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Comparative Effectiveness Review
Number 151

Management of Postpartum Hemorrhage

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Preface

The Agency for Healthcare Research and Quality (AHRQ), through its Evidence-based Practice Centers (EPCs), sponsors the development of systematic reviews to assist public- and private-sector organizations in their efforts to improve the quality of health care in the United States. These reviews provide comprehensive, science-based information on common, costly medical conditions, and new health care technologies and strategies.

Systematic reviews are the building blocks underlying evidence-based practice; they focus attention on the strength and limits of evidence from research studies about the effectiveness and safety of a clinical intervention. In the context of developing recommendations for practice, systematic reviews can help clarify whether assertions about the value of the intervention are based on strong evidence from clinical studies. For more information about AHRQ EPC systematic reviews, see www.effectivehealthcare.ahrq.gov/reference/purpose.cfm.

AHRQ expects that these systematic reviews will be helpful to health plans, providers, purchasers, government programs, and the health care system as a whole. Transparency and stakeholder input are essential to the Effective Health Care Program. Please visit the Web site (www.effectivehealthcare.ahrq.gov) to see draft research questions and reports or to join an email list to learn about new program products and opportunities for input.

We welcome comments on this systematic review. They may be sent by mail to the Task Order Officer named below at: Agency for Healthcare Research and Quality, 540 Gaither Road, Rockville, MD 20850, or by email to epc@ahrq.hhs.gov.

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Key Informants

In designing the study questions, the EPC consulted several Key Informants who represent the end-users of research. The EPC sought the Key Informant input on the priority areas for research and synthesis. Key Informants are not involved in the analysis of the evidence or the writing of the report. Therefore, in the end, study questions, design, methodological approaches, and/or conclusions do not necessarily represent the views of individual Key Informants.

Key Informants must disclose any financial conflicts of interest greater than $10,000 and any other relevant business or professional conflicts of interest. Because of their role as end-users, individuals with potential conflicts may be retained. The TOO and the EPC work to balance, manage, or mitigate any conflicts of interest.

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Technical Expert Panel

In designing the study questions and methodology at the outset of this report, the EPC consulted several technical and content experts. Broad expertise and perspectives were sought. Divergent and conflicted opinions are common and perceived as healthy scientific discourse that results in a thoughtful, relevant systematic review. Therefore, in the end, study questions, design, methodologic approaches, and/or conclusions do not necessarily represent the views of individual technical and content experts.

Technical Experts must disclose any financial conflicts of interest greater than $10,000 and any other relevant business or professional conflicts of interest. Because of their unique clinical or content expertise, individuals with potential conflicts may be retained. The TOO and the EPC work to balance, manage, or mitigate any potential conflicts of interest identified.

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Peer Reviewers

Prior to publication of the final evidence report, EPCs sought input from independent Peer Reviewers without financial conflicts of interest. However, the conclusions and synthesis of the scientific literature presented in this report do not necessarily represent the views of individual reviewers.

Peer Reviewers must disclose any financial conflicts of interest greater than $10,000 and any other relevant business or professional conflicts of interest. Because of their unique clinical or content expertise, individuals with potential nonfinancial conflicts may be retained. The TOO and the EPC work to balance, manage, or mitigate any potential nonfinancial conflicts of interest identified.

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Management of Postpartum Hemorrhage

Structured Abstract

Objectives. To systematically review evidence addressing the management of postpartum hemorrhage (PPH)), including evidence for the benefits and harms of nonsurgical and surgical treatments, interventions for anemia after PPH is resolved, and effects of systems-level interventions.

Data sources. We searched the MEDLINE®, Embase, and Cumulative Index to Nursing and Allied Health Literature (CINAHL®) databases for articles published in English since 1990.

Review methods. We included comparative studies of nonsurgical and surgical interventions to manage PPH published in English from 1990 to November 2014 and conducted in high-resource countries. We also included case series addressing harms of interventions and benefits and harms of procedures and surgeries for PPH, as these interventions are unlikely to be addressed in randomized studies. Two investigators independently screened studies against predetermined inclusion criteria (including study design, country of conduct, and outcomes addressed) and independently rated the quality of included studies. We extracted data into evidence and summary tables and summarized them qualitatively.

Results. We identified a total of 68 unique studies. Sixty-one studies addressed effectiveness outcomes: none of good quality, 23 fair, and 38 poor. Fifty studies reported harms of interventions for PPH management: 11 good quality and 39 poor. Few studies addressed pharmacologic or medical management, including transfusion for supportive management of ongoing PPH, and evidence is insufficient to comment on effects of such interventions. The success of uterine-sparing techniques, such as uterine balloon tamponade, embolization, uterine compression sutures, and uterine and other pelvic artery ligation, in controlling bleeding without the need for additional procedures or surgeries ranged from 36 to 98 percent. However, these data come from a limited number of studies with a small number of participants. Harms of interventions were diverse and not well understood. Studies suggested an association between recombinant activated factor VIIa and thromboembolic events, but sample sizes were small. Some studies with longer term followup reported adverse effects on future fertility and menstrual changes in women undergoing embolization. Studies also reported need for reoperation after hysterectomy. No study (out of two addressing such interventions) demonstrated benefits associated with transfusion or iron supplementation for anemia after PPH is stabilized. Systems-level interventions had little effect on reducing the incidence or severity of PPH or the need for transfusion or hysterectomy.

Conclusions. The literature addressing management of PPH comprises predominantly studies of poor quality. Diagnosis of PPH is subjective and management is urgent, often involving rapid and simultaneous initiation of interventions. Therefore, comparing the severity of PPH and trajectory of care across studies is challenging. Further research is needed across all interventions for PPH management.

Contents

Figures

Appendixes

Executive Summary

Introduction

Postpartum hemorrhage (PPH) is commonly defined as blood loss exceeding 500 mL following vaginal birth and 1,000 mL following cesarean.[1] Definitions vary, however, and diagnosis of PPH is subjective and often based on inaccurate estimates of blood loss.[1-4] Moreover, average blood loss at birth frequently exceeds 500 or 1,000 mL,[4] and symptoms of hemorrhage or shock from blood loss may be hidden by the normal plasma volume increases that occur during pregnancy. PPH is often classified as primary/immediate/early, occurring within 24 hours of birth, or secondary/delayed/late, occurring from more than 24 hours postbirth to up to 12 weeks postpartum. In addition, PPH may be described as third or fourth stage depending on whether it occurs before or after delivery of the placenta, respectively. Multiple studies have noted an increase in PPH in high-resource countries, including the United States, Canada, Australia, Ireland, and Norway, since the 1990s.[5-9]

PPH is a leading cause of maternal mortality and morbidity worldwide, and accounts for nearly one-quarter of all maternal pregnancy-related deaths.[10] Multiple studies have suggested that many deaths associated with PPH could be prevented with prompt recognition and more timely and aggressive treatment.[11-13] Morbidity from PPH can be severe, with sequelae including organ failure, shock, edema, compartment syndrome, transfusion complications, thrombosis, acute respiratory distress syndrome, sepsis, anemia, intensive care, and prolonged hospitalization.[14-16]

The most common etiology of PPH is uterine atony (impaired uterine contraction after birth), which occurs in about 80 percent of cases. Atony may be related to overdistention of the uterus, infection, placental abnormalities, or bladder distention.[17] Although the majority of women who develop PPH have no identifiable risk factors, clinical factors associated with uterine atony, such as multiple gestation, polyhydramnios, high parity, and prolonged labor, may lead to a higher index of suspicion.[14,15,17,18] Other causes of PPH include retained placenta or clots, lacerations, uterine rupture or inversion, and inherited or acquired coagulation abnormalities.[17,18]

Interventions To Manage PPH

Organizations and associations including the World Health Organization, International Confederation of Midwives, International Federation of Gynecologists and Obstetricians, American College of Obstetricians and Gynecologists, California Maternal Quality Care Collaborative, and Royal College of Obstetricians and Gynaecologists have released guidelines for PPH prevention and management.[10,15,17-21] Initial management includes identifying PPH, determining the cause, and implementing appropriate interventions based on the etiology.

Interventions to treat PPH generally proceed from less to more invasive and include compression techniques, medications, procedures, and surgeries. PPH management may also involve adjunctive therapies, such as blood and fluid replacement and/or an antishock garment,[22,23] to treat the blood loss and other sequelae that result from PPH. PPH management varies significantly according to available resources.

Conservative management techniques, such as uterotonic medications, external uterine massage, and bimanual compression, are generally used as "first-line" treatments. Procedures used in PPH management include manual removal of the placenta, manual removal of clots,

uterine balloon tamponade, and uterine artery embolization.[10,15,17,18] Laceration repair is indicated when PPH is a result of genital tract trauma.

Surgical options when other measures fail to control bleeding include curettage, uterine and other pelvic artery ligation, uterine compression sutures, and hysterectomy.[10,15,17,18] More invasive procedures (e.g., uterine balloon tamponade and uterine artery embolization) and surgical techniques are generally used after first-line conservative management has failed to control bleeding and can be considered second-line interventions.[24] Table 1 in the full report includes brief descriptions of interventions used in PPH management.

After PPH has been controlled, followup management varies. It may include laboratory testing (e.g., hemoglobin and hematocrit), iron replacement therapy, and other interventions to assess and treat sequelae of PPH.

At a systems level, PPH has been the focus of perinatal care safety initiatives that attempt to improve patient outcomes by incorporating a variety of strategies, such as practice guidelines or protocols, simulation drills, and teamwork training.[25-29] These systems-level interventions may influence management of PPH.

Scope and Key Questions

This systematic review provides a comprehensive review of potential benefits of PPH management (medical and surgical), as well as harms associated with treatments in women with PPH. We assess intermediate outcomes, such as blood loss, hospital and intensive care unit (ICU) stay, and anemia, and longer term outcomes, including uterine preservation, fertility, breastfeeding, psychological impact and harms of treatment, and mortality related to treatment.

Key Questions

We synthesized evidence in the published literature to address the following Key Questions (KQs):

KQ1. What is the evidence for the effectiveness of interventions for management of postpartum hemorrhage?

a. What is the effectiveness of interventions intended to treat postpartum hemorrhage likely due to atony?
b. What is the effectiveness of interventions intended to treat postpartum hemorrhage likely due to retained placenta?
c. What is the effectiveness of interventions intended to treat postpartum hemorrhage likely due to genital tract trauma?
d. What is the effectiveness of interventions intended to treat postpartum hemorrhage likely due to uncommon causes (e.g., coagulopathies, uterine inversion, subinvolution, abnormal placentation)?

KQ2. What is the evidence for choosing one intervention over another and when to proceed to subsequent interventions for management of postpartum hemorrhage?

KQ3. What are the harms, including adverse events, associated with interventions for management of postpartum hemorrhage?

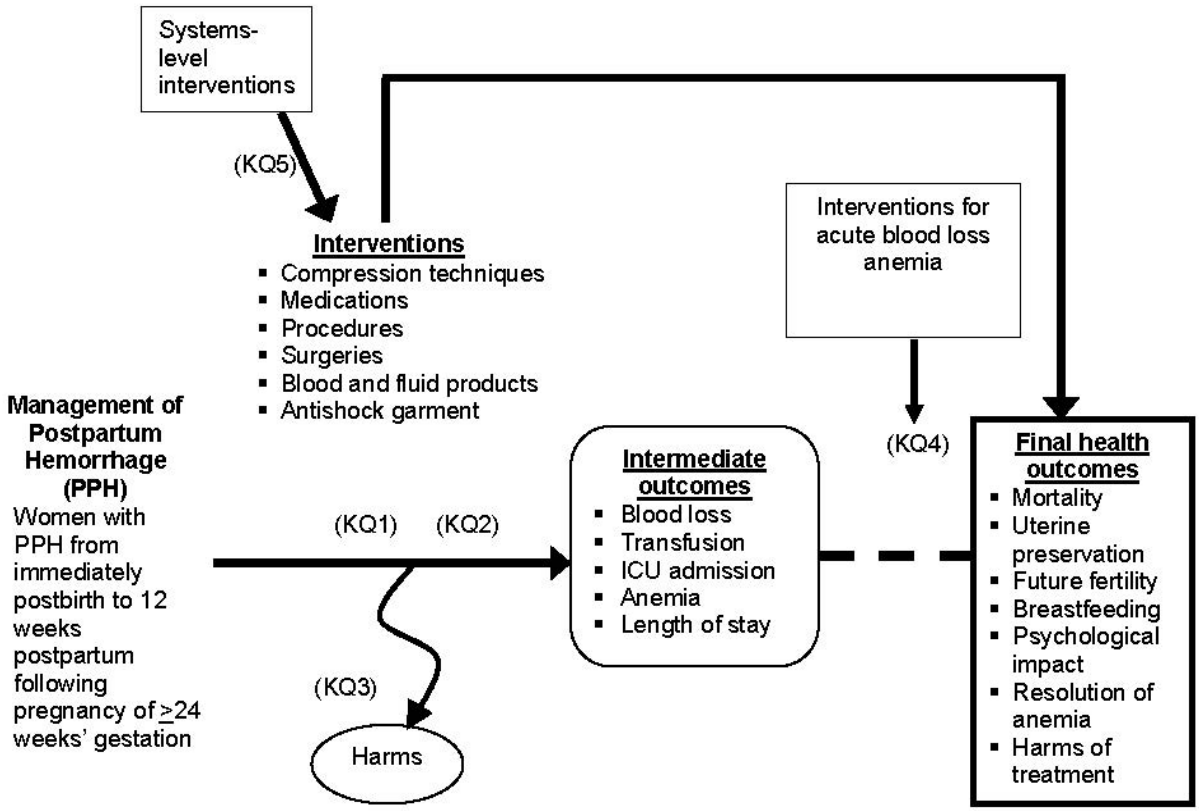
KQ4. What is the effectiveness of interventions to treat acute blood loss anemia after stabilization of postpartum hemorrhage?

KQ5. What systems-level interventions are effective in improving management of postpartum hemorrhage?

Analytic Framework

The analytic framework illustrates the population, interventions, and outcomes that guided the literature search and synthesis (Figure A). The framework for management of PPH includes women with PPH from immediately postbirth to 12 weeks postpartum following pregnancy of at least 24 weeks' gestation. The figure depicts the KQs within the context of the population, intervention, comparator, outcomes, timing, and setting (PICOTS) parameters described in the review. In general, the figure illustrates how interventions such as compression techniques, medications, procedures, surgeries, blood and fluid products, antishock garments, or systems-level interventions may result in intermediate outcomes such as blood loss, transfusion, ICU admission, anemia, or length of stay and/or in final health outcomes such as mortality, uterine preservation, future fertility, breastfeeding, or psychological impact. Also, adverse events may occur at any point after the intervention is received.

Figure A. Analytic framework



ICU = intensive care unit; KQ = Key Question.

Methods

Literature Search Strategy

A librarian employed search strategies, provided in Appendix A of the full report, to retrieve research on interventions for PPH. We searched MEDLINE® via the PubMed® interface, the Cumulative Index of Nursing and Allied Health Literature (CINAHL®), and Embase (Excerpta Medica Database). We limited searches to the English language and to studies published from 1990 to the present in order to reflect current standards of care for PPH. Our last search was conducted in November 2014. We manually searched reference lists of included studies and of recent narrative and systematic reviews and meta-analyses.

Inclusion and Exclusion Criteria

We developed criteria for inclusion and exclusion (Table A) in consultation with a Technical Expert Panel. We limited studies to those published in English and conducted in Very High Human Development countries as ranked by the United Nations Development Programme Human Development Index (Table A). In the opinion of our clinical experts, processes of care and interventions available in these countries best reflect the system of health care in the United States. A considerable body of evidence addresses PPH management in developing countries. However, the limited availability of skilled clinicians and treatment options in many of these countries results in different standards of care and clinical approaches from those in the United

States.

PPH is a complex condition. Treatments are selected not only by PPH etiology and severity, but also by factors related to the setting of care, the availability of medications or other therapeutic options, the availability of personnel, and the standards of care in a given treatment center. Treatment availability and the feasibility of providing certain treatments differ across developed and developing nations, and even within any given nation. Because the context of care in most developing nations differs significantly from care in the United States, we instituted language and country limitations in order to identify studies that are most applicable to guiding care by clinicians in the United States, who are the intended audience for this report.

In order to provide contextual information about effectiveness and harms reported in studies conducted in developing nations, we provide summaries of recent reviews of interventions for PPH, which include studies conducted in any country, in the Discussion section (Findings in Relation to What Is Already Known) of the full report.

Table A. Inclusion criteria

Category	Criteria
Study population	• KQs 1–3, 5: Women with PPH from immediately postbirth to 12 weeks postpartum following pregnancy >24 weeks' gestation • KQ4: Women with stabilized PPH and acute blood loss anemia • All modes of birth in any setting
Time period	1990 to present
Publication languages	English only
Country	Very High Human Development countries as indicated by the United Nations Development Programme Human Development Index. Countries as of April 2014 include Norway, Australia, United States, Netherlands, Germany, New Zealand, Ireland, Sweden, Switzerland, Japan, Canada, Republic of Korea, Hong Kong, Iceland, Denmark, Israel, Belgium, Austria, Singapore, France, Finland, Slovenia, Spain, Liechtenstein, Italy, Luxembourg, United Kingdom, Czech Republic, Greece, Brunei Darussalam, Cyprus, Malta, Andorra, Estonia, Slovakia, Qatar, Hungary, Barbados, Poland, Chile, Lithuania, United Arab Emirates, Portugal, Latvia, Argentina, Seychelles, and Croatia
Admissible evidence (study design and other criteria)	Admissible designs • KQs 1–2, 4: RCTs or prospective/retrospective cohort studies, population-based case series or registry studies with ≥50 cases of PPH treatment, case series of procedures (uterine balloon tamponade, uterine artery embolization) or surgical approaches with ≥50 women • KQ3: RCTs or prospective retrospective cohort studies, case series with ≥50 cases addressing interventions for PPH • KQ5: Pre-post studies related to large-scale health systems changes, RCTs, prospective/retrospective cohort studies Other criteria • Original research studies that provide sufficient detail regarding methods and results to enable use and adjustment of the data and results • Studies targeting women with PPH who meet the population criteria described above • Studies that address: o Treatment modality aimed at treatment/management of PPH in a relevant population or treatment for acute blood loss anemia following stabilization of PPH o Outcomes related to interventions; primary outcomes of interest include blood loss, transfusion, ICU admission, anemia, length of stay, mortality, uterine preservation, future fertility, breastfeeding, and psychological impact, as well as harms • Studies must include extractable data presented in text or tables (vs. solely in figures) on relevant outcomes • For KQ5, studies must explicitly assess effects of a systems-level intervention on PPH management as a primary or secondary aim; analytic models must indicate data analysis of the effect of the strategy as it relates to PPH treatment; results data include information about effects of strategy on management of PPH; discussion interprets the strategy as potentially having value/not having value for PPH management

ICU = intensive care unit; KQ = Key Question; PPH = postpartum hemorrhage; RCT = randomized controlled trial.

Study Selection

Two reviewers independently assessed each abstract. If one reviewer concluded that the article could be eligible based on the abstract, we retained it for review of the full text. Two reviewers independently assessed the full text of each included study, with any disagreements adjudicated by a senior reviewer.

Data Extraction and Synthesis

We extracted data from included studies into evidence tables that report study design, descriptions of the study population (for applicability), description of the interventions, and baseline and outcome data on constructs of interest. Data were initially extracted by one team member and reviewed for accuracy by a second. The final evidence tables are presented in Appendix D of the full report.

We completed evidence tables for all included studies, and data are presented in summary tables and analyzed qualitatively in the text. We did not conduct meta-analyses, given significant heterogeneity in the study populations, interventions, and outcomes.

Quality (Risk-of-Bias) Assessment of Individual Studies

We used tools appropriate for specific study designs to assess quality/risk of bias of individual studies: the Cochrane Risk of Bias tool for randomized trials;[30] the Newcastle-Ottawa Scale for Non-Randomized Studies;[31] the National Heart, Lung, and Blood Institute scale for pre-post studies;[32] a tool for case series adapted from RTI Item Bank questions;[33] and a four-item harms assessment instrument for cohort studies derived from the McMaster Quality Assessment Scale of Harms (McHarm) for Harms Outcomes[34] and the RTI Item Bank.[33] Appendix B of the full report includes questions used in each tool.

Two team members independently assessed each included study, with discrepancies resolved through discussion to reach consensus and/or adjudication by a senior reviewer. The results of these assessments were then translated to the Agency for Healthcare Research and Quality standard of "good," "fair," and "poor" quality designations, as described in the full report. Quality ratings for each study are in Appendix E of the full report.

Strength of the Body of Evidence

Two senior investigators graded the body of evidence for key intervention/outcome pairs using methods based on the "Methods Guide for Effectiveness and Comparative Effectiveness Reviews."[35] The team reviewed the final strength-of-evidence designation. The possible grades were:

- High: High confidence that the evidence reflects the true effect. Further research is unlikely to change estimates.
- Moderate: Moderate confidence that the evidence reflects the true effect. Further research may change our confidence in the estimate of effect and may change the estimate.
- Low: Low confidence that the evidence reflects the true effect. Further research is likely to change confidence in the estimate of effect and is also likely to change the estimate.
- Insufficient: Evidence is either unavailable or does not permit a conclusion.

Applicability

We assessed applicability by identifying potential PICOTS factors likely to affect the generalizability of results (i.e., applicability to the general population of women being treated for PPH). We considered factors related to the availability of interventions; severity of PPH; characteristics of the population, such as mode of birth, that may be associated with PPH; and setting of the intervention as particularly likely to affect applicability.

Results

Article Selection and Overview

We identified 3,266 nonduplicative titles or abstracts with potential relevance, with 920 proceeding to full-text review. We excluded 844 studies at full-text review and included 68 unique studies (76 publications) in the review. We present findings by intervention and outcome area where possible under each KQ. For KQ1, we integrated discussion of subquestions because there was not adequate distinction in the literature to address different etiologies separately.

While a number of studies were classified as prospective or retrospective studies using our study classification algorithm (Appendix G of the full report), few cohort studies provided comparative analyses between the groups, and many were confounded by indication in that women who received interventions such as massive transfusion or hysterectomy likely had more severe cases of PPH. Additionally, initial management of PPH using first-line interventions such as uterotonics and uterine massage differed across studies and across women, as each study generally included a number of patients transferred from other hospitals. Thus, populations were heterogeneous in terms of severity and level of stabilization prior to second-line interventions. Given the lack of data from randomized or controlled studies of PPH management, we present data from cohort studies and case series, and note potential confounding.

The following sections summarize findings within the literature meeting our criteria. Overall, the evidence to answer questions about PPH management did not reach standards for high strength of evidence (Tables B–E). We briefly summarize strength-of-evidence findings in each section below and provide a full discussion of strength-of-evidence assessment in the Discussion section of this Executive Summary and in the full report.

KQ1. Effectiveness of Interventions for Management of PPH

Fifty-one unique studies examined the effectiveness of interventions for management of PPH. Some studies addressed multiple interventions. We classified these studies broadly as medical interventions, procedures, and surgical interventions, and more specifically by the type of intervention, including pharmacologic interventions (12 studies), transfusion as an intervention for management of acute PPH (4 studies), intrauterine balloon tamponade (5 studies), embolization (19 studies), uterine compression sutures (3 studies), uterine and other pelvic artery ligation (5 studies), embolization and hysterectomy (1 study), hysterectomy (8 studies), and combined approaches (4 studies). Studies that address transfusion as an intervention for anemia once PPH is stabilized are summarized under KQ4.

Pharmacologic Interventions

We identified few studies of pharmacologic interventions for PPH that met our review criteria (n = 12). Six small studies of fair and poor quality each addressed different drugs. One retrospective cohort study reported successful control of bleeding following oxytocin and other uterotonics in 49 percent of women. One randomized controlled trial (RCT) of tranexamic acid versus no tranexamic acid reported significantly less blood loss, duration of bleeding, and need for transfusion in the tranexamic acid arm compared with control. A cohort study comparing misoprostol and methylergonovine reported no group differences in transfusion or need for other treatments or surgeries. Case series of sulprostone and carboprost tromethamine reported control of bleeding without additional procedures or surgeries in 83 and 88 percent of participants,

respectively, and a cohort study assessing recombinant human soluble thrombomodulin reported greater D-dimer decreases in women with PPH and disseminated intravascular coagulopathy treated with thrombomodulin than in matched controls.

Six small studies of recombinant activated factor VIIa (rFVIIa) had mixed results. In one retrospective cohort study, women in the rFVIIa group required more blood products and had greater blood loss than women not receiving the treatment. In a case-control study, differences in change in prothrombin time were not significant between women treated with rFVIIa and those who were not. Used as a second-line intervention, rFVIIa controlled bleeding without the need for further procedures or surgeries in 27 to 31 percent of women in one cohort study, a rate that was similar to the rate for treatment with other second-line interventions in that study. In registry studies, bleeding was considered improved after one or multiple doses of rFVIIa in 64 to 80 percent of women after the final dose. No study included more than 177 women receiving rFVIIa.

Strength of evidence is insufficient for all outcomes of each of the agents studied (oxytocin and other uterotonics, misoprostol, tranexamic acid, carboprost tromethamine, thrombomodulin, and rFVIIa) for PPH management due to the study sizes and lack of studies addressing each agent.

Transfusion for Supportive Management of Ongoing PPH

Three studies of fair quality and one of poor quality addressed transfusion for supportive management of PPH. Two of the studies found that ICU admissions and death were higher with combined blood products versus single (whole blood or packed red blood cells) and massive transfusion versus nonmassive transfusion. These differences may reflect that women in the groups with poorer outcomes had more severe PPH. A third study found that estimated blood loss, blood products transfused, and mean length of stay did not differ between cryoprecipitate and fibrinogen concentrate groups, and a fourth reported reduced use of blood products after the introduction of fibrinogen. Strength of evidence for outcomes related to transfusion is insufficient. While there were three fair-quality studies of transfusion, two of them were so confounded that we could not confidently ascertain their outcomes.

Procedures

Both of the procedures assessed in the studies we reviewed (uterine balloon tamponade, embolization) showed positive results for PPH management. The median success rate (defined as control of bleeding without additional procedures or surgeries) of intrauterine balloon tamponade as the initial second-line procedure (i.e., first procedure following conservative management) was 75 percent in three studies reporting data on success. In one study of a protocol change to add balloon tamponade as the initial procedure after medication failure, rates of some invasive procedures (beyond tamponade) decreased in women who had vaginal births. The median success rate for embolization as the initial second-line procedure among 15 studies providing such data was 89 percent (range, 58% to 98%). However, there was wide variation in the materials used for embolization, the arteries that were embolized, and the interventions that were used before and in conjunction with embolization. The availability of embolization, which is performed by an interventional radiologist, varies by hospital; therefore, this treatment modality is not available to all women with PPH. Strength of evidence for outcomes related to uterine balloon tamponade is insufficient, given the small number of studies and small sample sizes.

Strength of evidence is low for embolization controlling bleeding without additional procedures or surgeries.

Surgical Interventions

The effectiveness of surgical interventions varied. The success rate of uterine compression sutures was 60 and 70 percent in the two studies from which this could be ascertained. Ligation had a median success rate of 92 percent in three studies (range, 36% to 96%). Hysterectomy used as the first procedure after conservative management controlled bleeding without further surgeries or procedures in a median of 57 percent of women (range, 20% to 93%) in two studies. One study compared embolization and hysterectomy, and reported significantly more ICU admissions and a greater median length of stay in the hysterectomy group than the embolization group. Strength of evidence is insufficient for the success of uterine compression sutures and hysterectomy in controlling bleeding, given the few studies available. Strength of evidence is low for ligation controlling bleeding without further procedures or surgeries.

Combined Approaches

Three studies examined a combination of medical and surgical interventions for secondary PPH. Interventions included conservative management (including uterotonics), transfusion, surgical evacuation, curettage, and hysterectomy. In the two studies that compared medical and surgical approaches, hospital readmission and repeat surgical evacuation occurred more frequently in women who initially received medical management versus surgical. One cohort study of women with primary PPH reported greater need for transfusion, ICU admission, and greater hospital length of stay in women undergoing procedures and/or surgery compared with women who were medically managed. Strength of evidence for studies of combination interventions and length of stay was insufficient, given the small sample sizes and inconsistency in interventions.

KQ2. Evidence for Choosing Interventions and Proceeding to Subsequent Interventions

We did not identify any studies addressing this question.

KQ3. Harms of Interventions for PPH

Harms varied considerably across the 50 studies reporting harms data. Harms were generally mild in the few studies of medications that met our review criteria. Four studies of rFVIIa reported on thrombotic events, but sample sizes were small and studies were of fair to poor quality. Few studies of uterine balloon tamponade reported adverse events, and studies of embolization reported on subsequent menstrual changes, infertility, and pregnancy complications, including spontaneous abortion. Few women, however, were followed long term, and rates of such complications ranged from 0 to 43 percent across studies. Two small studies assessing uterine compression sutures and preterm birth reported no differences in preterm births between cases and controls, and studies of ligation and hysterectomy reported primarily on operative injuries and reoperation.

Strength of evidence for harms of interventions was typically insufficient, given the diversity of harms reported in single studies. Strength of evidence was low for hematoma, infertility, and menstrual changes associated with embolization and low for a lack of association between

embolization and spontaneous abortion. Strength of evidence was also low for the association between hysterectomy and operative organ damage and reoperation due to the greater number of studies and more consistent reporting of adverse events.

KQ4. Effectiveness of Interventions for Acute Blood-Loss Anemia After Stabilization of PPH

Two small poor-quality RCTs addressed interventions for acute blood loss after PPH is stabilized. In a study comparing women treated with intravenous versus oral iron supplementation after PPH, there was no significant difference in hemoglobin level between groups at any time point. In a study that assessed differences in fatigue and quality of life between women treated with blood transfusion versus no transfusion, the difference in these outcomes between groups was minimal and possibly clinically equivalent. Strength of evidence is insufficient for all outcomes and harms in studies of interventions for anemia after PPH, given the few studies, small number of participants, and differences in intervention approaches.

KQ5. Effectiveness of Systems-Level Interventions

Across a range of systems-level interventions that range from a complex multiphase project with 11 distinct components to simple 3-component models for audit and feedback, findings are inconsistent about benefit. All sites, including those participating in the active sites of a null cluster randomized trial, were aware of a programmatic emphasis on improving response to and outcomes of PPH. Despite this built-in bias toward finding an effect—since estimated blood loss was rarely quantitatively measured and self-report of performance would be expected to be optimistic—results of a large trial and the higher quality studies do not demonstrate ability to reduce incidence or severity of PPH, or key maternal outcomes such as transfusion, hysterectomy, and ICU admission. Strength of evidence is moderate for a lack of benefit for systems-level interventions in reducing PPH incidence or severity, preventing hysterectomy, or affecting ICU admissions. Strength of evidence is moderate for no effect on the need for transfusion and insufficient for effects on mortality.

Discussion

Key Findings

We included 68 unique studies (76 publications) in this review, including 4 RCTs, 2 prospective and 14 retrospective cohort studies, 10 pre-post studies (studies that compare PPH management and/or outcomes before and after an intervention, such as introduction of a new protocol), 4 case-control studies, and 34 case series. Most studies were conducted in Europe (n = 33), and 18 were conducted in the United States or Canada, 13 in Asia, 3 in Australia or New Zealand, and 1 in Argentina. No studies were of good quality for effectiveness outcomes. We considered 23 studies as fair quality for effectiveness outcomes and 38 as poor (including case series, which we considered poor quality by default). Seven studies provided only harms data. Among the 50 studies reporting harms, we considered 11 as good quality for harms reporting and the remainder as poor quality.

Six small studies of fair and poor quality addressed different pharmacologic agents. Three studies, each of different agents (oxytocin and other uterotonics, tranexamic acid, sulprostone, carboprost tromethamine), reported reduced bleeding or control of bleeding. One study

comparing misoprostol and methylergonovine reported no group differences in outcomes, and one of recombinant human soluble thrombomodulin to treat disseminated intravascular coagulation reported greater decrease in D-dimer in the thrombomodulin arm. Six small studies of rFVIIa had mixed results related to need for transfusion and control of bleeding.

Medications commonly used for PPH in the United States are oxytocin, methylergonovine maleate, carboprost tromethamine, and misoprostol. One study that met our inclusion criteria addressed oxytocin; one study included methylergonovine maleate and misoprostol. Because evidence regarding first-line management, particularly pharmacologic management, is critical for decisionmaking by clinicians and guidelines developers, we summarize findings from other recent studies of agents and interventions conducted in any country in the Discussion section of the full report.

The success of uterine-sparing techniques, such as uterine balloon tamponade, embolization, uterine compression sutures, and uterine and other pelvic artery ligation, in controlling bleeding without the need for additional procedures or surgeries ranged from 36 to 98 percent. However, these data come from a limited number of studies with a small number of participants. Harms reporting was limited to 50 studies and was difficult to synthesize because diverse adverse events were reported inconsistently across studies. Only two studies addressed interventions for anemia after PPH is stabilized. Systems-level interventions (n = 9 studies) showed little benefit in reducing the incidence or severity of PPH or the need for transfusion or hysterectomy.

Strength of Evidence

We included case series in our assessment of strength of evidence for harms and success rates of procedures and surgeries, and we rated strength of evidence for outcomes we considered to be clinically significant, consistently defined, and plausibly linked to the intervention. Overall, the evidence to answer questions about PPH management did not reach standards for high strength of evidence (Tables B–E). Strength of evidence was insufficient for all interventions/outcomes except for the success of embolization and ligation in controlling bleeding without further procedures or surgeries, which had low strength of evidence.

Strength of Evidence for Interventions To Manage PPH

The strength of evidence for interventions is summarized below:

Pharmacologic interventions. Strength of evidence is insufficient for all outcomes of each agent studied (oxytocin and other uterotonics, misoprostol, tranexamic acid, carboprost tromethamine, thrombomodulin, and rFVIIa) for PPH management because of the study sizes and lack of studies addressing each agent.

Transfusion for supportive management of PPH. While three fair-quality studies addressed transfusion, two of them were so confounded that we could not confidently ascertain their outcomes; thus, strength of evidence for all outcomes in insufficient.

Uterine balloon tamponade. Strength of evidence for the success of uterine balloon tamponade in controlling bleeding is insufficient.

Uterine artery embolization. Strength of evidence for embolization controlling bleeding without additional procedures or surgeries is low because of a lack of comparative studies and small sample sizes in studies providing data to assess success of the intervention.

Uterine compression sutures. Strength of evidence is insufficient for the success of uterine compression sutures.

Uterine and other pelvic vessel ligation. Strength of evidence is low for ligation controlling bleeding without further surgeries or procedures.

Hysterectomy. Strength of evidence is insufficient for all outcomes of hysterectomy.

Combined interventions. Strength of evidence is insufficient for all outcomes.

As noted, we identified few studies of medications meeting our review criteria. However, a number of studies of misoprostol and oxytocin have been conducted in developing countries. Four recent systematic reviews of interventions for PPH, including two Cochrane reviews, assessed uterotonics, including misoprostol. We summarize these reviews fully in the Findings in Relation to What Is Already Known section in the full report and provide a brief summary here.

In one Cochrane review, oxytocin infusion was more effective and caused fewer side effects than misoprostol when used as first-line therapy for the treatment of primary PPH. When used *after* prophylactic uterotonics, misoprostol and oxytocin infusion had similar effects. The review concluded that adding misoprostol for women receiving treatment with oxytocin did not appear to be beneficial. In another Cochrane review, differences in maternal mortality and morbidity, except for fever, did not differ significantly between misoprostol and control groups. The investigators concluded that misoprostol did not increase or decrease morbidity or mortality, with the exception of fever, and the lowest effective dose should be used. In another review of misoprostol versus placebo, misoprostol did not reduce PPH risk significantly compared with placebo. In the fourth review and meta-analysis, higher doses of misoprostol (600 vs. 400 micrograms) were no more effective at preventing blood loss.

Table B. Summary of evidence in studies addressing effectiveness of interventions (KQ1)

Category	Intervention	Key Outcome(s)	Strength of Evidence Grade	Findings
Pharmacologic Interventions	Oxytocin and other uterotonics	Control of bleeding	Insufficient	Control of bleeding in 45/91 women (49%) receiving oxytocin and other uterotonics in a single short-term study with high study limitations.
	Tranexamic acid vs. no tranexamic acid	Anemia, transfusion, blood loss, ICU stay	Insufficient	Less blood loss, need for transfusion, and progression to severe PPH in TXA group vs. control ($p < .05$) reported in a single small short-term cohort study with high study limitations.
	Misoprostol vs. methylergonovine maleate	Transfusion, uterine preservation	Insufficient for superiority of 1 agent over another in affecting any outcome	No group differences in need for transfusion or additional medical or surgical treatments in a single small short-term cohort study with high study limitations.
	Sulprostone	Success in controlling bleeding	Insufficient	In a single short-term study with high study limitations, bleeding was controlled in 83% of 1,370 women.
	Carboprost tromethamine	Success in controlling bleeding	Insufficient	In a single short-term study with high study limitations, bleeding was controlled by carboprost in 81% of 237 cases of PPH.
	Thrombomodulin vs. no thrombomodulin	Uterine preservation, bleeding, transfusion	Insufficient	Greater D-dimer decrease from baseline in intervention arm vs. control in a single small short-term cohort study with high study limitations.
	RFVIIa	Transfusion, anemia, uterine preservation, LOS	Insufficient	Need for transfusion was greater with rFVIIa in 1 small study with high study limitations and not different in another. Rates of hysterectomy, LOS were similar.

Table B. Summary of evidence in studies addressing effectiveness of interventions (KQ1) (continued)

Category	Intervention	Key Outcome(s)	Strength of Evidence Grade	Findings
Other Medical Interventions	Transfusion for supportive management of ongoing PPH	ICU admission, LOS	Insufficient	Inconsistency in direction of effect (greater LOS and ICU admission in transfusion or whole blood groups in 2 studies; no group differences in another study); high study limitations.
Procedures	Uterine tamponade	Success in controlling bleeding	Insufficient	Tamponade without further procedure or surgery controlled bleeding in 75-86% of women in 3 studies, and tamponade plus additional intervention controlled bleeding in 86-98% in another, but studies were small with high study limitations.
	Embolization	Success in controlling bleeding	Low for positive effect in controlling bleeding	Median success rate of 89% as initial second-line intervention in 15 studies with high limitations; conservative management and severity of PPH varied across studies. A higher SOE is not possible due to the lack of comparisons in this literature and small sample sizes.

Table B. Summary of evidence in studies addressing effectiveness of interventions (KQ1) (continued)

Category	Intervention	Key Outcome(s)	Strength of Evidence Grade	Findings
Surgeries	Uterine compression sutures	Success in controlling bleeding	Insufficient	In 2 small studies with medium limitations, bleeding controlled by suture following conservative management in 60-70% of women.
	Ligation	Success in controlling bleeding	Low for positive effect in controlling bleeding	92% success rate for controlling bleeding without further procedure or surgeries in 3 small studies of ligation alone with medium study limitations. Ligation with or without suture controlled bleeding in 91% in 1 case series.
	Hysterectomy	LOS, ICU admission	Insufficient	Insufficient SOE due to few comparative studies, high limitations.
Other Interventions	Combined interventions	LOS in women with primary and secondary PPH	Insufficient	Greater LOS in women with primary PPH undergoing procedures/surgeries vs. medical management in 1 small study with high limitations. No differences in LOS between surgical and medical management groups in 2 small studies with high limitations addressing secondary PPH.

ICU = intensive care unit; KQ = Key Question; LOS = length of stay; PPH = postpartum hemorrhage; rFVIIa = recombinant activated factor VIIa; SOE = strength of evidence; TXA = tranexamic acid.

Strength of Evidence for Harms of Interventions

Generally strength of evidence was insufficient, given the diversity of harms reported in single studies. However, strength of evidence rose above insufficient for selected harms related to uterine compression sutures, embolization, and hysterectomy because of the greater number of studies and more consistent reporting of adverse events (Table C).

As noted, few studies of uterotonics met our inclusion criteria. However, harms reported in recent systematic reviews of uterotonics for PPH treatment included shivering and fever. (See Findings in Relation to What Is Already Known section in the full report for more information.) In one review, oral misoprostol was associated with a significant increase in vomiting and shivering compared with either oxytocin or rectal misoprostol. In another review, differences in maternal mortality and morbidity, except for fever, did not differ significantly between misoprostol and control groups. Risk of fever was increased in misoprostol groups and was highest in studies with a misoprostol dose of 600 micrograms or more. In another review of misoprostol versus placebo, shivering and fever were significantly more common in misoprostol arms. A fourth review noted more adverse effects related to misoprostol than placebo.

While evidence in the current review was insufficient to comment on the association between rFVIIa and thrombolic events, studies in other populations have suggested increased risk of arterial events. In one review of RCTs in nonhemophilia patients, the pooled relative risk of thrombolic events across studies of prophylactic and therapeutic uses of rFVIIa was 1.45 (95%

confidence interval, 1.02 to 2.05). Another review of fertility outcomes following embolization, ligation, and sutures concluded that the techniques reviewed did not appear to compromise fertility, but the number and quality of studies were limited.

Table C. Summary of evidence in studies addressing harms of interventions (KQ3)

Intervention Category	Intervention	Key Outcome(s)	Strength of Evidence Grade	Findings
Pharmacologic Interventions	Tranexamic acid	All harms	Insufficient	In 1 small RCT with low study limitations, serious harms did not differ between groups and mild transient harms occurred more often in TXA group.
	Sulprostone	All harms	Insufficient	Insufficient SOE, as there was only 1 study considered poor quality for harms reporting.
	Methylergonovine maleate	Acute coronary syndrome and myocardial infarction	Low SOE for lack of association of methylergonovine maleate with acute coronary syndrome and myocardial infarction	No significant difference in the incidence of these conditions in the exposed and nonexposed groups in 1 large cohort study with low study limitations.
	Carboprost tromethamine	All harms	Insufficient	Insufficient SOE, as there was only 1 study considered poor quality for harms reporting.
	RFVIIa	Thromboembolic events	Insufficient	4 of 5 studies (unclear overlap in 2 studies) reported thromboembolic events (pulmonary embolus, deep vein thrombosis, myocardial infarction), but sample sizes were small and study limitations high.
Other Medical Interventions	Transfusion for supportive management of ongoing PPH	All harms	Insufficient	Inconsistency in harms reported in 7 studies with high study limitations.

Table C. Summary of evidence in studies addressing harms of interventions (KQ3) (continued)

Intervention Category	Intervention	Key Outcome(s)	Strength of Evidence Grade	Findings
Procedures	Uterine tamponade	All harms	Insufficient	Small studies with high limitations and few harms reported.
	Embolization	Infertility	Low SOE for negative effect of embolization on future fertility	Infertility rate among women who had embolization in these studies was greater than that of the overall population (range, 0 to 43%), but few women (n = 300) available for long-term followup; high study limitations and inconsistency in 5 studies.
		Spontaneous abortion in subsequent pregnancy	Low SOE for lack of association between embolization and spontaneous abortion in subsequent pregnancy	Small number of women followed up; rates of miscarriage ranged from 5% to 21.4% in 7 studies with high study limitations. Rates were comparable to estimates in the general population.
		Menstrual changes	Low SOE for an association between embolization and subsequent menstrual changes	Rates of menstrual change, including heavier, lighter, or irregular menses and amenorrhea, ranged from 2% to 22% in 8 studies with high limitations.
		Hematoma	Low SOE for association between embolization and hematoma	Rates ranged from 1.7% to 6% in 7 studies with high limitations.

Table C. Summary of evidence in studies addressing harms of interventions (KQ3) (continued)

Intervention Category	Intervention	Key Outcome(s)	Strength of Evidence Grade	Findings
Surgeries	Uterine compression sutures	Preterm birth	Low SOE for no effect on subsequent preterm birth	In 2 studies with medium limitations, preterm births did not differ between women in case and control arms in subsequent pregnancies.
	Ligation	Surgical injury	Insufficient	High study limitations and imprecision in 2 studies. Injuries (inadvertent ligation of the ureters and secondary hysterectomy disunion with sepsis) related to ligation reported in both studies.
	Hysterectomy	Bladder and ureter lesions	Low SOE for association of hysterectomy and operative organ damage	Rates of bladder and ureter lesions ranged from 6% to 12% and 0.4% to 41%, respectively, in 6 small studies with high study limitations.
		Reoperation	Low SOE for association between hysterectomy and reoperation	Rates of reoperation ranged from 1.8% to 29% in 5 small studies with high study limitations.

KQ = Key Question; PPH = postpartum hemorrhage; RCT = randomized controlled trial; rFVIIa = recombinant activated factor VIIa; SOE = strength of evidence; TXA = tranexamic acid.

Strength of Evidence for Interventions for Anemia

There is insufficient strength of evidence for all outcomes and harms in studies of interventions for anemia after PPH is stabilized, given the few studies, small number of participants, and differences in intervention approaches (Table D).

Table D. Summary of evidence in studies addressing interventions for anemia after PPH (KQ4)

Intervention	Key Outcome(s)	Strength of Evidence Grade	Findings
Iron supplementation	Anemia	Insufficient	No differences in groups receiving oral vs. intravenous iron in 1 small RCT with high study limitations and indirect outcomes.
Transfusion for anemia	Fatigue	Insufficient	No significant group differences in 1 small RCT with high study limitations.
	Quality of life	Insufficient	No significant group differences in 1 small RCT with high study limitations.
Iron supplementation and transfusion for anemia	All harms (transfusion reactions, infections, endometritis, thromboembolic events)	Insufficient	Of 2 small RCTs, harms were not prespecified in 1 study. No serious adverse reactions were attributed to the study drugs in either RCT but reporting in 1 RCT is not clear.

KQ = Key Question; PPH = postpartum hemorrhage; RCT = randomized controlled trial.

Strength of Evidence for Systems-Level Interventions

Overall the strength of evidence for any systems-level intervention on any outcome is insufficient or moderate, as the observational data are biased and a single very large trial suggests that at least one clearly described and implemented program did not change risk of

severe hemorrhage or meaningfully modify processes of care or overall maternal outcomes. Strength of evidence is moderate that these multicomponent interventions did not change specific outcomes, such as severity of PPH, transfusion, hysterectomy, and ICU admission (Table E).

Table E. Summary of evidence in studies addressing systems-level interventions for PPH (KQ5)

Intervention	Key Outcome(s)	Strength of Evidence Grade	Findings
Systems-Level Approaches	Incidence of PPH	Moderate SOE for lack of benefit in reducing PPH incidence	Sites were aware of objectives with regard to reducing PPH, and assessors of a somewhat subjective outcome were not masked in 1 large cluster RCT with medium study limitations.
	Severity of PPH	Moderate SOE for lack of benefit in reducing severity of PPH	Sites were aware of objectives with regard to reducing severity of PPH, and assessors of a somewhat subjective outcome were not masked. Severity was unchanged in 1 RCT, reduced in 2 pre-post studies, and had no difference in 3. Mean estimated blood loss >1,000mL declined in 1 study and increased in another.
	Transfusion	Moderate SOE for no effect on transfusion	Transfusion was unchanged in 1 RCT, increased in 1 pre-post study, and was unchanged in 2; 1 study found decreased use of total blood products related to decrease in risk of disseminated intravascular coagulation; another found decreased overall use of transfusion and blood products.
	Hysterectomy	Moderate SOE for lack of benefit in preventing hysterectomy	Hysterectomy was unchanged in 1 RCT with low study limitations. There was no significant change in 3 pre-post studies, in which hysterectomies increased in 2 and declined in the third. Risk significantly increased in 1 study and was similar between time periods in a third.
	ICU admission	Moderate SOE for lack of benefit	No change in 1 RCT and no change in 2 pre-post studies, all with low study limitations.
	Mortality	Insufficient SOE for benefit	Only 1 small pre-post study with medium study limitations reported on changes in mortality.

ICU = intensive care unit; KQ = Key Question; PPH = postpartum hemorrhage; RCT = randomized controlled trial; SOE = strength of evidence.

Applicability

Studies differed in terms of study population and outcome measures. Most studies did not make direct comparisons between treatments or characterize populations well in terms of severity of PPH and prior management strategies. This lack of direct comparison of treatment options hinders our ability to understand what treatments are most effective and in what order they should be used, both of which are paramount questions for clinicians. Overall, findings of studies in the review are generally applicable to the population of women who would be experiencing PPH in hospitals in high-resource nations. Most studies were conducted in Europe or the United States in tertiary care centers. Studies frequently included a number of women with PPH who were transferred from smaller or community hospitals, which can occur when women with PPH requiring additional treatment are stable enough to be moved to facilities with interventional radiology or other services. More women had PPH after cesarean birth than vaginal birth in the 50 studies reporting mode of birth (estimated 6,304 vaginal and 7,924 cesarean births among the 14,228 births for which mode was clearly reported). The most common cause of PPH was atony, which aligns with the most frequent cause of PPH in the larger

community and literature. Studies of pharmacologic agents typically included women with mild to moderate PPH, while studies of procedures or surgical approaches generally included women with more severe PPH that had not been controlled with first-line therapies such as uterotonics.

The uterotonics, blood products, and iron supplements studied are generally widely available; however, the accessibility of procedures such as embolization may be limited in smaller community hospitals. Similarly, community hospitals may lack personnel with experience with arterial ligation and compression sutures. Comparators across studies with more than one group were typically either no specific treatment (e.g., rFVIIa or no rFVIIa) or another treatment (e.g., embolization or ligation) and are likely confounded by patient and provider characteristics that may have affected the choice of intervention. For example, patients with more severe hemorrhage likely received more aggressive treatment, and providers could offer only the options available in their facilities. Outcomes addressed across studies were appropriate and clinically relevant; however, few studies reported longer term outcomes such as future fertility or patient-centered outcomes such as quality of life.

The populations included in the systems-level interventions, both in the United States and Europe, are similar in size and type (rural, academic, etc.) to current labor and delivery environments in the United States. Likewise the interventions designed and implemented in these studies were informed by processes of identifying evidence and crafting guidance that conform to typical quality improvement and outcomes-based research. The content of the interventions is feasible to implement across a full range of settings, and the approaches to measuring outcomes are applicable to practice. Overall the systems-level interventions assessed have good applicability to current practice in the United States.

Research Gaps

Future research needs around management of PPH are both clinical and methodologic. Priorities for future research include the following:

- Reaching consensus on definitions and criteria for PPH and first-line management strategies to promote consistency within the literature.
- Standardizing a definition of PPH, potentially with gradations of severity, to allow for meaningful comparison of outcomes.
- Conducting more rigorously controlled studies of all interventions for PPH management, especially medication studies, in light of the fact that these are considered first-line management and few studies in developed/high-resource nations addressed agents commonly in use. While studies in the PPH population are likely to be retrospective, studies should clearly describe first-line management and timing of management to clarify the course of care. Studies must report a priori study size calculation to ensure that the number of subjects will be adequate to show a difference (if the study is designed for superiority). In addition, comparative studies must declare within the design and methods section whether the study is a superiority trial or a noninferiority trial.
- Conducting cluster RCTs of intervention bundles that address order of medications, order and timing of manual interventions such as uterine massage and bimanual compression, number of times to repeat medications prior to moving on to second-line interventions, hemodynamic monitoring, and supportive care such as transfusion.
- Clearly identifying the trajectory of care, including which interventions were used and the order and timing of interventions.
- Identifying markers that can inform the decision to move to an alternative intervention.

- Investigating the effectiveness of agents used to control bleeding in other clinical areas and of new medications to address PPH. It is likely that new agents would be compared with or added to existing agents and not compared with placebo.
- Conducting additional RCTs or controlled studies of treating anemia after PPH is stabilized.
- Conducting additional prospectively designed and reported studies that report data from large national databases. These studies can describe effects in larger population samples and may be valuable for identifying longer term harms—for example, effects on breastfeeding, psychological trauma, and future fertility.
- Replicating the intrauterine balloon tamponade study that found it was effective in reducing invasive interventions.
- Using and clearly reporting objective methods to diagnose PPH and evaluate management, including accurate measurement of blood loss. Visual estimation of blood loss is too imprecise to be used in research.
- Dedication to prospective objective measures, such as estimated blood loss, time course of intervention, and use of intervention components.
- Greater capture and multivariable adjustment, including metaregression, for known risk factors and confounders to allow better understanding of the attributable impact, if any, of the intervention.
- Attention to the possibility that effect modifiers hide efficacy in some groups, which means that studies will need to be powered and specify a priori stratified analyses by candidate effect modifiers, such as grand multiparity, route of birth, induction, prolonged oxytocin infusion, or infection in labor.
- Prespecifying harms, differentiating harms of interventions from sequelae of PPH wherever possible, and studying longer term effects of procedures and surgical interventions.
- Using multivariate modeling. The size of the study populations in systems-level interventions can clearly support multivariate modeling and could serve to drive better understanding of the general lack of effectiveness. In particular, such data are well-suited to use of risk-adjustment models, and adjusting for these underlying differences in study population characteristics would allow comparison not only across time periods but across studies.
- Attention to the possibility that systems-level interventions are working against a biologically determined risk of PPH, meaning that within a specific population with particular characteristics, there is an irreducible level of risk, and event rates cannot be driven below that "floor." If this floor were demonstrated with risk-adjustment methods, this finding would fundamentally change the focus of study design and care. A floor would suggest that we need very large pragmatic trials aimed not at reducing the occurrence of PPH but at diminishing associated morbidity, mortality, personal harm and distress, and costs. The systems-level intervention studies available now cannot fully inform this goal, but primary meta-analyses of the highest quality cohorts with risk adjustment could determine if the evidence seen in some of the included studies that suggest benefits are worth pursing on a larger scale, including a scale large enough to separate the influence of candidate components to determine their individual contributions to improvements in care.

Limitations of the Evidence Base

Studies included in this review are methodologically and clinically limited. There is not a universally agreed management strategy for PPH. Medications were typically used as the initial

treatment; however, the specific drugs, dosages, and order varied. The selection of interventions, including which interventions were performed and in which order, was also inconsistent. Management was not well described in many studies, especially for women who transferred from other hospitals. Methods for estimating blood loss, when reported, varied and were limited. Overall, it was difficult to ascertain confidently the complete trajectory of care of women in many of the studies we reviewed, which compromises our ability to draw meaningful comparisons. As noted, few studies that met our criteria addressed commonly used uterotonics such as oxytocin; however, prior systematic reviews that have included studies in developing countries have reported similar effects on bleeding for misoprostol and oxytocin and benefits for misoprostol in reducing blood loss with side effects, including fever.

Procedures and surgical interventions also differed across studies. For example, materials used for embolization varied, as did the sites of embolization and ligation. There is no clear trigger for starting subsequent interventions, so success rates have limited reliability. It may be that women would have recovered after the first-line treatment if time allowed. In addition, there is the potential for cumulative effects of multiple interventions that cannot be measured. Outcomes other than control of bleeding can be difficult to assess. For example, transfusion could be an adverse outcome if treatment was not sufficient and timely to halt bleeding rapidly. Alternatively, early transfusion can be the appropriate intervention. Therefore, it is sometimes hard to know whether to classify transfusion as an adverse outcome. Measuring harms is similarly challenging. In some cases, it can be difficult to assess if harms are due to PPH or management interventions and how much each contributed, especially to deaths. There is a significant lack of truly comparative studies. Randomized studies would be ideal, yet are complex to conduct with a life-threatening condition such as PPH. Studies were typically conducted or data collected over long timeframes (median study duration, 5 years; range, 6 months to 29 years), and it is likely that interventions and patient characteristics would have changed over time, but few studies account for secular changes such as the introduction of new interventions.

In systems-level interventions, a natural tension exists between the desire to implement robust interventions and the challenges of understanding which components may have value. In the case of these interventions, it is particularly challenging because lower quality studies with looser measures of outcomes were more likely to report intervention effects. The literature about systems-level interventions is limited by lack of analyses that seek to adjust for secular trends and changes in confounders, such as proportion of births by cesarean and trends in rising body-mass index. Likewise, lack of multivariable modeling may obscure the influence of elements of care, such as induction of labor, and comorbidities, such as chorioamnionitis, that could identify which predictors may be exerting substantial influence and inform new approaches to diminishing risk of PPH.

Implications for Clinical and Policy Decisionmaking

A limited body of evidence addresses interventions for managing PPH. Few studies addressed medications commonly used to treat PPH, precluding our ability to draw conclusions about their effectiveness. Success rates for uterine balloon tamponade or surgeries are typically above 60 percent (e.g., success of uterine balloon tamponade as the initial second-line therapy in one study was 86%; success rates for ligation as the first second-line intervention to control bleeding ranged from 36% to 96%). Studies of embolization suggested that it may be associated with a median rate of successful control of bleeding without the need for additional procedures

or surgeries of 89 percent, with a wide range of success (58% to 98%) across studies. However, few studies clearly provided data on the success of these procedures and surgeries as the initial second-line approach, so rates are based on a small number of cases. Adverse events and longer term outcomes associated with procedures and surgical interventions are also not well understood. At this point, the evidence is insufficient to comment on the effectiveness and harms of most interventions for most outcomes.

Given the mixed and insufficient evidence, clinicians will likely need to continue to make individual decisions about the care of women with PPH based on each woman's clinical situation and the management options available in the setting. This body of evidence does not provide clear answers to the key clinical questions of what interventions to use and in what order.

Conclusions

A limited body of evidence addresses interventions for managing PPH. The most effective treatments and the order in which to use treatments remain unclear. Diagnosis of PPH is subjective, which makes it difficult to compare the severity of PPH and determine the comparability of participants within and across studies. The trajectory of care, rationale for choice of intervention, and component of care ultimately responsible for controlling bleeding are also frequently unclear because of the need for rapid intervention in an emergency situation. Few studies included in this review addressed pharmacologic or medical management, including transfusion for supportive management of ongoing PPH, and the evidence reviewed is insufficient to comment on effects of such interventions. The success of uterine-sparing techniques, such as uterine balloon tamponade, embolization, uterine compression sutures, and uterine and other pelvic artery ligation, in controlling bleeding without the need for additional procedures or surgeries ranged from 36 to 98 percent. However, these data come from a limited number of studies with a small number of participants. Harms of interventions are diverse and not well understood. Some studies reported an association between rFVIIa and thromboembolic events, but sample sizes were small. Some studies with longer term followup reported adverse effects on future fertility and menstrual changes in women undergoing embolization. Need for reoperation was reported after hysterectomy. Evidence is insufficient to assess the effects of interventions for anemia after PPH is stabilized, and systems-level interventions showed little benefit in reducing the incidence or severity of PPH or the need for transfusion or hysterectomy. Further research is needed across all interventions for PPH management, especially pharmacologic interventions, which are the most frequently used first-line therapies.

References

1. Rath WH. Postpartum hemorrhage--update on problems of definitions and diagnosis. Acta Obstet Gynecol Scand. 2011 May;90:421-8. PMID: 21332452.
2. Kavle JA, Khalfan SS, Stoltzfus RJ, et al. Measurement of blood loss at childbirth and postpartum. Int J Gynaecol Obstet. 2006 Oct;95:24-8. PMID: 16919628.
3. Stafford I, Dildy GA, Clark SL, et al. Visually estimated and calculated blood loss in vaginal and cesarean delivery. Am J Obstet Gynecol. 2008 Nov;199(5):519.e1-7. PMID: 18639209.
4. Schorn MN. Measurement of blood loss: review of the literature. J Midwifery Womens Health. 2010 Jan-Feb;55:20-7. PMID: 20129226.
5. Ford JB, Roberts CL, Simpson JM, et al. Increased postpartum hemorrhage rates in Australia. Int J Gynaecol Obstet. 2007 Sep;98:237-43. PMID: 17482190.
6. Joseph KS, Rouleau J, Kramer MS, et al. Investigation of an increase in postpartum haemorrhage in Canada. BJOG. 2007 Jun;114:751-9. PMID: 17516968.
7. Knight M, Callaghan WM, Berg C, et al. Trends in postpartum hemorrhage in high resource countries: a review and recommendations from the International Postpartum Hemorrhage Collaborative Group. BMC Pregnancy Childbirth. 2009;9:55. PMID: 19943928.
8. Lutomski JE, Byrne BM, Devane D, et al. Increasing trends in atonic postpartum haemorrhage in Ireland: an 11-year population-based cohort study. BJOG. 2011 Feb;119:306-14. PMID: 22168794.
9. Rossen J, Okland I, Nilsen OB, et al. Is there an increase of postpartum hemorrhage, and is severe hemorrhage associated with more frequent use of obstetric interventions? Acta Obstet Gynecol Scand. 2010 Oct;89:1248-55. PMID: 20809871.
10. WHO Recommendations for the Prevention and Treatment of Postpartum Haemorrhage. Geneva: World Health Organization; 2012. PMID: 23586122.
11. Berg CJ, Harper MA, Atkinson SM, et al. Preventability of pregnancy-related deaths: results of a state-wide review. Obstet Gynecol. 2005 Dec;106:1228-34. PMID: 16319245.
12. Kilpatrick SJ, Prentice P, Jones RL, et al. Reducing maternal deaths through state maternal mortality review. J Womens Health (Larchmt). 2012 Sep;21:905-9. PMID: 22621323.
13. Della Torre M, Kilpatrick SJ, Hibbard JU, et al. Assessing preventability for obstetric hemorrhage. Am J Perinatol. 2011 Dec;28:753-60. PMID: 21698554.
14. McLintock C, James AH. Obstetric hemorrhage. J Thromb Haemost. 2011 Aug;9:1441-51. PMID: 21668737.
15. ACOG Practice Bulletin: Clinical Management Guidelines for Obstetrician-Gynecologists, Number 76, October 2006: postpartum hemorrhage. Obstet Gynecol. 2006 Oct;108:1039-47. PMID: 17012482.
16. Zelop CM. Postpartum hemorrhage: becoming more evidence-based. Obstet Gynecol. 2010 Jan;117:3-5. PMID: 21173639.
17. Clinical Practice Obstetrics Committee. Active management of the third stage of labour: prevention and treatment of postpartum hemorrhage: No. 235, October 2009 (Replaces No. 88, April 2000). Int J Gynaecol Obstet. 2010 Mar;108(3):258-67. PMID: 20196196.
18. Royal College of Obstetricians and Gynaecologists. Postpartum Haemorrhage: Prevention and Management (Green-top Guideline No. 52). London: Royal College of Obstetricians and Gynaecologists; 2009. www.rcog.org.uk/womens-health/clinical-guidance/prevention-and-management-postpartum-haemorrhage-green-top-52.
19. California Maternity Care Quality Collaborative: OB Hemorrhage Toolkit Update; 2014. www.cmqcc.org/.
20. International Federation of Obstetrics and Gynaecology, International Confederation of Midwives. International joint policy statement. FIGO/ICM global initiative to prevent post-partum hemorrhage. J Obstet Gynaecol Can. 2004 Dec;26(12):1100-2, 8-11. PMID: 15696639.
21. Lalonde A. Prevention and treatment of postpartum hemorrhage in low-resource settings. Int J Gynaecol Obstet. 2012 May;117:108-18. PMID: 22502595.

22. Miller S, Ojengbede O, Turan JM, et al. A comparative study of the non-pneumatic anti-shock garment for the treatment of obstetric hemorrhage in Nigeria. Int J Gynaecol Obstet. 2009 Nov;107:121-5. PMID: 19628207.

23. Miller S, Fathalla MM, Youssif MM, et al. A comparative study of the non-pneumatic anti-shock garment for the treatment of obstetric hemorrhage in Egypt. Int J Gynaecol Obstet. 2010 Apr;109:20-4. PMID: 20096836.

24. Abdul-Kadir R, McLintock C, Ducloy AS, et al. Evaluation and management of postpartum hemorrhage: consensus from an international expert panel. Transfusion. 2014 Jul;54(7):1756-68. PMID: 24617726.

25. Skupski DW, Lowenwirt IP, Weinbaum FI, et al. Improving hospital systems for the care of women with major obstetric hemorrhage. Obstet Gynecol. 2006 May;107:977-83. PMID: 16648399.

26. Rizvi F, Mackey R, Barrett T, et al. Successful reduction of massive postpartum haemorrhage by use of guidelines and staff education. BJOG. 2004 May;111:495-8. PMID: 15104617.

27. Audureau E, Deneux-Tharaux C, Lefevre P, et al. Practices for prevention, diagnosis and management of postpartum haemorrhage: impact of a regional multifaceted intervention. BJOG. 2009 Sep;116:1325-33. PMID: 19538416.

28. Deneux-Tharaux C, Dupont C, Colin C, et al. Multifaceted intervention to decrease the rate of severe postpartum haemorrhage: the PITHAGORE6 cluster-randomised controlled trial. BJOG. 2010 Sep;117:1278-87. PMID: 20573150.

29. Dupont C, Touzet S, Colin C, et al. Incidence and management of postpartum haemorrhage following the dissemination of guidelines in a network of 16 maternity units in France. Int J Obstet Anesth. 2009 Oct;18:320-7. PMID: 19733052.

30. Higgins JP, Altman DG, Gotzsche PC, et al. The Cochrane Collaboration's tool for assessing risk of bias in randomised trials. BMJ. 2011;343:d5928. PMID: 22008217.

31. Wells GA, Shea B, O'Connell D, et al. The Newcastle-Ottawa Scale (NOS) for Assessing the Quality of Nonrandomised Studies in Meta-Analyses. Ottawa Hospital Research Institute; 2014. www.ohri.ca/programs/clinical_epidemiology/oxford.asp.

32. National Heart, Lung, and Blood Institute. Quality Assessment Tool for Before-After (Pre-Post) Studies With No Control Group; 2014. www.nhlbi.nih.gov/health-pro/guidelines.

33. Viswanathan M, Berkman ND, Dryden DM, Hartling L. Assessing Risk of Bias and Confounding in Observational Studies of Interventions or Exposures: Further Development of the RTI Item Bank. Methods Research Report. (Prepared by RTI–UNC Evidence-based Practice Center under Contract No. 290-2007-10056-I) . AHRQ Publication No. 13-EHC106-EF . Rockville, MD: Agency for Healthcare Research and Quality; August 2013. www. effectivehealthcare. ahrq.gov/ reports/final.cfm .

34. McMaster Quality Assessment Scale of Harms (McHarm) for Primary Studies. Hamilton, Ontario: McMaster University; 2008.

35. Methods Guide for Effectiveness and Comparative Effectiveness Reviews. AHRQ Publication No. 10(14)-EHC063-EF. Rockville, MD: Agency for Healthcare Research and Quality. January 2014. Chapters available at www.effectivehealthcare.ahrq.gov.

Introduction

Definition and Prevalence

Postpartum hemorrhage (PPH) is commonly defined as blood loss exceeding 500 milliliters (mL) following vaginal birth and 1000 mL following cesarean.[1] Definitions vary, however, and diagnosis of PPH is subjective and often based on inaccurate estimates of blood loss.[1-4] Moreover, average blood loss at birth frequently exceeds 500 or 1000 mL,[4] and symptoms of hemorrhage or shock from blood loss may be hidden by the normal plasma volume increases that occur during pregnancy. Proposed alternate metrics for defining and diagnosing PPH include change in hematocrit, need for transfusion, rapidity of blood loss, and changes in vital signs, all of which are complicated by the urgent nature of the condition.[1] PPH is often classified as primary/immediate/early, occurring within 24 hours of birth, or secondary/delayed/late, occurring more than 24 hours post-birth to up to 12 weeks postpartum. In addition, PPH may be described as third or fourth stage depending on whether it occurs before or after delivery of the placenta, respectively.

The overall prevalence of PPH worldwide is estimated to be 6 to 11 percent of births with substantial variation across regions.[5, 6] Prevalence differs by assessment method and ranges from 10.6 percent when measured by objective appraisal of blood loss to 7.2 percent when assessed with subjective techniques to 5.4 percent when assessment is unspecified.[5] Multiple studies have noted an increase in PPH in high-resource countries, including the United States, Canada, Australia, Ireland, and Norway, since the 1990s.[7-11] In the United States, one study found that the incidence of PPH increased 26% from 1994 to 2006 (2.3% vs. 2.9%, respectively, $p < 0.001$).[12] Another U.S. study reported the incidence of severe PPH doubled from 1.9 percent in 1999 to 4.2 percent in 2008 ($p < 0.0001$).[13] Factors underlying the increase remain unclear, and both recent U.S. studies found rising PPH rates were not explained by changes in risk factors (e.g., maternal age, cesarean birth, multiple gestation).[12, 13]

Adverse Outcomes Associated With Postpartum Hemorrhage

PPH is a leading cause of maternal mortality and morbidity worldwide and accounts for nearly one-quarter of all maternal pregnancy-related deaths.[14] Multiple studies have suggested that many deaths associated with PPH could be prevented with prompt recognition and more timely and aggressive treatment.[15-17] Morbidity from PPH can be severe with sequelae including organ failure, shock, edema, compartment syndrome, transfusion complications, thrombosis, acute respiratory distress syndrome, sepsis, anemia, intensive care, and prolonged hospitalization.[18-20]

The most common etiology of PPH is uterine atony (impaired uterine contraction after birth), which occurs in about 80 percent of cases. Atony may be related to overdistention of the uterus, infection, placental abnormalities, or bladder distention.[21] Though the majority of women who develop PPH have no identifiable risk factors, clinical factors associated with uterine atony, such as multiple gestation, polyhydramnios, high parity, and prolonged labor, may lead to a higher index of suspicion.[18, 19, 21, 22] Other causes of PPH include retained placenta or clots, lacerations, uterine rupture or inversion, and inherited or acquired coagulation abnormalities.[21, 22]

Interventions

Organizations and associations including the World Health Organization, International Confederation of Midwives, International Federation of Gynecologists and Obstetricians, American College of Obstetricians and Gynecologists, Royal College of Obstetricians and Gynaecologists, and the California Maternity Quality Care Collaborative have released guidelines for PPH prevention and management.[14, 19, 21-25] Initial management includes identifying PPH, determining the cause, and implementing appropriate interventions based on the etiology. A variety of medical, procedure, and surgical interventions are available (see Table 1).

Interventions to treat PPH generally proceed from less to more invasive and include compression techniques, medications, procedures, and surgeries. PPH management may also involve adjunctive therapies, such as blood and fluid replacement and/or an anti-shock garment,[26, 27] to treat the blood loss and other sequelae that result from PPH. Conservative management techniques such as uterotonic medications, which cause the uterus to contract, external uterine massage, and bimanual compression are generally used as "first-line" treatments.[28] These compression techniques encourage uterine contractions that counteract atony and assist with expulsion of retained placenta or clots. Aortic compression is another compression technique that has been used for severe PPH.[29, 30]

The medications most commonly used in PPH management are uterotonic agents. These medications include oxytocin (Pitocin®), misoprostol (Cytotec®), methylergonovine maleate (Methergine®,), carboprost tromethamine (Hemabate®), and dinoprostone (Prostin E2®).[14, 19, 21, 22, 31] All of these medications are available in the United States. Only oxytocin, methylergonovine maleate, and carboprost tromethamine are approved by the U.S. Food and Drug Administration (FDA) specifically for PPH management; use of these other medications is off label. Typically, oxytocin is used as the initial medication for PPH management then other uterotonics are administered if oxytocin fails to stop bleeding. A recent U.S. study found wide variation in the use of these other uterotonics, which was not attributable to patient or hospital characteristics.[32] In cases of severe blood loss from PPH, the hemostatic recombinant activated factor VIIa (NovoSeven®) and the antifibrinolytic tranexamic acid (Cyklokapron®) have been used.[33]

Procedures used in PPH management include manual removal of the placenta, manual removal of clots, uterine balloon tamponade, and uterine artery embolization.[14, 19, 21, 22] Laceration repair is indicated when PPH is a result of genital tract trauma. Surgical options when other measures fail to control bleeding include curettage, uterine and other pelvic artery ligation, uterine compression sutures, and hysterectomy.[14, 19, 21, 22] More invasive procedures (e.g., uterine balloon tamponade and uterine artery embolization) and surgical techniques are generally used after "first-line" conservative management (e.g., uterotonics, uterine massage, bimanual compression, manual placenta and clot removal, and laceration repair) has failed to control bleeding and can be considered "second-line" interventions.[28] Procedures and surgeries can increase the risk of infection and other complications, and they may eliminate or adversely affect future fertility and pregnancy.

After PPH has been controlled, followup management varies and may include laboratory testing (e.g., hemoglobin and hematocrit), iron replacement therapy, and other interventions to assess and treat sequelae of PPH. The immediate postpartum period is a unique physiologic state with relative intravascular volume expansion with a reduction in cardiovascular demand compared to pregnancy. The physiologic anemia of pregnancy may be exacerbated by acute

blood loss anemia from PPH. These physiologic realities may allow women with low hematocrits to be asymptomatic. Interventions for acute blood loss anemia include red blood cell transfusion and iron supplementation. Erythropoietin-stimulating agents (Aranesp®, Epogen®, Procrit®) have also been used for anemia following stabilization of PPH, but they are not approved by the FDA for this use.[19]

At a systems level, PPH has been the focus of perinatal care safety initiatives that attempt to improve patient outcomes by incorporating a variety of strategies, such as practice guidelines or protocols, simulation drills, and teamwork training.[34-38] These systems-level interventions may influence management of PPH.

A variety of outcomes related to PPH management are reported.[39-44] Blood loss itself is measured, although often inaccurately as previously noted. Transfusion and anemia are sometimes used as markers for the amount of blood loss. The outcomes of intensive care unit (ICU) admission and extended hospitalization are used as indicators of maternal morbidity. Severe hemorrhage can lead to hysterectomy and death.

PPH can occur in any birth setting: hospital, birth center, or home. In home birth and birth center settings, severe or recalcitrant PPH can necessitate transfer for inpatient care. In considering setting, it is important to note that PPH management varies significantly according to available resources. All U.S. hospitals do not have immediate access to all interventions for PPH, and hospital volume appears to influence maternal morbidity and mortality from PPH.[45] In addition, many studies conducted in low-resource countries have limited to no applicability for higher-resource countries such as the United States.

Table 1. Brief descriptions of interventions used in PPH management

Intervention	Description
Anti-shock garment	Garment with segments that are wrapped around the woman's legs, pelvis, and abdomen then tightened with Velcro straps. The garment places pressure that forces blood to the heart, lungs, and brain to prevent or treat shock.
Aortic compression	Compressing the aorta, by applying firm pressure with a closed fist just above the umbilicus, slows bleeding.
Curettage	Insertion of a curette into the uterus to remove any retained fragments of the placenta or clots. This is most commonly performed for secondary PPH.
External uterine massage and bimanual compression	External uterine massage is performed by placing a hand on the lower abdomen. For bimanual compression, the clinician places one hand on the abdomen and the other hand inside the vagina then compresses the uterus between the two hands. These techniques cause the uterus to contract, which treats atony and assists with expulsion of retained placenta or clots.
Hysterectomy	Surgical removal of the uterus is usually performed as a last resort when other treatments fail. Hysterectomy can be total (includes removal of the cervix) or subtotal (cervix is left intact). Hysterectomy stops bleeding in most cases of PPH.
Manual removal of the placenta and/or clots	Insertion of the clinician's hand into the uterus to remove the placenta and/or clots when they are not being expelled by contractions alone.
Recombinant activated factor VIIa (rFVIIa)	This hemostatic medication helps bleeding stop by activating the extrinsic pathway of the coagulation cascade, which is a process that causes blood to clot.
Tranexamic acid	This antifibrinolytic medication reduces blood loss by preventing clot breakdown.
Transfusion	Transfusion is the intravenous administration of blood products, including red blood cells, fresh frozen plasma, platelet concentrates, and cryoprecipitate. Red blood cells help maintain blood volume and improve the blood's capacity to carry oxygen. Fresh frozen plasma and cryoprecipitate contain coagulation factors, which are proteins that are needed to help the blood clot so that bleeding will stop. Platelet concentrates replace functioning platelets necessary for thrombus formation in patients with low platelet levels (due to low baseline levels or consumption from ongoing bleeding or disseminated intravascular coagulation) or dysfunctional platelets (due to hereditary platelet disorders or pharmacologic effects).

Table 1. Brief descriptions of interventions used in PPH management (continued)

Intervention	Description
Uterine and other pelvic artery ligation	Tying a suture around an artery to occlude blood flow. Uterine artery ligation is most commonly performed for PPH; utero-ovarian and internal iliac arteries can also be ligated.
Uterine artery embolization	Injection of one or more embolizing agents (e.g., absorbable gel particles, gelatin sponge pledgets, foam, metal coils) into the uterine arteries to reduce blood flow. This procedure is performed by an interventional radiologist.
Uterine compression sutures	Placing sutures around the uterus to compress it and stop bleeding. This surgery is performed for uterine atony that does not respond to other treatments. The most common technique for uterine compression is the B-lynch suture.
Uterine tamponade	Uterine tamponade can be performed with a balloon or packing. Intrauterine balloon tamponade is performed by inserting an inflatable balloon device through the vagina or abdomen (if a cesarean was performed) into the uterine cavity and then filling it with sterile saline. For packing, gauze, which may be coated with material to enhance clotting, is used to firmly fill the uterine cavity. The balloon or packing exerts pressure on the uterine wall, which stops bleeding, and is later removed.
Uterotonic medications (oxytocin, misoprostol, methylergonovine, carboprost tromethamine)	These uterotonic medications cause contractions and increase uterine tone. These effects counter uterine atony, which is the most common cause of PPH.

Abbreviations: PPH = postpartum hemorrhage

Scope and Key Questions

Scope of Review

This systematic review provides a comprehensive review of potential benefits of PPH management (medical and surgical) as well as harms associated with treatments in women with PPH. We assess intermediate outcomes such as blood loss, hospital and ICU stay, and anemia, and longer term outcomes including uterine preservation, fertility, breastfeeding, psychological impact and harms of treatment, and mortality related to treatment.

Key Questions

We have synthesized evidence in the published literature to address the following Key Questions (KQs):

KQ1.What is the evidence for the comparative effectiveness of interventions for management of postpartum hemorrhage?

e. What is the effectiveness of interventions intended to treat postpartum hemorrhage likely due to atony?
f. What is the effectiveness of interventions intended to treat postpartum hemorrhage likely due to retained placenta?
g. What is the effectiveness of interventions intended to treat postpartum hemorrhage likely due to genital tract trauma?
h. What is the effectiveness of interventions intended to treat postpartum hemorrhage likely due to uncommon causes (e.g., coagulopathies, uterine inversion, subinvolution, abnormal placentation)?

KQ2. What is the evidence for choosing one intervention over another and when to proceed to subsequent interventions for management of postpartum hemorrhage?

KQ3.What are the harms, including adverse events, associated with interventions for management of postpartum hemorrhage?

KQ4. What is the effectiveness of interventions to treat acute blood loss anemia after stabilization of postpartum hemorrhage?

KQ5.What systems-level interventions are effective in improving management of postpartum hemorrhage?

Table 2 outlines the population, intervention, comparator, outcomes, timing, and setting (PICOTS) characteristics for the KQs.

Table 2. PICOTS

PICOTS	Criteria	
Population	• KQ 1-3: Women with postpartum hemorrhage immediately post-birth to 12 weeks postpartum following pregnancy > 24 weeks' gestation • KQ4: Women with stabilized PPH and acute blood loss anemia • KQ 1-5: All modes of birth	
Intervention(s)	**KQ 1-3** • Compression techniques (external uterine massage, bimanual compression, aortic compression) • Medications (oxytocin [Pitocin], misoprostol [Cytotec], methylergonovine maleate [Methergine], carboprost tromethamine [Hemabate], dinoprostone [Prostin E2], recombinant activated factor VIIa [NovoSeven], and tranexamic acid [Cyklokapron]) • Devices (Bakri postpartum balloon, Foley catheter, Sengstaken-Blakemore tube, Rusch balloon) • Procedures (manual removal of placenta, manual evacuation of clot, uterine balloon tamponade, uterine artery embolization, laceration repair) • Surgeries (curettage, uterine and other pelvic artery ligation, uterine compression sutures, hysterectomy) • Blood and fluid products • Antishock garment **KQ4** • Interventions for acute blood loss anemia (e.g., iron replacement, erythropoietin) **KQ5** • Systems-level interventions (e.g., implementation of protocols, training)	
Comparator	• Different intervention (any intervention compared with any other intervention) • Placebo	
Outcomes	<u>Intermediate outcomes</u> • Blood loss • Transfusion • ICU admission • Anemia • Length of stay	<u>Final outcomes</u> • Mortality • Uterine preservation • Future fertility • Breastfeeding • Psychological impact • Harms
Timing	• Immediately post-birth to 12 weeks postpartum • Primary (< 24 hours postpartum) or secondary (≥ 24 hours postpartum)	

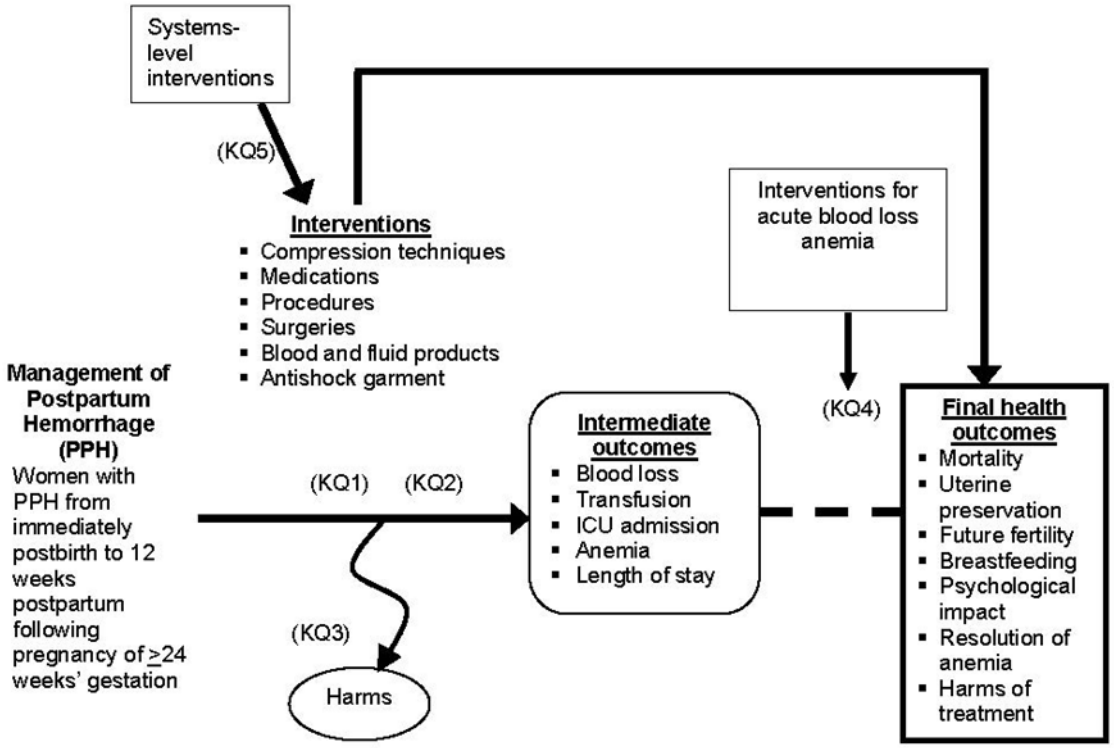
PICOTS	Criteria
Setting	• All birth settings (hospital, birth center, home)

Abbreviations: ICU = intensive care unit; KQ = Key Question; PICOTS = population, intervention, comparator, outcome, timing, setting

Analytic Framework

The analytic framework illustrates the population, interventions, and outcomes that guided the literature search and synthesis (Figure 1). The framework for management of PPH includes women with PPH immediately post-birth to 12 weeks postpartum following pregnancy of > 24 weeks' gestation. The figure depicts the KQs within the context of the PICOTS described in the document. In general, the figure illustrates how interventions such as compression techniques, medications, procedures, surgeries, blood and fluid products, anti-shock garments or systems-level interventions may result in intermediate outcomes such as blood loss, transfusion, ICU admission, anemia, or length of stay and/or in final health outcomes such as mortality, uterine preservation, future fertility, breastfeeding, or psychological impact. Also, adverse events may occur at any point after the intervention is received.

Figure 1. Analytic framework



Abbreviations: ICU = intensive care unit; KQ = Key Question.

Organization of This Report

The Methods section describes the review processes including search strategy, inclusion and exclusion criteria, approach to review of abstracts and full publications, methods for extraction of data into evidence tables, and compiling evidence. We also describe our approach to grading the quality of the literature and to describing the strength of the body of evidence.

The Results section presents the findings of the literature search and the review of the evidence by KQ, synthesizing the findings across strategies. We present findings by intervention and outcome area where possible under each KQ and focus on comparative studies of higher quality. Cohort and case-control studies, pre-post studies, case series of procedural or surgical approaches, and randomized trials are also described in more detail in summary tables for each KQ. We integrate discussion of sub-questions within that for each KQ because there was not adequate distinction in the literature to address them separately. We also report harms data from case series and note that harms reported in all studies of interventions for PPH are described under KQ3.

The Discussion section of the report discusses the results and expands on methodologic considerations relevant to each KQ. We also outline the current state of the literature and challenges for future research in the field.

The report includes a number of appendixes to provide further detail on our methods and the studies assessed. The appendices are as follows:

- Appendix A. Search Strategies
- Appendix B. Screening and Quality Assessment Forms
- Appendix C. Excluded Studies
- Appendix D. Evidence Tables
- Appendix E. Quality/Risk of Bias Ratings
- Appendix F. Applicability Tables
- Appendix G. Study Design Classification Algorithm

We also provide a list of abbreviations and acronyms at the end of the report.

Uses of This Evidence Report

We anticipate this report will be of primary value to organizations that develop guidelines for managing PPH and to clinicians who provide intrapartum and postpartum care for women. Interested organizations would include the American Congress of Obstetricians and Gynecologists, the Society for Maternal-Fetal Medicine, the American College of Nurse-Midwives, the American Academy of Family Physicians, the Association of Women's Health, Obstetric, and Neonatal Nurses, the Society of Interventional Radiology, and the Society for Obstetric Anesthesia and Perinatology.

PPH is diagnosed and treated by clinicians including obstetricians, maternal-fetal medicine physicians, midwives, family physicians, nurses, interventional radiologists, and anesthesiologists. This report supplies practitioners and researchers up-to-date information about the current state of evidence, and assesses the quality of studies that aim to determine the outcomes of treatments for PPH.

Researchers, including perinatal safety researchers, can obtain a concise analysis of the current state of knowledge of interventions in this field. They will be poised to pursue further investigations that are needed to advance research methods, develop new treatment strategies, and optimize the effectiveness and safety of clinical care for women with this potentially life-threatening condition.

This report is unlikely to be used by women and their families given that PPH is often unanticipated and requires rapid intervention.

Methods

In this chapter, we document the procedures that the Vanderbilt Evidence-based Practice Center (EPC) used to produce a comparative effectiveness review (CER) on approaches to treatment of postpartum hemorrhage (PPH). These procedures follow the methods outlined in the Agency for Healthcare Research and Quality (AHRQ) Effective Health Care Program "Methods Guide for Effectiveness and Comparative Effectiveness Reviews."[46]

Topic Refinement and Review Protocol

The topic for this report was nominated by the American College of Obstetricians and Gynecologists in a public process using the Effective Health Care Web site. Working from the nomination, we drafted the initial KQs and analytic framework and refined them with input from key informants representing the fields of obstetrics and gynecology, nursing, midwifery, obstetric anesthesiology, quality improvement, and perinatal safety. All members of the research team were required to submit information about potential conflicts of interest before initiation of the work. No members of the review team had any conflicts.

After review from the AHRQ, the questions and framework were posted online for public comment. No changes to the questions or framework were recommended. We also developed population, interventions, outcomes, timing, and settings (PICOTS) criteria for intervention KQs.

We identified technical experts on the topic to provide assistance during the project. The Technical Expert Panel (TEP), representing the fields of obstetrics and gynecology, midwifery, nursing, patient and perinatal safety, quality improvement, and maternal-fetal medicine, contributed to the AHRQ's broader goals of (1) creating and maintaining science partnerships as well as public-private partnerships and (2) meeting the needs of an array of potential customers and users of its products. Thus, the TEP was both an additional resource and a sounding board during the project. The TEP included seven members serving as technical or clinical experts. To ensure robust, scientifically relevant work, we called on the TEP to review and provide comments as our work progressed. TEP members participated in conference calls and discussions through e-mail to:

- Help to refine the analytic framework and KQs at the beginning of the project;
- Discuss the preliminary assessment of the literature, including inclusion/exclusion criteria; and
- Provide input on the set of studies identified for inclusion.

The final protocol was posted to the AHRQ Effective Health Care web site and registered in the PROSPERO international register of systematic reviews (ID#: CRD42014010123).

Literature Search Strategy

Search Strategy

To ensure comprehensive retrieval of relevant studies of therapies for women with PPH, we used three key databases: the MEDLINE® medical literature database via the PubMed® interface, the Cumulative Index of Nursing and Allied Health Literature (CINAHL®), and EMBASE (Excerpta Medica Database), an international biomedical and pharmacological literature database via the Ovid® interface. Search strategies applied a combination of controlled vocabulary (Medical Subject Headings [MeSH], CINAHL medical headings, and Emtree headings) to focus specifically on management of PPH and harms of interventions. We restricted literature searches

to studies published from 1990 to the present to reflect current standards of care for PPH. Interventions such as the B-Lynch suture were introduced in the late 1990s,[47] and embolization techniques were not widely used until the mid- to late-1990s.[48, 49] Misoprostol was initially used as a treatment for gastric ulcer and not broadly used for PPH prevention or treatment until the 2000s. The World Health Organization recommended its use for prevention of PPH in 2007.[50, 51] Given that currently used interventions were not in widespread use prior to 1990, we set 1990 as a conservative lower bound for the search.

We only included studies published in English as a review of non-English citations retrieved by our MEDLINE search identified few studies of relevance. Appendix A lists our search terms and strategies and the yield from each database. Searches were last executed in November 2014**.**

We carried out hand searches of the reference lists of recent systematic reviews or meta-analyses of therapies for PPH. The investigative team also scanned the reference lists of studies included after the full-text review phase for additional studies that potentially could meet our inclusion criteria.

Gray Literature

AHRQ's Scientific Resource Center requested Scientific Information Packets (SIPs) from companies that produce medications or devices with U.S. Food and Drug Administration (FDA) approval for management of uterine bleeding (oxytocin [Pitocin®], misoprostol [Cytotec®], methylergonovine maleate [Methergine®], carboprost tromethamine [Hemabate®], dinoprostone[Prostin E2®], recombinant coagulation factor VIIa [NovoSeven®], and tranexamic acid [Cyklokapron®]; and devices for PPH including Bakri™ postpartum balloon, non-pneumatic anti-shock garment [NASG], Foley catheter, Sengstaken-Blakemore tube, and the Rusch balloon) and searched for regulatory data for approved products. We also searched ClinicalTrials.gov to assess publication bias and to identify any study results that may not have been identified in our other database searches.

Inclusion and Exclusion Criteria

Table 3 lists the inclusion/exclusion criteria we used based on our understanding of the literature, key informant and public comment during the topic-refinement phase, input from the TEP, and established principles of systematic review methods.

Table 3. Inclusion criteria

Category	Criteria
Study population	• KQ1-3, 5: Women with postpartum hemorrhage (PPH) immediately post-birth to 12 weeks postpartum following pregnancy > 24 weeks' gestation • KQ4: Women with stabilized PPH and acute blood loss anemia • All modes of birth in any setting
Time period	1990 to present
Publication languages	English only
Country	Very High Human Development countries as indicated by the United Nations Development Programme Human Development Index. Countries as of April 2014 include: Norway, Australia, US, Netherlands, Germany, New Zealand, Ireland, Sweden, Switzerland, Japan, Canada, Republic of Korea, Hong Kong, Iceland, Denmark, Israel, Belgium, Austria, Singapore, France, Finland, Slovenia, Spain, Liechtenstein, Italy, Luxembourg, U.K., Czech Republic, Greece, Brunei Darussalam, Cyprus, Malta, Andorra, Estonia, Slovakia, Qatar, Hungary, Barbados, Poland, Chile, Lithuania, United Arab Emirates, Portugal, Latvia, Argentina, Seychelles, and Croatia

Table 3. Inclusion criteria (continued)

Category	Criteria
Admissible evidence (study design and other criteria)	Admissible designs • KQ 1-2, 4: RCT or prospective/ retrospective cohort studies, population-based case series or registry studies with ≥ 50 cases of PPH treatment, case series of procedures (uterine balloon tamponade, uterine artery embolization) or surgical approaches with ≥ 50 women • KQ3: RCT or prospective/ retrospective cohort studies, case series with ≥ 50 cases addressing interventions for PPH • KQ5: Pre- and post-studies related to large-scale health systems changes, RCTs, prospective/retrospective cohort studies Other criteria • Original research studies that provide sufficient detail regarding methods and results to enable use and adjustment of the data and results • Studies targeting women with PPH and meet the population criteria as described above • Studies that address: o Treatment modality aimed at treatment/management of PPH in a relevant population or treatment for acute blood loss anemia following stabilization of PPH o Outcomes related to interventions; primary outcomes of interest include blood loss, transfusion, ICU admission, anemia, length of stay, mortality, uterine preservation, future fertility, breastfeeding, and psychological impact, and harms. • Studies must include extractable data presented in text or tables (vs. solely in figures) on relevant outcomes • For KQ5, studies must explicitly assess effects of an systems-level intervention on PPH management as a primary or secondary aim; analytic models must indicate data analysis of the effect of the strategy as it relates to PPH treatment; results data include information about effects of strategy on management of PPH; discussion interprets the strategy as potentially having value/not having value for PPH management

Abbreviations: ICU = intensive care unit; KQ = Key Question; PPH = postpartum hemorrhage; RCT = randomized controlled trial

Case series comprise much of the literature addressing treatments for PPH. We limited inclusion of case series to those with at least 50 cases of PPH in order to balance the need to identify rigorously conducted studies with identifying studies large enough to suggest effects of the interventions. We include effectiveness and harms data from case series of procedural (uterine balloon tamponade, uterine artery embolization) and surgical (arterial ligation, uterine compression sutures, hysterectomy) approaches because they report pertinent evidence for the effects of such interventions that are unlikely to be found in randomized controlled trials (RCTs). These procedural and surgical approaches are rarely addressed in RCTs, and patients who would be receiving these second-line interventions have an unstable and quickly changing health status and typically are not eligible for RCTs.

We also limited studies to those published in English and conducted in Very High Human Development countries as ranked by the United Nations Development Programme Human Development Index (Table 3). In the opinion of our clinical experts, processes of care and interventions available in these countries best reflect the system of health care in the United States. A considerable body of evidence addresses PPH management in developing countries; however, the limited availability of skilled clinicians and treatment options in many of these countries results in different standards of care and clinical approaches than those in the United States. PPH is a complex condition. Treatments are selected not only by PPH etiology and

severity but also by factors related to the setting of care, the availability of medications or other therapeutic options, the availability of personnel, and the standards of care in a given treatment center. Treatment availability and feasibility of providing certain treatments differ across developed and developing nations, and even within any given nation. Because the context of care in most developing nations differs significantly from care in the United States,[52, 53] we instituted language and country limitations in order to identify studies that are most applicable to guiding care by clinicians in the United States, who are the intended audience for this report.

In order to provide contextual information about effectiveness and harms reported in studies conducted in developing nations, we provide summaries of recent reviews of interventions for PPH, which include studies conducted in any country in the Discussion section (Findings in Relation to What's Known).

Study Selection

Once we identified articles through the electronic database searches and hand-searching, we examined abstracts of articles to determine whether studies met our criteria. Two reviewers separately evaluated the abstracts for inclusion or exclusion, using an Abstract Review Form (Appendix B). If one reviewer concluded that the article could be eligible for the review based on the abstract, we retained it. Following abstract review, two reviewers independently assessed the full text of each included study using a standardized form (Appendix B) that included questions stemming from our inclusion/exclusion criteria. Disagreements between reviewers were resolved by a senior reviewer. All abstract and full text reviews were conducted using the DistillerSR online screening application (Evidence Partners Incorporated, Ottawa, Ontario). Appendix C includes a list of excluded studies and the reasons for exclusion.

Data Extraction

The staff members and clinical experts (including two nurse-midwives, three obstetrician/gynecologists, one hematologist, and two epidemiologists) who conducted this review jointly developed the evidence tables. We designed the tables to provide sufficient information to enable readers to understand the studies and to determine their quality; we gave particular emphasis to essential information related to our Key Questions. Two evidence table templates were employed to facilitate the extraction of data based on study type; one form was designed for case series that reported harms data and one to accommodate all types of comparative studies and population-based case series. We based the format of our evidence tables on successful designs used for prior systematic reviews.

The team was trained to extract data by extracting several articles into evidence tables and then reconvening as a group to discuss the utility of the table design. We repeated this process through several iterations until we decided that the tables included the appropriate categories for gathering the information contained in the articles. All team members shared the task of initially entering information into the evidence tables. A second team member also reviewed the articles and edited all initial table entries for accuracy, completeness, and consistency. A senior reviewer reconciled disagreements concerning the information reported in the evidence tables.

The full research team met regularly during the article extraction period and discussed global issues related to the data extraction process (e.g., determining harms of treatment vs. harms of PPH itself). In addition to outcomes related to intervention effectiveness, we extracted all data available on harms. Harms encompass the full range of specific negative effects, including the

narrower definition of adverse events. The final evidence tables are presented in their entirety in Appendix D.

Data Synthesis

We considered conducting a meta-analysis, but the small number of comparative studies of any given intervention and the heterogeneity of interventions and outcomes made a meta-analysis inappropriate. We completed evidence tables for all included studies (Appendix D), and data are presented in summary tables and analyzed qualitatively in the text.

We also tabulated success rates reported in studies of procedures and surgical approaches in which we could extract data on the effectiveness of the first intervention following conservative management. We refer to these as "initial second-line interventions." Some studies reported success rates for procedures and/or surgeries only in combination or after multiple interventions; therefore, not all studies addressing a given intervention are represented in these tables. When multiple second-line interventions are combined in analysis, it is impossible to determine which of these stopped the bleeding and thus would be reasonable to use initially. We defined success for a specific intervention as control of bleeding without need for subsequent medical or surgical interventions (not including transfusion or iron supplementation). In some cases, bleeding may have ceased, but a participant ultimately died. If death was not considered to be related to the intervention but was thought to be caused by the PPH and its sequelae, we include the case in the estimate of successful control of bleeding.

Quality (Risk of Bias) Assessment of Individual Studies

We used separate tools appropriate for specific study designs to assess quality of individual studies: the Cochrane Risk of Bias tool for RCTs,[54] the Newcastle-Ottawa Quality Assessment Scale for cohort and case-control studies,[55] the National Heart, Lung, and Blood Institute's (NHLBI) Quality Assessment Tool for Before-After (Pre-Post) Studies,[56] and a tool adapted from questions outlined in the RTI item bank to assess case series.[57] We used questions adapted from the RTI item bank and from the McMaster McHarms[58] tools to assess reporting of harms.

The Cochrane Risk of Bias tool is designed for the assessment of studies with experimental designs and randomized participants. Fundamental domains include sequence generation, allocation concealment, blinding, completeness of outcome data, and selective reporting bias. The Newcastle-Ottawa Quality Assessment Scale was used to assess the quality of nonrandomized studies and assesses three broad perspectives: the selection of study groups, the comparability of study groups, and the ascertainment of either the exposure or outcome of interest for case-control or cohort studies, respectively. The NHLBI tool considers questions related to study objectives, description of participants and intervention, outcome assessment, length of followup, and statistical analysis and is designed for studies without a control group. Similarly, the case series and harms tools address questions related to participant and outcome assessment and pre-specification of harms.

Quality assessment of each study was conducted independently by two team members using the forms presented in Appendix B. Any discrepancies were adjudicated by the two team members or a senior investigator. Investigators did not rely on the study design as described by authors of individual papers; rather, the methods section of each paper was reviewed to determine which rating tool to employ. The results of these tools were then translated to the Agency for Healthcare Research and Quality standard of "good," "fair," and "poor" quality as described below. Appendix E reports quality scoring for each study.

Determining Quality Ratings

- We required that RCTs receive a positive score (i.e., low risk of bias for RCTs) on all of the questions used to assess quality to receive a rating of good/low risk of bias. RCTs had to receive at least five positive scores to receive a rating of fair/moderate risk of bias, and studies with ≤ four positive ratings were considered poor quality/high risk of bias. We considered a score of "unclear" for a question as a positive score as long as the consensus of the investigators assessing quality was that study outcomes were not likely to be biased by the factor.
- We required that case-control or cohort studies receive positive scores (stars) on all elements to receive a rating of good, ≤ 2 negative ratings for fair, and > 2 negative scores for a rating of poor quality.
- For pre-post studies we required that studies receive positive scores on all questions to receive a rating of good. We considered studies with ≤ four negative ratings as fair quality and those with more than four as poor quality.
- We required that studies assessed for harms reporting receive a positive rating (i.e., affirmative response) on all four questions to receive a rating of good. Studies with at least three positive responses were considered fair quality and those with less than three positive responses as poor quality.
- Case series have inherently high risk of bias and presumptive low quality. Nonetheless, prospective case series that enroll participants consecutively and control for potentially confounding factors may provide evidence to support comparative studies. We assessed case series using questions identified in the AHRQ Effective Health Care program's "Methods Guide for Effectiveness and Comparative Effectiveness Reviews."[46] The elements on which they were scored and the results are presented in Appendix E.

Strength of the Body of Evidence

We applied explicit criteria for rating the overall strength of the evidence for each key intervention-outcome pair for which the overall risk of bias is not overwhelmingly high. We established concepts of the quantity of evidence (e.g., numbers of studies, aggregate ending-sample sizes), the quality of evidence (from the quality ratings on individual articles), and the coherence or consistency of findings across similar and dissimilar studies and in comparison to known or theoretically sound ideas of clinical or behavioral knowledge.

The strength of evidence evaluation is that stipulated in the Effective Health Care Program's "Methods Guide for Effectiveness and Comparative Effectiveness Reviews"[46] and in the updated strength of evidence guide[59] which emphasizes five major domains: study limitations (low, medium, high level of limitation), consistency (inconsistency not present, inconsistency present, unknown or not applicable), directness (direct, indirect), precision (precise, imprecise), and reporting bias. Study limitations are derived from the quality assessment of the individual studies that addressed the KQ and specific outcome under consideration. Each key outcome for each comparison of interest is given an overall evidence grade based on the ratings for the individual domains.

The overall strength of evidence was graded as outlined in Table 4. Two senior staff members independently graded the body of evidence; disagreements were resolved as needed through discussion or third-party adjudication. We recorded strength of evidence assessments in tables, summarizing results for each outcome. We considered case series in the assessment of

strength of the evidence for harms and for success of procedural and surgical interventions as such interventions are not likely to be represented in RCTs given the urgent nature of PPH treatment. We presumed the quality of case series providing data to assess the success of interventions to be low.

Table 4. Strength of evidence grades and definitions[a]

Grade	Definition
High	**We are very confident that the estimate of effect lies close to the true effect for this outcome.** The body of evidence has few or no deficiencies. We believe that the findings are stable, i.e., another study would not change the conclusions.
Moderate	**We are moderately confident that the estimate of effect lies close to the true effect for this outcome.** The body of evidence has some deficiencies. We believe that the findings are likely to be stable, but some doubt remains.
Low	**We have limited confidence that the estimate of effect lies close to the true effect for this outcome.** The body of evidence has major or numerous deficiencies (or both). We believe that additional evidence is needed before concluding either that the findings are stable or that the estimate of effect is close to the true effect.
Insufficient	**We have no evidence, we are unable to estimate an effect, or we have no confidence in the estimate of effect for this outcome**. No evidence is available or the body of evidence has unacceptable deficiencies, precluding reaching a conclusion.

[a]Excerpted from Berkman et al. 2013[59]

Applicability

We assessed the applicability of findings reported in the included literature to the general population of women who experience PPH by determining the population, intervention, comparator, and setting in each study and developing an overview of these elements for each intervention category. We anticipated that areas in which applicability would be especially important to describe would include the definition and severity of PPH, the age range and parity of the participants, and the setting in which the intervention took place. Applicability tables for each intervention are in Appendix F.

Peer Review and Public Commentary

Researchers and clinicians with expertise in managing PPH and individuals representing stakeholder and user communities provided external peer review of this report; AHRQ and an associate editor also provided comments. The draft report was posted on the AHRQ Web site for 4 weeks to elicit public comment. We addressed all reviewer comments, revised the text as appropriate, and documented changes and revisions to the report in a disposition of comments report that will be made available 3 months after AHRQ posts the final review on the AHRQ Web site.

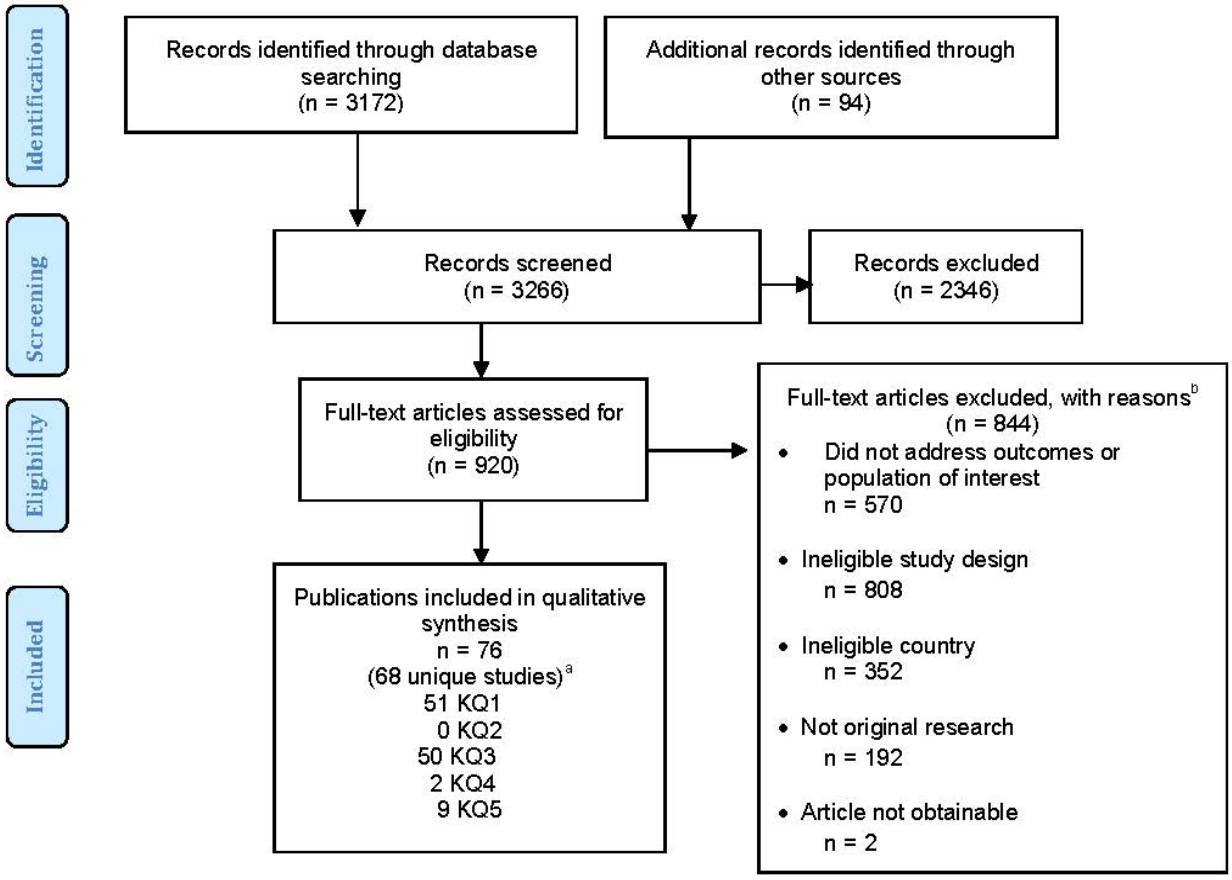
Results

Results of Literature Searches

We identified 3266 nonduplicative titles or abstracts with potential relevance, with 920 proceeding to full text review (Figure 2). We excluded 844 studies at full text review and included 68 unique studies (76 publications) in the review. We present findings by intervention and outcome area where possible under each Key Question (KQ). Comparative studies and case series that provided harms or data on successful controlling of bleeding are also described in more detail in summary tables in each KQ. We tabulated success rates reported in studies of procedures and surgical approaches in which we could extract data on the effectiveness of the intervention as the initial second-line intervention (i.e., first intervention following routine conservative management) and defined success as controlling of bleeding without need for additional procedures or surgeries.

We integrate discussion of subquestions within that for each KQ because there was not adequate distinction in the literature to address them separately. Harms of interventions for postpartum hemorrhage (PPH) are described under KQ3. Transfusion as an intervention for anemia following stabilization of PPH is addressed under KQ4, and transfusion as an intervention to manage ongoing PPH is described under KQ1. We also briefly summarize the strength of the evidence (SOE) for interventions and key outcomes in each Key Points section and describe SOE more fully in the Discussion section.

Figure 2. Disposition of studies identified for this review



Abbreviations: KQ = Key Question; n = number.
[a]Numbers next to each KQ indicate number of unique studies addressing the question. Studies could address more than one KQ.
[b]Numbers do not tally as studies could be excluded for multiple reasons.

Description of Included Studies

The 68 unique studies included in the review comprise four randomized controlled trials (RCTs), two prospective and 14 retrospective cohort studies, 10 pre-post studies (defined as studies that compare PPH management and/or outcomes before and after an intervention, such as introduction of a new protocol), four case-control studies, and 34 case series. Most studies were conducted in Europe (n = 33), and 18 were conducted in the United States or Canada, 13 in Asia, and three in Australia or New Zealand and one in Argentina (Table 5). No studies were of good quality for effectiveness outcomes. We considered 23 studies as fair quality for effectiveness outcomes and 38 as poor quality (including case series, which we considered poor quality by default). Seven studies (one retrospective cohort, two case-control, four case series) provided only harms data.[60-66] Among the 50 studies reporting harms of interventions for management of PPH, we considered 11 as good quality for harms reporting and the remainder as poor quality.

While a number of studies were classified as prospective or retrospective studies using our study classification algorithm (Appendix G), few cohort studies provided comparative analyses, and many were confounded by indication in that women who received interventions such as massive transfusion or hysterectomy likely had more severe cases of PPH. Additionally, initial management of PPH using first-line interventions such as uterotonics and uterine massage

differed across studies and across women as each study generally included a number of patients transferred from other hospitals. Thus, populations were heterogeneous in terms of severity and level of stabilization prior to second-line interventions. Given the lack of data from randomized or controlled studies of PPH management, we present data from cohort studies and case series and note potential confounding.

Table 5. Characteristics of included studies addressing effectiveness and harms

Characteristic	RCTs[a]	Prospective Cohort Studies	Retrospective Cohort Studies	Pre-Post Studies	Case-Control Studies	Population-Based Case Series	Retrospective Case Series	Total Literature[b]
Intervention								
Pharmacologic	1	1	5	0	1	5	0	13
Transfusion for supportive management of ongoing PPH	0	0	3	1	0	1	2	7
Uterine balloon tamponade	0	0	1	1	0	1	2	5
Uterine artery embolization	0	2	5	0	1	0	12	20
Uterine and other pelvic artery ligation	0	1	1	0	0	0	3	5
Uterine compression sutures	0	1	1	0	2	0	1	5
Hysterectomy	0	1	2	0	0	4	3	10
Combined interventions	0	0	2	0	0	0	2	4
Interventions for anemia once PPH is stabilized	2	0	0	0	0	0	0	2
Systems-level interventions	1	0	0	8	0	0	0	9
Population Characteristics								
Study population								
U.S./Canada	0	0	3	4	1	4	6	18
Europe	3	2	6	6	2	4	10	33
Asia	0	0	5	0	1	0	7	13
Other	1	0	0	0	0	2	1	4
Total N participants (where reported)	737	477	142309[c]	5726[d]	359	3757	3049	156414

Abbreviations: PPH = postpartum hemorrhage; RCT= randomized controlled trial; rFVIIa = recombinant activated factor VIIa

aDoes not include N participants in one systems-level RCT.[37]

bTotal across interventions exceeds 68 as some interventions were addressed in multiple studies.

[c]One cohort study using data from a utilization database includes 139,617 women exposed to methylergonovine during hospitalization for birth.

[d]Does not include N participants in 2 pre-post studies.[67, 68]

KQ1. Effectiveness of Interventions for Management of PPH

Studies of Medical Interventions

Pharmacologic Interventions

Key Points

- Six small, single studies of fair and poor quality addressed various pharmacologic interventions not including recombinant activated factor VIIa (rFVIIa) with mixed results.
- In one fair quality retrospective cohort study assessing oxytocin and other uterotonics, bleeding was controlled with uterotonic medications without need for further procedures/surgeries in 45 of 91 women (49% success rate).
- In one RCT of tranexamic acid (TXA), blood loss, progression to severe PPH, and need for transfusion were reduced in the TXA arm compared with the non-TXA control arm, but need for further interventions did not differ.
- Need for transfusion or further interventions did not differ in a retrospective cohort study comparing misoprostol and methylergonovine maleate.
- In a small, population-based case series, sulprostone stopped bleeding in 83 percent of participants without need for further intervention.
- Carboprost tromethamine controlled bleeding in 88 percent of women in a small, population-based case series.
- Blood loss and transfusion in women with PPH and disseminated intravascular coagulation (DIC) did not differ in a retrospective study comparing women who received recombinant thrombomodulin with matched controls who did not receive the drug.
- Six small studies of rFVIIa also had mixed results. In one retrospective cohort study, women in the rFVIIa group required more blood products and had greater blood loss than women not receiving the treatment. Differences in change in prothrombin time were not significant between women treated with rFVIIa and those who were not in a case-control study. rFVIIa used as a second-line intervention controlled bleeding without need for further procedures or surgeries in 27 to 31 percent of women in one cohort study, a rate that was similar to treatment with other second-line interventions in that study. In registry studies bleeding was considered improved after one or multiple doses of rFVIIa in 64 to 80 percent of women after the final dose. No study included more than 177 women receiving rFVIIa.
- Strength of the evidence is insufficient for all outcomes of oxytocin and other uterotonics, misoprostol, tranexamic acid, carboprost tromethamine, thrombomodulin, and rFVIIa for PPH management due to the study sizes and lack of studies addressing each agent.

Overview of the Literature

Twelve studies addressed pharmacologic agents for the treatment of PPH:[69-80]one RCT,[69] five cohort studies,[72, 73, 77-79] one case-control study,[74] and five population-based case series or registry studies.[70, 71, 75, 76, 80] Studies were conducted in France,[69, 70] the United States,[71, 78] Finland,[73] Ireland,[74] Japan,[72] the United Kingdom,[77] Hong Kong,[79]and Australia and New Zealand.[76, 80] These studies from Australia and New Zealand report on data collected from one registry over differing time periods, but because the overlap in data is not clear, we have

presented results from both studies but note that the populations likely overlap to some extent. Another registry study reported data from various northern European countries.[75]

Six of these studies (two cohort studies,[73, 77] one case-control,[74] and three registry studies[75, 76, 80]) addressed rFVIIa. Atony accounted for many of the cases of PPH in studies reporting etiology (range = 18 to 56% of cases).

Other agents were each addressed in one study: tranexamic acid (one RCT, n = 144),[69] oxytocin and other (unspecified) uterotonics (one retrospective cohort, n=49),[79] misoprostol compared with methylergonovine maleate (one retrospective cohort, n = 58),[78] sulprostone (one population-based case series, n = 1,370),[70] carboprost tromethamine (one registry study, n = 236),[71] and recombinant human soluble thrombomodulin (rTM; one cohort study, n = 36).[72] Two studies included only women with atonic PPH,[70, 71] and, where reported, atony accounted for 27 to 65 percent of cases. We rated the RCT as poor quality for all effectiveness outcomes and the five cohort and case-control studies as fair quality. The case series were considered poor quality by default. Table 6 provides an overview of key outcomes in studies with comparison groups. We note that one additional cohort study reported only harms of methylergonovine maleate and is discussed in KQ3.[60]

Detailed Analysis

Oxytocin and Other Uterotonics

One fair quality retrospective cohort study reported on 91 women (mean age=33.3±4.6, median parity=0, range 0-3) undergoing treatment for massive PPH (defined as estimated blood loss of ≥1500ml within 24 hours after birth).[79] PPH was due to atony in 41.8 percent of cases. Women were initially treated with intravenous oxytocin (n=33 receiving oxytocin only) and other uterotonic agents (n=16 receiving oxytocin plus other agents). Other uterotonics used could have included carboprost, rectal misoprostol, and sulprostone, though the study does not specify which agents were actually administered. Among the 49 women who received oxytocin and other uterotonics only (i.e., PPH resolved without need for additional procedures or surgeries), atony accounted for 26.5 percent of cases, and "other causes" (uterine rupture, coagulopathy, retained placenta) accounted for 42.9 percent. Causes of PPH differed significantly among women receiving uterotonics only and those requiring second-line therapies (n=42) to control bleeding ($p<.001$), in whom atony and placenta previa or accreta accounted for most cases. Among the 33 women treated with oxytocin only, bleeding was controlled in 32, and one required subsequent hysterectomy (97% success rate). Among those 16 treated with oxytocin plus other uterotonics, bleeding was controlled in 13, and three required hysterectomy (81% success). Thus, bleeding was controlled without need for further procedures/surgeries in 45 of 91 women receiving oxytocin alone or with other uterotonics (49% success rate). Women receiving only conservative management had a median length of stay of 6 days (range 3-29), and 12 (24.5%) were admitted to the ICU. Length of stay and ICU admissions appear to be similar among the 42 women who received second-line therapies (length of stay ranging from 4 to 54 days, number admitted to ICU ranging from 3 to 8 women), but the study does not report analytic comparisons.

Tranexamic Acid

A single RCT (rated poor quality for all efficacy outcomes) with 144 participants reported reduction of blood loss in women with PPH treated with high-dose TXA (n = 72).[69] The RCT was an open-label trial at multiple centers in France and included women with PPH > 800 mL

following vaginal birth. All women received packed red blood cells (PRBCs) and colloids as ordered by clinicians. The use of additional procoagulant treatments was permitted only in cases involving intractable bleeding. The treatment group received TXA in a loading dose of 4 g over 1 hour, then infusion of 1 g/hour over 6 hours. Women in the control group did not receive TXA, and groups did not differ on maternal or obstetric characteristics at baseline. The primary outcome was efficacy of TXA in the reduction of blood loss as measured using collection pouches. The volume of blood loss between enrollment and 6 hours later was significantly lower in the TXA group (median = 173 mL; first to third quartiles, 59 to 377) than in the control group (median = 221 mL; first to third quartiles 105 to 564, $p = 0.041$).

Secondary outcomes included PPH duration, anemia, transfusion, and the need for invasive interventions. In the TXA group, bleeding duration was shorter and progression to severe PPH and PRBC transfusion was less frequent than in the control group ($p < 0.03$). PPH stopped after only uterotonics and PRBC transfusion in 93 percent of the women who received TXA versus 79 percent of the women in the control group ($p = 0.016$). There was no significant difference between the groups in the ratio of invasive interventions performed.

Misoprostol Versus Methylergonovine Maleate

A fair quality retrospective cohort study compared intramuscular methylergonovine maleate versus rectal misoprostol for patients who had a clinical diagnosis of PPH and were treated between 2000 and 2005.[78] Inclusion criteria were gestational age at birth of 37 to 42 weeks, singleton pregnancy, a "clinical diagnosis of PPH" in the medical record, and the patient "required something more than standard oxytocin." Fifty-eight records were included for review. Forty patients received misoprostol, and 18 received methylergonovine maleate. The study reported no differences between the groups in age, gestational age, or type of birth. There were no differences in the need for blood transfusion, "third-level" medical treatment, or surgical interventions. However, the number of participants was small; therefore, the apparent lack of difference in outcomes could be due to Type II error. Furthermore, the assignment to intervention was by provider choice, which introduced selection bias.

Sulprostone

One retrospective population-based case series reports outcomes following sulprostone administration in women with PPH (defined as blood loss of $\geq$ 500mL of blood loss necessitating manual placenta removal and/or uterine examination) who were treated at one of 106 French maternity hospitals.[70] Outcomes related to a multifaceted educational intervention conducted in these hospitals with the aim of lowering PPH rates are described under KQ5.[37, 81] Among the 9,365 cases of PPH occurring in the study period (2004-2006), 4,038 women had clinically assessed atonic PPH, of whom 1370 received sulprostone (995 after vaginal birth, 375 after cesarean birth). Women received additional treatments including uterine cavity or genital tract examination (n = 1634), oxytocin (n = 1297), and vascular volume expansion (n = 653). Among women who received sulprostone, bleeding stopped without the need for additional procedures or surgeries in 83.4 percent. Need for embolization, surgery, or hysterectomy was more common after cesarean birth compared with vaginal birth (26.1% vs. 13%, $p < .01$).

Carboprost Tromethamine

A retrospective population-based case series reviewed carboprost tromethamine for PPH in 236 women (237cases of PPH) at 12 U.S. obstetrics units.[71] The women (mean age 25.3 ± 5.7 years) were given either 125 micrograms or 250 micrograms of carboprost tromethamine (range

one to five doses), preceded in 96 percent of cases by oxytocics. The decision to administer carboprost tromethamine was made at the discretion of independent practitioners. Hemorrhage was controlled in 208 of 237 cases (87.8%). In 17 cases, PPH was controlled with additional oxytocics. Second-line treatments in the 12 women in which carboprost tromethamine failed included nine arterial ligations (followed by hysterectomy in four cases) and immediate hysterectomy in three women. Twenty-seven percent of women received transfusions, but the timing of transfusion (pre- or post-carboprost tromethamine) is not clear.

Recombinant Human Soluble ThromboModulin (rTM)

A fair quality retrospective cohort of the use of rTM in 10 consecutive patients with severe PPH complicated by DIC reported no significant difference in total blood loss or transfusion requirements between those treated with rTM and matched controls.[72] All 36 patients were admitted to a single tertiary center. The primary outcome was the efficacy of recombinant human soluble thrombomodulin (rTM) in disseminated intravascular coagulation (DIC) associated with severe PPH. Ten consecutive patients with DIC associated with severe PPH were treated with rTM. Twenty-six patients with DIC associated with severe PPH were chosen for comparison. The baseline characteristics of the control group were described as "similar" to the treated group. On day 2 following treatment, D-dimer decrease from baseline was significantly greater in the rTM group compared with the control group ($p<.05$). The intervention is targeted for DIC, and is not a treatment for PPH without the presence of DIC.

Table 6. Key outcomes in comparative studies of pharmacologic agents

Author, Year Country Groups (n) Quality	Age, Years Parity	Key Outcomes
Chan et al. 2013[79] Hong Kong **G1:** Oxytocin only (33) **G1a:** Oxytocin ± other uterotonics (16) **G2:** Uterine compression sutures (21) **G3:** Embolization alone (4) **G4:** Uterine balloon tamponade (11) **G5:** Two second-line therapies (6) Quality: Fair	**Age, mean ± SD** **G1-G5:** 33.3±4.6 **Parity, median** **G1-G5:** 0 (range: 0-3)	• 1/33 women receiving oxytocin alone required subsequent hysterectomy • 3/16 receiving oxytocin plus other uterotonics required subsequent hysterectomy • Estimated blood loss among all 49 women=1.8 liters (range 1.5-15); median 3 units (range 0-39) red blood cells transfused • Median LOS=6 days (range: 3-29); 24.5% required ICU admission
Ducloy-Bouthers et al. 2011[69] France **G1:** Tranexamic acid (78) **G2:** Control (74) Quality: Poor/High risk of bias for all outcomes	**Age, mean ± SD** **G1:** 29 ± 4 **G2:** 28.5 ± 5 **Primipara, n (%)** **G1:** 46 (64) **G2:** 50 (69)	• Blood loss for G1 was significantly lower vs. G2 (G1: median 170 mL vs. G2: median 221 mL) • Bleeding duration was shorter for G1: n = 28 (36%) with persistent bleeding after 6 hours vs. G2: n = 37 (50%), p = 0.03

Table 6. Key outcomes in comparative studies of pharmacologic agents (continued)

Author, Year Country Groups (n) Quality	Age, Years Parity	Key Outcomes
Baruah et al., 2008[78] US **G1:** Misoprostol (40) **G2:** Methylergonovine maleate (18) Quality: Fair	**Age, n (%)** Under 20 **G1:** 6 (15) **G2:**1(5.5) 20-29 **G1:** 14 (35) **G2:** 9 (50) 30-39 **G1:** 19 (47.5) **G2:** 8 (44.4) ≥ 40 **G1:**1(2.5) **G2:** 0 **Primipara, n (%)** **G1:** 14 (35) **G2:** 6 (33)	• 5 women in G1 needed transfusion and none in G2, p = 0.11 • Need for third line medical or surgical therapy was comparable G1: 27 (67.5%) vs, G2: 14 (77.8%) • One woman in each group had hysterectomy
Sugawara et al. 2013[72] Japan **G1:** Recombinant thrombomodulin (10) **G2:** No thrombomodulin (26) Quality: Fair	**Age, Mean ± SEM** **G1:** 33.2 ± 1.7 **G2:** 31.7 ± 1.1 **Parity** NR	• Participants did not differ at baseline on blood loss, transfusions, obstetrical complications; shock index (PPH severity) significantly greater in G1 vs. G2 (p < .05) • G1 received 380 U/kg/day thrombomodulin for 3.0 ± 0.6 days + blood products as needed; incidence of undefined bleeding symptoms was not significantly less in G1 vs. G2 (22.2% vs. 42.3% at day 1 and 11.1% vs. 19.2% at day 2, p = .28) • No adverse events associated with either group were reported

Abbreviations: G = group; ICU = intensive care unit; LOS = length of stay; n = number; NR = not reported; SD = standard deviation; SEM = standard error of the mean

Recombinant Activated Factor VIIa (rFVIIa)

A fair quality retrospective cohort study in Finland compared the effectiveness of rFVIIa versus standard management (no rFVIIa) among women with PPH (defined as loss of 1.5 times patient's blood volume).[73] Eligible participants were identified using medical records at a single tertiary referral hospital. Of the 48 women identified, 26 were treated with rFVIIa and 22 were not. There were no statistically significant differences in age, body mass index (BMI), obstetrical course (cause of PPH, mode of birth, length of hospital stay after birth), lowest hemoglobin, or lowest platelet count between the two groups. Activated partial thromboplastin time, liters of total bleeding (11.3 vs. 8.0, p = 0.005), units of RBC (20 vs. 13, p = 0.003), units of platelets (23 vs. 14, p = 0.014), and number with fibrinogen concentrate transfused (15 vs. 5, p = 0.014) were significantly greater among women treated with rFVIIa than among untreated women. There was no statistical comparison of maternal or fetal outcomes between the groups.

A retrospective case-control study in Ireland compared the effectiveness of rFVIIa in reversing coagulopathy associated with massive PPH versus standard management (no rFVIIa) between 2003 and 2006.[74] Twenty-eight women with massive PPH (defined as transfusion of > 5 units of PRBC in 24 hours) were identified using medical records at a single Irish hospital. Of these, six women who were treated with rFVIIa and had a prolonged prothrombin time (PT) were matched with six women with the largest number of PRBC units transfused and prolonged PTs

who were not treated with rFVIIa. There were no statistically significant differences in age, obstetrical factors (gestation, parity, cause of massive PPH, or number of hysterectomies), or coagulopathy factors (PRBC, platelets, fresh frozen plasma [FFP], or cryoprecipitate transfused, or worst PT or fibrinogen levels) between the two groups. The PT improved with management in both groups, and there was no significant difference in the magnitude or absolute value of improvement ($p = 0.9$). There was no statistical comparison of maternal or fetal outcomes between the groups.

One fair quality cohort study used data from the U.K. Obstetric Surveillance System (UKOSS). The UKOSS includes all hospitals with a consultant-led maternity unit in the United Kingdome. Clinicians in these hospitals reported data on PPH cases and treatment to the UKOSS using case notification cards completed monthly. UKOSS personnel also followed up with hospitals to identify potential missed cases. In this study, 31 women received rFVIIa as the initial second-line therapy after failure of conservative PPH management approaches. Sixteen received rFVIIa after uterotonic failure, and 15 received it after failure of uterotonics plus intrauterine balloon tamponade (either with balloon or packing). Among the 16 who had received only uterotonics plus rFVIIa, 11 had successful cessation of bleeding. One required compression sutures, two had ligations, one had interventional radiology, and seven required hysterectomy to control bleeding. Thus, the success rate (control of bleeding without further procedures or surgeries) for rFVIIa was 31 percent. Among the 15 who had rFVIIa after intrauterine tamponade with balloon or packing plus uterotonics, seven required hysterectomy while interventional radiology controlled bleeding after rFVIIa in four (27% success rate for rFVIIa plus uterine tamponade).[77]

Three registry studies also assessed use of rFVIIa. A voluntary registry study described outcomes of treatment of PPH with rFVIIa in nine Northern European countries.[75] Eligible women (128 total identified, 108 included in the analysis) were identified differently in each country, with most identified by physicians or pharmacists who responded to requests for information about use of rFVIIa for treatment of PPH. In Finland and the Netherlands, information was collected for national surveys prior to initiation of this study, and those data were provided to the study group. Information on study endpoints was gathered retrospectively via standardized surveys completed by local practitioners in some instances and via national survey data in others. The registry gathered information on hematologic parameters after the use of rFVIIa as the primary treatment for PPH and as secondary prophylaxis if other interventions were used prior to rFVIIa. Clinicians noted improvements in bleeding after a single dose in 80 percent of the 92 women receiving rFVIIa to treat PPH and in 75 percent of the 16 women receiving it as secondary prophylaxis. Clinicians judged rFVIIa as failing to control bleeding in 15 cases overall (13.8%) Hemoglobin increased in 51 percent of cases in which bleeding was reduced after rFVIIa and showed no significant change in 32 percent of cases. Hemoglobin levels dropped post-administration in 17 percent of cases.

Two comprehensive registry studies were performed to describe outcomes of off-label use of rFVIIa for treatment of PPH in Australia and New Zealand.[76, 80] Cases were identified between 2002 and 2008 from the Australian and New Zealand Haemostasis Registry (developed using unrestricted educational grant funds from Novo Nordisk Pharmaceuticals, the maker of rFVIIa), representing 38 hospitals in those countries. Data were collected via standardized data forms from 105 case medical records and treating clinicians of women with acute obstetric hemorrhage who received rFVIIa. Overall, bleeding stopped or decreased in 76 percent of women. Most (78%) women received a single dose of rFVIIa, and 64 percent of these women had decrease or

cessation of bleeding. Median dose of rFVIIa was 92 micrograms/kg (range 9 to 139). Most women (76%) required < 6 units PRBC transfusion after receiving rFVIIa, and 13 women (21%) required hysterectomy after rFVIIa failed to control bleeding.

In the second registry study, which includes some of the same women in study summarized above, cases with off-label use of rFVIIa (non-hemophilia indications) were identified at 96 hospitals between 2000 and 2009 in the Australian and New Zealand Haemostasis Registry.[80] The registry included 95 percent of off-license use of rFVIIa during that time frame. Of 3,446 cases of off-label rFVIIa use identified, 177 were obstetric cases from 175 women with PPH. Data were collected both retrospectively (2000-2005) and prospectively (2005-2009) by trained data collectors, and were validated by central registry staff. A single dose of rFVIIa was used in 134 (76%) of women, and bleeding stopped or decreased in 99 (56%) of women after a single dose, and 114 (64%) of women after the final dose was given. Table 7 outlines key outcomes in comparative studies.

Table 7. Key outcomes in comparative studies of rFVIIa

Author, Year Country Groups (n) Quality	Age Parity	Key Outcomes
Ahonen et al., 2007[73] Finland **G1:** rFVIIa (26) **G2:** control (22) Quality: Fair	**Age, mean ± SD** **G1:** 33 ± 4 **G2:** 35 ± 4 **Nulliparous, n (%):** **G1:**.12 (46) **G1:** 12 (54.5)	• Response to rFVIIa was considered good (n = 17, 65%), moderate (n = 3, 12%), and poor (n = 6, 23%) • Blood loss (liters) was significantly greater in G1 (mean 11.3 ± 4.5) vs. G2 (mean 8.0 ± 3.1)
McMorrow et al., 2008[74] Ireland **G1:** rFVIIa (6) **G2:** control (6) Quality: Fair	**Age, mean ± SD** **G1:** 34 ± 2.8 **G2:** 31 ± 4.6 **Parity, mean ± SD:** **G1:** 2 ± 0.5 **G1:** 1 ± 0.75	• Prothrombin time improved in both groups with no significant differences between the groups (p = 0.09) • Women in both groups received uterotonics (oxytocin, ergometrine, misoprostol, carboprost tromethamine), and uterine massage • The number of hysterectomies performed was comparable in G1: 50% and G2: 67%
Kayem et al. 2011[77, 82] UK **G1:** Uterine compression sutures (199) **G2:** Pelvic vessel ligation (20) **G3:** Interventional radiology (embolization, arterial balloon) (22) **G4:** rFVIIa (31) Quality: Fair	**Age** **< 35, n (%)** **G1:** 128 (64) **G2:** 12 (60) **G3:** 12 (55) **G4:** 21 (68) **> 35, n (%)** **G1:** 71 (36) **G2:** 8 (40) **G3:** 10 (45) **G4:** 10 (32) **Nulliparous, n (%)** **G1:** 92 (46) **G2:** 3 (15) **G3:** 6 (27) **G4:** 9 (29)	• Among all women receiving these second-line therapies, 205 had prior uterotonic therapy (oxytocin, ergometrine, carboprost tromethamine, misoprostol) alone, 67 had prior uterotonics and intrauterine tamponade • rFVIIa was successful in controlling bleeding in 5/16 women who received only uterotonics and in 4/15 who had uterotonics and tamponade as a first-line therapy • 14 women who received rFVIIa ultimately required hysterectomy

Abbreviations: G = group; n = number; rFVIIa = recombinant activated factor VIIa; SD = standard deviation

Studies of Other Medical Interventions

Transfusion for Supportive Management of Ongoing PPH

Key Points

- No good quality studies addressed transfusion for supportive management of PPH.
- In one retrospective cohort study, women receiving combination blood products compared with whole blood or PRBC only for supportive management of PPH had a greater level of transfusion, greater likelihood of intensive care unit (ICU) stay, and greater risk of adverse outcomes.
- Estimated blood loss, blood products transfused, and mean length of stay did not differ between groups in a retrospective cohort study comparing outcomes following cryoprecipitate or fibrinogen transfusion for supportive management of PPH. In a pre-post study, use of blood products was reduced after the introduction of fibrinogen.
- Strength of the evidence for outcomes related to transfusion for supportive management of PPH is insufficient. While there were three fair quality studies of transfusion for this purpose, two of these were so confounded that we could not confidently ascertain their outcomes.

Overview of the Literature

Three fair quality retrospective cohort studies and one poor quality pre-post study addressed transfusion as a therapy for management of PPH. Studies that address transfusion as an intervention for anemia once PPH is stabilized are summarized under KQ4. Transfusion in these studies was evaluated as a method of supportive management of the complications of PPH (e.g. coagulopathy, anemia, hypovolemia), rather than to reverse the underlying cause of PPH. Cohort studies were conducted in the United States,[83] Ireland,[84] and Korea[85] and included a total of 1,700 women. The pre-post study was conducted in the UK and included 93 women. Causes of PPH, where reported, included atony (range = 2.5 to 38%), placental abruption or placenta previa (8-17%), chorioamnionitis (21%), and placenta accreta (14%). Studies assessed different aspects of transfusion for supportive management of PPH: whole blood vs. PRBC vs. a combination of products,[83] massive transfusion vs. no massive transfusion,[85] cryoprecipitate vs. fibrinogen concentrate,[84] and use of fresh frozen plasma vs. fibrinogen concentrate. [86] One additional Canadian case series,[63]one French case series,[61] and one case series from Italy[65] reported only on harms of transfusion and are described in KQ3.

Detailed Analysis

A fair quality, single-center, retrospective cohort study conducted in the United States compared complication rates between whole blood transfusion, PRBC transfusion alone, and combination blood product transfusion for supportive management of PPH.[83] Eligible participants with PPH (defined as hypovolemia sufficient to provoke hemodynamic instability) were identified using a database of obstetric and neonatal outcomes. Of 1,540 women identified, 659 received whole blood transfusion, 593 received PRBC only, and 288 received a combination of blood products. There were no statistically significant differences between groups in age, race, or parity, but women in the combination blood product group were more likely to have perineal trauma, placenta previa or abruption, and hysterectomy than the other groups. Mean units of blood product transfused was significantly greater among women getting a combination of blood products when compared with women receiving whole blood or PRBC only (5.5, 2.2, and. 2.3

units in the combination blood products, whole blood, and PRBC groups, respectively, $p < 0.001$). Women in the combination transfusion group were also significantly more likely to be transferred to the ICU (23%, 4%, and 7% in the combination blood products, whole blood, and PRBC alone groups, respectively, $p < 0.05$) and to die (2%, 0%, and 1% in the combination blood products, whole blood, and PRBC alone groups, respectively, $p = 0.03$) than women in the other two groups.

Another fair quality, single-center, retrospective cohort study used electronic medical records at a Korean academic hospital to determine whether patients with an elevated shock index at the time of presentation with PPH would be more likely to require massive transfusion.[85] Women with PPH (defined as blood loss ≥ 500 mL) were identified as part of the massive transfusion group (defined as receiving transfusion of ≥ 10 units PRBC within 24 hours of birth, n=26) or the non-massive transfusion group (n=100). Groups did not differ in terms of age, parity, mode of birth, bleeding time. Significantly fewer women in the massive transfusion group had an alert mental status (18 vs. 95, $p < 0.01$) and underwent embolization (22 vs. 36, $p < 0.01$), and significantly more women in this group required ICU stay (11 vs. 5, $p < 0.01$) and died (3 vs. 0, $p < 0.01$). Additionally the median systolic and diastolic blood pressures and hemoglobin levels were significantly lower (5.9 vs. 9.5, $p < 0.01$), and the median shock index (1.3 vs. 0.8, $p < 0.01$) and length of hospital stay (4.0 vs. 2.0, $p < 0.01$) were significantly higher in the massive transfusion group than in the non-massive transfusion group. Transfusion requirements were significantly higher in the first 24 hours and during the hospitalization among the massive transfusion group than the non-massive transfusion group (18.0 units and 3.0 units in the first 24 hours, respectively, and 20.0 units and 4.0 units during the hospitalization, respectively). These finding are confounded by indication as the massive transfusion group was presumably experiencing more severe PPH given their lower median hemoglobin and lower median systolic and diastolic blood pressures than the non-massive transfusion group.

A fair quality, single-center, retrospective cohort study from Ireland compared the effectiveness of transfusion with cryoprecipitate (n = 14) versus fibrinogen concentrate (n = 20) for supportive management of PPH.[84] Women were identified for inclusion in a major obstetric hemorrhage database if they experienced PPH (defined as blood loss of ≥ 2.5 L, transfusion of ≥ 5 units PRBC, or treatment of a coagulopathy in the acute event). Eligible participants from the database were women treated with either cryoprecipitate or fibrinogen concentrate between 2009 and 2011. There were no statistically significant differences between groups in age, race, BMI, parity, gestation at birth, birth weight, or cause of PPH, but women in the cryoprecipitate group were more likely have previous cesarean birth. There was no statistically significant difference between groups in mean estimated blood loss; number of units of PRBC, Octaplas/fresh frozen plasma, or platelets transfused; medical and surgical treatments administered; and mean length of hospital stay.

Finally, one poor quality pre-post study from the United Kingdom compared the effectiveness of fibrinogen concentrate (n=51) versus fresh frozen plasma (n=42) for management of PPH-associated coagulopathy.[86] Eligible participants were identified within a single hospital if they had major obstetric blood loss (defined as > 1500 mL) associated with coagulopathy between April 2011 and June 2013, with participants treated between April 2011 and March 2012 receiving treatment with a major obstetric hemorrhage algorithm that included fresh frozen plasma, and participants included from July 2012 through June 2013 receiving treatment with fibrinogen concentrate. Women treated with fibrinogen concentrate received significantly fewer total blood components (3.0 vs 8.0, for the fibrinogen concentrate group vs.

the plasma group, p= 0.0004), pooled bags of cryoprecipitate (numbers not reported), total quantity of fibrinogen (0 vs. 3.2, for the fibrinogen concentrate group vs. the fresh frozen plasma group, p= 0.0005), and doses of platelets (numbers not reported). Units of red blood cells given to the two groups did not differ significantly, nor did ICU admission, transfusion-related acute lung injury (n=0 in both periods), or hysterectomy. There was a significantly higher rate of transfusion-associated circulatory overload in the fresh frozen plasma group (p=.04). Table 8 outlines key outcomes.

Table 8. Key outcomes in comparative studies of transfusion for supportive management of PPH

Author, Year Country Groups (n) Quality	Age, Years Parity	Key Outcomes
Alexander et al., 2009[83] US **Groups:** **G1:** Whole blood only (659) **G2:** PRBC only (593) **G3:** Combinations of blood products (208) Quality: Fair	**Age, year, n (%):** 17 or less **G1:** 54 (8) **G2:** 39 (7) **G3:** 28 (10) 35 or older **G1:** 66 (10) **G2:** 54 (9) **G3:** 34 (12) **Nulliparous, n (%)** **G1:** 333 (51) **G2:** 306 (52) **G3:** 135 (47)	• Mean units of blood transfused was 2.2 units for G1, 2.3 units for G2, and 5.5 units for G3 ($p < 0.001$) • G3 more likely than G1 and G2 to be transferred to the ICU (23%, 4%, and 7%, respectively, $p < 0.05$) and to die (2%, 0%, and 1%, respectively, $p = 0.03$)
Sohn et al. 2013[85] Korea **G1:** Massive transfusion requiring 10 or more units of PRBCs (26) **G2:** Received < 10 units PRBCs (100) Quality: Fair	**Age, median (IQR range)** **G1:** 31 (29.8-34.5) **G2:** 31 (29-34) **Primiparous, n (%)** **G1:** 17 (65.4) **G2:** 56 (56) **Multiparous, n (%)** **G1:** 9 (34.6) **G2:** 44 (44)	• Women in G1 had greater length of stay and need for ICU care compared with G2 ($p < 0.01$) • Findings confounded by indication
Ahmed et al., 2012[84] Ireland **G1:** Cryoprecipitate (14) **G2:** Fibrinogen (20) Quality: Fair	**Age, mean** **G1:** 32.8 **G2:** 31.0 **Nulliparous, n (%)** **G1:** 6 (43) **G2:** 6 (30)	• Cryoprecipitate was used prior to July 2009 and then replaced with fibrinogen • Hypofibrinogenemia was resolved with both treatments • The two groups had comparable hemoglobin, hematocrit, and platelet counts
Mallaiah et al., 2014[86] United Kingdom **G1:** Fresh frozen plasma (42) **G2:** Fibrinogen concentrate (51) Quality: Poor	**Age** NR **Parity** NR	• FFP used in massive PPH algorithm prior to June 2012, and was then replaced with fibrinogen concentrate. • Use of fibrinogen concentrate resulted in transfusion of significantly fewer total blood components and units of FFP and cryoprecipitate vs. use of FFP. • The groups had similar outcomes, with similar rates of ICU admission and hysterectomy, and there were no deaths.

Abbreviations: FFP = fresh frozen plasma; G = group; ICU = intensive care unit; IQR = interquartile range; n = number; NR = not reported; PPH = postpartum hemorrhage; PRBC = packed red blood cells

Studies of Procedures

Uterine Balloon Tamponade

Key Points

- No good quality studies addressed uterine balloon tamponade.
- In one fair quality pre-post study, 86% of women who had balloon tamponade did not require further procedures or surgeries.
- Case series reported a decrease or cessation of bleeding in 75 to 98 percent of patients treated with a balloon tamponade device, with and without prior or subsequent surgeries or procedures.
- Strength of the evidence for outcomes related to uterine balloon tamponade is insufficient given the small number of studies and small sample sizes.

Overview of the Literature

Five studies, one pre-post study, one retrospective cohort study, two retrospective case series, and one population-based case series, addressed the use of intrauterine balloon tamponade for the management of PPH.[79, 87-90] The pre-post study was conducted in France, cohort study in Hong Kong, and case series in the United States, Finland, and Italy. Many of the women in these studies had atony (100% in pre-post study, 57.2% in the cohort study, and 16%-72.7% in case series). A total of 208 women had intrauterine tamponade using Bakri,[87, 90]Sengstaken-Blakemore,[79] Rusch,[89] or Belfort-Dildy Obstetrical Tamponade System[88] balloons. .

Detailed Analysis

One fair quality pre-post study examined the rate of invasive procedures (embolization and surgery) after adding balloon tamponade to the protocol for PPH management in a maternity unit at a tertiary care university hospital in France.[87] The new protocol required that intrauterine balloon tamponade be performed prior to any invasive intervention in cases of PPH due to uterine atony that were nonresponsive to sulprostone. Data were collected prospectively for 30 months after implementation of the new protocol. The patients in the control group (n = 290, none of whom had balloon tamponade) were identified from electronic medical records as women admitted to the hospital with PPH due to atony requiring sulprostone therapy in the 30 months prior to the new protocol implementation. During the study period, 395 women with PPH required sulprostone therapy, which was unsuccessful in 72 women. Of these women who needed additional procedures or surgeries, 43 had intrauterine balloon tamponade as the initial second-line therapy. No additional procedures or surgeries were required after balloon tamponade in 92% (11/12) of the women who had cesarean births and 84% (26/31) of the women who had vaginal births. Among the six women for whom balloon tamponade was unsuccessful, three had embolization, two had conservative surgical interventions (defined as artery ligations and/or uterine compression sutures), and one had hysterectomy. The overall success rate of balloon tamponade was 86% (37/43 women). Adding balloon tamponade to the protocol decreased the rates of arterial embolization (8.2% pre vs. 2.3% post, p = 0.006, OR 0.26, 95 percent CI: 0.09-0.72) and conservative surgical procedures (5.1% pre vs. 1.4% post, p = 0.029, OR 0.26, 95% CI: 0.07-0.95) among women with vaginal births. Hysterectomy and transfusion rates were unchanged. Rates of invasive interventions and transfusion were unchanged among women with cesarean births (Table 9).

In a fair quality cohort study (see full description in Oxytocin and Other Uterotonics section above), 42 of 91 women with massive PPH required second-line procedures or surgeries to control bleeding.[79] Procedures included balloon tamponade (n=12), embolization (n=5), and sutures (n=26), and women receiving second-line therapies did not differ in terms of age, BMI, parity, mode of birth, or causes of PPH. Twelve women received uterine balloon tamponade with a Sengstaken-Blakemore tube, with successful control of bleeding in 9 (75%). One woman required subsequent embolization, and two required hysterectomy to control bleeding.

One population-based case series examined the outcomes of women with PPH treated with a dual-balloon catheter tamponade device, the Belfort-Dildy Obstetrical Tamponade System, using postmarketing surveillance data from medical records and clinician interviews at 11 hospitals in the United States.[88] During the study period (September 2010 – October 2012), 51 women with PPH were treated with the balloon tamponade device. Of these, 28 women had vaginal births and 23 had cesarean births. The median time interval between birth and insertion of the balloon was 2.2 hours (range 0.3-210 hours). Estimated median blood loss was 2000mL (range 855-8700). Thirty-nine (77%) patients required PRBC transfusion, and 12 (24%) were admitted to the ICU. Bleeding was considered to be decreased in 22 (43%) women and stopped in 28 (55%). Eight patients (16%) required additional procedures or surgeries after the balloon placement including hysterectomy (n = 4), uterine artery embolization (n = 4), and surgical repair (n = 3); some required more than one intervention. The overall success rate of balloon tamponade in controlling or decreasing bleeding was 98% (50/51 women, who also had prior medical or surgical interventions). Table 9 outlines key outcomes in studies of uterine balloon tamponade.

A retrospective case series evaluated uterine tamponade conducted with a Rusch balloon between 2002 and 2012 at one Italian center.[89] All 52 women who had balloon tamponade (mean age=34.4±4.4, 39% multiparous, 60% with atony) received initial uterotonics and other conservative management. Oxytocin was continuously infused in conjunction with tamponade (20 IU for 24 hours). Tamponade balloons were filled with 200 mL in cases of abnormal placentation and 400mL in cases of atony. Women also received antibiotics for 24 hours, and those receiving balloon tamponade after vaginal birth had vaginal packing. Balloons were left in place for a mean of 23.1±9.0 hours (range: 3.5-40 hours). Sixty-three percent of women also received red blood cell transfusion. Balloon tamponade as the initial second-line procedure successfully controlled bleeding in 39 of 52 women (75%, success in 11 of 14 cases of PPH following vaginal birth and 28 of 38 cesarean births). Two women had subsequent uterine artery ligation, one had compression sutures, and 10 had hysterectomies. More failures of balloon tamponade requiring hysterectomy occurred in cases of PPH due to placenta previa and accreta (success in 2 of 5 cases) and in cases due to atony accompanied by placenta previa and/or accreta (success in 3 of 7 cases).

A final retrospective case series reported on 50 women with PPH (n=44) or at risk of PPH (n=6) receiving a Bakri uterine balloon after conservative management including uterotonics, laceration repair, and curettage as needed.[90] Overall, 29 women had vaginal births and 21 had cesarean births (N primigravid=30). PPH was most often due to placental retention (30% of cases) or vaginal rupture/paravaginal hematoma (22%). Uterine balloons were inserted in the vagina or lower uterine segment and left in situ for a mean of 12.7 hours (range 1-28 hours). Four women had compression sutures or ligation concomitantly with uterine balloon tamponade, and the study reports data on successful control for all women (i.e., not separately for those women who received tamponade alone). In all, uterine balloon tamponade successful controlled bleeding in 43 of 50 women (86%). Three women required subsequent embolization, two

required supravaginal uterine amputation, one required compression sutures plus supravaginal uterine amputation, and one had embolization followed by hysterectomy. Because success data are not extractable for women who received uterine balloon tamponade alone, this study is not included in Table 10, which reports rates of successful control of bleeding following uterine tamponade.

Table 9. Key outcomes in studies of uterine balloon tamponade

Author, Year, Country Study Design Groups (N) Study Quality	Age, Years Parity	Key Outcomes
Laas et al. 2012[87] France Pre-post **G1:** Women with PPH due to atony and nonresponsive to sulprostone admitted to the maternity service after implementation of new protocol using intrauterine balloon tamponade as first-line therapy after medication failure (395) **G2:** Control group, had PPH requiring sulprostone during the 30 months before implementation of new protocol (290) Quality: Fair	**Age, median (range)** **G1:** 30 (27-34) **G2:** 31 (26-34) **Nulliparous, n (%)** **G1**: 212 (53.7) **G2**: 160 (55.2)	• In G1, 72 women required interventions beyond medication and 43 of these had intrauterine balloon tamponade • No additional procedures or surgeries were required after balloon tamponade in 92% (11/12) of women who had cesareans and 84% (26/31) of women who had vaginal births • The rates of invasive interventions among women who had vaginal births were significantly lower after introduction of new protocol
Chan et al. 2013[79] Hong Kong Cohort study **G1:** Oxytocin only (33) **G1a:** Oxytocin ± other uterotonics (16) **G2:** Uterine compression sutures (21) **G3:** Embolization alone (4) **G4:** Uterine balloon tamponade (11) **G5:** Two second-line therapies (6) Quality: Fair	**Age, mean ± SD** **G1-G5:** 33.3±4.6 **Parity, mean ± SD** G1-G5: **21.6±3.2**	• 2/12 women receiving uterine balloon tamponade required hysterectomy. 1/12 required embolization. • Estimated blood loss among 11/12 women=12.3 liters (range 1.5-8.7); median 10 units (range 3-34) RBC transfused • Median LOS=8 days (range: 4-12); 72.7% required ICU admission

Table 9. Key outcomes in studies of uterine balloon tamponade (continued)

Author, Year, Country Study Design Groups (N) Study Quality	Age, Years Parity	Key Outcomes
Dildy et al. 2013[88] US Case series **G1:** Dual-balloon tamponade (51)	**Age, median (range)** **G1:** 33 (19-47) **Parity** NR	• 77% required red blood cell transfusion • 24% were admitted to the ICU • Bleeding was considered to be decreased or stopped in 98% of cases • 16% required surgical interventions after balloon tamponade
Ferrazzani et al. 2014[89] Italy Case series G1: Rusch uterine balloon tamponade (52)	**Age**, **mean ± SD** **G1:** 34.4±4.4 **Multiparous, n (%)** **G1:** 20 (38.5)	• Total **,** mean ± SD estimated blood loss=1759,± 1011 mL; mean ± SD days of hospital admission=6.2±3.0 • Uterine tamponade successful in controlling bleed in 20/24 cases of PPH due to atony, 3/7 cases due to atony+ placenta previa or accreta, 9/11 cases due to placenta previa, 5/5 cases of placenta accreta, 2/5 cases due to placenta previa-accreta (39/52 cases overall)
Gronvall et al. 2012[90] Finland Case series G1: Bakri uterine balloon tamponade (50)	**Age, mean (range)** **G1: 31.3 (19-47)** **Parity, n** **0: 30** **1-2: 16** **≥3: 4**	• Uterine balloon tamponade successfully controlled bleeding in 43/50 cases, in 4 cases women had concomitant ligation or sutures • Mean blood loss after balloon insertion=525 mL (range=0-3250 mL). • Mean inflation volume of balloon=367 mL (range 30-500mL)

Abbreviations:; G = group; ICU = intensive care unit; LOS = length of stay; mL = milliliter; n = number; NR = not reported; PPH = postpartum hemorrhage; RBC = red blood cells; SD = standard deviation

Table 10 reports rates of successful control of bleeding after uterine tamponade.

Table 10. Success rates after uterine balloon tamponade as the initial second-line procedure

Study Design	Study Country	Quality	Total N Treated	Total N Successful	% Success
Pre-Post Studies	Laas 2012[87] France	Fair	43	37	86.1
Cohort Studies	Chan 2013[79] Hong Kong	Fair	12	9	75
Case Series	Ferrazzani 2014[89] Italy	Poor	52	39	75
	Total	NA	107	85	Range: 75-86% Median Success Rate: 75%

Abbreviations: n = number; NA = not applicable
Note: Success = control of bleeding without further procedure or surgery

Embolization

Key Points

- No good quality studies addressed embolization.

- Embolization materials, arteries embolized, and interventions used prior to and concomitantly with embolization varied across studies.
- Success (control of bleeding without further procedures or surgeries) rates for embolization as the initial procedure after conservative management ranged from 58 to 98 percent (success in 1251/1435 women), with a median rate of 89 percent.
- Strength of the evidence is low for embolization controlling bleeding without additional procedures or surgeries.

Overview of the Literature

Nineteen studies addressed embolization to treat PPH.[49, 77, 79, 91-108] Seven studies had explicit comparison groups: one poor quality case-control study[91] and six fair quality cohort studies (reported in multiple publications), five of which were retrospective[49, 79, 92-96] and one prospective.[77] Four studies were conducted in France in tertiary care hospitals,[91, 92, 95, 96]one in Korea,[49] in a hospital that serves Jehovah's Witnesses, one in the United Kingdom,[77] which reported data collected via the UKOSS (described in the section on rFVIIa), and one in Hong Kong.[79] Ten women in one cohort study also had concomitant vessel ligation and/or uterine compression sutures,[92-94] one woman in each of two studies had prior or concomitant artery ligation,[49, 95] and three in another study[77] also had intra-arterial balloon placement along with embolization. Eighty-one percent of the cases of PPH reported in the case-control study were due to atony.[91] Rates of atony in the cohort studies ranged from 9 to 69.5 percent. Other causes in all populations included placenta accreta, percreta, and/or previa (range: 9.4 to 22%); thrombus, vascular anomaly, or coagulopathy (range: 2 to 10%); and genital tract lacerations or uterine tears (range: 1to 14%). The case-control study and two retrospective cohort studies reported primarily on longer-term fertility with followup of participants at ≥ 12 months post-embolization (fertility data reported in KQ3).[91, 92, 95] The prospective cohort study reported primarily success of embolization and the need for additional second-line interventions[77] as did one retrospective cohort study.[96] Remaining studies also reported primarily on the rate of success (i.e., controlling bleeding without further procedures or surgical interventions) of embolization.

Twelve retrospective case series also addressed embolization.[97-108] Studies were conducted in France (n = 4), Asia (n = 7), the United States (n = 1). Most cases of PPH were due to atony (range = 43 to 100%), and most studies reported primarily on rates of success. One study[107] reported on embolization to control secondary PPH, and one case series included 50 women in who embolization was performed because of high risk for PPH.[108]

Detailed Analysis

One fair quality retrospective cohort study reported in three publications[92-94] included all 101 women who had pelvic artery embolization for PPH from 1994 to 2007 at a tertiary care facility in France. Embolization failed to control bleeding in 11 of 101 women, seven of whom required a postpartum hysterectomy. Failure was associated with increased blood loss as 100 percent of failed cases had blood loss greater than 1500 ml ($p < .001$). Failure was also associated with increased rate of transfusion with 90 percent of women in whom embolization failed receiving more than 5 units PRBC compared with 43 percent of the successful embolizations ($p < .004$). Cases of failed embolization were more likely to be complicated by wound infection (27% vs. 6 % in the success group, $p < .04$).

A second fair quality retrospective cohort study conducted in France assessed outcomes in 52 women undergoing selective embolization using gelfoam (n = 41, mean age = 29.2 ± 4.65 years,

9 primiparous, 11 vaginal births), hysterectomy (n = 6, mean age = 30.1 ± 4.11, 2 primiparous, 2 vaginal births), or both embolization and hysterectomy (n = 5, mean age = 36.6 ± 4.56, 0 primiparous, 0 vaginal births).[95] All women were treated between 1996 and 2005, and atony was the most frequent cause of PPH across groups (69.5%). All women had medical management (oxytocin, manual placenta removal, uterine massage, prostaglandins, transfusion) prior to embolization or hysterectomy. Embolization successfully stopped bleeding in 41 of 46 cases (89.1%). Five women required additional embolization procedures (insertion of coil to correct injury sustained in cesarean birth, ovarian artery embolization, embolization beyond gluteal artery, embolization of internal iliac artery, embolization of ligated hypogastric arteries). Among five women proceeding to hysterectomy following failed embolization, two women had placenta accreta, one had percreta, and one had sustained arterial injury during embolization. The study also assessed fertility in women who had had embolization (n = 37 available for followup) 2 to 11 years earlier: of the 16 women who desired a future pregnancy, all became pregnant 1 to 11 months following the decision to try to conceive (total of 19 pregnancies in the followup period).

In one fair quality retrospective cohort study reporting outcomes after embolization, ligation, or hysterectomy (see full study description in Ligation section), eight of 61 women with PPH underwent embolization using gelatin sponge or coils as the first secondary procedure.[96] Embolization failed in three cases: one woman undergoing embolization also required methotrexate, one required subsequent ligation, and one required hysterectomy (63% success rate for embolization alone). This study also reported intervention by cause of PPH: among eight cases treated with primary embolization, three women had PPH due to atony (one cesarean birth). Embolization failed in one case, which resulted in hysterectomy and subsequent death. Embolization was successful in two cases of PPH due to accreta (one cesarean birth) and in one case due to placental abruption (vaginal birth). The procedure failed in one case of PPH due to genital tract laceration (instrumented vaginal birth), leading to subsequent ligation, and successfully controlled bleeding in another case following lacerations.[96]

Another fair quality retrospective cohort study reported outcomes after second-line procedures (see full description in the Oxytocin and Other Uterotonics section) in 42 women with PPH.[79] Procedures included balloon tamponade (n=12), embolization (n=5), and sutures (n=26), and women receiving second-line therapies did not differ in terms of age, BMI, parity, mode of birth, or causes of PPH. Although five women underwent embolization after the failure of conservative management including oxytocin and other uterotonics, the paper reports etiology only for the four women who had embolization alone (i.e., not followed by another second-line approach). Two women had atony, one had placenta previa, and one had placenta accreta. Embolization successfully controlled bleeding without need for further procedure or surgery in three of the five women receiving embolization (60%). One woman required subsequent compression sutures and one required hysterectomy to control bleeding.

One poor quality case-control study conducted in France assessed the effects of embolization on fertility in 53 women exposed to embolization following PPH and 106 women who had not undergone embolization and were matched on date of birth, age, gravidity and parity, fertility assistance, and mode of birth.[91] Women (mean age = 34.3, range 19-44) had undergone embolization (78.5% using absorbable gelatin, 1.8% using coils, 7.1% using microparticles, 12.6% using gelatin+other) between 2000 and 2006, and the primary cause of PPH was atony (81.1%). Embolization successfully controlled bleeding in 100 percent of women, but three required more than one embolization procedure.

One fair quality prospective cohort study reported UKOSS data collected between 2007 and 2009.[77] The study reported an analysis of outcomes of second-line therapies (i.e., interventions received after uterotonics alone or with intrauterine tamponade via balloon or packing). Second-line interventions included interventional radiology (defined as embolization or occlusion with an intra-arterial balloon), ligation (of any of the internal iliac, uterine, hypogastric, or ovarian arteries), compression sutures (including B-lynch, modified B-lynch, multiple vertical or horizontal sutures, squared compression sutures, and others), or rFVIIa. Among an estimated 1,237,385 births in the study period, 272 women had PPH treated with the interventions of interest as a second-line intervention. More than 50 percent of PPH cases (53%) were primarily due to atony. Other causes included placenta previa (9%), placenta accreta (10%), uterine tears (13%), and other (15%, includes placental abruption, genital bleeding, amniotic fluid embolism, infection, clotting abnormalities, undetermined causes). Women who had a cesarean birth (n = 230) were treated with a surgical method in 199 (87%) of the cases, and those who gave birth vaginally (n = 42) were more likely to be treated by interventional radiology or rFVIIa (52%, $p < 0.001$). Among the 272 cases of PPH, 205 women received uterotonics alone, and 67 had uterotonics plus intrauterine tamponade as first-line procedures. Data for each of the second-line therapies addressed in the study are reported under the appropriate intervention type (suture, etc.). Among the 22 women treated with interventional radiology, 19 had embolization alone, two had embolization plus balloon, and one had balloon only. Fourteen of the 22 women received uterotonics prior to interventional radiology. The interventional radiology procedures failed to control bleeding in two women (14%; 95% CI: 0 to 43), who required hysterectomy. Among the eight of 22 women who received uterotonics and intrauterine tamponade prior to interventional radiology, bleeding was controlled in seven cases, and one woman (12%, 95% CI: 0 to 53) required an additional (unstated) intervention. The study does not report the success of embolization alone but only the success of both interventional radiology procedures together.

One fair quality retrospective cohort conducted at a hospital that treated Jehovah's Witnesses in Korea reported results from women treated with embolization or hysterectomy between 2002 and 2009 (see Hysterectomy section for results from that arm).[49] All women were initially treated with uterotonics (oxytocin, ergots, prostaglandins), uterine massage, transfusion (in patients who were not Jehovah's Witnesses), and fluid replacement. Among the 124 women (eight Jehovah's Witnesses) experiencing primary PPH, 60 (mean age 31.0 ± 4.8 years, 17 primiparous, 23 vaginal births) underwent selective embolization using gelfoam. PPH was most frequently due to atony (92.4%), and mean blood loss prior to embolization was 676.7 ml. Embolizations were performed by the same two interventionists across the study period. Mean ICU stay in the embolization group was 5 days (mean overall LOS = 8.6 days). Two women in the embolization group required hysterectomy due to continued bleeding from the cesarean uterine wound and from vaginal and cervical lacerations after vaginal birth.

In case series, rates of success (control of bleeding after embolization without further procedures or surgeries) ranged from 58 to 98 percent. In some cases, women had a procedure such as ligation or balloon tamponade prior to embolization. Five studies also reported on resumption of menses and/or pregnancies achieved (see discussion in KQ3).

One population-based case series reported on 211 women undergoing embolization either to control ongoing PPH (n=161, mean age=32.4±4.8 years, primipara=47.2%) or prophylactically (n=50, mean age=30.1±6.1 years, primipara=50%).[108] Of note, this study included 56 women (37 in the emergency embolization group and 19 in the prophylactic group) who were <22 weeks gestation at the time of treatment. Most cases of prophylactic embolization were performed for

retained placenta (n=37), while most cases of emergency embolization were for atony (n=73). Embolic materials included gelatin sponge in most cases (n=193 cases), but metal coils (n=11) and other materials including N-butyl-2-cyanoacrylate (n=7) were also used. Embolization successfully controlled bleeding in 181 of 211 women (86%); 12 women required a second embolization procedure, and 18 required hysterectomies. Because the study does not clearly report how women who had second embolizations also had hysterectomies, we do not include this study in the success rates in Table 12.One retrospective case series reported on 117 cases of embolization (mean age=32.0±5.0, 69 vaginal births, 56 primiparous) for PPH performed between 2006 and 2013 at a Korean hospital.[106] More than half of the cases of PPH in the embolization group (54.7%) were due to atony, and women were treated initially with fluids, uterotonics, uterine massage, suture of lacerations, and uterine evacuation as needed. Embolization was performed with gelatin particles, coils, glue, or polyvinyl alcohol particles and was successful overall at controlling bleeding without further procedural or surgical intervention in 103 of 117 women (88%). Ten women required additional embolization, and four had hysterectomies. Embolization failure was associated with DIC (OR 3.364, 95% CI: 0.838 to 13.503, p=.08), greater than 10 RBC units transfused (OR 8.011, (95% CI: 1.531 to 41.912, p=.014), and embolization of uterine and ovarian arteries (OR 20.472, (95% CI: 2.715 to 154.365, p=.003). Nineteen of the 117 cases of PPH were secondary (12 cesarean births, p=.03 compared with primary PPH group), and embolization successfully controlled bleeding in 18 of these cases. This study includes data on 20 women who underwent hysterectomy but no outcomes of interest for the current review were reported; thus we did not include the hysterectomy data.

One retrospective case series included 56 women (median age = 33 years, median gravida = 2, median para = 2) with severe PPH (defined as ≥ 1000mL blood loss via clinical estimation or weighing of blood collecting bag; ≥ 500mL blood loss with poor clinical signs; continued bleeding; need for transfusion; or DIC) undergoing embolization at a French tertiary care hospital between 1995 and 2005.[97] All women received initial medical treatment including suturing of vaginal or cervical lesions, oxytocin, uterine massage, and sulprostone. Thirty births were vaginal without instrumentation (54.5%), nine were instrumented vaginal (16.5%), and 16 were cesarean (29%). All women had atony, and 36 required transfusion (64.3%). Embolization was performed with gelfoam or sponge. Embolization successfully stopped bleeding in 55 cases (98% success rate). One woman required a second embolization session to control bleeding, and none needed further surgical interventions for bleeding.

Another French retrospective case series including 113 women (mean age = 31 years, 67 cesarean births) reported on menses and fertility outcomes and success of the embolization procedure.[98] PPH was most frequently due to atony (75% of cases), and all women received medical management prior to embolization. Embolization materials included gelatin sponge, powder, and microparticles. Eighteen women required surgery prior to embolization (sutures, n = 11; ligation, n = 7). Embolization successfully controlled bleeding in 111 cases (results not reported for women who had embolization without a prior surgical procedure). Two women required hysterectomy post-embolization.

In a Korean retrospective case series reporting on 251 women with primary PPH (mean age 32 ± 4 years, 139 nulliparous, 141 vaginal births), most cases of PPH were due to atony (78.9%).[101] The study reviewed data from women treated between 2000 and 2011. All women had medical management prior to embolization, and 22 had surgical interventions prior to embolization (hysterectomy, n = 15; uterine artery ligation, n = 2; laparotomy, n = 2; suture or

uterine wall repair, n = 2; dilatation and curettage, n = 1). Embolization was performed with gelatin sponge or multiple particles. Embolization successfully controlled bleeding in 201 of the 229 women for whom embolization was the first second-line procedure (88%). Among all 251 women, embolization successfully controlled bleeding in 217 (87%). Twelve women required a repeat embolization (success in nine cases, one hysterectomy, one laparotomy, one death), nine required hysterectomy, six required laparotomy (one death), three required additional conservative management, one required uterine artery ligation, and three died after the first embolization session. Successful embolization was associated with vaginal birth, absence of DIC, and absence of need for transfusion of > 10 PRBC units (p values < .05).

A retrospective review of embolization for PPH conducted at two Korean hospitals between 2006 and 2011 included data from 176 women (mean age = 33.9 years, 105 vaginal births, 73 primiparous) undergoing 189 embolization procedures.[105] Women who had cesarean births were significantly older than those with vaginal births (p = 0.035). Twenty-five cases of PPH were secondary, and overall, PPH was most frequently due to atony (57.6% of cases). Embolizations were done with gelatin sponge, particles, coils, or a combination. Bleeding successfully stopped after embolization in 158 cases (89.7%). Twelve women needed a repeat embolization, 11 needed a surgical procedure (five hysterectomies), and one needed vascular ligation.

One retrospective case series reporting data from a U.S. tertiary care hospital included 76 women (mean age = 33 years, 18 cesarean births) who had PPH.[99] Ten women were excluded from analysis because they had interventions prior to or concomitant with embolization or had an ectopic pregnancy. Embolization (performed with gelfoam and/or coils) successfully controlled bleeding without further procedures or surgeries in 63 of 66 women (95%). Three women required a subsequent hysterectomy. Embolization was successful in 98% (49/50) of the women with primary PPH and 88% (14/16) of the women who had secondary PPH (presentation 4 to 72 days post-birth, mean = 25 days). Women required a mean 0.4 units PRBC after embolization, and the mean hospital stay overall was 3.5 days (range 1-12 days). Among those with primary PPH, mean hospital stay was 3.9 days and was 2 days in the secondary PPH group.

One Japanese retrospective case series included data from 55 women (median age 33 years, 34 vaginal births, median parity = 1, range 0-3) with PPH treated with embolization between 2003 and 2013.[104] Most cases of PPH were due to atony (n = 41), and all women had initial conservative management including uterine massage, packing, and uterotonics. The embolization material was gelatin sponge, and embolization successfully stopped bleeding without an additional intervention in 46 women (84%). Bleeding stopped in two women who went on to hysterectomy after embolization due to uterine necrosis. The study does not report the interventions performed for the other seven women who required another procedure after embolization. Advanced maternal age and retained placenta were independent risk factors for failure of embolization (OR 1.46, 95% CI: 1.12 to 2.18 and OR 15.48, 95% CI: 2.04 to 198.12, respectively).

One French retrospective case series reported outcomes among 102 women (mean age 31.8 ± 5.9 years, 82 vaginal births, mean parity 2.01 ± 1.11) undergoing embolization at an academic medical center between 1998 and 2002.[103] Women may have had medical management including uterine massage and oxytocin prior to embolization. PPH was due to atony in 43 percent of women. Mean ICU stay was 2.07 ± 1.2 days, and units of whole blood, platelets, and fresh frozen plasma transfused ranged from 0 to 31. Embolization was successful without further surgical procedure in 59 women. Fourteen women required a second embolization to control bleeding, and 29 required surgery (nine laparotomies, two uterine artery ligations, seven

hysterectomies, 11 genital tear repairs plus subsequent embolization). Embolization was more successful in women with vaginal births (success in 63/81 vaginal births) compared with cesarean (success in 11/21 cesarean births, p = 0.017; OR for poor outcome associated with cesarean birth: 0.16, 95% CI: 0.04 to 0.5). Atony as the cause of PPH was also associated with greater success (success in 39/44 women; OR 4.13, 95% CI: 1.35 to 12.6).

Another retrospective case series conducted in a French tertiary care hospital reported on success rates for embolization in 98 women with PPH (33 considered "major" PPH, defined as change in peripartum hemoglobin level of ≥ 4 g/dL and/or hemodynamic instability and/or hypovolemic shock).[102] All women had treatment (resuscitation, uterotonics, manual placenta removal, surgical repair of tears as indicated) prior to embolization, and most cases of PPH were due to atony. Forty-five women had vaginal births, 14 had instrumented vaginal births, and 28 had cesarean births. Embolization was performed with gelatin sponge pledgets and coils as needed. Twenty-six women had a surgical procedure prior to embolization (vaginal or cervical suture, n = 17; uterine suture, n = 1; artery ligation, n = 3; hysterectomy, n = 9; packing, n = 2). Embolization successfully controlled bleeding in 90 of the 98 cases of PPH. Women in whom PPH failed to control bleeding required subsequent uterine suture (n = 4), laparotomy for vessel ligation (n = 2), and repair of genital tears (n = 2). Embolization plus uterine sutures failed in three cases, leading to hysterectomy.

In another large retrospective case series from Korea, 257 women (mean age = 32 years, 162 primiparas, 112 cesarean births) underwent embolization for PPH between 2004 and 2011.[100] PPH was most often caused by atony (n = 156 cases), and embolization materials included gelatin sponge, N-butyl-cyanoacrylate, or both. Nineteen cases of PPH were secondary. Nine women had a surgical procedure prior to embolization (eight hysterectomies, one artery ligation). Embolization successfully stopped bleeding in 233 women overall (91%). In the 248 women for whom embolization was the first second-line procedure, embolization was successful in 226 (91%). Women for whom embolization failed to control bleeding were more likely to have DIC (OR 6.57, 95% CI: 1.60 to 26.9, p = .009), and the rate of major complications was significantly greater among failed embolizations vs. successful (9.4% vs. 37.5%, p < .01).

Finally, one retrospective case series conducted in Korea included 52 women (mean age 31.6 years, range=25-40) with secondary PPH.[107] Bleeding began a median 10 days post-birth (range 1-39 days) and was most frequently related to retained placental tissue (44.2% of cases). All women had initial conservative management prior to embolization, which was conducted with gelatin particles, N-butyl cyanoacrylate, and/or microcoils. Embolization successfully controlled bleeding without further procedure or surgery in 47 of 52 women (90.4%). In univariate analyses, successful control of bleeding was not associated with obstetric characteristics, mode of birth, onset of bleeding post-birth, length of stay, amount of transfusion, or cause of bleeding (all p values=ns). One woman needed repeat embolization, one had further conservative management, and three women had subsequent hysterectomy. In the 44 women available for followup at a mean of 12.6 months post-procedure (range 1-62 months), all women had regular menstruation and five had pregnancies, although the number desiring pregnancy was not reported. The investigators note that no complications occurred. Table 11 outlines key outcomes in all studies of embolization.

Table 11. Key outcomes in studies of embolization

Study Design	Author, Year Country Groups (n) Quality	Age, Years Parity	Key Outcomes
Cohort Studies	Sentilhes et al. 2010[92-94] France **G1:** Embolization alone (58 at followup) **G2:** Embolization + vessel ligation and/or suture (10 at followup) Quality: Fair	**Age** NR **Parity** NR	•Bleeding not controlled by embolization in 11/101 women •7 women required hysterectomy •100% percent of failed cases had blood loss greater than 1500 ml ($p < .001$) •90% of women in whom embolization failed received more than 5 units PRBC compared with 43% of successful embolizations ($p < .004$). •Cases of failed embolization were more likely to be complicated by wound infection (27% vs. 6 % in the success group, $p < .04$)
	Chaleur et al. 2008[95] France **G1:** Embolization (41) **G2:** Hysterectomy (6) **G3:** Embolization and hysterectomy (5) Quality: Fair	**Age, mean ± SD** **G1:** 29.2 ± 4.65 **G2:** 30.1 ± 4.11 **G3:** 36.6 ± 4.56 **Primiparous, n (%)** **G1:** 9 (21.9) **G2:** 2 (33) **G3:** 0	• All patients had had medical management prior to procedure • 5 second-line hysterectomies (G3) were performed due to embolization failure • Among 16 women in G1 desiring future pregnancy, all were able to conceive 1-11 months after beginning to try to conceive
	Ledee et al. 2001[96] France **G1:** Hysterectomy (10) **G2:** Bilateral hypogastric artery ligation (48) **G3:** Embolization (9) Quality: Fair	**Age** NR **Parity** NR	• All women underwent bimanual compression, oxytocin and prostaglandin IV administration, and resuscitation before further intervention • Embolization was primary procedure in 8 cases and secondary in 1. In 3 cases, an additional intervention was needed to control bleeding
	Chan et al. 2013[79] Hong Kong **G1:** Oxytocin only (33) **G1a:** Oxytocin ± other uterotonics (16) **G2:** Uterine compression sutures (21) **G3:** Embolization alone (4) **G4:** Uterine balloon tamponade (11) **G5:** Two second-line therapies (6) Quality: Fair	**Age, mean ± SD** **G1-G5:** 33.3±4.6 **Parity, mean ± SD** **G1-G5:** 21.6±3.2	• Mean estimated blood loss in 4 women undergoing only embolization=5.1 liters (range 1.5-15 liters); mean PRBC transfused=20 packs (range 2-32) •3 women (75%) admitted to ICU •Embolization successful in 3/5 women; 1 woman required subsequent hysterectomy to control bleeding

Table 11. Key outcomes in studies of embolization (continued)

Study Design	Author, Year Country Groups (n) Quality	Age, years Parity	Key Outcomes
Cohort Studies	Kayem et al. 2011[77, 82] UK **G1:** Uterine compression sutures (199) **G2:** Pelvic vessel ligation (20) **G3:** Interventional radiology (embolization, arterial balloon) (22) **G4:** RFVIIa (31) Quality: Fair	**Age** **< 35, n (%)** **G1:** 128 (64) **G2:** 12 (60) **G3:** 12 (55) **G4:** 21 (68) **> 35, n (%)** **G1:** 71 (36) **G2:** 8 (40) **G3:** 10 (45) **G4:** 10 (32) **Nulliparous, n (%)** **G1:** 92 (46) **G2:** 3 (15) **G3:** 6 (27) **G4:** 9 (29)	• Among all women receiving these second-line therapies, 205 had had prior uterotonic therapy (oxytocin, ergometrine, carboprost tromethamine, misoprostol) alone, 67 had had uterotonics and intrauterine tamponade • 19 women had embolization only, 2 had occlusion with intra-arterial balloon and embolization, and 1 had balloon only • Interventional radiology after uterotonics alone was successful as first second-line therapy in 12/14 women; 2 went on to hysterectomy. • Interventional radiology was successful as first second-line therapy after uterotonics+ tamponade in 7/8 cases. 1 women required an additional (unstated) intervention • Overall, 71 women had hysterectomy(47 after failure of second-line therapy, 24 after failure of uterotonics/ tamponade and subsequent treatments) •
	Kim et al. 2013[49] Korea **G1**: Embolization (60) **G2:** Hysterectomy (61) Quality: Fair	**Age, mean ± SD** **G1:** 31.0 ± 4.8 **G2:** 31.8 ± 4.0 **Primiparous, n** **G1:** 17 **G2:** 22	• Primary cause of hemorrhage in both groups = atony • 8 women in study were Jehovah's Witnesses-4 in each group • All women in G1 and G2 received uterotonics (G1: oxytocin = 100%, sulprostone = 68%, Ervin = 36%; G2: oxytocin = 100%, sulprostone = 60.6%; Ervin = 19.6%). 25 women in G1 and 36 in G2 required transfusion prior to procedure • Embolization was successful in 96% of G1; 2 women required hysterectomy due to continued bleeding from cesarean uterine wound and vaginal and cervical lacerations • Mean days in ICU in G1 = 5 days (5 women). ICU days not reported in G2 but 39 women required ICU care; LOS in hospital was 8.60 days in G1 and 11.5 in G2
Case-Control	Hardeman et al. 2010[91] France **G1**: Embolization (53) **G2:** No embolization (106) Quality: Poor	**Age, mean (range)** **G1:** 34 (19-44) **G2:** NR **Parity, mean (range)** **G1:** 2.02 (1-5)	• 43 cases of PPH due to atony • Embolization successful in controlling bleeding without additional procedure or surgery in 50/53 cases • Three women required a second embolization, which was successful in all cases

Table 11. Key outcomes in studies of embolization (continued)

Study Design	Author, Year Country Groups (n) Quality	Age, years Parity	Key Outcomes
Case Series	Inoue et al. 2014[108] Japan G1a: Emergency embolization (161) G1b: Prophylactic embolization (50)	**Age, mean ± SD** **G1a:** 32.4 **± 4.8** **G1b:** 30.1 ± 6.1 **Primiparous, n (%)** **G1a:** 76 (47.2) **G1b:** 25 (50)	• One of more embolization procedures successfully controlled bleeding in 91.9% of G1a and 96% of G1b • 12 women required more than on embolization procedure, and 18 had hysterectomy • Among 113 women followed for 3 months to 3 years post-procedure, 106 resumed menses
	Cheong et al. 2014[106] Korea G1: Embolization (117)	**Age, mean** **G1:** 32 **Primiparous, n (%)** **G1:** 56 (47.9)	• Among 117 women undergoing embolization, 19 (16.2%) had secondary PPH • 36.8% of women required >10 red blood cell units • 14 women required another embolization and/or hysterectomy to control bleeding
Case Series	Fiori et al. 2009[97] France G1: Embolization (56)	**Age, median** **G1: 33** **Parity, median (range)** **G1:** 2 (1-4)	• Embolization successful in 55/56 cases (98%) • Regular menses in 30/34 available for followup
	Gaia et al. 2009[98] France G1: Embolization (113)	**Age, mean** **G1:** 33 **Parity** NR	• Embolization successfully controlled bleeding in 111 cases; 2 women required hysterectomy post-embolization • 99/107 with available fertility data had resumed menses, normal menses in 66 (menorrhagia = 10, oligomenorrhea = 23, amenorrhea = 6) • 29 women desired future pregnancy, 18 conceptions (mean conception delay 11 months from decision to try to conceive)
	Lee et al. 2012[101] Korea G1: Embolization (251)	**Age, mean ± SD** **G1:** 32 ± 4 **Nulliparous, n (%)** **G1:** 139 (55)	• 22 women had surgical procedure before embolization; embolization successful in controlling bleeding as the first second-line procedure in 201/229 women (88%) • Success rate among all 251 women = 86.5% • Success associated with vaginal birth, absence of DIC, absence of massive transfusion (all p values < .05) • Among 113 women with ≥ 6 months followup, 110 had regular menses
	Lee et al. 2009[105] Korea G1: Embolization (176)	**Age, mean** **G1:** 33.9 **Primiparous, n** **G1:** 73	• Bleeding successfully stopped after embolization in 158 cases (89.7%) • 12 women had repeat embolization, 11 had surgical procedure (5 hysterectomies), and 1 had vascular ligation (some women had more than 1 procedure)

Table 11. Key outcomes in studies of embolization (continued)

Study Design	Author, Year Country Groups (n) Quality	Age, years Parity	Key Outcomes
	Ganguli et al. 2011[99] US G1: Embolization (66)	**Age, mean** **G1:** 33 **Parity, mean (range)** **G1:** 1.8 (0-9)	• Embolization successfully controlled bleeding without further procedures or surgeries in 63 of 66 women overall (95%). • Embolization successful in 14/16 women with secondary PPH (88%) • Embolization successful in 49/50 cases of primary PPH (98%) • Women required a mean 0.4 units PRBC after embolization • Mean hospital stay overall was 3.5 days (range 1-12 days)
	Yamasaki et al. 2013[104] Japan G1: Embolization (55)	**Age, mean** **G1:** 33 **Parity, median (range)** **G1:** 1 (0-3)	• Successful controlling of bleeding without further procedures or surgeries in 46/55 • Bleeding stopped in two women who went on to hysterectomy after embolization due to uterine necrosis • Advanced maternal age (OR 1.46 95% CI: 1.12 to 2.18) and retained placenta were independent risk factors for failure of embolization (15.48 95% CI: 2.04 to 198.12)
	Touboul et al. 2008[103] France G1: Embolization (102)	**Age, mean ± SD** **G1:** 31.8 ± 5.9 **Parity, mean ± SD** **G1:** 2.01 ± 1.11	• Embolization successful without further surgical procedure in 59/102 cases • Embolization more successful in women with vaginal births (success in 63/81) compared with cesarean (success in 11/21, p = 0.017; OR for poor outcome associated with cesarean birth: 0.16, 95% CI: 0.04 to 0.5) • Atony associated with greater success (success in 39/44 women; OR 4.13, 95% CI: 1.35 to 12.6) • Mean ICU stay 2.07 ± 1.2 days • Units of whole blood, platelets, and fresh frozen plasma transfused ranged from 0 to 31
Case Series	Poujade et al. 2012[102] France G1: Embolization (98)	**Age, mean ± SD** Successful embolization: 32.3 ± 5.7 Failed embolization: 31.2 ± 6.4 **Parity, mean ± SD** Successful embolization: 2.1 ± 1.3 Failed embolization: 2.1 ± 1.7	• Embolization successfully controlled bleeding in 90 of the 98 women, 26 of whom also had surgical procedure prior to embolization • Women in whom PPH failed to control bleeding required subsequent uterine suture (n = 4), laparotomy for vessel ligation (n = 2), and repair of genital tears (n = 2). Embolization plus uterine sutures failed in three cases, leading to hysterectomy
	Kim et al. 2013[100] Korea G1: Embolization (257)	**Age, mean** **G1:** 32 **Primiparous, n** **G1:** 162	• Embolization successful in 233/257 women overall • Success rate in the 248 women for whom embolization was the first second-line procedure = 91% • Overall, women for whom embolization failed to control bleeding were more likely to have DIC (OR 6.57, 95% CI: 1.60 to 26.9, p = .009)

Table 11. Key outcomes in studies of embolization (continued)

Study Design	Author, Year Country Groups (n) Quality	Age, years Parity	Key Outcomes
	Park et al. 2014[107] Korea G1: Embolization for secondary PPH (52)	**Age, mean (range)** **G1:** 31.6 (25-40) **Parity, primiparous, n (%)** **G1:** 35 (67.3)	• Mean time to onset of PPH post-birth=13.3 days (range 1-39 days) • Most cases due to retained placenta (n=23) • Bleeding successfully controlled in 47/52 women. One woman required repeat embolization, 3 had hysterectomy, 1 had conservative management • In women followed up for 1-62 months, normal menstruation returned in 100%; 5 subsequent pregnancies • Success of embolization not significantly associated with maternal characteristics, mode of birth, bleeding onset post-birth, length of stay, cause of bleeding or transfusion requirements

Abbreviations: CI = confidence interval; DIC = disseminated intravascular coagulation; G = group; ICU =intensive care unit; LOS = length of stay; n = number; NR = not reported; OR = odds ratio; PRBC = packed red blood cells; PPH = postpartum hemorrhage; SD = standard deviation

Embolization Success Rates

As noted earlier, we tabulated success rates reported in studies of embolization in which we could extract data on the effectiveness of the procedure as the initial second-line procedure (i.e., women routinely had first-line conservative management prior to the procedure). Some studies only reported rates in combination with other procedures/interventions or after an initial procedure or intervention, thus not all studies addressing embolization are represented. Success rates for embolization, which was performed using different materials and on different arteries across studies, ranged from 58 to 98 percent (success in 1251/1435 women), with a median rate of 89 percent (Table 12).

Table 12. Success rates after embolization as the initial second-line procedure

	Study Country	Quality	Total N Treated	Total N Successful	% Success
Cohort Studies	Kim 2013[49] Korea	Fair	60	58	96.67
	Chan 2013[79] Hong Kong	Fair	5	3	60
	Zwart 2010[109] Netherlands[a]	Fair	114	94	82.46
	Chaleur 2008[95] France	Fair	46	41	89.13
	Ledee 2001[96] France	Fair	8	5	62.50
Case-Control	Hardeman 2010[91] France	Poor	53	50	94.34
Case Series	Cheong 2014[106] Korea	Poor	117	103	88.03
	Yamasaki 2013[104] Japan	Poor	55	46	83.64
	Lee 2013[105] Korea	Poor	176	158	89.77
	Kim 2013[100] Korea	Poor	248	226	91.13
	Sentilhes 2011[94] France	Poor	100	89	89.00
	Ganguli 2011[97] US	Poor	66	63	95.45
	Lone 2010[110] U.K.	Poor	229	201	87.77
	Fiori 2009[97] France	Poor	56	55	98.21
	Touboul 2008[103] France	Poor	102	59	57.84
	Total	NA	1435	1251	Range: 58-98% Median Success Rate: 89.00%

Note: Success = control of bleeding without further procedure or surgery
[a]Outcomes of this study described in section on embolization and hysterectomy
Abbreviations: N = number; NA = not applicable

Studies of Surgical Interventions

Uterine Compression Sutures

Key Points

- No good quality studies addressed uterine compression sutures.

- In one fair-quality prospective cohort study, sutures were effective in controlling bleeding without further procedures or surgeries in 140 of 199 women, all of whom received uterotonics and/or intrauterine balloon tamponade prior to sutures (70% success rate). Sutures were successful in 15 of 21 women in another study (71%).
- Strength of the evidence is insufficient for the success of uterine compression sutures in controlling bleeding given the few studies available.

Overview of the Literature

Three studies addressed uterine compression sutures, one prospective cohort study (reported in two publications), one retrospective cohort study, and two retrospective case series.[77, 79, 82, 111] The prospective cohort study, rated as fair quality, reported data collected via the UKOSS.[77, 82] Two-hundred and eleven cases of PPH were treated with sutures in the study period. One retrospective cohort study reported on 26 women with massive PPH in Hong Kong.[79] The case series reported data from interventions performed by a single surgeon in Argentina[111] The study reports on 539 cases of PPH treated with ligation or suture and does not clarify how many women received each technique. Two additional studies of compression sutures reported harms outcomes only and are described under KQ3.[62, 66]

Detailed Analysis

One fair quality prospective cohort study reported UKOSS data collected between 2007 and 2009.[77] The study reported an analysis of outcomes of second-line therapies (i.e., interventions received after uterotonics alone or with intrauterine tamponade via balloon or packing. Among women who were initially treated with uterotonics alone, 161 went on to require compression sutures, which were successful in controlling bleeding in 120 cases (74.53% success rate). Twenty-five women required hysterectomy (without another intervening procedure) after sutures. Three women had ligation after suture; seven had either embolization or balloon placement (three of these went on to require hysterectomy); and six had rFVIIa (four ultimately required hysterectomy). Thus, compression sutures with or without subsequent procedures failed to control bleeding in 32 women, leading to hysterectomy. Among 38 women who required sutures after failure of uterotonics plus intrauterine tamponade, 14 went on to require hysterectomy (eight immediately, two after ligation and/or rFVIIa, two after interventional radiology and/or rFVIIa, and two after rFVIIa alone). Overall (among women who received uterotonics and intrauterine tamponade), sutures successfully controlled bleeding in 70 percent of cases (n = 140/199 cases)[77]

Another publication from this study,[82]which includes data from the majority (n = 199/211) of the participants who received sutures described above,[77] reported on 211 women receiving compression sutures (B-lynch, n = 79; modified B-lynch, n = 48; other, including square sutures or combination sutures, n = 32; unspecified, n = 52) to treat PPH in the study period. The most common reason for the hemorrhage was uterine atony (n = 129, 61%). As in the first study, all women had prior uterotonic treatment either for prophylaxis or treatment of PPH. Ten women had embolization or ligation, 41 had uterine balloon or packing, and two had rFVIIa prior to sutures. Embolization or ligation following sutures was required in 18 cases, rFVIIa in nine, and uterine packing or balloon in 25. Overall, sutures as the initial second-line therapy failed to control bleeding, leading to subsequent hysterectomy, in 46 cases and successfully controlled hemorrhage in 153 cases (sutures were not the initial second-line therapy in 12 cases). Fifty-two women (25%) of all women (those who received sutures as the initial second-line therapy and

those who received sutures in combination with or after another second-line procedure) required hysterectomy to control bleeding. More women who required an additional second-line intervention went on to require hysterectomy (OR 3.09, 95% CI: 1.46 to 6.56).

In a fair quality retrospective cohort study (see full description in Oxytocin and Other Uterotonics section), 42 of 91 women with massive PPH required second-line procedures or surgeries to control bleeding.[79] A total of 26 women received sutures (including B-Lynch, Hwu, Cho square, and Hayman), 21 of whom received sutures alone, and five of whom also had sequential embolization. In the 21 women receiving sutures alone, bleeding was successfully controlled in 15 (71.4%). Six women required subsequent hysterectomy. None of the women who had both sutures and embolization required hysterectomy. One retrospective case series reported data on 539 cases of PPH treated with either uterine sutures or arterial ligation in hospitals in Argentina between 1989 and 2009.[111] Sutures were placed by a single surgeon, and suture types included B-lynch, Cho, Hayman, and Pereira. The number of sutures compared with ligations, and potential overlap between interventions, is not clear. Overall, the study reports cessation of bleeding in 499 cases. Forty women required hysterectomy, but whether this occurred after suture or ligation or a combination is not clear. B-lynch sutures were reported as successful in 81 of 86 cases, Hayman sutures in 34 of 37, Cho sutures in 281 of 313 cases, and Pereira in 11 of 11 cases, but again, prior or subsequent interventions are not clear. Because the number of women who received sutures as the initial second-line intervention is clearly reported in only two studies,[77, 79, 82] we do not include a success rate table for uterine compression sutures. Table 13 outlines data from studies with comparison groups.

Table 13. Key outcomes in studies of uterine compression sutures

Author, Year Country Study Design Groups (n) Quality	Age, Years Parity	Key Outcomes
Kayem et al. 2011[77, 82] UK Cohort study **G1:** Uterine compression sutures (199) **G2:** Pelvic vessel ligation (20) **G3:** Interventional radiology (embolization, arterial balloon) (22) **G4:** RFVIIa (31) Quality: Fair	**Age** **< 35, n (%)** **G1:** 128 (64) **G2:** 12 (60) **G3:** 12 (55) **G4:** 21 (68) **> 35, n (%)** **G1:** 71 (36) **G2:** 8 (40) **G3:** 10 (45) **G4:** 10 (32) **Nulliparous, n (%)** **G1:** 92 (46) **G2:** 3 (15) **G3:** 6 (27) **G4:** 9 (29)	• Among all women receiving these second-line therapies, 205 had had prior uterotonic therapy (oxytocin, ergometrine, carboprost tromethamine, misoprostol) alone, 67 had had uterotonics and uterine tamponade • Compression sutures used more often in PPH caused by atony (63%, interventional radiology used more often for cases related to genital or ligament bleeding or clotting abnormalities) • Sutures as the first second-line therapy were successful in 120/161 women who received prior uterotonics only; 25 required immediate hysterectomy, 3 required ligation (no subsequent hysterectomy), 7 interventional radiology (3 subsequent hysterectomies), 6 rFVIIa (4 subsequent hysterectomies). In total 32 went on to hysterectomy • Among women who received uterotonics plus intrauterine tamponade, sutures were successful in 20/38 cases • Overall (across all groups) 71 women had hysterectomy(47 after failure of second-line therapy, 24 after failure of tamponade and subsequent treatments)

Table 13. Key outcomes in studies of uterine compression sutures (continued)

Author, Year Country Groups (n) Quality	Age, years Parity	Key Outcomes
Chan et al. 2013[79] Hong Kong Cohort study **G1:** Oxytocin only (33) **G1a:** Oxytocin ± other uterotonics (16) **G2:** Uterine compression sutures alone (21) **G3:** Embolization alone (4) **G4:** Uterine balloon tamponade (11) **G5:** Two second-line therapies (6) Quality: Fair	**Age, mean ± SD** **G1-G5:** 33.3±4.6 **Parity, mean ± SD** **G1-G5:** 21.6±3.2	• 11/26 women receiving sutures required subsequent hysterectomy or embolization (58% success rate) • Estimated blood loss among 21 women who received sutures not followed by hysterectomy=2.0 liters (range 1.5-20.0); median 4 units (range 0-77) RBC transfused. Median LOS=7 days (range: 4-31); 38.1% required ICU admission
Palacios-Jaraquemada 2011[111] Argentina Case series G1: Arterial ligation or uterine suture (539)	**Age** NR **Parity** NR	• Review of 539 cases of ligation or suture for PPH conducted by single surgeon • Techniques successful in controlling bleeding in 499 cases; 40 women required subsequent hysterectomy • Suture (B-lynch, Hayman, Cho, Pereira) appears to have been successful in 431 cases but denominator not clearly presented, nor are procedures received prior to or in conjunction with sutures clearly reported

Abbreviations: G = group; ICU = intensive care unit; LOS = length of stay; n= number; NR = not reported; PPH = postpartum hemorrhage; RBC = red blood cells; rFVIIa = recombinant activated factor VIIa; SD = standard deviation

Uterine and Other Pelvic Artery Ligation

Key Points

- No good quality studies addressed uterine and other pelvic artery ligation (hereafter, ligation).
- Rates of successful control of bleeding without further procedures or surgeries ranged from 36 to 96 percent with a median of 92 percent in three studies.
- Strength of the evidence is low for ligation controlling bleeding without further procedures or surgeries.

Overview of the Literature

Five studies reported data on ligation.[77, 96, 111-113] Studies include two fair quality cohort studies, one conducted in the U.K.,[77] and one in France.[96] In the prospective study of ligation of pelvic vessels (unspecified), 25 percent of cases of PPH were due to atony, 30 percent due to uterine tears, 20 percent due to accreta, and 25 percent due to other causes, and most women were under age 35 (60%).[77] Nearly 40 percent of cases of PPH in the retrospective cohort study, which included cases of bilateral hypogastric artery ligation, were due to atony, and participant age was not reported.[96] Studies primarily reported rates of success for ligation. Three

retrospective case series also reported data on ligation: one reported cases of bilateral uterine artery ligation or selective pelvic pedicle ligation, performed by a single surgeon in Argentina,[111] one reported on outcomes after uterine artery ligations over 30 years in a U.S. center,[112] and the final study reported on triple uterine artery ligation conducted over 9 years in France[113]. Case series primarily reported success rates and provide little data on participant characteristics.

Detailed Analysis

Outcomes of ligation were reported in a fair quality UKOSS cohort study described fully above.[77] Fourteen women required vessel ligation as second-line procedure following uterotonics alone. Ligation successfully controlled bleeding in five women, and five required sutures (followed by hysterectomy in three), two required rFVIIa (followed by hysterectomy in one), and two required hysterectomy immediately after ligation. Six women had ligation after uterotonics and intrauterine tamponade failure, and three went on to hysterectomy to control bleeding (two after sutures plus rFVIIa, one after sutures alone).[77]

Another fair quality retrospective cohort study reported data from women with PPH admitted to a French ICU between 1983 and 1998 and included some data on future fertility.[96] Sixty-one cases of PPH occurred in the time period, 48 of which were treated with bilateral ligation of the hypogastric arteries, eight with embolization using gelatin sponge or coils, and five with hysterectomy as the primary procedure. Across groups, 39 women required transfusion of four or more blood units. Most of the 56 women requiring either ligation or embolization as a primary procedure had cesarean births (n = 41). The women requiring primary hysterectomy all had hemorrhagic shock. The primary procedure failed in eight cases (described under each intervention). Among the 48 women undergoing primary ligation, four required hysterectomy to correct bleeding (92% success rate for primary ligation). This study also reported intervention by cause of PPH: 20 women had PPH due to atony and received ligation as the primary intervention. Nineteen of these 20 had cesarean births (elective or emergency). Ligation was successful in controlling bleeding in 18 of 20 cases, with two women requiring subsequent hysterectomy (one vaginal birth and one cesarean birth). Eleven women (10 cesarean births) had PPH due to accreta. Ten ligations were successful in this group; one woman who had a cesarean birth required hysterectomy and subsequently died. Seven women had PPH due to genital tract laceration (seven vaginal births, 4 instrumented), and ligation was successful in all cases. Six women had placental abruption (six cesarean births), and ligation was successful in all cases. Two women had uterine rupture or pre-rupture (two cesarean births) with bleeding controlled successfully by ligation in both cases. Two women had PPH due to uterine artery injury, presumably incurred during cesarean birth. Ligation successfully controlled bleeding in one case, and the other women died. Finally, one woman with a cesarean birth had PPH related to placenta previa. Ligation failed to control bleeding, leading to subsequent hysterectomy.[96]

One French retrospective case series included 56 women with PPH (median age=31.5, median parity=0.5) who underwent triple uterine artery ligation with (n=43) or without (n=13) concomitant uterine compression sutures.[113] The PPH treatment protocol in the hospital studied included oxytocin followed by sulprostone followed by ligation as needed, sutures as needed, and other procedures including hysterectomy or embolization if bleeding remained uncontrolled. Most cases (80.4%) of PPH were due to atony. All women received initial oxytocin, and 83.9 percent also received sulprostone. Overall, ligation alone and ligation with suture controlled bleeding in 51 of 56 women (91.1%). Four women had a subsequent hysterectomy and one required embolization. Failure of ligation with or without suture occurred more often in cases of

PPH due to accreta (4 cases) compared with atony (1 case, p=.0004, [OR for failure of ligation ± suture=15.07, 95% CI: 1.12 to 201.9, p=.041]). Ligation with or without suture was also significantly less likely to fail when women had first received sulprostone (p=.025).

One retrospective case series reported data on 539 cases of PPH treated with either uterine sutures or arterial ligation in hospitals in Argentina between 1989 and 2009.[111] Interventions were conducted by a single surgeon. The number of sutures compared with ligations, and potential overlap between interventions, is not clear. Overall, the study reports cessation of bleeding in 499 cases. Forty women required hysterectomy, but whether this occurred after suture or ligation or a combination is not clear. Ligation was reported as successful in 68 of 105 cases, but again, prior or subsequent interventions are not clear.

Another retrospective case series reviewed data from 29 years (1963-1992) of ligations performed in a U.S. hospital.[112] Women received initial medical therapy including uterotonics, and 265 underwent bilateral uterine artery ligation after cesarean birth. Atony accounted for most cases of PPH across the study period (n = 135), and the rate of PPH treated with ligation declined across decades (n = 124, 60, 81 per each decade from 1963-1992). Overall, ligation failed to control bleeding in 10 women, eight of whom had abnormal placentation. Six of these 10 women had total hysterectomies, three had sutures, and one had ovarian artery ligation. Most treatment failures (n = 7) occurred in the first decade reviewed. The study reports that menstrual flow was not affected, but method and timing of followup is not clear. Table 14 outlines key outcomes of studies.

Table 14. Key outcomes in studies of uterine and other pelvic artery ligation

Study Design	Author, Year Country Groups (n) Quality	Age, Years Parity	Key Outcomes
Cohort Studies	Kayem et al. 2011[77, 82] UK **G1:** Uterine compression sutures (199) **G2:** Pelvic vessel ligation (20) **G3:** Interventional radiology (embolization, arterial balloon) (22) **G4:** rFVIIa (31) Quality: Fair	**Age** **< 35, n (%)** **G1:** 128 (64) **G2:** 12 (60) **G3:** 12 (55) **G4:** 21 (68) **> 35, n (%)** **G1:** 71 (36) **G2:** 8 (40) **G3:** 10 (45) **G4:** 10 (32) **Nulliparous, n (%)** **G1:** 92 (46) **G2:** 3 (15) **G3:** 6 (27) **G4:** 9 (29)	• Among all women receiving these second-line therapies, 205 had had prior uterotonic therapy (oxytocin, ergometrine, carboprost tromethamine, misoprostol) alone, 67 had had uterotonics and intrauterine tamponade • Ligation as the initial second-line therapy was successful in 5/14 women, 2 went on to immediate hysterectomy, 5 required sutures (3 subsequent hysterectomies), 2 required rFVIIa (1 subsequent hysterectomy). In total, 6 women had hysterectomies. • Overall, 71 women had hysterectomy(47 after failure of second-line therapy, 24 after failure of uterotonics/ tamponade and subsequent treatments)
	Ledee et al. 2001[96] France **G1:** Hysterectomy (10) **G2:** Bilateral hypogastric artery ligation (48) **G3:** Embolization (9) Quality: Fair	**Age** NR **Parity** NR	• All women underwent bimanual compression, oxytocin and prostaglandin IV administration, and resuscitation before further intervention • Ligation was primary procedure in 48 women and secondary in 1; ligation failed to control bleeding in 4 cases, which all required hysterectomy
Case Series	Blanc et al. 2012[113] France G1: Triple uterine artery ligation (56)	**Age, median (range)** **G1:** 31.5 (17-44) **Parity, median (range)** **G1**: 0.5 (0-8)	• Mean red blood cells =4.1 units, mean 2.25 units of fresh frozen plasma. • 7 women required ICU admission • Ligation with or without concomitant Cho sutures controlled bleeding in 91.1% of women (51/56)
	Palacios-Jaraquemada 2011[111] Argentina G1: Arterial ligation or uterine suture (539)	**Age** NR **Parity** NR	• Review of 539 cases of ligation or suture for PPH conducted by single surgeon • Techniques successful in controlling bleeding in 499 cases; 40 women required subsequent hysterectomy Ligation appears to have been successful in 68 cases but denominator not clearly reported, nor are procedures received prior to or in conjunction with ligation
	O'Leary 1995[112] US **G1:** Uterine artery ligation (265)	**Age** NR **Parity** NR	• 265 cases of PPH treated over 30 years; ligation failed in 10 cases leading to hysterectomy (6 cases), placental site ligation (3 cases), ovarian artery ligation (1 case) • Menstrual flow reportedly not affected but followup not clearly described

Abbreviations: G = group; ICU = intensive care unit; n = number; NR = not reported; PPH = postpartum hemorrhage; rFVIIa = recombinant activated factor VIIa

Ligation Success Rates

Ligation was performed on multiple sites (e.g., internal iliac, uterine arteries) within and across studies, and rates of successful control of bleeding ranged from 36 to 96 percent with a median of 92 percent (Table 15).

Table 15. Success rates after uterine and other pelvic artery ligation as the initial second-line procedure

Study Design	Study Country	Quality	Total N Treated	Total N Successful*	% Success[a]
Cohort Studies	Kayem 2011[77] UK	Fair	14	5	35.71
	Ledee 2001[96] France	Fair	48	44	91.67
Case Series	O'Leary 1995[112] US	Poor	265	255	96.23
	Total	NA	422	372	Range: 36-96% Median success rate: 91.67%

[a]Success = control of bleeding without further procedure or surgery
Abbreviations: NA = not applicable

Embolization and Hysterectomy

Key Points

- One study compared embolization and hysterectomy.
- Embolization failed to control bleeding in 20 cases (18%), leading to 17 hysterectomies.
- Women in the hysterectomy group had significantly more ICU admissions compared with the embolization group (RR 1.6, 95% CI: 1.1 to 2.4) and had a greater median length of stay (LOS, 10 days vs. 7 days).
- Strength of the evidence was low for embolization controlling bleeding without additional procedures or surgeries and insufficient for the effects of hysterectomy.

Overview of the Literature

One fair quality prospective cohort study conducted in the Netherlands[109] compared outcomes following embolization or hysterectomy. The 205 women in the study most frequently had PPH related to atony (33%), and 43.4 percent were age 40 or older.

Detailed Analysis

One fair quality cohort study (Table 16) conducted in the Netherlands (LEMMoN: Nationwide Study into Ethnical Determinants of Maternal Morbidity in the Netherlands) prospectively collected data on severe maternal morbidity from all 98 Dutch maternity hospitals between 2004 and 2006 using a standardized collection form.[109] Two hundred and five women required either embolization (n = 114) or hysterectomy (n = 108) or both (n=17) during the study period. More than 40 percent (43.4%) of women in both groups were age 35 or older, 39.5 percent were nulliparous, and 49.8 percent had cesarean births. The most frequent cause of PPH in the embolization arm was atony (33%) and disorders of placentation (placenta previa, morbidly adherent placenta) in the hysterectomy group (35%). Women in both arms had other interventions prior to either embolization or hysterectomy including oxytocin (> 80% of both

groups); sulprostone (> 50% of both groups); plasma replacement, frozen plasma, or red blood cell transfusion (> 78% of both groups); and other surgical interventions including arterial ligation, B-lynch suture, inspection (6 women in embolization and 11 in hysterectomy groups).

Embolization failed to control bleeding in 20 cases (18%): 17 women in the embolization group also ultimately required hysterectomy to control PPH (two of these were due to uterine necrosis) and one case was resolved with balloon tamponade. In sub-analyses of these failed cases, embolization had a failure rate of 25 percent following cesarean birth. Women in the hysterectomy group required more transfusions (median 14 vs. 10, p = 0.002) and more massive transfusions (≥ eight units of red blood cells) compared with women undergoing embolization (RR 1.5, 95% CI: 1.1 to 2.1); however, timing of transfusion (i.e., pre- or post-embolization or hysterectomy) is not clear. Women in the hysterectomy group also had significantly more ICU admissions compared with the embolization group (RR 1.6, 95% CI: 1.1 to 2.4) and had a greater median LOS (10 days vs. 7 days).[109]

Table 16. Key outcomes in studies of embolization and hysterectomy

Author, Year Country Groups (n) Quality	Age, Years Parity	Key Outcomes
Zwart et al. 2010[109] **G1:** Embolization (114) **G2:** Hysterectomy (108) Quality: Fair	**Age, greater than 35, %** **G1+G2:** 43.4 **Nulliparity, %** **G1+G2:** 39.5 **Parity ≥ 3:** **G1+G2:** 7.3	• Women in both groups had additional interventions including misoprostol (13% in both groups), sulprostone (G1: 67%, G2: 86%), transfusion (98% of both groups), balloon therapy G1: 21%, G2: 30%), ligation or suture (G1: 10%, G2: 6%) • 17 women in G1 went on to have hysterectomy, 1 went on to balloon tamponade after embolization • Women in G2 required more massive transfusions (≥ 8 units red blood cells) than G1 (RR:1.5, 95% CI: 1.1 to 2.1) but the timing of transfusion (pre- or post-procedure) is not clear • Women in G2 more often admitted to ICU than women in G1 (RR: 1.6, 95% CI: 1.1 to 2.4); 67 women in G1 admitted to ICU (number NR for G2) • Median length of hospitalization for G1 = 7 days (range 1-38) vs. 10 days (range 2-65) for G2

Abbreviations: CI = confidence interval; G = group; ICU = intensive care unit; n = number; NR = not reported; RR = relative risk

Hysterectomy

Key Points

- Two of eight studies reported data to calculate control of bleeding without additional procedures or surgeries. In these two studies bleeding was controlled after hysterectomy as the initial second-line intervention in a median of 57 percent of cases.
- In one case series analyzing data by hospital volume, there was no difference in transfusion, intraoperative injury, length of stay, or medical complications based on hospital volume after adjusting for age, race, hospital size, year of diagnosis, and hospital type.
- Strength of the evidence is insufficient for all hysterectomy outcomes given the few studies available.

Overview of the Literature

Eight studies reported outcomes of hysterectomy.[45, 49, 96, 110, 114-117] Studies included two retrospective cohort studies of fair quality, one conducted in France (n=10)[96] and the other in

Korea (total n = 61).[49] Atony accounted for 75 percent of the 61 cases in one study,[49] while PPH in the 10 women undergoing hysterectomy in the second was due to genital tract lacerations in three cases, atony in three cases, placenta accreta or previa or placenta abruption in three cases, and uterine rupture in the final case. Four population-based case series also reported on outcomes following hysterectomy. Case series were conducted in Canada,[114] Denmark,[115] the U.K.,[116] and the United States.[45]. One retrospective case series reported on 55 peripartum hysterectomies conducted at one U.S. hospital.[117] Finally, another retrospective case series conducted at a university hospital in the U.K. and including data from 52 cases of PPH also reported risk factors for hysterectomy.[110]Participant ages ranged from 14 to 54 years in the studies reporting age,[45, 110, 114] and PPH was typically due to atony (range 30 to 56% of cases) or placenta previa or accreta (range: 20 to 38% of cases). One additional case series assessing hysterectomy reported only harms data and is addressed in KQ3.[64]

Detailed Analysis

In one fair quality cohort study including women undergoing embolization (results described in embolization section) or hysterectomy, all women were initially treated with uterotonics (oxytocin, ergots, prostaglandins), uterine massage, transfusion (in patients who were not Jehovah's Witnesses) and fluid replacement.[49] Among the 124 women (eight Jehovah's Witnesses) experiencing primary PPH, 61 (mean age 31.8 ± 4.0 years, 22 primiparous, 33 vaginal deliveries) underwent hysterectomy. PPH was most frequently due to atony (75.4%), and mean blood loss prior to procedure was 1288.3 ml. Significantly more women in the hysterectomy group had DIC, hypotension, elevated heart rate, greater blood loss before intervention, and greater total transfusion requirements than in the comparison arm of women undergoing embolization (all p values < 0.001). Mean total LOS was 11.5 days. Thirty-nine women in the hysterectomy group required ICU care; however, the study does not report mean ICU stay. Fifty-seven women in the hysterectomy group required transfusion after surgery, and four also required embolization post-hysterectomy.

In another fair quality retrospective cohort study reporting outcomes after embolization, ligation, or hysterectomy (see full study description in Ligation section above), five of 61 women received hysterectomy as the primary procedure. The women requiring primary hysterectomy all had hemorrhagic shock, and the procedure was not successful at controlling bleeding in four cases. One woman also required subsequent embolization. This study also reported intervention by cause of PPH: hysterectomy was the primary procedure in three cases of PPH due to genital tract laceration (three vaginal births). As noted, one woman required subsequent embolization, and the other two died. Similarly, one woman who had a cesarean birth died after hysterectomy for PPH due to uterine rupture. Hysterectomy successfully controlled bleeding in one case of PPH due to placental abruption.[96]

One population-based case series reported on outcomes following peripartum hysterectomy due to PPH.[116] In this study there were 315 cases of PPH that resulted in hysterectomy identified via UKOSS between 2005 and 2006. The median ICU stay was 2 days. Sixty-two women had a return to the operating room for a second surgery after hysterectomy. Fourteen percent of these women had a second surgery due to continued bleeding and 6 percent had return due to damage to other organs during hysterectomy. The median number of blood units transfused ranged from nine to 12 depending on etiology of transfusion.

Another population-based case series from the United States was conducted with data from a nationwide validated database that collected quality and resource utilization data (Perspective)

data from 500 facilities in the United States.[45] The main hypothesis of this study was that hospital volume affects outcomes of postpartum hysterectomy. Among the 2,209 patients identified, overall maternal mortality was 1.2 percent among low, intermediate, and high volume facilities, reoperation rates were 3.2 to 6.4 percent ($p = 0.02$). Intensive care use rates were 45 percent, 39.6 percent and 27.4 percent for low, medium and high-volume institutions, respectively ($p < 0.001$). The mean length of stay was 3.5 to 4.1 days. After adjusting for age, race, hospital size, year of diagnosis and hospital type, there was no difference in transfusion or length of stay based on hospital volume. Perioperative death was higher at low volume facilities (1.8% compared with 0.9 and 0.8% at medium and high volume hospitals, $p = 0.02$). Adjusted OR for perioperative death was 0.22 at high volume facilities.

A population-based case series in Denmark collected peripartum hysterectomy data from 1995 to 2004 using the Danish Medical Birth Register, which records information on all births in the country since 1973.[115] Peripartum hysterectomy was defined in this study as a hysterectomy taking place immediately after and up to one month after birth. Out of 653,482 births, there were 152 peripartum hysterectomies to control hemorrhage; thirty percent of cases of PPH were due to atony. Prior to hysterectomy, 80 percent of women received oxytocin, 73 percent prostaglandins, 43 percent misoprostol, and 43 percent ergot alkaloid. Ligation was performed in 21 percent of patients and B-lynch suture was also done in 21 percent prior to hysterectomy. Hysterectomy was more often performed after cesarean birth ($n = 101$, RR for hysterectomy after cesarean compared with vaginal birth = 11.1, 95% CI: 7.9 to 15.6, $p < .0001$). Sixteen women (11%) needed reoperation.

An additional population-based case series reported on all cases of postpartum hysterectomy done between 1999 and 2006 in a Canadian hospital.[114] All obstetric care in the region is linked to a regional database. Investigators identified all hysterectomies that occurred within 24 hours of birth. A total of 87 peripartum hysterectomies were performed in the study period, a rate of 0.8 per 1,000 births. Thirty-four percent of women in the series had placenta previa or accreta. All women received uterotonics prior to hysterectomy, and 86 percent received blood transfusion. Pelvic vessels were ligated in 33 percent of cases. B-lynch suture was done 3 times. Forty-six women (53%) were admitted to the ICU, and mean length of stay after birth was 6 days (range 2 to 16). Eighty-one percent of hysterectomies took place after cesarean birth ($n = 70$).

Two retrospective case series reported on emergency hysterectomy outcomes and were conducted in the U.K.[110] and the U.S.[117] In the U.K. series, most (n=50/52) women had primary PPH and all had numerous interventions, including uterotonics, packing, balloon tamponade, and sutures, prior to hysterectomy to control bleeding.[110] In multivariate analyses, multiparity, placenta previa, primary PPH, and failed induction were significant risk factors for hysterectomy (all p values <.02). The U.S. series reported on 55 peripartum hysterectomies (17 vaginal births, 38 cesarean; mean age=29 ± 6.8), typically for PPH due to atony (56.4% of cases).[117] Mean overall length of stay was 11 ± 7.9 days, mean number units transfused was 6.9±5.3, and mean estimated blood loss was 3325.6 ± 1839.2 mL. Table 17 outlines outcomes.

Table 17. Key outcomes in studies of hysterectomy

	Author, Year Country Groups (n) Quality	Age, Years Parity	Key Outcomes
Cohort Studies	Kim et al. 2013[49] Korea **G1**: Embolization (60) **G2:** Hysterectomy (61) Quality: Fair	**Age, mean ± SD** **G1:** 31.0 ± 4.8 **G2:** 31.8 ± 4.0 **Primiparous, n** **G1:** 17 **G2:** 22	• Primary cause of hemorrhage in both groups was atony • 8 women in study were Jehovah's Witnesses-4 in each group • All women in G1 and G2 received uterotonics (G1: oxytocin = 100%, sulprostone = 68%, Ervin = 36%; G2: oxytocin = 100%, sulprostone = 60.6%; Ervin = 19.6%). 25 women in G1 and 36 in G2 required transfusion prior to procedure • Embolization was successful in 96% of G1; 2 women required hysterectomy due to continued bleeding from cesarean uterine wound and vaginal and cervical lacerations • Hysterectomy was successful in 93% of G2. 4 women required embolization following hysterectomy for extrauterine vaginal bleeding or continued bleeding of ligated vessels • 57 women required transfusion post-hysterectomy in G2 • Mean days in ICU in G1 = 5 days (5 women). ICU days not reported in G2 but 39 women required ICU care; LOS in hospital was 8.60 days in G1 and 11.5 in G2
	Ledee et al. 2001[96] France **G1:** Hysterectomy (10) **G2:** Bilateral hypogastric artery ligation (48) **G3:** Embolization (9) Quality: Fair	**Age** NR **Parity** NR	• All women underwent bimanual compression, oxytocin and prostaglandin IV administration, and resuscitation before further intervention • Hysterectomy was the primary procedure in 5 women (all with hemorrhagic shock) and secondary in 5 • Hysterectomy as a primary procedure failed to control bleeding in 4 cases—3 deaths, 1 subsequent embolization

17. Key outcomes in studies of hysterectomy (continued)

	Author, Year Country Groups (n) Quality	Age, years Parity	Key Outcomes
Case Series	Knight et al. 2008[116] UK G1: Hysterectomy (315)	**Age** NR **Parity** NR	• Median ICU stay = 2 days • Need for further procedure or surgery in 62 cases; 14% due to continued bleeding, 6% due to organ damage incurred during hysterectomy • Median number of blood units transfused ranged from 9 to 12 depending on etiology
	Wright et al. 2010[45] US G1: Hysterectomy (2209)	**Age, n (%)** < 30 years: 673 (30.5) ≥ 30 years: 1536 (69.5) (overall median = 33, range = 14 to 50) **Parity** NR	• 35% of cases of PPH due to atony, 35% due to placenta accreta • Reoperation rates were 3.2% to 6.4% (p = 0.02 among low, intermediate, high volume hospitals) • Intensive care use was 45%, 39.6%, and 27.4% for low, medium and high-volume institutions, respectively (p < 0.001), mean length of stay was 3.5 to 4.1 days • No difference in transfusion, intraoperative injury, length of stay, or medical complications based on hospital volume in adjusted analyses • Perioperative death was higher at low volume facilities (1.8% compared with 0.9% and 0.8% at medium and high volume hospitals, p = 0.02). Adjusted OR for perioperative death was 0.22 at high volume facilities
	Sakse et al. 2007[115] Denmark G1: Hysterectomy (152)	**Age** **G1:** NR **Nulliparous, n** **G1:** 36	• Most hysterectomies performed after cesarean birth (n = 101); RR for hysterectomy after cesarean birth compared with vaginal = 11.1, 95% CI: 7.9 to 15.6, p < .0001 • Women generally received initial medical management • Ligation was performed in 21% and B-lynch suture in 21% prior to hysterectomy • 16 women (11%) needed reoperation
	Glaze et al. 2008[114] Canada G1: Hysterectomy (87)	**Age, mean ± SD** **G1:** 34 ± 5 **Primiparous, n (%)** **G1:** 37 (43)	• All women received uterotonics prior to hysterectomy; 86% had blood transfusion; 33% had pelvic vessel ligation • 53% admitted to ICU • Mean LOS 6 days (SD = 3, range = 2-16)
	Lone et al. 2010[110] UK **G1:** Hysterectomy (52)	**Age, mean (range)** **G1:** 29.4 (14-54) **Parity, mean** G1: 1.35	• Most women had multiple interventions prior to hysterectomy: bimanual compression, n = 46; oxytocin, n = 52; arterial ligation, n = 28; uterine packing, n = 18; intrauterine balloon, n = 17; B-lynch suture, n = 15; rfVIIa, n = 2 • Primary PPH, induction, placenta previa were significant risk factors for hysterectomy in multivariate analyses
	Forna et al. 2004[117] US G1: Hysterectomy (55)	**Age, mean ± SD** **G1:** 29.0±6.8 **Parity, mean** **G1:** 3.3±2.8	• Mean LOS=11±7.9 days • 15 women had uterine artery ligation prior to hysterectomy, 1 had hypogastric artery ligation • Women had a mean 2.1±1.2 postoperative complications

Abbreviations: CI = confidence interval; G = group; ICU = intensive care unit; LOS = length of stay; n = number; NR = not reported; OR = odds ratio; PPH = postpartum hemorrhage; rFVIIa = recombinant activated factor VIIa; SD = standard deviation

Studies of Combined Approaches

Key Points

- One cohort study of women with primary PPH reported greater need for transfusion, ICU admission, and hospital length of stay in women undergoing procedures and/or surgery compared with women who were medically managed.
- In three studies of women with secondary PPH, interventions included medical and surgical interventions. In one study, curettage resolved bleeding in 92 percent of women.
- Strength of the evidence for studies of combination interventions and length of stay was insufficient given the small sample sizes and inconsistency in interventions.

Overview of the Literature

Four studies addressed combination approaches and reported data in such a way that findings for individual interventions could not be isolated.[118-121] Studies included two fair quality retrospective cohort studies[118, 119] and two case series[120, 121] that were conducted in France,[118] Israel,[119] the United States,[121] and the United Kingdom.[120]Three studies included women with secondary PPH, typically defined as bleeding occurring ≥ 24 hours after birth and up to 12 weeks later.[119-121]Studies of secondary PPH included a total of 413 women, and all studies typically reported on success of interventions to control bleeding.

Detailed Analysis

One fair quality French retrospective cohort study compared outcomes in women initially treated for PPH medically (n = 147) or using "advanced interventional procedures" (n = 110), which included uterine artery embolization (n = 85), embolization plus surgery (n = 11), or surgery alone (n = 14; surgery included peritoneal packing, arterial ligation, hysterectomy, or combination of all three).[118] Women (median age = 31 years) were treated between 2004 and 2005. Twelve women required hysterectomy: four in the medically managed group and eight in the advanced procedures group (p = NS). Both groups required transfusion, with the procedures group requiring significantly more units of RBC (2.8 vs. 1.2, p = 0.0004) and fresh frozen plasma (1.6 vs. 0.6, p = 0.003). Six women in the medical group and 31 in the advanced group were admitted to the ICU (p < 0.0001), and the median length of stay in the hospital was significantly greater in the procedures group (3.2 days vs. 1.0, p < .0001). However, the procedures group was likely experiencing more severe PPH given their lower median hemoglobin and systolic and diastolic blood pressures than the medically managed group. The study identified five factors that predicted the need for an advanced procedure: abnormalities of placental implantation, prothrombin time < 50 percent, fibrinogen < 2 g/l, troponin detectable, and heart rate > 115 beats per minute.

Three studies, one fair quality retrospective cohort study and two case series, focused on secondary PPH.[119-121] The cohort study, conducted in Israel and including data from 1990 to 2002, compared initial surgical evacuation of the uterus (n = 50, mean age = 29.9, 4 cesarean births) or primary medical treatment (n = 118, mean age = 28.5, 16 cesarean births) with regard to immediate complications and future reproduction.[119] The study defined secondary PPH as occurring 24 hours after the end of the third stage of labor and up to 12 weeks later. More women in the medical group also had primary PPH compared with the surgical group (15 vs. 14, p = .03), and more women in the surgical group had manual separation of the placenta than did women in the medical group (8 vs.5, p = .02). Need for blood transfusion, antibiotics,

hysterectomy, uterine perforation, readmission, hospitalization > 2 days, and hemoglobin drop of > 20g/L did not differ significantly between groups. One woman in the surgical group required a hysterectomy (0 in the medical group, p = NS). More women in the medical group required a secondary surgical evacuation than in the surgical group (31 vs. 4, p = .01).

A case series conducted in the U.K. reported on 132 women with secondary PPH (excessive vaginal blood loss or lochial discharge occurring ≥ 24 hours after the end of third stage of labor and up to 6 weeks following), 33 of whom had had primary PPH.[120] More than half of the women presented with secondary PPH in the first two weeks postpartum (19% at ≤ 7 days after birth, 41% at 8-14 days, 23% at 15-21 days, 12% at 22-28 days, and 5% at > 28 days). Initially, 57 women had conservative management and 75 women had uterine evacuation. Most women (97%) received antibiotics as an initial treatment, 17 percent had blood transfusion, and overall 63 percent had uterine evacuation. The majority of the women were hospitalized (84%), and the mean length of stay was 3.5 ± 2.3 days. Women who were initially managed conservatively were more likely to be readmitted to the hospital than women who had surgical evacuation (OR 7.8, 95 per CI: 1.2-28.8) One woman required a hysterectomy after uterine perforation.

The second case series reports on cases of secondary PPH (defined as vaginal bleeding post-discharge severe enough to require readmission or surgery) over a 10-year period (1981-1991) at two tertiary hospitals in the United States.[121] One-hundred and thirteen women had secondary PPH (mean age = 26, range = 16-39, 10 cesarean births, 22 cases of prior PPH) occurring at a mean of 18 days postpartum. Eleven percent of bleeding occurred > 6 weeks after birth. Two-thirds of the women required hospitalization (67%, mean LOS = 4 days) and one-third had transfusion (35%, mean PRBC = 3 units). Bleeding resolved in 12% of women with conservative management. The majority of women (88%) had curettage, which was successful for 92%. Of the nine women who required additional surgical intervention to control bleeding, six had hysterectomy, one had ligation, and one had laparotomy. Table 18 outlines outcomes.

Table 18. Key outcomes in studies of combined interventions

Author, Year Country Groups (n) Quality	Age, Years Parity	Key Outcomes
Gayat et al. 2011[118] France **G1:** Advanced interventions (embolization, ligation, surgery, packing, hysterectomy) (110) **G2:** Medical management (147) Quality: Fair	**Age, median (first to third quartile)** **G1:** 32 (30-36) **G2:** 31 (27-35) **Primiparous, n (%)** **G1:** 32 (29) **G2:** 57 (39)	• Women in both groups received transfusion, sulprostone (> 80% in each group) prior to procedure • Women in G1 received embolization (n = 85), surgery only (n = 14), or embolization + surgery (n = 11). Surgery included one or combination of peritoneal packing, ligation of arteries, hysterectomy. 12 women had a hysterectomy and 11 women had ligation before transfer to study hospital. 14 of these women were still actively bleeding on arrival to study hospital • ICU and LOS in obstetric unit significantly longer in G1 vs. G2 (ICU: median 31 days vs. 6 days, p < .0001, LOS in unit: median 3.2 vs. 1.0 days, p < .0001)
Feigenberg et al. 2009[119] Israel **G1:** Initial medical treatment for secondary PPH(118) **G2:** Surgical evacuation of uterus for secondary PPH (50) Quality: Fair	**Age, mean** **G1:** 28.5 **G2:** 29.9 **Mean pregnancies prior to PPH** **G1:** 3 **G2:** 2.7	• All women had secondary PPH—mean time to admission post-birth was 16.8 days in G1 and 27.9 days in G2 (p = .0003) • 48 women in G1 and 22 in G2 required > 2 days hospitalization, p = ns • 1 woman in G2 required hysterectomy (0 in G1), p = ns
Hoveyda et al. 2001[120] UK **G1:** Medical and surgical management for secondary PPH (132)	**Age** NR **Nulliparous, n (%)** **G1:** 56 (42.4)	• Initial management of women with secondary PPH was conservative (n = 57) or surgical evacuation (n = 75); 84% were hospitalized • More women initially treated conservatively required readmission compared with women initially treated with evacuation (OR 7.8, 95% CI: 2.1 to 28.8) • Mean LOS = 3.5 ± 2.3 days
Boyd et al. 1995[121] US **G1:** Medical and surgical management for secondary PPH (113)	**Age, mean (range)** **G1:** 26 (16-39) **Nulliparous, %** **G1:** 39	• Bleeding resolved in 91/99 women treated with curettage; 6 had hysterectomy, 1 had ligation, 1 had laparotomy • Bleeding resolved in 12/99 treated conservatively • Mean LOS = 4 days, range 1-19 days

Abbreviations: CI = confidence interval; G = group; ICU = intensive care unit; LOS = length of stay; n = number; NR = not reported; OR = odds ratio; PPH = postpartum hemorrhage; rFVIIa = recombinant activated factor VIIa

KQ2. Evidence for Choosing One Intervention Over Another and Proceeding to Subsequent Interventions

We did not identify any studies addressing this question.

KQ3. Harms of Interventions for Management of PPH

Key Points

- Fifty studies reported harms of interventions for management of PPH. Eleven of these were assessed as good quality for harms reporting and the remainder as poor quality.
- In four of the five studies that reported harms related to rFVIIa, 2 to 9 percent of women who received rFVIIa had thrombotic complications. None of the women in the two of these studies that had comparator groups had thromboembolic events; however, this may be due to the small sample sizes rather than evidence of an adverse effect of the medication.
- Sixteen studies reported harms in women who underwent embolization; however, the harms reported in these studies are diverse and few studies report the same harms. The most frequently reported adverse events were infertility (0-43%), PPH in subsequent pregnancy (5%-23%), spontaneous abortion in subsequent pregnancy (5%-21%), and hematoma at puncture site (1%-6%).
- Nine studies reported diverse harms among women who had hysterectomy. The most frequently reported adverse events were ureter lesion (0.4%-41%), reoperation (1.8%-29%), infection (7%-54.6%), and bladder lesion (6%-12%).
- Multiple studies reported harms of transfusion (seven studies), intrauterine balloon tamponade (three studies), uterine and other pelvic artery ligation (two studies), curettage (two studies), and combined approaches (two studies); however, they did not report comparable adverse events.
- Two case-control studies reported on adverse pregnancy outcomes following uterine compression sutures to control PPH in the index pregnancy and noted no significantly greater incidence of preterm birth among women who had sutures compared with women in the control group.
- Harms for tranexamic acid, sulprostone, methylergonovine maleate, and carboprost tromethamine were only reported in one study per intervention. Most side effects were mild.
- Strength of the evidence for harms of interventions was typically insufficient given the diversity of harms reported in single studies. Strength of the evidence was low for hematoma, infertility, and menstrual changes associated with embolization and low for a lack of association between embolization and spontaneous abortion. Strength of the evidence was also low for the association of hysterectomy and operative organ damage and reoperation due to the greater number of studies and more consistent reporting of adverse events.

Overview of the Literature

Fifty unique studies (reported in 55 publications) reported harms of interventions for management of PPH.[37, 45, 49, 60-66, 69-71, 73-77, 80, 81, 82 , 83, 84, 86, 87, 89-95, 97-106, 108-117, 119-121] These include two RCTs,[37, 69, 70, 81] with harms data from one RCT reported in subsequent case series publications; two prospective cohort studies;[77, 109] nine retrospective cohort studies;[49, 60, 73, 83, 84, 92-96, 119] four case-control studies;[62, 66, 74, 91] two pre-post studies;[86, 87] nine population-based case series;[45, 61, 71, 75, 76, 80, 114-116] and 23 retrospective case series.[63-65, 89, 90, 97-106, 108, 110-113, 117, 120, 121] Eleven studies were assessed as good quality for harms reporting; [45, 60, 62, 65, 66, 69, 76, 100, 105, 117, 119] the remaining were of poor quality. Thirteen studies were conducted in France,[37, 61, 69, 70, 81, 87, 91-98, 102, 103, 113] nine in the United States,[45, 60, 66, 71, 83, 99, 112, 117, 121] six in Korea,[49, 62, 100, 101, 105, 106] five in the United Kingdom,[77, 86, 110, 116, 120] three in Canada,[63, 64, 114] two in Ireland,[74, 84] two in

Japan,[108, 122] two (with unclear overlap of participants) in Australia and New Zealand,[76, 80] two in Italy,[65, 89] two in Finland,[73, 90] and one each in Argentina, [111] Israel,[119] the Netherlands,[109] Denmark,[115] and multiple European countries.[75]

In most studies, authors differentiated harms that seemed to be related to the intervention from those that were thought to be due to complications of PPH. When that is the case, we report only those harms attributed to the intervention. When that distinction was not made, we report all harms listed in the study. In almost all cases of maternal mortality, the authors provided detailed explanations that made it clear that the deaths were due to the PPH and its sequelae rather than the intervention. In this section, we have only reported deaths for which there was no detail about the cause and thus we could not distinguish if it was attributable to the intervention, the hemorrhage, or some other etiology.

Detailed Analysis

Medical Interventions

Pharmacologic Interventions

Tranexamic acid. In an RCT that compared women who received tranexamic acid with women who did not (n = 72 per group), serious side effects did not differ between the two groups. Two women in the tranexamic acid group and one in the control group had deep vein thrombosis (p = 0.37). None of the women experienced renal failure, seizures, or death. Mild, transient adverse effects occurred more often in the tranexamic acid group than in the control group (24% vs. 6%, p = 0.03). These side effects included nausea and vomiting (15% vs. 2%, p = 0.002), phosphenes (11% vs. 3%, p = 0.02), and dizziness (6% vs. 4%, p = 0.28). The trial was not adequately powered to report safety but was good quality for harms reporting.[69]

Sulprostone. In one population-based case series of 1,370 women treated with sulprostone, 51 women (3.7%) experienced at least one side effect.[70] These side effects included digestive effects (n = 34), hyperthermia and chills (n = 7), cardiac effects (n = 5), high blood pressure (n = 2), respiratory effects (n = 2), and dizziness (n = 2). The cardiac side effects (tachycardia, n = 1; atypical chest pain, n = 1; ischemia, n = 3) were considered severe by the investigators and resolved with cessation of sulprostone. Other severe harms included acute hypertension in one woman and acute cyanosis in a woman with asthma, both of which also resolved with cessation of sulprostone. This study, which is part of family of studies reporting on a systems-level intervention for PPH,[37, 70, 81] was rated as poor quality for harms reporting.

Methylergonovine maleate. One cohort study (rated good quality for harms reporting) used data from U.S. hospital admissions collected over 4 years to identify women who had been given methylergonovine maleate during hospitalization for birth (n = 139,617) and those who had not (n = 2,094,013).[60] The study compared rates of myocardial ischemia and infarction in the exposed and unexposed women. Six women in the methylergonovine maleate group and 52 in the non-methylergonovine maleate group had an acute coronary syndrome (composite of acute myocardial infarction and unstable angina). The adjusted relative risk of developing an acute coronary syndrome associated with methylergonovine maleate exposure was 1.67 (95% CI: 0.40 to 6.97), and the risk difference was 1.44 per 100,000 patients (95% CI: -2.56 to 5.45). Four

women in the methylergonovine maleate group and 44 in the non-exposed group had an acute myocardial infarction (RR for infarction associated with methylergonovine maleate = 1.00m 95% CI: 0.20 to 4.95, risk difference per 100,000 patients = 0, 95% CI: -3.47 to 3.47).

Carboprost tromethamine. One-fifth (n = 48/237) of the participants in a population-based case series experienced a side effect attributed to the drug. Harms reported included diarrhea (11.4%), elevated blood pressure (6.8%), vomiting (6.8%), elevated temperature (2.1%), flushing (1.7%), and tachycardia (1.7%). Quality for the reporting of harms was assessed as poor.[71]

Recombinant activated factor VIIa (rFVIIa). Five studies (one good[76] and four poor quality for harms reporting[73-75, 80]) with rFVIIa as an intervention reported harms. Two women who received rFVIIa in a retrospective cohort study[73] (n = 26) experienced adverse events that may be related to the medication. These included pulmonary edema (n = 1) and PE (n = 1). Neither of these events occurred in women who did not receive rFVIIa (n = 22), but this may be due to the small sample size rather than evidence of an effect of the medication.[73] One case-control study reported one case of acute respiratory distress syndrome (ARDS) among the six women who received rFVIIa. There were no long term sequelae, though exact long term complications of interest were not described.[74] In a population-based case series, adverse events potentially related to rFVIIa in the 92 women to whom it was administered included thromboembolism (n = 4; 2 had PE, one had bilateral ovarian vein thrombosis, and one had a thrombus involving the jugular and subclavian vein, upper arm, and axilla that was not thought to be related to rFVIIa), myocardial infarction (n = 1), and allergic reaction (n = 1). None of these events occurred in women who did not receive rFVIIa (n = 16), but this may be due to the small sample size.[75]

Two studies reported data from the same rFVIIa registry for differing time periods; however, because the overlap between studies is not clear, we report these studies separately. In one study, rated as good quality for harms reporting, and including 105 women with PPH, adverse events potentially related to rFVIIa included cerebrovascular accident (n = 1), deep venous thrombosis (n = 1), and pulmonary embolism (n = 1).[76] The other study reporting data from this registry included 175 cases of rFVIIa use for PPH and reported that 15 women (8.6%) had thromboembolic adverse events, the most common of which were venous thrombosis among five women (2.9%), disseminated intravascular coagulation in nine (5.1%), and other thrombosis in three (1.7%). There were two arterial thrombotic events including one (0.6%) myocardial infarction.[80]

Transfusion for Supportive Management of PPH

Seven studies reported harms of transfusion for PPH management.[37, 61, 63, 65, 70, 81, 83, 84, 86] One retrospective cohort study included 659 women who received whole blood transfusion, 593 who received packed red blood cells (PRBC) only, and 288 who received a combination of blood products. There was a significant difference in the number of women who experienced acute tubular necrosis (0.3% whole blood only vs. 2% PRBC only vs. 4% combinations), acute respiratory distress (0.5% vs. .3% vs. 2%), pulmonary edema (7% vs. 4% vs. 14%), and hypofibrinogenemia (0.2% vs. 0.3% vs. 16%).[83] In another retrospective cohort study, there were no thrombotic complications or adverse reactions to cryoprecipitate or fibrinogen concentrate among 34 women receiving either treatment.[84] In a population-based case series addressing the thromboembolic risk associated with severe PPH and blood replacement therapies in 317 women with severe PPH (defined as uterine bleeding in the first 24 hours after birth, persisting after

manual exploration of the uterine cavity and requiring IV uterotonics with a decrease of hemoglobin > 40g/l^{-1}, or > 4 U RBCs, hemostatic intervention or death), none of the women developed symptomatic deep vein thrombosis (DVT) or PE.[61] Three women developed superficial venous thrombosis (SVT). Severe PPH or packed RBC unit transfusions were found to be a risk factor for SVT. Other variables, such as cesarean birth, absence of low molecular weight heparin use, pre-eclampsia, severe pre-eclampsia, HELLP syndrome, placenta abruption, pregnancy loss, unexplained pregnancy loss, or F12C46T polymorphism were found to be significant risk factors for SVT. In one report from a larger, systems-level RCT [37, 70, 81] that included 660 women who received a transfusion, five transfusion-related adverse events (not described) occurred. The investigators considered one case of pulmonary edema to be a severe harm.[81] A pre-post study comparing transfusion with a combination of red blood cells, fresh frozen plasma, and platelets vs. a combination of red blood cells, platelets, and fibrinogen concentrate in 93 women with PPH reported the development of transfusion-associated circulatory overload in four women in the non-fibrogen period and none in the fibrinogen period (p=.04).[86]

Another retrospective case series including 104 women requiring transfusion for PPH reported pulmonary complications in 2.8 percent of women and cardiac complications in 1 percent but did not describe complications further.[63] A final series included 71 women with PPH and assessed the risk of developing transfusion-related acute lung injury (TRALI) associated with transfusion.[65] Of these 71 women, 13 met criteria for a diagnosis of TRALI as they developed new-onset hypoxemia within 6 hours of transfusion without cardiogenic or other cause, and one woman met criteria for possible TRALI with the same symptoms but an alternative risk factor as a possible cause of symptoms. Women with pregnancy-related hypertensive disorders were more likely to develop TRALI (36% vs. 5% in the TRALI vs. no TRALI groups, p=0.006). Age, smoking status, pre-existing morbidities, non-pregnancy related hypertensive disorders, parity, caesarean section, and the need for surgical intervention were not associated with the development of TRALI.

We rated one study as good quality for harms reporting,[65] and six as poor quality for harms reporting.

Procedures

Uterine balloon tamponade. Only one adverse event was reported among 43 women who had intrauterine balloon tamponade (Bakri balloon) in a pre-post study with poor quality for harms reporting. One woman was diagnosed with endometritis, which was successfully treated with antibiotics.[87] Harms associated with Rusch balloon tamponade in one retrospective case series (poor quality for harms) included one case of inadvertent discharge of the balloon and two cases of postpartum sepsis. Among the 31 of 42 women who did not have hysterectomy and were available for followup 4 to 108 months after the tamponade procedure, seven had had subsequent pregnancies, with four term births, two early abortions, and one ectopic pregnancy. The study did not report the number of women desiring pregnancy; however, 9 of 31 did not desire pregnancy because of psychological trauma associated with the previous pregnancy, and one had difficulty conceiving.[89] Another poor quality case series including 50 women reported two cases of spontaneous expulsion of a Bakri balloon for uterine tamponade and no other complications due to the balloon.[90]

Embolization. Sixteen studies (in multiple publications) reported harms in women who underwent embolization (Table 19); [49, 91-95, 97-106, 108, 109] however, the harms reported in these studies are diverse and few studies report the same harms. Table 20 summarizes adverse events of embolization that were comparably reported in two or more studies. The most frequently reported adverse events were infertility (0-43%), PPH in subsequent pregnancy (5%-23%), spontaneous abortion in subsequent pregnancy (5%-21%), and hematoma at a puncture site (1-6%). Although authors report PPH in subsequent pregnancy, it is likely related to history of PPH, which increases risk of recurrence, rather than the intervention.[123, 124]

Table 19. Harms reported in embolization studies

Author Year Country Study Design	Quality	n	Followup n Duration	Reported Harms
Kim et al., 2013 [100] Korea Retrospective case series	Good	257	257 NR	• Paresthesia in the posterior thigh (n = 10, 4%) • Uterine abscess (n = 3, 1%) • Postembolization syndrome (n = 2, 1%)
Lee et al., 2013 [105] Korea Retrospective case series	Good	176	148 Mean: 22.4 months (range: 2-58)	• Postembolization syndrome (n = 13, 9%) • Hematoma at the arterial puncture site (n = 3, 2%) • Heavier menses (n = 5, 3%) • Lighter menses (n = 17, 11%) • Dysmenorrhea (n = 1, 0.7%) • Uterine infarctions (n = 0) • Ischemic injuries (n = 0) • Neurologic complications (n = 0) • Major complications, not specified (n = 0) • Complications in subsequent pregnancies: preterm birth (n = 2/13, 15%)
Lee et al., 2012 [101] Korea Retrospective case series	Poor	251	113 Mean: 30 ± 23 months (range 6-99)	• Dissection of the uterine arteries (n = 2, 0.8%) • Transient numbness of the lower extremities (n = 2, 1%) • Edema of the lower legs (n = 1, 0.4%) • Hematoma at the puncture site (n = 3, 1%) • Irregular menses (n = 2, 2%)
Inoue et al. 2014[108] Japan Retrospective case series	Poor	211	113 (76 for pregnancy outcomes) 3 months-3 years	• Amenorrhea (n = 7, 6%) • Intrauterine infection (n = 6, 5.3%) • Asherman syndrome (n = 4, 3.5%) • Uterine necrosis (n = 3, 2.7%) • Abnormal menses (n = 2, 1.8%) • "Overall complication rate"=13.3% • Complications in subsequent pregnancies (n=42 pregnancies in 40 of 76 women followed post-embolization): preterm births (n=4/42, 9.5%), miscarriages (n=9/42, 21.4%), pregnancy terminations (indication not specified, n=3, 7.1%), recurrent PPH (n=7/42, 23.3%), placenta accreta (n=5, 16.7%)
Cheong et al.[106] Korea Retrospective case series	Poor	117	117 NR	• Uterine necrosis requiring hysterectomy (n = 3, 2.6%) • Fever >38.5ºC without focus of infection (n = 1, 1.7%) • Puncture site hematoma (n = 1, 1.7%)

Table 19. Harms reported in embolization studies (continued)

Author Year Country Study Design	Quality	n	Follow-up n Duration	Reported Harms
Zwart et al., 2010 [109] Netherlands Prospective cohort	Poor	114	114 NR	• Infection (n = 9, 8%) • Acute respiratory distress syndrome (n = 1, 1%) • Laparotomy (n = 3, 3%) • Ischemic complaints (n = 2, 2%) • Maternal death (n = 3, 3%), no details provided
Gaia et al., 2008 [98] France Retrospective case series	Poor	113	107 Mean ± SD: 46.4 ± 21.8 months (range: 12-84)	• Pulmonary embolism (n = 2, 2%) • Acute pulmonary edema (n = 1, 1%) • Myocardial infarction (n = 1, 1%) • Femoral vein thrombosis (n = 5, 4%) • Urinary disorders (n = 8, 7%) • Vaginal dryness (n = 11, 10%) • Hot flushes (n = 13, 12%) • Dyspareunia (n = 14, 13%) • Menorrhagia (n = 10, 10%) • Oligomenorrhea (n = 23, 21%) • Amenorrhea and diffuse uterine synechiae (n = 6, 6%) • Infertility (n = 11/29 desiring pregnancy, 38%) • Complications in subsequent pregnancies: spontaneous abortion (n = 1/19, 5%), PPH (n = 3/18, 17%)
Touboul et al., 2008 [103] France Retrospective case series	Poor	102	102 NR	• Ischemia of the lumbar plexus (n = 1, 1%) • Gluteal pain (n = 1, 1%)

Table 19. Harms reported in embolization studies (continued)

Author Year Country Study Design	Quality	n	Follow-up n Duration	Reported Harms
Sentilhes et al., 2011[92-94] France Retrospective cohort	Poor	101	68 (fertility and psychological outcomes) Mean: 71.4 months (range: 12-152 months)	• Buttock necrosis requiring debridement (n = 1, 1%) • Pulmonary embolism (n = 1, 1%) • Postpartum myocarditis (n = 1, 1%) • Puncture site hematoma (n = 1, 1%) • Postpartum fever (n = 22, 22%) • Endometritis (n = 14, 14%) • Wound infection (n = 8, 8%) • Increased menstruation (n = 11, 16%) • Amenorrhea or decreased menstrual flow (n = 15, 22%) • Synechia (n = 8, 12%) • Ovarian insufficiency (n = 7, 10%) • Infertility (13/30 desiring pregnancy, 43%) although the authors state there was no secondary infertility • Complications in subsequent pregnancies: miscarriage (n = 4/26, 15%), ectopic pregnancy (n = 1/26, 4%), uteroplacental insufficiency (1/19, 5%), recurrent PPH (n = 6/19, 32%) Psychological outcomes (may be due to PPH or PPH+treatment) • Symptoms requiring psychological care post-PPH (n = 2, 3%) • Fear of death post-PPH (n = 24, 35%) • Negative memory of pain post-PPH (n = 13, 19%) • Negative memory of separation from baby post-PPH (n = 6, 9%) • Complete amnesia about the birth (n = 3, 4%) • Think about event at least once/month (n = 16, 24%) • De novo phobia post-PPH (n = 5, 7%) • Persistent fear of death (n = 5, 7%) • Impossible to have sexual intercourse for ≥ 12 months (n = 4, 6%) • Marital problems considered related to event (n = 3, 4%) • Fear of PPH recurrence that lead to decision to avoid further pregnancy (n = 14, 21%) • Partners' negative feelings about PPH lead to decision to avoid further pregnancy (n = 13, 19%) • Anxiety or depression in subsequent pregnancy related to prior PPH (n = 16, 24%)
Poujade et al., 2012 [102] France Retrospective case series	Poor	98	98 NR	• Pulmonary edema (n = 1, 1%) • Uterine necrosis (n = 1, 1%) • Hysterectomy due to UAE-associated uterine necrosis (n = 1, 1%) • Endometritis (n = 11, 11%) • Wound infection (n = 1, 1%)

Table 19. Harms reported in embolization studies (continued)

Author Year Country Study Design	Quality	n	Follow-up n Duration	Reported Harms
Ganguli et al., 2011 [99] US Retrospective case series	Poor	66	66 NR	• Lower extremity DVT (n = 1, 2%) • Pancreatitis (n = 1, 2%) • Endometritis (n = 1, 2%) • Minor complications, not specified (n = 0)
Kim et al., 2013[49] Korea Retrospective cohort	Poor	60	60 2 years	• Transient fever > 38.5°C (n = 11, 18%) • Infection per blood culture findings (n = 0) • Ovarian failure (n = 1, 2%)
Fiori et al., 2009 [97] France Retrospective case series	Poor	56	34 Median 44.4 months (range: 8.3-118.2)	• Hypomenorrhea due to partial corporeal uterine synechiae: (n = 1, 3%) • Irregular menstrual bleeding (n = 1, 3%) • Infertility (n = 2/15 desiring pregnancy, 13%) • Complications in subsequent pregnancies: spontaneous abortion (n = 3/20, 15%) and ectopic pregnancy (n = 1/20, 5%), preterm birth (n = 1/12, 8%), PPH (n = 1/12, 8%)
Yamasaki et al., 2013 [104] Japan Retrospective case series	Poor	55	55 NR	• Fever (n = 6, 11%) • Lower limb neuropathy (n = 1, 2%) • Uterine necrosis (n = 2, 4%) • Hysterectomy due to UAE-associated uterine necrosis and infection (n = 2, 4%)
Hardeman et al., 2010[91] France Case-control	Poor	53	53 Range:12-70 months	• Pain and fever (n = 19, 36%) • Hematoma/inguinal pain (n = 3, 6%) • Metrorrhagia (n = 2, 4%) • Amenorrhea (n = 3, 6%) • Infertility (2/14 desiring pregnancy, 14%) • Complications in subsequent pregnancies: late miscarriage (n = 1/14, 7%), recurrent PPH (n = 2/12, 17%)
Chauleur et al., 2008[95] France Retrospective cohort	Poor	46	46 Range: 2-11 years	• Allergy to iodine (n = 1, 2%) • Acute pulmonary edema related to massive volume expansion (n = 1, 2%) • Hematoma from the puncture site resulting in cardiovascular instability (n = 1, 2%) • Major hemoperitoneum related to dissection of the epigastric artery (n = 1, 2%) • Infertility (n = 0/16 desiring pregnancy) • Death from methotrexate-related nephrotoxicity in one woman with placenta percreta given methotrexate in conjunction with embolization; death appears to be related to treatment but not to embolization • Complications in subsequent pregnancies: spontaneous abortion (n = 1/19, 5%), twin pregnancy with preterm birth and fetal growth restriction (n = 1/19, 5%), PPH (n = 1/19, 5%)

Abbreviations: DVT = deep vein thrombosis; n = number; NR = not reported; PPH = postpartum hemorrhage; SD = standard deviation; UAE = uterine artery embolization

Table 20. Adverse events reported in multiple embolization studies

Adverse Event	Number of Studies	Incidence
Spontaneous abortion in subsequent pregnancy	6[91, 92, 95, 97, 98, 108]	5%-21.4%
Hematoma at puncture site	6[91, 94, 95, 101, 105, 106]	1%-6%
PPH in subsequent pregnancy	5[91, 95, 97, 98, 108]	5%-23.3%
Infertility	5[91, 92, 95, 97, 98]	0-43%
Amenorrhea	4[91, 92, 98, 108]	6%-22%
Preterm birth in subsequent pregnancy	4[95, 97, 105, 108]	5%-15%
Fever	4[49, 94, 104, 106]	1.7%-22%
Uterine necrosis	4[102, 104, 106, 108]	1%-4%
Endometritis or intrauterine infection	4[94, 99, 102, 108]	2%-14%
Lighter menses	3[97, 98, 105]	3%-21%
Heavier menses	3[92, 98, 105]	3%-20%
Irregular menses	3[91, 97, 101]	2%-4%
Infection, not defined or wound infection	3[94, 102, 109]	1%-8%
Thromboembolic event (DVT or PE)	3[94, 98, 99]	1%-4%
Lower extremity neuropathy, including numbness or paresthesia	3[100, 101, 104]	1%-4%
Pulmonary edema	3[95, 98, 102]	1%-2%
Ischemia	3[103, 105, 109]	0-2%
Ectopic pregnancy in subsequent pregnancy	2[97, 115]	4%-5%
Postembolization syndrome	2[100, 105]	1%-9%

Abbreviations: DVT = deep vein thrombosis; PE = pulmonary embolism; PPH = postpartum hemorrhage

Surgical Interventions

Uterine compression sutures. One case-control study of good quality for harms compared outcomes in the subsequent pregnancy in women who had PPH treated with multiple square or Hayman sutures in the index pregnancy (n=42, mean age=34.8±3.0 years, nulliparous=39) and age- and parity-matched women who had a cesarean birth (n=139, mean age=33.8±3.2, nulliparous=136).[62] Women did not differ significantly in terms of parity, cesarean births, age, interval to next pregnancy, method of conception, or singleton pregnancy. Adverse outcomes did not differ between groups (preterm birth= 2 in suture group vs. 7 in control group; miscarriage=4 in suture group vs. 14 in control group; ectopic pregnancy=1 in suture group vs. 2 in control group; fetal or perinatal loss=1 in suture group vs.1 in control group; chromosomal abnormality=0 in suture group vs. 1 in control group). More women in the suture group had pelvic adhesions in the subsequent pregnancy compared with the control group (34.3% vs. 17.5%, p=.03). Three women in the suture group and two in the control group had PPH in the subsequent pregnancy (p=ns).

Another retrospective case-control study of good quality for harms reporting compared adverse pregnancy outcomes (after 24 weeks gestation) in the subsequent pregnancy in women who had PPH and a B-Lynch suture (n=63) and women who had PPH managed without B-Lynch sutures (n=189).[66]Women in the non-B-Lynch group were treated with transfusion (n=25), artery ligation (n=7), and uterine artery embolization (n=2). Other treatment modalities were not specified. Groups did not differ at baseline on age, BMI, or adverse outcomes in the index pregnancy, but women in the suture group were less likely to be nulliparous, have greater estimated blood loss, and greater likelihood of blood loss than those who did not receive sutures (all p values<.05). Adverse pregnancy outcomes (abnormal placentation, preeclampsia, preterm birth, impaired fetal growth) did not differ significantly between groups. In analyses adjusted for use of suture in the index pregnancy, blood loss, parity, and prior adverse outcomes, there was no

association between use of B-Lynch sutures and risk for any adverse outcome in the next pregnancy.

Uterine and other pelvic artery ligation. One retrospective cohort (poor quality for harms) reported a case of "secondary hysterectomy disunion with sepsis" (not clearly described) following ligation.[96] This study also reports fertility outcomes for an unstated number of women who had ligation: among the number followed, 10 planned another pregnancy and seven were able to conceive 1 to 4 years post-ligation. A retrospective case series described 265 women who underwent uterine artery ligation to treat PPH after a cesarean.[112] Two of the women who had uterine artery ligation had small broad ligament hematomas. None of the women experienced a major complication or long-term adverse effects. This study was rated poor quality for harms reporting.

Uterine compression sutures and uterine and other pelvic artery ligation. In one poor quality retrospective case series including 56 women with PPH who underwent triple uterine artery ligation with (n=43) or without (n=13) concomitant uterine compression sutures,[113] two women developed endometritis requiring antibiotics (3.6%).

In another retrospective case series of poor quality for harms reporting, 539 women underwent a variety of surgeries involving uterine compression sutures and arterial ligation. Five women had inadvertent ligation of the ureters, and one woman developed uterine necrosis. At 6 to 12 months after surgery, 404 women had a hysteroscopy (n = 100) or MRI (n = 304). Endometrial adhesions were present in three of the women who had hysteroscopy. None of the women who had MRI had endometrial adhesions or uterine morphological alterations. The study also notes 116 successful, spontaneous pregnancies in the study period, but the number desiring pregnancy and the method and timing of followup is not clear.[111]

Hysterectomy. Nine studies reported harms of hysterectomy.[45, 49, 64, 109, 110, 114-117] In a prospective cohort study, complications among 108 women who underwent hysterectomy included urinary tract lesions (n = 11, including 8 bladder and 3 ureter lesions), ovarian removal (n = 8), infection/abscess (n = 8), relaparotomy (n = 15, including one case of burst abdomen), Sheehan syndrome (n = 4), paralytic ileus (n = 3), DVT/PE (n = 3), and other (n = 2, exact harm not reported).[109]

Harms reported in a retrospective cohort study of 61 women who had a hysterectomy included 14 cases of transient fever and two skin wounds. Blood cultures did not identify any infections.[49]

Reported harms in a retrospective case series of 52 women who had an emergency hysterectomy included ureteric injury (n = 4 women), bladder injury (n = 3), small bowel injury (n = 2), urinary tract infection (n = 4), septicemia (n = 3), wound infection (n = 4), ARDS (n = 9), renal failure (n = 2), DIC (n = 11), repeat surgery (n = 15), and cardiac arrest (n = 2).[110] This authors did not distinguish which harms were specific to hysterectomy, but some of the adverse events (e.g., ARDS and renal failure) are likely unrelated to the surgical intervention.

In one population-based case series reporting data from the UKOSS, 18 of 315 women (6%) undergoing hysterectomy had a return to the operating room for a second surgery due to damage to other organs during hysterectomy.[116] Damage to organs such as ovaries (n = 28), bladder (n = 38) or ureters (n = 14) was reported in 67 women (21%).

In one U.S. population-based case series reporting on 2,209 peripartum hysterectomies, 715 hysterectomies were performed at low volume, 867 at intermediate volume, and 627 at high volume hospitals.[45] Harms included intraoperative injury and surgical and medical complications. Rates of bladder injury ranged from 7 to 9 percent across hospital types; ureteral injury ranged from 2 to 3 percent; intestinal injury from 3 to 4 percent; and vascular and "other" (not defined) injures from 0 to10.7 percent. Rates of intraoperative injuries did not vary significantly across hospital types. Wound complications were higher in low volume hospitals (9.9%, 6.8%, 6.7% in low, intermediate, and high volume hospitals, respectively). Postoperative hemorrhage rates were 4.3 percent at intermediate volume, 5.9 percent at high volume, and 6.9 percent at low volume hospitals (p = ns). Rates of venous thromboembolism ranged from 0.8 to 2.2 percent (p = ns). Pulmonary complications were lowest in high volume hospitals (9.7%) compared with intermediate (12.6%) and low volume hospitals (14.1%), p = .05. Cardiovascular, gastrointestinal, and infectious complications ranged from 4.3 to 6.4 percent, 7.3 to 8.8 percent, and 11.6 to 12.4 percent, respectively and did not differ significantly across hospital types. Volume was not associated with rates of intraoperative injuries or medical complications in analyses adjusted for age, race, year of diagnosis, insurance status, hospital type, and hospital size. The incidence of perioperative surgical complications, however, was lower in high volume hospitals compared with low volume (OR 0.66, 95% CI: 0.47 to 0.93).

A population-based case series from Denmark with 152 women reported the following complications after hysterectomy: reoperation (n = 16), infection (n = 13), bladder lesion (n = 10), oophorectomy (n = 8), ureter lesion (n = 3), abscess (n = 3), death (n = 2), and pulmonary embolism (n = 1).[115] No details are provided about the women who died.

In one Canadian retrospective review (rated poor quality for harms) of hysterectomies conducted at one institution over 28 years, 56 women (out of 30290 births) had emergency obstetric hysterectomies.[64] Harms reported included febrile morbidity (n=31), ureteric injury (n=23), renal failure (n=19), pulmonary atelectasis (n=18), wound infection (n=17), septicemia (n=13), psychological disturbance (n=13), hypovolemia (n=12), and pelvic abscess (n=9)

In another U.S. case series (good quality for harms) including 55 peripartum hysterectomies, investigators classified complications into hematologic (anemia, coagulopathy), infectious (fever, bacteremia), gastrointestinal (ileus), pulmonary (edema, effusion, emboli), genitourinary (urinary retention, hydronephrosis, tubular necrosis), cardiovascular (cardiomyopathy, pericardial effusion), psychiatric (depression), neurologic (encephalopathy), and other (reoperation, readmission, death, wound dehiscence, hematoma, hypokalemia, thrombosis).[117] Women had an average of 2.1±1.2 complications, with most having hematologic (98%) or infectious (54.6%) complications. Eighteen percent of women had other complications, 16 percent of women had pulmonary complications, 10.9 percent had genitourinary, and gastrointestinal, cardiovascular, and psychiatric complications were each experienced by 3.6 percent of women. Less than 2 percent (1.8%) had neurologic complications.

Finally, one Canadian population-based case series reports postoperative complications in 87 women undergoing peripartum hysterectomy: anemia (n = 32), DIC (n = 17), ileus (n = 8), fever (n = 7), depression (n = 1), hematoma (n = 1), and pneumonia (n = 1).[114] This study also did not distinguish which adverse events were thought to be related to hysterectomy versus other causes.

Eight of these studies were assessed as poor quality for reporting harms and one was of good quality.[117] Table 21 outlines harms reported in more than one study. Reoperation is included in the harms for hysterectomy (and not for other procedures or surgical interventions) because it is

typically considered the final surgical intervention and no further procedural or surgical intervention should be expected.

Table 21. Harms reported in multiple hysterectomy studies

Harm	N Studies Reporting	Incidence
Ureter lesion	6[45, 64, 109, 110, 115, 116]	0.4%-41%
Any Infection	5[45, 64, 109, 110, 115, 117]	7%-54.6%
Reoperation[a]	5[109, 110, 115-117]	1.8%-29%
Bladder lesion	5[45, 109, 110, 115, 116]	6%-12%
Fever	3[49, 64, 114]	8%-55%
DVT/PE	3[45, 109, 115]	1%-3%
Psychological effects	2[64, 117]	3.6%-23%
Ileus	2[109, 114, 117]	3%-10.9%
DIC	2[110, 114]	20%-21%

[a]Note: reoperation rates in one study[117] could have included readmission, death, hematoma, wound dehiscence, hypokalemia, ovarian vein thrombosis.
Abbreviations: DIC = disseminated intravascular coagulation; DVT = deep vein thrombosis; N = number; PE = pulmonary embolism

Curettage. Two retrospective case series, both of poor quality for harms reporting, described women who were treated with curettage for secondary PPH.[120, 121] In a series of 99 women, two had documented cases of Asherman syndrome on follow-up and one had uterine perforation from curettage that required repair via laparotomy.[121] In a series of 85 women, three had uterine perforation, one of whom underwent hysterectomy.[120] These were the only harms reported in these studies.

Combined interventions. One prospective cohort study of 272 women addressing multiple second-line therapies (embolization, uterine compression sutures, ligation, and rFVIIa) reported ARDS (five cases), pulmonary edema (11 cases), and cardiac arrest (six cases). The study also reports six instances of the following harms but does not clarify the number of cases of each: hypoxic brain injury, renal failure, pulmonary embolism, and bladder damage after hysterectomy. The study also does not clarify if any of the reported harms were due to intervention or the PPH itself. This study was assessed as poor quality for harms reporting.[77]

In a retrospective cohort study including 168 women with secondary PPH treated initially with either medical approaches or surgical evacuation, two women in the surgical group had uterine perforation.[119] At followup, 12.1 percent of the medical group (n = 90, mean 88.3 months after PPH) and 30.8 percent of the surgical group (n = 41, mean 81.6 months after PPH) had secondary infertility. (p = .06).The majority of the women (74% of medical group and 65% of surgical group) desired a subsequent pregnancy. More women in the surgical group (28%) than medical group (11%) required infertility treatments, but this difference was not significant. The mean number of births among those who conceived was 1.5 in the medical arm and 2.8 in the surgical arm (p = .004) Miscarriages did not differ between groups, and 3 percent of women in the medical group and 16 percent in the surgical arm required adhesiolysis (p = .003) in the followup period. We rated this study as good quality for harms reporting.

KQ4. Effectiveness of Interventions To Treat Acute Blood Loss Anemia in Women With Stabilized PPH

Key Points

- One small RCT reported elevations in hemoglobin in women with anemia after PPH receiving either oral or intravenous iron with no significant between group differences.
- One small RCT reported a decrease in fatigue and improvements in quality of life among women with asymptomatic anemia after PPH treated with transfusion, but differences between groups were not significant.
- Strength of the evidence is insufficient for all outcomes and harms in studies of interventions for anemia after PPH given the few studies, small number of participants, and differences in intervention approaches.

Overview of the Literature

We identified few studies addressing anemia after PPH is stabilized. Two studies (reported in multiple publications) addressed iron supplementation and transfusion. We did not identify studies of erythropoietin stimulating agents or other interventions. The two RCTs addressing interventions for post-PPH anemia were both rated as poor quality for all effectiveness outcomes and good[125, 126] and poor[127] quality for harms.[125-127]Studies were conducted in Australia[127] and the Netherlands[125, 126] and assessed transfusion and iron supplementation in women with stabilized hemorrhage. The RCTs included a total of 593 women followed for 6 weeks post-birth.

Detailed Analysis

A randomized non-inferiority trial, rated as poor quality for all effectiveness outcomes and good quality for reporting of harms, conducted in the Netherlands compared the effect of PRBC transfusion versus no intervention on quality of life among women with anemia due to PPH at 37 Dutch university and general hospitals.[125, 126] Eligible women were enrolled between 12 and 24 hours after birth, and had a hemoglobin concentration between 4.8 and 7.9 g/dl after experiencing PPH (defined as blood loss of ≥ 1000 mL and/or decrease hemoglobin concentration of ≥ 1.9 g/dl). Women with severe symptoms of anemia were excluded from the study. In total, 521 women were randomized to receive transfusion with PRBC (259 women) or no intervention (262 women). There were no significant differences in baseline characteristics between groups (no p-value reported), and there was no significant difference between baseline hemoglobin concentration (7.3 vs. 7.4 in the transfusion vs. non-intervention groups, $p = 0.56$). The hemoglobin at discharge was significantly higher among women receiving transfusions than those that did not (9.0 g/dL vs. 7.4 g/dL in the transfusion vs. non-intervention groups, $p < 0.001$), but there was not a statistically significant difference in hemoglobin concentration between groups at 6 weeks (12.1 g/dL vs. 11.9 g/dL in the transfusion vs. non-intervention groups, $p = 0.18$). The non-intervention group had greater mean fatigue, but the difference in mean physical fatigue between groups did not meet pre-specified non-inferiority parameters and was negligible overall. There was no significant difference in health-related quality of life between groups after removing questions not answered within the study timeframe. There was also no significant difference between groups in rate of postpartum depression, which was only

reported in one woman in the entire study.[126]There was no difference between the groups in rates of breastfeeding at 6 weeks (64% vs. 71% in the transfusion vs. non-intervention groups, p = 0.30). There was no difference between the transfusion and no transfusion groups in length of stay or in complications (transfusion reactions, thromboembolic events, urinary tract infections, infected surgical wound, infected episiotomy/rupture, endometritis, and total infectious complications [10.5% vs. 11.4% in the transfusion vs. non-transfusion groups, p = 0.90]).

An Australian RCT (rated as poor quality for all outcomes) compared the effectiveness of intravenous versus oral iron supplementation among anemic women with PPH.[127] Eligible participants were women with iron-deficiency anemia (hemoglobin < 110 g/L and ferritin < 12 µg/L) after PPH. Women were identified within 72 hours of cesarean or vaginal birth with blood loss > 500mL. Women (74 total) were enrolled over a 2-year period, and were randomized to either two intravenous infusions of 200 mg of iron sucrose (31 women) or daily oral ferrous iron sulfate tablets (43 women, total 160 mg iron daily) for a six-week period following enrollment. Hemoglobin and ferritin levels were measured at baseline and on days 1, 14, and 42, and transfusion of PRBC and drug reactions were documented. There was no statistically significant difference in mean hemoglobin levels at any time point between the intravenous and oral iron supplementation groups (baseline hemoglobin 96 vs. 95, p = 0.5; hemoglobin on day fourteen 115 vs. 118, p = 0.2, and hemoglobin on day forty-two 124 vs. 127, p = 0.7 in the IV intravenous iron vs. oral iron groups, respectively). Ferritin was significantly higher on days 14 and 42 among women in the intravenous iron repletion group than the oral iron repletion group (ferritin on day fourteen 101 vs. 37, p < 0.001; ferritin on day forty-two 46 and 19 and p = 0.01). There was no statistically significant difference in rate of red blood cell transfusion between the treatment groups. The study reports arrhythmia in one participant and notes that no other adverse reactions occurred. Table 22 summarizes key outcomes in these studies.

Table 22. Key outcomes in studies in women with stabilized PPH and anemia

Author, Year Country Groups (n) Quality	Age, Years Parity	Key Outcomes
Prick et al. 2014[125, 126] Netherlands **G1:** Red blood cell transfusion following resolved PPH (258) **G2:** No transfusion (261) Quality: Poor for all outcomes	**Age, mean ± SD** **G1:** 30.7 ± 5.0 **G2:** 30.9 ± 5.3 **Nulliparous, n (%)** **G1:** 152 (59) **G2:** 143 (55)	• 13% of G2 also received transfusion for anemic symptoms, blood loss, endometritis, inability to tolerate parenteral iron • G1 received a median of 2 red blood cell units and at discharge had a median Hb concentration of 9.0 g/dl (range: 8.5-9.5) vs. 7.4 (range: 6.8-7.7) in G2, p < .001 • Hb concentration at 6 weeks was not significantly different between groups (12.1 vs. 11.9 g/dl) • LOS did not differ between groups (median 2 days) • Physical fatigue scores were statistically significantly higher in G2 vs. G1 at all time points though the differences were not clinically significant • Harms in both groups included transfusion reactions, infections, endometritis, thromboembolic events; group differences were not significant
Froessler et al. 2013[127] Australia **G1:** IV iron sucrose (31) **G2:** Oral iron sulfate (43) Quality: Poor for all outcomes	**Age, median (range)** **G1:** 28 (26-32) **G2:** 30 (26-34) **Parity** NR	• Hb increased significantly in both groups by Day 14 and remained elevated at Day 42; G1: mean at baseline 96 g/dL (range: 87-102) and at Day 42 124 g/dL (118-132); G2: mean at baseline 95 g/dL (range: 89-106) increased to 127 g/dL (range:120-132) • No differences in Hb levels between the groups at any time point • Increased levels of ferritin in both groups, however time course of changes differed by treatment; levels were significantly increased for G1 from baseline 18 mg/L (range: 11-32), at Day 14 mean 101 (range:82-114) and Day 42 mean = 46 (range: 24-64) while levels for G2 baseline mean = 21 (range:24-52) were increased only at Day 14 = 37 (range: 24-52), and had dropped to by day 42 = 19 (range: 13-33) • Ferritin levels were significantly higher for G1 vs. G2 at Day 14 and Day 42 • Blood loss at birth was comparable for both groups (mean 775 mL for G1 and 800 mL for G2) • No serious drug reactions observed (one patient excluded due to arrhythmia during first iron transfusion but since she had prior occurrence it was deemed not related)

Abbreviations: G = group; Hb = hemoglobin; LOS = length of stay; n = number; NR = not reported; PPH = postpartum hemorrhage; rFVIIa = recombinant activated factor VIIa; SD = standard deviation

KQ5. Effectiveness of Systems-Level Interventions for Management of PPH

Key Points

- No clinical trials demonstrate effectiveness of a systems-level intervention for reducing severity of PPH or improving maternal outcomes.
- The sole cluster randomized trial in 106 French maternity units, with more than 146,000 births, used a multicomponent intervention of academic detailing of protocols, local champions, protocol reminders, and peer review compared to passive dissemination. Prevalence of severe PPH did not differ between arms.
- In general, multicomponent systems-level interventions do not reliably reduce severity of PPH.

- Three European pre-post publications used audit of PPH cases with feedback to teams and individual providers. Two reported significantly reduced incidence of severe PPH, in each case by more than 1 percent absolute risk among total births, and in an extended follow-up of one intervention, sustained at 0.6% among vaginal births.
- No U.S. studies relied primarily on audit and feedback.
- One large and diverse hospital system with 32,059 births across the study period used a detailed clinical staging and care algorithm to manage PPH and reduced blood product use by 26 percent.
- A large urban teaching hospital in U.S., that dramatically revised clinical responsibilities of residents and attending physicians, had no maternal mortality from PPH in a 36-month intervention period that followed a 24-month window with two maternal deaths. Overall PPH severity did not change.
- In a subsequent report, this teaching hospital found an increase in PPH diagnosis ($p=0.002$), increase in mean estimated blood loss ($p = 0.014$), and increase in the proportion of PPH with estimated blood loss greater than 1500 mL ($p=0.010$), though use of uterotonics, balloon tamponade, B-Lynch sutures and embolization increased ($p \leq 0.05$). Transfusion, postpartum hysterectomy, and ICU admission did not decline ($p > 0.05$) though length of stay in ICU was shorter.
- Strength of the evidence is moderate for a lack of benefit for systems-level interventions in reducing PPH incidence or severity; preventing hysterectomy; and affecting ICU admissions. Strength of the evidence is moderate for no effect on the need for transfusion and insufficient for effects on mortality.

Overview of the Literature

We classified research as system-level interventions when an entire administrative unit within a health system was responsible for implementing policies or protocols that were intended to improve management of PPH. The level from which interventions were launched ranged from an entire region of a national health system, to multihospital collaborations, to individual department decisions about labor and delivery routines that encompassed all care providers. Interventions were varied and included broad multicomponent interventions, implementation of emergency response teams, and audit and feedback of outcomes data about severe PPH to groups and individual providers.

We identified a total of nine studies (reported in 11 publications) that were designed to investigate the effectiveness of one or more system-level interventions for reducing severity of PPH or improving specific maternal outcomes.[34-37, 67, 68, 128-132] Six were of fair quality,[36, 37, 67, 68, 128, 129, 132] and three were of poor quality.[34, 35, 130, 131]

Because system-level randomized trials are rare, we decided during design of this review that we would include studies that were not randomized but examined the influence of multicomponent systems-level interventions over time. Eight studies compared a baseline period with subsequent trends after implementation of the interventions intended to improve management of PPH and to reduce severity of adverse maternal consequences.[34-36, 67, 128-130] Within this group one conducted formal trend analyses across a seven-year window beginning with launch.[130, 131]

For brevity in tables and text we have called these pre-post assessments. One publication provided outcomes from a randomized trial.[37] The trial was conducted in 106 maternity units in

defined maternity regions of France.[37] Of the remaining pre-post studies, four were conducted in Europe,[35, 36, 129-131] and four in the United States.[34, 67, 68, 128, 132]

When an entire system undertakes a change all the components are working in concert and are typically designed to do so. Given this intentional interaction between parts, the intervention that is being tested is the "bundle" of components that are being conducted together. For example the influence of audit and feedback in the context of an intervention that includes measuring blood loss, mock emergencies practice, and flow charts to track delivery of key treatments at specific intervals is being conducted in a different environment than audit and feedback in an intervention that does not measure blood loss, or use flow charts, but that did incorporate mock emergency practice.

At times in reviews of systems-level approaches the components are similar enough and the trials large enough that we can conduct meta-analyses of trials with well-operationalized outcomes to attempt (while noting the strong influence of context) to partially isolate the influence of a single component on outcomes. In this literature, the lack of a group of strong trials, the variation in implementation of even similar types of components, duplication of populations over time in publications, and wide range of operational definitions of outcomes, made such analysis implausible. We thus considered all components of an intervention as one systems-level intervention in our analyses below.

Detailed Analysis

The outcomes of systems-levels interventions are summarized in Table 23 in reverse chronological order. We summarize outcomes by study design below.

Table 23. Systems-level interventions to improve management of PPH

Author, Year; Country	Study Type & Time Period	Setting & Population Pre: PPH cases/births Post: PPH cases/births	Management Strategies Addressed by Intervention	Outcomes
Dupont et al. 2014[130, 131] France	Trend Analysis 2005 - 2012 Pre-Post 2005, 2008	Level III maternity unit: 2005: 27/2,919 (1.2%) 2006: 25/3,113 (1.0%) 2007: 9/3,213 (0.7%) 2008: 9/3,213 (0.4%) 2009: 16/3,539 (0.6%) 2010: 13/3,966 (0.4%) 2011: 16/4,019 (0.5%) 2012: 18/4,085 (0.6%) 2 maternity units (level III and level II) Pre: 77/4500 (1.71% Post: 42/5112 (0.82)	Quarterly clinical audit meetings for review of all severe PPH after vaginal birth with trend feedback using process control tools **Goal:** reduce the incidence of severe PPH; with secondary goals of increasing use of four key management components	Severe PPH (defined by EBL>1500 cc or need for specified interventions including transfusion and surgical interventions) decreased by half ($p < 0.001$) System reached and maintained reduced PPH target in the first quarter of 2009. Trends for use of all four key management components document statistically significant increase in consistency of use. Pre-Post: Severe PPH declined from 1.52% to 0.96% of births at level III hospital ($p = 0.048$) and from 2.08% to 0.57% at level II hospital ($p < 0.001$)
Einerson et al. 2014[128, 132] United States	Pre-Post 2007 - 2011	Urban tertiary care hospital Pre: 5.3% Post: 6.0% Total cases n = 3105 Total n = 52,819	Multicomponent evidence-based patient safety program to assist in management of PPH: education of all nursing and physician staff, introduction of a management checklist, universal use of active management of third stage Goal: sustained reduction in maternal morbidity from severe PPH	Increase in PPH diagnosis ($p=0.002$), increase in mean EBL ($p = 0.014$), and increase in the proportion of PPH with estimated blood loss greater than 1500 mL ($p=0.010$) Use of uterotonics, balloon tamponade, B-Lynch sutures and embolization increased ($p \leq 0.05$) Transfusion, postpartum hysterectomy, and ICU admission did not decline ($p > 0.05$) though length of stay in ICU was shorter.
[a]Shields et al. 2014[68] United States	Pre-Post 2010, 2011 (2 mos prior, 5 and 10 mos after)	29 hospital health system including range from small rural to large urban facilities	Labor and delivery nursing and physician education, with three progressive stages of intervention implementation via algorithm. **Goal:** reduce blood transfusion and peri-partum hysterectomy	Blood product use declined 25.9% ($p < 0.01$) and hysterectomy declined 14.8% but change was not significant ($p = 0.2$)

Table 23. Systems-level interventions to improve management of PPH (continued)

Author, Year; Country	Study Type & Time Period	Setting & Population Pre: PPH cases/births Post: PPH cases/births	Management Strategies Addressed by Intervention	Outcomes
Markova et al. 2012[129] Denmark	Pre-Post 2003, 2005, 2007	Urban university hospital Pre: NR Post: NR (148 total transfusions for PPH among 10,461 births)	Multi-professional skills training for management of a range of obstetric emergencies including PPH **Goal:** reduce need for transfusion and shorten interval to PPH interventions	No effect of the intervention on transfusion for PPH and an unchanged delay in management of retained placenta with trend towards longer duration
[a]Shields et al. 2011[67] United States	Pre-Post 2009, 2011	Rural hospital Pre: 62/2,939 (2.11%) Post: 148/5,813 (2.55%)	Labor and delivery nursing and physician education, with three progressive stages of intervention implementation via algorithm. **Goal**: promote early intervention, reduce stage of severity of hemorrhage, promote early use of blood products, and reduce DIC	Severity of PPH declined. After implementation 82% of women with PPH were treated successfully with Stage 1 intervention (supportive measures and uterine massage only or with a single dose of tocolytic) compared to 35% at baseline (p = 0.02)
Deneux-Tharaux et al. 2010[37] France	Cluster RCT 2004 - 2006	106 maternity units Control: 6.37% of 70,707 Intervention: 6.37% of 76,074	Passive vs. active dissemination of protocol with academic detailing, nurse and physician champions, reminders, and peer review of severe PPH cases **Goal:** reduce severity of PPH through multi-faceted early intervention	Proportion of women with severe PPH did not differ by intervention group (1.65% control sites and 1.64% intervention sites)
Audureau et al. 2009[36] France	Pre-Post 2002, 2005	19 maternity units Pre: 164/17,664 (0.93%) Post: 166/ 17,722 (0.94%)	Multifaceted intervention including dissemination of clinical guidelines, local opinion leaders, reminders, and blood collection bags **Goal:** Primary goals were use of intervention components, reducing prevalence of severe PPH analyzed as secondary outcome	Prevalence of severe PPH remained constant across time periods. Use of transfusion (p = 0.01) and hemostatic surgery increased significantly (p = 0.03)
Skupski et al. 2006[34] United States	Pre-Post 2000-2001, 2002-2005	Urban university hospital Major PPH Pre: 12/5811 (0.21%) Post: 49/12,912 (0.38%)	Multicomponent approach including rapid response team, clinical pathways, guidelines, and protocols, dedicated obstetric inpatient service, change in duties, didactic sessions **Goal:** reduce severity of PPH and improve maternal outcomes	Maternal deaths declined from two deaths in the baseline period to none in the follow-up period (p = 0 .04). Severity of hemorrhage remained unchanged

Table 23. Systems-level interventions to improve management of PPH (continued)

Author, Year; Country	Study Type & Time Period	Setting & Population Pre: PPH cases/births Post: PPH cases/births	Management Strategies Addressed by Intervention	Outcomes
Rizvi et al., 2004[35] Ireland	Pre-Post 6 months in 1999 6 months in 2002	Single hospital Pre: 54/3,176 (1.7%) Post: 15/3,300 (0.45%)	Audit of PPH > 1,000ml and near-miss maternal mortality for departures from guidelines; intervention included review of guidelines, staff training and practice drills **Goal:** reduce incidence of PPH > 1,000ml	PPH > 1,000ml declined from 1.7% to 0.45% ($p < 0.001$) with 100% adherence to guidelines in the follow-up period

[a]Studies used the same intervention tools in a "comprehensive patient safety initiative "but report on different time periods and different numbers of hospitals; thus, we have analyzed as two separate studies.
Abbreviations: DIC = disseminated intravascular coagulation; EBL = estimated blood loss; ICU = intensive care unit; PPH = postpartum hemorrhage

Randomized Controlled Trial

In 1998, the French government introduced perinatal networks organized within geographical regions. The networks encompass all public and private hospitals and include at least one tertiary care unit per network. The mandate for networks includes care coordination and quality improvement research. The single clinical trial of multicomponent interventions was a large cluster randomized trial conducted in two large maternity care regions of France representing six networks; 106 of a potential 109 maternity units in these networks participated.[37] Sites were stratified within network and by size, then centrally randomized to implement the full intervention or to have the related protocol passively disseminated without programmatic support.

At intervention sites outreach visits were held to plan for implementation and anticipate challenges. A protocol intended to reduce the rate of severe PPH was introduced by usual channels and reinforced through academic detailing by local opinion leaders and by reminders in the maternity units. The intervention proceeded in two phases that allowed sites to consider how to best optimize the quality of implementation at their site, to prepare staff, and to make changes to facilities or resources on hand. All types of care providers were engaged and had roles in the protocol. The second phase included implementation tools such as emergency response kit to hold key drugs, crisis response phone numbers, transfusion and lab order forms, and other items as desired by the units and provision of a "PPH chronological checklist" to track implementation of the protocol, estimate total estimated blood loss, and encourage minimal loss of time in crucial decisions. The intervention also included peer review of all births with severe PPH and critical analysis of the care provided in reference to the protocol guidance.

With a total of more 146,000 births in the two study arms, severe PPH did not differ across sites with an incidence of 1.64 percent at the intervention sites and 1.65 percent at the control comparison sites. Some components of the intervention suggested improvements in practice, such as involving senior staff sooner ($p = 0.005$), using second-line pharmaceutical options sooner ($p = 0.06$), and more prompt checks of hematocrit ($p = 0.09$). However, taken together these differences and the global intervention package did not significantly influence overall

maternal outcomes. In a followup case series (n = 9365) from this RCT[81] that assessed transfusion practices, only half (n = 423/858, 49%) of women with PPH and a hemoglobin level below 7.0 g/dL received RBC transfusion. These results suggest poor compliance with transfusion recommendations in the national French guidelines.

Observational Studies

Eight nonrandomized studies used prospective observational designs in which baseline data about processes of care and patient outcomes were collected for an extended period of time prior to implementation of a policy, protocol, or procedure change,[34-36, 67, 68, 128-131] then followup data were collected over time after implementation. One study (published in two papers) used the first quarter of the year of implementation as an anchor for trend analysis.[130, 131] Across these studies numerous types of components were implemented and evaluated (Table 24).

Table 24. Components of interventions in systems-level studies

Problem solving/quality improvement stage
Specific protocols in place
Phased roll out
Educational components including training sessions or didactic materials
Clinical champions who assisted locally in engrafting implementation
Multi-professional target group meaning nurses and physicians from obstetrics, anesthesia, and potentially pediatrics were included
Mock events or simulations to allow role play of response to PPH
Documented risk assessments such as risk scores recorded on admission to the labor and delivery unit
Use of tracking tools, checklists, or timelines to support protocol implementation and/or ensure timely response
Emergency response kits such as crash carts with key medications and drapes for measuring estimated blood loss
Tools like fluid collection drapes, approaches to weighing linens for fluid, and/or mandates for tracking estimated blood loss
New staffing response plans to provide additional or more senior staffing in the event of PPH
Audit and feedback in which individuals or groups regularly reviewed data from PPH events to examine trends and responsiveness to protocols

Abbreviations: PPH = postpartum hemorrhage

All systems-level studies evaluated the influence of combinations of these approaches (see Table 25). [34-37, 67, 128-132] Two of the observational studies documented statistically meaningful changes in use of selected intervention components.[36, 128, 132] Increases in use of management strategies included use of uterotonics,[128, 132] hemostatic sutures at cesarean, [128, 132] hemostatic interventions including embolization and hysterectomy[36] and transfusion[36] in the period after new protocols were introduced. In neither of these studies were the primary maternal outcomes such as incidence of severe PPH, DIC, hysterectomy, or ICU admission decreased.

Four studies reported reduced severity of PPH after implementation of new multicomponent programs.[35, 67, 68, 130, 131] In the most recent of these, reported in the United States, the investigators established a staging system to define severity.[67, 68] The staging was linked to the level of intervention ultimately required to control the hemorrhage with higher stages indicating greater morbidity. Use of the comprehensive maternal hemorrhage protocols was described first in a single hospital.[67] In the baseline data collection in this hospital before implementation, 35 percent of women giving birth by cesarean or vaginally were successfully treated with only Stage 1 (basic) interventions such as a single dose of uterotonic and uterine massage. This improved to 82 percent after the systems-level intervention program was in place ($p = 0.02$). The program emphasized vigilant observation, tracking of time course, and formal measurement of estimated blood loss and also allowed for shifting of staff to better match acuity. They then implemented

this protocol in a 29-hospital system to test influence on reducing transfusion and peri-partum hysterectomy as the clinical outcomes. Blood product use declined 25.9 percent ($p < 0.01$), but the decline in hysterectomy (14.8%) was not significant ($p = 0.2$). Unlike in the initial single site study, in the multisite intervention across the 10 months of follow-up there was an increase in the percentage of Stage 2 and 3 interventions.[68]

A French study in two maternity units reported in an initial paper[130] that the incidence of severe PPH declined in both a level II and level III hospital with the greater reduction in the lower acuity hospital. Incidence in that hospital fell from 2.09 percent to 0.57 percent of all births ($p < 0.001$) with a significant but less than one percent drop in the level III unit. In an extended follow-up of the program maintained across the level III sites for seven years, they documented achievement and persistence of a meaningfully reduced incidence of severe PPH to less than 0.6% ($p < 0.001$).[131] This program and that of the final study that reports reduced incidence was driven predominantly by a process of systematic audit of the charts of severe PPH cases with feedback to suggest improvements. The earliest group to examine audit and feedback reported similar scope of reductions in severe PPH (defined as > 1,000ml estimated blood loss) from 1.7 percent to 0.45 percent ($p = < 0 .001$) while noting that compliance with guidelines for intervention improved to 100 percent in the follow-up period. They attribute a portion of this success to training and use of practice drills.

Table 25. Summary of components of systems-level interventions

Components of interventions Author, Year	Problem Solving/Quality Improvement Stage	Specific Protocols in Place	Phased Roll Out	Educational Component	Clinical Champions	Multi-Professional Target Group	Mock Events/Simulations	Documented Risk Assessments	Tracking Tools/Checklists to Support Protocols	Emergency Response Kits	Tools/Mandate for Tracking EBL	Staffing Response Plan for PPH	Audit and Feedback
Dupont et. al. 2014 [130, 131]		X											X
Einerson et al 2014 [128, 132]	X	X		X					X				
Shields et al. 2014[68]	X	X	X	X		X	X	X	X	X	X	X	
Markova et al. 2012[129]				X		X	X						
Shields et al., 2011 [67]	X	X	X	X		X	X	X	X	X	X	X	
Deneux-Tharaux et al., 2010[37]	X	X	X		X				X	X	X		X
Audureau et al., 2009[36]	X	X		X	X	X			X		X		
Skupski et al., 2006[34]	X	X		X		X		X		X		X	
Rizvi et al., 2004[35]		X		X			X						X
Total Studies (n)	6	8	3	7	2	5	4	3	5	4	4	3	3

Abbreviations: EBL = estimated blood loss; PPH = postpartum hemorrhage

One study in a large urban teaching hospital in the United States examined maternal mortality over a 24-month baseline and a 36-month post-implementation phase.[34] They had two deaths in the period that prompted the systems-level intervention and none during the post-phase ($p = 0.036$). While this intervention included many similar components to others, the authors also report major adjustments to how operations were changed across the entire department to enhance the ability to have dedicated teams focused on laboring and postpartum women. These included separating coverage responsibilities for gynecologic and obstetric inpatients and redefining the oversight role of the covering obstetrician for both public and private patients. Such staffing and organizational changes exceed that in other studies. Subsequent reports from this teaching hospital implementing additional components of intervention found an increase in PPH diagnosis ($p=0.002$), increase in mean estimated blood loss ($p = 0.014$), and increase in the proportion of PPH with estimated blood loss greater than 1500 mL ($p=0.010$) alongside increased use of interventions like uterotonics, balloon tamponade, B-Lynch sutures and embolization ($p \leq 0.05$) [128, 132]

Four of the eight studies, along with the only systems-level RCT, did not document benefits of the tested intervention packages for reducing PPH severity or complications; this includes the study that reported reduced maternal mortality.[34, 36, 128, 129, 132] These studies shared common features among those without evidence of effectiveness as well as among those that reported

reduced incidence and/or severity. No clear pattern emerges to suggest an “active ingredient” to these multicomponent interventions.

Audit and feedback was used in two of the three studies that reported reduced severity. In evaluating this evidence it is crucial to underscore that there was no masking of the definitions of severity, of those who assessed severity, or of the overall intent of the research. Because obstetric care providers may use charted estimated blood loss as a proxy for level of concern and desire for vigilance in follow-up assessments, it could be that a shift occurred from labelling someone as high risk by indicating high estimated blood loss at the time of the birth to a lower estimate of estimated blood loss with concerns captured elsewhere in the protocols.

Only the randomized trial conducted any multivariate analysis to take into account secular trends in factors such as proportions of birth by cesarean and vaginal route or scheduled versus emergent cesarean. They detected a statistical trend of falling overall risk of PPH at both control and intervention sites. The reduction was similar over time and did not confound the trial analysis. The authors also used multilevel models to account for clustering within site.

One team reported analyses stratified by potential confounders.[36] Two teams used forms of trends analysis including graphical control charts but without adjustment for patient characteristics or route of birth trends.[131, 132] Others noted changes in trends that could modify risk, such as proportion of births by cesarean, but did not conduct adjusted analyses. Such factors alongside any changes in the risk profile of women receiving care can both obscure potential effects or introduce the appearance of an effect when there is none.

Gray Literature

In response to 10 requests for Scientific Information Packets, we received only one document, an unpublished systematic review conducted by a company that markets the Bakri Postpartum Balloon. The document yielded no studies of relevance for this review; all 23 identified studies were case series, typically with less than 20 participants, and a number were conducted in developing nations. Our search of ClinicalTrials.gov did not yield any results not identified in our other searches.

Discussion

State of the Literature

We included 68 unique studies (76 publications) in this review, including four randomized controlled trials (RCTs), two prospective and 14 retrospective cohort studies, 10 pre-post studies (defined as studies that compare PPH management and/or outcomes before and after an intervention, such as introduction of a new protocol), four case-control studies, and 34 case series. Most studies were conducted in Europe (n = 33), and 18 were conducted in the United States or Canada, 13 in Asia, and three in Australia or New Zealand and one in Argentina (Table 5). No studies were of good quality for effectiveness outcomes. We considered 23 studies as fair quality for effectiveness outcomes and 38 as poor (including case series, which we considered poor quality by default). Seven studies provided only harms data. Among the 50 studies reporting harms, we considered 11 as good quality for harms reporting and the remainder as poor quality.

While a number of studies were classified as prospective or retrospective studies using our study classification algorithm (Appendix G), few cohort studies provided comparative analyses between the groups, and many were confounded by indication in that women who received interventions such as massive transfusion or hysterectomy likely had more severe cases of postpartum hemorrhage (PPH). Given the lack of data from randomized or controlled studies of PPH management, we present data from cohort studies and case series and note potential confounding as appropriate.

Overall, it appears that 50 deaths occurred in the included studies addressing non-systems level interventions out of roughly 152,264 participants (note that 139617 of these participants were included in a large database study reporting harms following methylergonovine maleate given in the peripartum hospitalization[60]). Only one death was potentially linked to PPH management: a woman who was given methotrexate in conjunction with embolization died from methotrexate-related nephrotoxicity.[95] The remaining deaths appear to be the result of PPH and its sequelae rather than interventions used for management.

Summary of Key Findings

Findings are summarized below by Key Question (KQ).

KQ1. Effectiveness of Interventions for Management of PPH

Sixty-one unique studies examined the effectiveness of interventions for management of PPH. Some studies addressed multiple interventions. We classified these studies broadly as medical interventions, procedures, and surgical interventions and more specifically by the type of intervention including pharmacologic interventions (12 studies), transfusion (four studies), intrauterine balloon tamponade (five studies), embolization (19 studies), uterine compression sutures (three studies), uterine and other pelvic artery ligation (five studies), embolization and hysterectomy (one study), hysterectomy (eight studies), and combined approaches (four studies).

Medical Interventions

Pharmacologic Interventions

Six of the pharmacologic intervention studies were small, single studies of fair and poor quality with mixed results. The other six pharmacologic intervention studies assessed the effectiveness of recombinant activated factor VIIa (rFVIIa). These small studies (largest n = 175) also had mixed results. Overall, additional research is needed for pharmacologic interventions, particularly in light of the fact that these are typically considered the first line in management of PPH.

Transfusion for Supportive Management of Ongoing PPH

Four studies of fair and poor quality addressed transfusion for PPH management. Two of the studies found ICU admissions and death were higher with combined blood products versus single (whole blood or packed red blood cells [PRBC]) and massive transfusion versus non-massive transfusion. These differences may reflect that women in the groups with poorer outcomes had more severe PPH. A third study found cryoprecipitate and fibrinogen concentrate were equally efficacious. A final pre-post study reported a significant reduction in the usage blood products for PPH after the introduction of fibrinogen.

Procedures

Both of the procedures (uterine balloon tamponade, embolization) we reviewed showed positive results for PPH management. The median success rate (defined as control of bleeding without additional procedures or surgeries) of intrauterine balloon tamponade as the initial second-line procedure (i.e., the first procedure used after first-line conservative management had failed to control bleeding) in one study was 86 percent and 75 percent in two other studies. In a study of a protocol change to add balloon tamponade as the initial procedure after medication failure, rates of some invasive interventions (beyond tamponade) decreased in women who had vaginal births. Uterine balloon tamponade is a relatively simple, fast, and inexpensive procedure that warrants further study.

The median success rate for embolization as the initial second-line procedure among 14 studies was 89 percent (range = 58% to 98%). However, there was wide variation in the materials used for embolization, the arteries that were embolized, and the interventions that were used before and in conjunction with embolization. The availability of embolization, which is performed by an interventional radiologist, varies by hospital; therefore, this treatment modality is not available to all women with PPH.

Surgical Interventions

The effectiveness of surgical interventions varied. The success rate of uterine compression sutures was 70 percent in the one study from which this could be ascertained. In three studies of ligation, the median success rate was 92 percent in (range = 36%-96%). Hysterectomy used as the first procedure after conservative management controlled bleeding without further surgeries or procedures in a median of 57 percent of women (range = 20%-93%) in two studies. One study compared embolization and hysterectomy and reported significantly more ICU admissions and a greater median length of stay in the hysterectomy group than the embolization group.

Combined Approaches

Three studies examined a combination of medical and surgical interventions for secondary PPH. In the two studies that compared medical and surgical approaches, hospital readmission and repeat surgical evacuation occurred more frequently in women who initially received medical management versus surgical.

KQ2. Evidence for Choosing Interventions and Proceeding to Subsequent Interventions

We did not identify any studies addressing this question.

KQ3. Harms of Interventions for PPH

Fifty studies reported harms of interventions for management of PPH; eleven of these were good quality for harms reporting and the remainder were poor. In four of the five studies that reported harms related to rFVIIa, 2 to 9 percent of women who received rFVIIa had thrombotic complications. None of the women in the two of these studies that had comparator groups had thromboembolic events; however, this may be due to the small sample sizes rather than evidence of an adverse effect of the medication. The harms reported in embolization studies are diverse and few studies report the same harms. The most frequently reported adverse events were infertility (0-43%), PPH in subsequent pregnancy (5%-23%), spontaneous abortion in subsequent pregnancy (5%-21%), and hematoma at a puncture site (1%-6%). Two studies of uterine compression sutures reported cases of preterm birth following sutures but noted no significant differences with control groups. The most frequently reported adverse events in nine hysterectomy studies were ureter lesions (0.4%-41%), reoperation (1.8%-29%), infection (7%-54.6%), and bladder lesion (6%-12%). Harms for other procedural or surgical interventions were either incomparable across studies or were only reported in a single study per intervention.

KQ4. Effectiveness of Interventions for Acute Blood Loss Anemia After Stabilization of PPH

Two small, poor quality RCTs addressed interventions for acute blood loss after PPH is stabilized. In a study comparing women treated with intravenous versus oral iron supplementation after PPH, there was no significant difference in hemoglobin level at any time point between groups. In a study that assessed differences in fatigue and quality of life between women treated with blood transfusion versus no transfusion, the difference in these outcomes between groups was minimal and possibly clinically equivalent.

KQ5. Effectiveness of Systems-Level Interventions

Across a range of systems-level interventions that range from complex multiphase project with 11 distinctive components to simple three component models for audit and feedback, findings are inconsistent about benefit. All sites, including those participating in the active sites of the null cluster randomized trial were aware of a programmatic emphasis on improving response to and outcomes of PPH. Despite this built-in bias towards finding an effect – since estimated blood loss was rarely quantitatively measured and self-report of performance would be expected to be optimistic – results of a large trial and the higher quality studies do not

demonstrate ability to reduce incidence or severity of PPH, or key maternal outcomes like transfusion, hysterectomy, and ICU admission.

Strength of the Evidence

Overall the evidence to answer questions about PPH management did not reach standards for high strength of evidence. The strength of evidence (SOE) tables summarize the total number of studies and the number of participants within those studies noting the study designs and quality (Tables 26-32). The tables also provide the assessment of the study limitations, consistency of findings across studies, directness of the evidence, precision of the estimate, and presence of reporting bias. We included case series in our assessment of SOE for harms and success rates of interventions, and we rated SOE for outcomes we considered to be clinically significant, consistently defined, and plausibly linked to the intervention.

SOE is insufficient for all outcomes of oxytocin and other uterotonics, misoprostol, tranexamic acid, carboprost tromethamine, thrombomodulin, and rFVIIa for PPH management due to the study sizes and lack of studies addressing each agent (Table 26). As noted, we identified few studies of medications meeting our review criteria; however, a number of studies of misoprostol and oxytocin have been conducted in developing countries. Four recent systematic reviews of interventions for PPH, including two Cochrane reviews, assessed uterotonics including misoprostol. We summarize these reviews fully in the Findings in Relation to What is Known section below and provide a brief summary here. In one Cochrane review, oxytocin infusion was more effective and caused fewer side effects when used as first-line therapy for the treatment of primary PPH compared with misoprostol.[133] When used *after* prophylactic uterotonics, misoprostol and oxytocin infusion had similar effects. The review concluded that adding misoprostol for women receiving treatment with oxytocin did not appear beneficial. In another Cochrane review differences in maternal mortality and morbidity, except for fever, did not differ significantly between misoprostol and control groups.[134] The investigators concluded that misoprostol did not increase or decrease morbidity or mortality, with the exception of fever, and the lowest effective dose should be used. In another review of misoprostol vs. placebo, misoprostol did not reduce PPH risk significantly compared with placebo.[135] In the fourth review and meta-analysis, higher doses of misoprostol (600 vs. 400 micrograms) were no more effective at preventing blood loss.[50]

Table 26. Strength of the evidence for studies addressing medications

Intervention /Outcome	Study Design Quality and Number of Studies (N Total with PPH)	Study Limit-ations[a]	Consistency	Direct-ness	Precision	Reporting Bias	Finding Strength of Evidence Grade
Oxytocin and Other Uterotonics							
Intervention success	Retrospective cohort-1 fair (91)[79]	High	Unknown	Direct	Imprecise	NA	Control of bleeding in 45/91 (49%) women receiving oxytocin and other uterotonics. Insufficient SOE for success in controlling bleeding due to single, short-term study with high study limitations
TXA Vs. No TXA							
All outcomes (anemia, transfusion, ICU, blood loss)	RCT-1 poor (144)[69]	High	Unknown	Direct	Imprecise	Undetected	Less blood loss, need for transfusion, progression to severe PPH in TXA group vs. control, p<.05, but insufficient SOE for all outcomes due to single small, short-term cohort study with high study limitations

Table 26. Strength of the evidence for studies addressing medications (continued)

Intervention / Outcome	Study Design Quality and Number of Studies (N Total with PPH)	Study Limit-ations[a]	Consistency	Direct-ness	Precision	Reporting Bias	Finding Strength of Evidence Grade
Misoprostol Vs. Methyler-gonovine Maleate							
All outcomes (transfusion, uterine preservation)	Retrospective cohort -1 fair (58)[78]	High	Unknown	Direct	Imprecise	NA	No group differences in need for transfusion, additional medical or surgical treatments. Insufficient SOE for superiority of one agent over another in affecting any outcome due to single small, short-term cohort study with high study limitations
Sulprostone							
Intervention success	Case series-1 poor (1370)[70]	High	Unknown	Direct	Precise	NA	Bleeding controlled in 83% of 1370 women receiving sulprostone. Insufficient SOE for success in controlling bleeding due to single, short-term study with high study limitations

Table 26. Strength of the evidence for studies addressing medications (continued)

Intervention /Outcome	Study Design Quality and Number of Studies (N Total With PPH)	Study Limit-ations[a]	Consistency	Direct-ness	Precision	Reporting Bias	Finding Strength of Evidence Grade
Carboprost Trometh-amine							
Intervention success	Case series-1 poor (237)[71]	High	Unknown	Direct	Imprecise	NA	Bleeding controlled by carboprost in 81% of 237 cases of PPH. Insufficient SOE for success in controlling bleeding due to single small, short-term cohort study with high study limitations
Thrombo-modulin Vs. No Thrombo-modulin							
All outcomes (uterine preservation, bleeding, transfusion)	Retrospective cohort-1 Fair quality (36)[72]	High	Unknown	Direct	Imprecise	NA	Greater D-dimer decrease from baseline in intervention arm vs. control, p<.05. Insufficient SOE for all outcomes due to single small, short-term cohort study with high study limitations

Table 26. Strength of the evidence for studies addressing medications (continued)

Intervention / Outcome	Study Design Quality and Number of Studies (N Total with PPH)	Study Limit-ations[a]	Consistency	Direct-ness	Precision	Reporting Bias	Finding Strength of Evidence Grade
rFVIIa							
Transfusion	Case-control-1 fair (12)[74] Retrospective cohort-1 fair (48)[73]	High	Inconsistent	Direct	Imprecise	NA	Greater need for transfusion in rFVIIa group in one study and no difference in the second. Insufficient SOE due to inconsistency in effects on transfusion, high study limitations
Anemia	Retrospective cohort-1 fair (48)[73]	High	Unknown	Direct	Imprecise	NA	Insufficient SOE due to one small study with high study limitations; ; need for transfusion greater in rFVIIa arm vs. control
Uterine preservation	Case-control-1 fair (12)[74]	High	Inconsistent	Direct	Imprecise	NA	Insufficient SOE. No difference in hyster-ectomy rates in one small, imprecise study with high study limitations
LOS	Retrospective cohort-1 fair (48)[73]	High	Unknown	Direct	Imprecise	NA	Insufficient SOE. Similar LOS for treated and untreated groups in one small, imprecise study with high study limitations

[a]Note: Study limitations are rated on a low to high scale. Low limitations=more rigorously designed study.
Abbreviations: ICU = intensive care unit; LOS = length of stay; NA = not applicable; PPH = postpartum hemorrhage; RCT = randomized controlled trial; rFVIIa = recombinant activated factor VIIa; SOE = strength of the evidence; TXA = tranexamic aid

The SOE for outcomes related to transfusion and uterine balloon tamponade is insufficient (Table 27). While there were three fair quality studies of transfusion, two of these were so confounded that we could not confidently ascertain their outcomes. There is low SOE for embolization controlling bleeding without additional procedures or surgeries.

Table 27. Strength of the evidence for studies addressing other medical interventions and procedures

Outcome	Study Design Quality and Number of Studies (N Total With PPH)	Study Limit-ations [a]	Consistency	Direct-ness	Precision	Reporting Bias	Finding Strength of Evidence Grade
Transfusion for Supportive Management of PPH							
ICU admission and overall LOS	Retrospective cohort-3 fair (1700)[83-85]	High	Inconsistent	Direct	Precise	NA	Insufficient SOE due to inconsistency in direction of effect (greater LOS and ICU admission in transfusion or whole blood groups in 2 studies; no group differences in another study), high study limitations

Table 27. Strength of the evidence for studies addressing other medical interventions and procedures (continued)

Uterine Balloon Tamponade							
Intervention success[b]	Pre-post-1 fair (43)[87] Retrospective cohort-1 fair (12)[79] Case series-3 poor (153)[88-90]	High	Consistent	Direct	Imprecise	NA	Balloon tamponade without further procedure/surgery controlled bleeding in 75%-86% of women in 3 studies, and tamponade plus additional intervention controlled bleeding in 86-98% in another 2. Insufficient SOE due to small sample sizes, high study limitations
Embolization							
Intervention success[b]	Prospective cohort-1 fair (114) [109] Retrospective cohort-4 fair (114) [49, 79, 95, 96] Case-control-1 poor (53)[91] Case series-9 poor (1232)[94, 97, 99, 100, 103-106, 110]	High	Consistent	Direct	Precise	NA	Low SOE for success of embolization in controlling bleeding without additional procedures or surgeries (median success rate of 89% as initial second-line intervention; conservative management and severity of PPH varied across studies). A higher SOE is not possible due to the lack of comparisons in this literature and small sample sizes

Abbreviations: ICU = intensive care unit; LOS = length of stay; NA = not applicable; PPH = postpartum hemorrhage; SOE = strength of the evidence

[a]Note: Study limitations are rated on a low to high scale. Low limitations=more rigorously designed study.

[b]Success defined as control of bleeding without additional procedures or surgeries when used as the initial second-line procedure (i.e., the first procedure used after first-line conservative management failed to control bleeding)

There is insufficient SOE for the success of uterine compression sutures (Table 28). There is low SOE for ligation controlling bleeding without further procedures or surgeries and insufficient SOE for all hysterectomy outcomes.

Table 28. Strength of the evidence for studies of surgical interventions

Outcome	Study Design Quality and Number of Studies (N Total With PPH)	Study Limit-ations[a]	Consistency	Direct-ness	Precision	Report-ing Bias	Finding Strength of Evidence Grade
Uterine Compression Sutures							
Intervention success[b]	Prospective cohort-1 fair (211)[77, 82] Retrospective cohort-1 fair (26)[79]	Medium	Consistent	Direct	Imprecise	NA	Insufficient SOE due to small studies; bleeding controlled by suture following conservative management in 60%-70% of women
Ligation							
Intervention success[*b]	Prospective cohort-1 fair (20)[77] Retrospective cohort-1 fair (48)[96] Case series-2 poor (321)[112, 113]	Medium	Consistent	Direct	Precise	NA	Low SOE due to small sample size. 92% success rate for controlling bleeding without further procedure or surgery in 3 small studies of ligation alone. Ligation with or without suture controlled bleeding in 91% in one case series
Hysterectomy							
LOS, ICU admission	Prospective cohort-1 fair (108) [109]	High	Unknown	Direct	Imprecise	NA	Insufficient SOE due to few comparative studies, high limitations

[a]Note: Study limitations are rated on a low to high scale. Low limitations=more rigorously designed study.
[b]Success defined as control of bleeding without additional procedures or surgeries when used as the initial second-line procedure (i.e., the first procedure used after first-line conservative management failed to control bleeding)
Abbreviations: ICU = intensive care unit; LOS = length of stay; NA-not applicable; PPH = postpartum hemorrhage; SOE-strength of the evidence

Table 29 outlines the SOE for studies of combination interventions. Two studies assessed length of stay; however, we considered the SOE for the effect of intervention to be insufficient given the small sample sizes and inconsistency in interventions.

Table 29. Strength of the evidence for studies of combination interventions

Outcome	Study Design Quality and Number of Studies (N Total With PPH)	Study Limit-ations[a]	Consistency	Direct-ness	Precision	Reporting Bias	Finding Strength of Evidence Grade
LOS in women with primary PPH	Retrospective cohort-1 fair (257)[118]	High	Unknown	Direct	Imprecise	NA	Greater LOS in women undergoing procedures/ surgeries vs. medical management, p<.001. Insufficient SOE due to small, single study
LOS in women with scondary PPH	Retrospective cohort-2 fair (168)[119]	High	Unknown	Direct	Imprecise	NA	No differences in LOS between surgical and medical management groups. Insufficient SOE due to small, single study

Abbreviations: LOS = length of stay; NA = not applicable; PPH = postpartum hemorrhage; SOE = strength of the evidence

[a]Note: Study limitations are rated on a low to high scale. Low limitations=more rigorously designed study.

The SOE for harms of interventions for management of PPH can be found in Table 30. Generally SOE was insufficient given diversity of harms reported in single studies. However, SOE rose above insufficient for selected harms related to embolization and hysterectomy due to the greater number of studies and more consistent reporting of adverse events. As noted, few studies of uterotonics met our inclusion criteria; however, harms reported in recent systematic reviews of uterotonics for PPH treatment included shivering and fever (see Findings in Relation to What's Known section for full summary). In one review, oral misoprostol was associated with a significant increase in vomiting and shivering compared with either oxytocin or rectal misoprostol.[133] In another review, differences in maternal mortality and morbidity, except for fever, did not differ significantly between misoprostol and control groups.[134] Risk of fever was increased in misoprostol groups and was highest in studies with a misoprostol dose of 600 µg or more. In another review of misoprostol vs. placebo, shivering and fever were significantly more common in misoprostol arms.[135] A fourth review noted more adverse effects related to misoprostol vs. placebo.[50]

While evidence in the current review was insufficient to comment on the association between rFVIIa and thrombolic events, studies in other populations have suggested increased risk of arterial events. In one review of RCTs in non-hemophilia patients, the pooled relative risk of thrombolic events across studies of prophylactic and therapeutic uses of rFVIIa was 1.45 (95% CI: 1.02 to 2.05).[136] Another review of fertility outcomes following embolization, ligation, and sutures concluded that the techniques reviewed did not appear to compromise fertility, but the number and quality of studies was limited.[137]

Table 30. Strength of the evidence for harms of interventions for management of PPH

Intervention Outcome	Study Design Quality and Number of Studies (N Total With PPH)	Study Limit-ations [a]	Consistency	Direct-ness	Precision	Reporting Bias	Finding Strength of Evidence Grade
Pharmacologic							
Tranexamic acid *All harms*	RCT-1 good (114)[69]	Low	Unknown	Direct	Imprecise	Undetected	Insufficient SOE due to small sample size, but serious harms did not differ between groups and mild, transient harms occurred more often in TXA group
Sulprostone *All harms*	Case series-1 poor (1370)[70]	High	Unknown	Direct	Precise	NA	Insufficient SOE as only one study considered poor quality for harms reporting

Table 30. Strength of the evidence for harms of interventions for management of PPH (continued)

Intervention Outcome	Study Design Quality and Number of Studies (N Total with PPH)	Study Limit-ations [a]	Consistency	Direct-ness	Precision	Reporting Bias	Finding Strength of Evidence Grade
Pharmacologic							
Methyler-gonovine maleate *Acute coronary syndrome and myocardial infarction*	Retrospective cohort study-1 good (139,617)[60]	Low	Unknown	Direct	Precise	NA	Low SOE for lack of association of methyler-gonovine maleate with acute coronary syndrome and myocardial infarction; no significant difference in the incidence of these conditions in the exposed and non-exposed groups
Carboprost tromethamine *All harms*	Case series-1 poor (237) [71]	High	Unknown	Direct	Imprecise	NA	Insufficient SOE as only one study considered poor quality for harms reporting
rFVIIa *Thrombo-embolic events*	Case-control-1 fair (12)[74] Retrospective cohort-1 fair (48)[73] Retrospective case series-1 good, 2 poor (unclear due to overlap of 2 studies)[75, 76, 80]	High	Consistent	Direct	Imprecise	NA	Insufficient SOE; 4 of 5 studies (unclear overlap in 2 studies) reported thromboembolic events (pulmonary embolus, deep vein thrombosis, myocardial infarction) but sample sizes were small and study limitations are high

Table 30. Strength of the evidence for harms of interventions for management of PPH (continued)

Intervention Outcome	Study Design Quality and Number of Studies (N Total with PPH)	Study Limit-ations [a]	Consistency	Direct-ness	Precision	Reporting Bias	Finding Strength of Evidence Grade
Other Medical Interventions							
Transfusion for supportive management of PPH *All harms*	Retrospective cohort-2 poor (1574)[83, 84] Pre-post-1 poor (93)[86] Case series-1 good, 3poor (1152)[61, 63, 65, 81]	High	Inconsistent	Direct	Precise	NA	Insufficient SOE due to inconsistency, study limitations
Procedures							
Uterine balloon tamponade *All harms*	Pre-post-1 poor (43)[87] Case series-2 poor (102)[80, 90]	High	Consistent	Direct	Imprecise	NA	Insufficient SOE due to small studies with high limitations
Embolization *Infertility*	Retrospective cohort-2 poor (152)[92-95] Case-control-1 poor (53)[91] Case series-2 poor (169) [97, 98]	High	Inconsistent	Direct	Imprecise	NA	Low SOE for negative effect of embolization on future fertility. Infertility rate among women who had embolization in these studies was greater than that of the overall population rate (range 0-43%), but few women (n = 300) available for long-term followup; high study limitations and inconsistency among studies

Table 30. Strength of the evidence for harms of interventions for management of PPH (continued)

Intervention Outcome	Study Design Quality and Number of Studies (N Total with PPH)	Study Limit-ations [a]	Consistency	Direct-ness	Precision	Reporting Bias	Finding Strength of Evidence Grade
Embolization							
Spontaneous abortion in subsequent pregnancy	Retrospective cohort-2 poor (152)[92-95] Case-control-1 poor (53)[91] Case series-1 good, 3 poor (421) [97, 98, 105, 108]	High	Consistent	Direct	Imprecise	NA	Low SOE for lack of association between embolization and spontaneous abortion in subsequent pregnancy in the small number of women followed-up; rates ranged from 5-21.4%, which is comparable to estimates in the general population
Menstrual changes	Retrospective cohort-2 poor (152)[92-95] Case-control-1 poor (53)[91] Case series-1 good, 4 poor (709) [97, 98, 101, 105, 108]	High	Consistent	Direct	Imprecise	NA	Low SOE for an association between embolization and menstrual changes. Rates of menstrual change (heavier, lighter, or irregular menses and amenorrhea) ranged from 2 to 22%
Hematoma	Retrospective cohort-2 poor (152)[92-95] Case-control-1 poor (53)[91] Case series-1 good, 2 poor (544)[101, 105, 106]	High	Consistent	Direct	Precise	NA	Low SOE for association between embolization and hematoma; rates ranged from 1.7-6%

Table 30. Strength of the evidence for harms of interventions for management of PPH (continued)

Intervention Outcome	Study Design Quality and Number of Studies (N Total with PPH)	Study Limit-ations [a]	Consistency	Direct-ness	Precision	Reporting Bias	Finding Strength of Evidence Grade
Surgical Interventions							
Uterine compression sutures *Preterm birth*	Case-control-2 good (105 with PPH and sutures)[62, 66]	Mediu m	Consistent	Direct	Imprecise	NA	Low SOE for no effect of sutures on preterm birth; in 2 studies; preterm births did not differ between women in case and control groups
Ligation *Surgical injury*	Retrospective cohort study-1 poor (48)[96] Case series-1 poor (539-not clear how many had ligation)[111]	High	Consistent	Direct	Imprecise	NA	Insufficient due to high study limitations and imprecision; injuries (inadvertent ligation of the ureters and secondary hysterectomy disunion with sepsis) related to ligation reported in both studies
Hysterectomy *Bladder and ureter lesions*	Prospective cohort-1 poor (108)[109] Case series-5 poor (2784)[45, 64, 110, 115, 116]	High	Consistent	Direct	Precise	NA	Low SOE for association of hysterectomy and operative organ damage; rates of bladder and ureter lesions ranged from 6%-12% and 0.4%-41%, respectively

Table 30. Strength of the evidence for harms of interventions for management of PPH (continued)

Intervention Outcome	Study Design Quality and Number of Studies (N Total with PPH)	Study Limit-ations [a]	Consistency	Direct-ness	Precision	Reporting Bias	Finding Strength of Evidence Grade
Surgical Interventions							
Hysterectomy *Reoperation*	Prospective cohort-1 poor (108)[109] Case series-3 poor, 1 good (574)[110, 115-117]	High	Consistent	Direct	Precise	NA	Low SOE for association between hysterectomy and reoperation. Rates of reoperation ranged from 1.8-29%

[a]Note: Study limitations are rated on a low to high scale. Low limitations=more rigorously designed study.
Abbreviations: LOS = length of stay; NA = not applicable; PPH = postpartum hemorrhage; RCT = randomized controlled trial; SOE = strength of the evidence; TXA = tranexamic acid

SOE is insufficient for all outcomes and harms in studies of interventions for anemia after PPH given the few studies, small number of participants, and differences in intervention approaches (Table 31).

Table 31. Strength of the evidence for interventions for anemia after PPH

Outcome	Study Design Quality and Number of Studies (N Total With PPH)	Study Limit-ations [a]	Consistency	Direct-ness	Precision	Reporting Bias	Finding Strength of Evidence Grade
Iron Supple-mentation							
Anemia	RCT-1 poor (74)[127]	High	Unknown	Indirect	Imprecise	Undetected	No differences in groups receiving oral or IV iron. Insufficient SOE for effects on anemia due to small sample size, indirect measures.

Table 31. Strength of the evidence for interventions for anemia after PPH (continued)

Outcome	Study Design Quality and Number of Studies (N Total with PPH)	Study Limit-ations [a]	Consistency	Direct-ness	Precision	Reporting Bias	Finding Strength of Evidence Grade
Transfusion for Anemia Post-PPH							
Fatigue	RCT-1 poor (519)[125]	High	Unknown	Direct	Imprecise	Undetected	No significant group differences. Insufficient SOE for effects on fatigue related to anemia due to single, small study with high study limitations
Quality of life	RCT-1 poor (519)[125]	High	Unknown	Direct	Imprecise	Undetected	No significant group differences. Insufficient SOE for effects on quality of life due to single study with high limitations
Iron Supplement ation and Transfusion for Anemia							
All harms (transfusion reactions, infections, endo-metritis, thrombo-embolic events)	RCT-1 good, 1 poor (593)[125, 127]	High	Inconsistent	Direct	Imprecise	Undetected	Insufficient SOE; harms were not pre-specified in 1 study. No serious reactions attributed to the study drugs but reporting in one RCT is not clear

Abbreviations: LOS = length of stay; PPH = postpartum hemorrhage; RCT = randomized controlled trial; SOE = strength of the evidence. [a]Study limitations are rated on a low to high scale. Low limitations=more rigorously designed study.

Overall the SOE for any systems-level intervention on any outcome is insufficient or moderate as the observational data are biased and a single, very large trial suggest that at least one clearly described and implemented program did not change risk of severe hemorrhage or meaningfully modify processes of care or overall maternal outcomes (Table 32). SOE is moderate that these multicomponent interventions did not change specific outcomes such as severity of PPH, transfusion, hysterectomy, and ICU admission.

Table 32. Strength of the evidence for studies addressing multicomponent, systems-level interventions

Outcome	Study Design Quality and Number of Studies (Participants With PPH/Total N)	Study Limit-ations[a]	Consistency	Direct-ness	Precision	Reporting Bias	Findings and Strength of Evidence Grade
Incidence of PPH	Cluster RCT: 1 Fair (9350/146781)[37]	Medium	Unknown	Direct	Precise	Undetected	Moderate SOE for lack of benefit in reducing PPH incidence. Sites aware of objectives with regard to reducing PPH and assessors of a somewhat subjective outcome not masked
Severity of PPH	Cluster RCT: 1 Fair (9350/146781)[37]	Medium	Unknown	Direct	Precise	Undetected	Moderate SOE for lack of benefit in reducing severity of PPH. Sites aware of the objectives with regard to reducing severity of PPH and assessors of a somewhat subjective outcome not masked. Severity unchanged in RCT; reduced in 2 pre-post studies, no difference in 3, and mean EBL >1000mL declined in 1 study and increased in another.
	Pre/Post: 3 fair, 2 poor (4241/152194)[35, 36, 67, 128, 130-132]	High	Inconsistent	Direct	Precise	NA	

Table 32. Strength of the evidence for studies addressing multicomponent, systems-level interventions (continued)

Outcome	Study Design Quality and Number of Studies (Participants with PPH/Total N)	Study Limit-ations[a]	Consistency	Direct-ness	Precision	Reporting Bias	Findings and Strength of Evidence Grade
Transfusion	Cluster RCT: 1 Fair (9350/146781)[37]	Low	Unknown	Direct	Precise	Undetected	Moderate SOE for no effect on transfusion. Transfusion unchanged in RCT, increased in one pre-post study and unchanged in two; one with decreased use of total blood products related to decrease in risk of disseminated intravascular coagulation; another decreased overall use of transfusion and blood products
	Pre/Post: 5 Fair (4108/129164)[36, 67, 68, 128, 129, 132]	Low	Inconsistent	Direct	Precise	NA	
Hyster-ectomy	Cluster RCT: 1 Fair (9350/146,781)[37]	Low	Unknown	Direct	Precise	Undetected	Moderate SOE for lack of benefit in preventing hysterectomy. Hysterectomy unchanged in RCT. No significant change in three pre-post studies in which hysterectomies increased in two and declined in third; risk significantly increased in one study and was similar between time periods in a third
	Pre/Post: 3Fair, 1 Poor, (3504/66969)[35, 36, 68, 128, 132]	Low	Inconsistent	Direct	Precise	NA	

Table 32. Strength of the evidence for studies addressing multicomponent, systems-level interventions (continued)

Outcome	Study Design Quality and Number of Studies (Participants with PPH/Total N)	Study Limit-ations[a]	Consistency	Direct-ness	Precision	Reporting Bias	Findings and Strength of Evidence Grade
ICU admission	Cluster RCT 1 Fair (9350/146781)[37] Pre/Post: 1 Fair, 1 Poor (3174/59295)[35, 128, 132]	Low Low	Unknown Consistent	Direct Direct	Precise Precise	Undetected NA	Moderate SOE for lack of benefit. No change in RCT and no change in two pre-post studies
Mortality	Pre/Post:1 Poor; (61/18723)[34]	Medium	Unknown	Direct	Imprecise	NA	Insufficient SOE for benefit—one smaller study

[a]Note: Study limitations are rated on a low to high scale. Low limitations=more rigorously designed study.
Abbreviations: EBL = estimated blood loss; ICU = intensive care unit: LOS = length of stay; NA = not applicable; PPH = postpartum hemorrhage; RCT = randomized controlled trial; SOE = strength of the evidence

Findings in Relation to What Is Already Known

Findings in recent (2009-present) systematic reviews and meta-analyses of interventions to manage PPH are largely in line with findings reported here in that while reviews reported some positive effects, studies included in the reviews typically had significant limitations that precluded firm conclusions. Reviewers noted a lack of high quality literature, small sample sizes, limited followup, and a preponderance of observational studies of procedures or surgical approaches given the urgent nature of PPH. We summarize findings of reviews of pharmacologic studies conducted in developing nations as the current review contains few comparable studies of pharmacologic agents. We also summarize recent reviews of procedures and surgical approaches.

Few drug studies met our inclusion criteria, which specified studies must be conducted in the high-resource countries where care would be applicable to that in the United States. Four recent reviews, however, have addressed uterotonics, primarily in lower resource settings. Overall, these reviews had conflicting findings about the effectiveness of misoprostol; however, this medication was consistently associated with adverse effects, particularly fever and shivering.

One 2014 Cochrane review assessed the effectiveness and safety of any intervention used for the treatment of primary PPH.[133] The uterotonic interventions included in the search strategy (search dates: up to August 2013) were ergonovine, oxytocin, and prostaglandin medications. Seven RCTs evaluated misoprostol. Four RCTs (1,881 participants) compared misoprostol with placebo given in addition to other conventional uterotonics. Adjunctive use of misoprostol (600-1000 micrograms) with simultaneous administration of other uterotonics did not provide additional benefit for maternal mortality, serious maternal morbidity, admission to intensive care, or hysterectomy. Three RCTs (1,851 participants) compared oral misoprostol with oxytocin infusion (n=2 RCTs) or rectal misoprostol (n=1 RCT) as primary PPH treatment. Primary outcomes including maternal mortality, hysterectomy, ICU admission, and serious maternal morbidity did not differ between the groups. Oral misoprostol, however, was associated with a significant increase in vomiting and shivering compared with either oxytocin or rectal

misoprostol. No RCTs of ergonovine or carboprost tromethamine met the inclusion criteria. The investigators concluded that, overall, the clinical trials included in the review were not adequately powered to assess impact on the primary outcome measures. Compared with misoprostol, oxytocin infusion was more effective and caused fewer side effects when used as first-line therapy for the treatment of primary PPH. When used *after* prophylactic uterotonics, misoprostol and oxytocin infusion had similar effects. Adding misoprostol for women receiving treatment with oxytocin does not appear beneficial.

A 2013 Cochrane review (search dates: up to January 2013) assessed maternal deaths in studies of misoprostol for prevention and treatment of PPH and included 78 RCTs reporting on 59,216 women; only seven of these studies focused on treatment vs. prevention, and most studies were conducted in low-resource countries.[134] Overall, differences in maternal mortality and morbidity, except for fever, did not differ significantly between misoprostol and control groups. Risk of fever was increased in misoprostol groups and was highest in studies with a misoprostol dose of 600 µg or more. The investigators concluded that misoprostol does not increase or decrease morbidity or mortality, with the exception of fever, and the lowest effective dose should be used.

In another review (search dates: not specified) including three RCTs (2,346 participants) of misoprostol vs. placebo, misoprostol did not reduce PPH risk significantly compared with placebo, and shivering and fever were significantly more common in misoprostol arms.[135]A review of maternal deaths and dose-related effects of misoprostol included 46 trials with more than 40,000 participants. The investigators found more adverse effects related to misoprostol than placebo and no evidence, in a meta-analysis, that higher doses of misoprostol (600 vs. 400 micrograms) were more effective at preventing blood loss. Fever was higher among women given misoprostol and occurred more frequently with higher doses (600 vs. 400-500 micrograms)[50]

One review (search dates: not specified) evaluating uterine tamponade in resource-poor settings included 13 observational studies and reported successful treatment of PPH in 234 of 241 women.[41]Most women had oxytocin and ergometrine or other medications prior to tamponade, and the tamponade device varied among studies. Another systematic review (search dates: 1950-2012) assessed menstrual and fertility outcomes after uterine-sparing interventions for PPH.[137] Studies included in the review addressed embolization (n = 17), ligation (n = 5), and compression sutures (n = 6). Overall, 183 of 235 women who desired another pregnancy were able to conceive, and 553 of 606 resumed normal menstruation within 6 months of birth. Within each intervention type, most women who wanted to conceive were able to do so: 86 percent (24/28) of women who had sutures (21 total term live births, 0 preterm births, pregnancy losses, or cases of recurrent PPH), 85 percent (33/39) of women who had ligation (68 total term live births, 1 preterm birth, 23 pregnancy losses, 8 cases of recurrent PPH), and 75 percent (126/168) of women who had embolization (136 total term live births, 4 preterm births, 30 pregnancy losses, 18 cases of recurrent PPH). The investigators conclude that the techniques reviewed do not appear to compromise fertility, but the number and quality of studies was limited.

One review (search dates: up to August 2009) evaluated emergency postpartum hysterectomy for PPH performed within 48 hours of birth and included 24 studies reporting on 981 cases of hysterectomy (73% cesarean births, 78% multiparous) in women in developed nations.[42] More than half (55.8%) of women received uterotonics or other surgical interventions prior to hysterectomy, and 43.6 percent had blood transfusion. Ten percent of women required another surgery after hysterectomy to control bleeding (ligation, adnexectomy, laparotomy). Harms were

reported in four studies in the review and included fever (n = 135 cases), DIC (116 cases), infection (83 cases), genitourinary morbidity (68 cases), pulmonary morbidity (60 cases), gastrointestinal morbidity (25 cases), neurologic morbidity (16 cases), renal morbidity (8 cases), and cardiovascular morbidity (8 cases). Overall, morbidity did not differ between women undergoing total vs. subtotal hysterectomy.

Finally, one recent review (search dates: not specified) examined effects of PPH guideline implementation and included seven studies (6 cohort studies and one RCT).[138] Studies were conducted in the United States, Europe, South America, and Pakistan. The incidence of PPH (diagnosed using variable criteria across studies) after guideline implementation declined in four studies and increased in three. The investigators concluded that guidelines can have positive effects on decreasing PPH incidence but note significant flaws among the studies.

Applicability

We set inclusion criteria intended to identify studies with applicability to women being treated for primary or secondary PPH. Studies differed in terms of study population and outcome measures. Most studies did not make direct comparisons between treatments or characterize populations well in terms of severity of PPH and prior management strategies. This lack of direct comparison of treatment options hinders our ability to understand what treatments are most effective and in what order they should be used, both of which are paramount questions for clinicians. We summarize overall applicability below, and Appendix F contains applicability tables for individual interventions.

Overall, findings of studies in the review are generally applicable to the population of women who would be experiencing PPH in hospitals in high-resource nations. Most studies were conducted in Europe or the United States in tertiary care centers. Studies frequently included a number of women with PPH who were transferred from smaller or community hospitals, which can occur when women with PPH requiring additional treatment are stable enough to be moved to facilities with interventional radiology or other services. More women had PPH after cesarean birth than vaginal birth in the 50 studies reporting mode of birth (estimated 6,304 vaginal and 7,924 cesarean births among the 14,228 births for which mode was clearly reported). The most common cause of PPH was atony, which aligns with the most frequent cause of PPH in the larger community and literature. Studies of pharmacologic agents typically included women with mild to moderate to PPH while studies of procedures or surgical approaches generally included women with more severe PPH that had not been controlled with first-line therapies such as uterotonics.

Uterotonics, blood products, and iron supplements studied are generally widely available; however, the accessibility to procedures such as embolization may be limited in smaller community hospitals. Similarly, community hospitals may lack personnel with experience with arterial ligation and compression sutures. Comparators across studies with more than one group were typically either no specific treatment (e.g., rFVIIa or no rFVIIa) or another treatment (e.g., embolization or ligation) and are likely confounded by patient and provider characteristics that may have affected the choice of intervention. For example, patients with more severe hemorrhage likely received more aggressive treatment, and providers could only offer the options available in their facilities. Outcomes addressed across studies were appropriate and clinically relevant; however, few studies reported on longer term outcomes such as future fertility or on patient-centered outcomes such as quality of life.

The populations included in the systems-level interventions both in the United States and Europe reflect those typical of similar size and type (rural, academic, etc.) obstetric units in current labor and delivery environments in the United States. Likewise the interventions designed and implemented in these studies were informed by processes of identifying evidence and crafting guidance that conforms to typical quality improvement and outcomes based research. The content of the interventions is feasible to implement across a full range of settings and the approaches to measuring outcomes are applicable to practice. Overall the systems-level interventions assessed have good applicability to current practice in the United States.

Implications for Clinical and Policy Decisionmaking

A limited body of evidence addresses interventions for managing PPH. Few studies addressed medications commonly used to treat PPH, precluding our ability to draw conclusions about their effectiveness. Success rates for uterine balloon tamponade or surgeries are typically above 60 percent (e.g., success of uterine balloon tamponade as the initial second-line therapy in one study was 86%; success rates for ligation as the first second-line intervention to control bleeding ranged from 36 to 96%). Studies of embolization suggested that it may be associated with a median rate of successful control of bleeding without the need for additional procedures or surgeries of 89 percent, with a wide range of success (58% to 98%) across studies; however, few studies clearly provided data on the success of these procedures and surgeries as the initial second-line approach, so rates are based on a small number of cases. Adverse events and longer term outcomes associated with procedures and surgical interventions are also not well-understood. Some studies reported menstrual changes and infertility rates higher than the general population rates after embolization. Studies of other procedures and surgical interventions did not consistently report fertility data. At this point, the evidence is insufficient to comment on the effectiveness and harms of most interventions for most outcomes.

Thus, given the mixed and insufficient evidence, clinicians will likely need to continue to make individual decisions about the care of women with PPH based on each woman's clinical situation and the management options available in the setting. Embolization, for example, requires an interventional radiologist and may not be widely available. Transportation to a radiology suite may also lead to treatment delays. Choice of some interventions may be guided by the availability of skilled clinicians or may naturally follow cesarean birth (when the abdomen is already open) vs. vaginal birth. This body of evidence does not provide clear answers to the key clinical questions of what interventions to use and in what order.

Limitations of the Comparative Effectiveness Review Process

We included studies published in English only. In our scan of the non-English language literature published since 1990 and located via our MEDLINE search, we determined that the majority would not meet our review criteria. Given the high percentage of non-eligible items in this scan (90%), we feel that excluding non-English studies did not introduce significant bias into the review. We also included only studies conducted very high human development countries as determined by the World Health Organization as these studies have systems of care most relevant to the United States. We recognize that this criterion eliminated many studies of first-line uterotonics such as misoprostol that have been conducted in developing or low resource

nations. We provide a summary of recent systematic review of those studies to supplement our analysis (See Findings in Relation to What's Known section above).

Limitations of the Evidence Base

There are a number of limitations in the studies that we reviewed. There is not a universally agreed management strategy for PPH. Medications were typically used as the initial treatment; however, the specific drugs, dosages, and order varied. The selection of interventions, including which interventions were performed and in which order, was also inconsistent. Management was not well described in many studies, especially for women who transferred from other hospitals. Methods for estimating blood loss, when reported, varied and were limited. Overall, it was difficult to ascertain confidently the complete trajectory of care of women in many of the studies we reviewed, which compromises our ability to draw meaningful comparisons. As noted, few studies that met our criteria addressed commonly used uterotonics such as oxytocin; however, prior systematic reviews that have included studies in developing countries have reported similar effects on bleeding for misoprostol and oxytocin and benefits for misoprostol in reducing blood loss with side effects including fever.

Procedures and surgical interventions also differed across studies. For example, materials used for embolization varied, as did the sites of embolization and ligation. There is no clear trigger for starting subsequent interventions, so success rates have limited reliability. It may be that women would have recovered after the first line treatment if time allowed. In addition, there is the potential for cumulative effects of multiple interventions that cannot be measured. Outcomes other than controlling bleeding can be difficult to assess. For example, transfusion could be an adverse outcome if treatment was not sufficient and timely to halt bleeding rapidly. Alternately early transfusion can be the appropriate intervention; therefore, it is sometimes hard to know whether to classify transfusion as an adverse outcome. There are also challenges for measuring harms. In some cases, it can be difficult to assess if harms are due to PPH or management interventions and how much each contributed, especially to deaths. There is a significant lack of truly comparative studies and randomized studies, which would be ideal yet are complex to conduct with a life-threatening condition such as PPH. Studies were typically conducted or data collected over long time frames (median study duration = 5 years, range 6 months to 29 years), and it is likely that interventions and patient characteristics would have changed over time, but few studies account for secular changes such as the introduction of new interventions.

In the systems-level interventions, a natural tension exists between the desire to implement robust interventions and the challenges of understanding which components may have value. In the case of these interventions, it is particularly challenging because lower quality studies with looser measures of outcomes were more likely to see intervention effects. The literature about systems-level intervention is limited by lack of analyses that seek to adjust for secular trends and changes in confounders, such as proportion of births by cesarean and trends in rising body-mass index. Likewise lack of multivariable modeling may obscure the influence of elements of care, such as induction of labor, and comorbidities, such as chorioamnionitis, that could identify which predictors may be exerting substantial influence and inform new approaches to diminishing risk of PPH.

Research Gaps

Future research needs around management of PPH are both clinical and methodologic. Priorities for future research include the following:

- Reaching consensus on definitions and criteria for PPH and first-line management strategies to promote consistency within the literature.
- Standardizing a definition of PPH, potentially with gradations of severity, to allow for meaningful comparison of outcomes.
- Conducting more rigorously controlled studies of all interventions for PPH management, especially medication studies in light of the fact that these are considered first-line management, and few studies in developed/high resource nations addressed agents commonly in use. While studies in the PPH population are likely to be retrospective, studies should clearly describe first-line management and timing of management to clarify the course of care. Studies must report a priori study size calculation to ensure that the number of subjects will be adequate to show a difference (if the study is designed for superiority). In addition, comparative studies must declare within the design and methods section whether the study is a superiority trial or a non-inferiority trial.
- Conducting cluster randomized control trials of intervention bundles that address order of medications, order and timing of manual interventions such as uterine massage and bimanual compression, number of times to repeat medications prior to moving on to second-line interventions, hemodynamic monitoring, and supportive care such as transfusion.
- Clearly identifying the trajectory of care, including which interventions were used and the order and timing of interventions.
- Identifying markers that can inform the decision to move to an alternate intervention.
- Investigating the effectiveness of agents used to control bleeding in other clinical areas and of new medications to address PPH. It is likely that new agents would be compared with or added to existing agents and not compared with placebo.
- Conducting additional RCTs or controlled studies of treating anemia after PPH is stabilized.
- Conducting additional prospectively designed and reported studies that report data from large national databases. These studies can describe effects in larger population samples and may be valuable for identifying longer term harms--for example, effects on breastfeeding, psychological trauma, and future fertility.
- Replicating the intrauterine balloon tamponade study that found it was effective in reducing invasive interventions.
- Using and clearly reporting objective methods to diagnose PPH and evaluate management including accurate measurement of blood loss. Visual estimation of blood loss is too imprecise to be used in research.
- Dedication to prospective objective measures such as estimated blood loss, time course of intervention, and use of intervention components.
- Greater capture and multivariable adjustment, including meta-regression, for known risk factors and confounders to allow better understanding of the attributable impact, if any, of the intervention.
- Attention to the possibility that effect modifiers hide efficacy in some groups, which means that studies will need to be powered and specify a priori stratified analyses by candidate effect modifiers, such as grand multiparity, route of birth, induction, prolonged oxytocin infusion, or infection in labor.

- Prespecifying harms, differentiating harms of interventions from sequelae of PPH wherever possible, and studying longer term effects of procedures and surgical interventions.
- Using multivariate modeling. The size of the study populations in systems-level interventions can clearly support multivariate modeling and could serve to drive better understanding of the general lack of effectiveness. In particular, such data are well-suited to use of risk-adjustment models, and adjusting for these underlying differences in study population characteristics would allow comparison not only across time periods but across studies.
- Attention to the possibility that systems-level interventions are working against a biologically determined risk of PPH, meaning that within a specific population with particular characteristics there is an irreducible level of risk and event rates cannot be driven below that "floor." If this floor were demonstrated with risk adjustment methods, this finding would fundamentally change the focus of study design and care. A floor would suggest that we need very large pragmatic trials aimed not at reducing the occurrence of PPH but at diminishing associated morbidity, mortality, personal harm and distress, and costs. The systems-level intervention studies available now cannot fully inform this goal, but primary meta-analyses of the highest quality cohorts with risk adjustment could determine if the evidence seen in some of the included studies that suggest benefits are worth pursing on a larger scale, including a scale large enough to separate the influence of candidate components to determine their individual contributions to improvements in care.

Conclusions

A limited body of evidence addresses interventions for managing PPH. The most effective treatments and the order in which to use treatments remain unclear. Diagnosis of PPH is subjective, which makes it difficult to compare the severity of PPH and determine the comparability of participants within and across studies. The trajectory of care, rationale for choice of intervention, and component of care ultimately responsible for controlling bleeding are also frequently unclear because of the need for rapid intervention in an emergency situation. Few studies included in this review addressed pharmacologic or medical management, including transfusion for supportive management of ongoing PPH, and the evidence reviewed is insufficient to comment on effects of such interventions. The success of uterine-sparing techniques, such as uterine balloon tamponade, embolization, uterine compression sutures, and uterine and other pelvic artery ligation, in controlling bleeding without the need for additional procedures or surgeries ranged from 36 to 98 percent; however, these data come from a limited number of studies with a small number of participants. Harms of interventions are diverse and not well-understood. Some studies reported an association between rFVIIa and thromboembolic events, but sample sizes were small. Some studies with longer term followup reported adverse effects on future fertility and menstrual changes in women undergoing embolization. Need for re-operation was reported after hysterectomy. Evidence is insufficient to assess the effects of interventions for anemia after PPH is stabilized, and systems-level interventions showed little benefit in reducing the incidence or severity of PPH or the need for transfusion or hysterectomy. Further research is needed across all interventions for PPH management, especially pharmacologic interventions, which are frequently used as first-line therapies.

References

1. Rath WH. Postpartum hemorrhage--update on problems of definitions and diagnosis. Acta Obstet Gynecol Scand 2011 May;90:421-8. PMID: 21332452.
2. Kavle JA, Khalfan SS, Stoltzfus RJ, et al. Measurement of blood loss at childbirth and postpartum. Int J Gynaecol Obstet 2006 Oct;95:24-8. PMID: 16919628.
3. Stafford I, Dildy GA, Clark SL, et al. Visually estimated and calculated blood loss in vaginal and cesarean delivery. Am J Obstet Gynecol 2008 Nov;199:519 e1-7. PMID: 18639209.
4. Schorn MN. Measurement of blood loss: review of the literature. J Midwifery Womens Health 2010 Jan-Feb;55:20-7. PMID: 20129226.
5. Carroli G, Cuesta C, Abalos E, et al. Epidemiology of postpartum haemorrhage: a systematic review. Best Pract Res Clin Obstet Gynaecol 2008 Dec;22:999-1012. PMID: 18819848.
6. Calvert C, Thomas SL, Ronsmans C, et al. Identifying regional variation in the prevalence of postpartum haemorrhage: a systematic review and meta-analysis. PLoS One 2012;7:e41114. PMID: 22844432.
7. Ford JB, Roberts CL, Simpson JM, et al. Increased postpartum hemorrhage rates in Australia. Int J Gynaecol Obstet 2007 Sep;98:237-43. PMID: 17482190.
8. Joseph KS, Rouleau J, Kramer MS, et al. Investigation of an increase in postpartum haemorrhage in Canada. BJOG 2007 Jun;114:751-9. PMID: 17516968.
9. Knight M, Callaghan WM, Berg C, et al. Trends in postpartum hemorrhage in high resource countries: a review and recommendations from the International Postpartum Hemorrhage Collaborative Group. BMC Pregnancy Childbirth 2009;9:55. PMID: 19943928.
10. Lutomski JE, Byrne BM, Devane D, et al. Increasing trends in atonic postpartum haemorrhage in Ireland: an 11-year population-based cohort study. BJOG 2011 Feb;119:306-14. PMID: 22168794.
11. Rossen J, Okland I, Nilsen OB, et al. Is there an increase of postpartum hemorrhage, and is severe hemorrhage associated with more frequent use of obstetric interventions? Acta Obstet Gynecol Scand 2010 Oct;89:1248-55. PMID: 20809871.
12. Callaghan WM, Kuklina EV, Berg CJ. Trends in postpartum hemorrhage: United States, 1994-2006. Am J Obstet Gynecol 2010 Apr;202:353 e1-6. PMID: 20350642.
13. Kramer MS, Berg C, Abenhaim H, et al. Incidence, risk factors, and temporal trends in severe postpartum hemorrhage. Am J Obstet Gynecol 2013 Nov;209:449 e1-7. PMID: 23871950.
14. WHO Recommendations for the Prevention and Treatment of Postpartum Haemorrhage. 2012PMID: 23586122.
15. Berg CJ, Harper MA, Atkinson SM, et al. Preventability of pregnancy-related deaths: results of a state-wide review. Obstet Gynecol 2005 Dec;106:1228-34. PMID: 16319245.
16. Kilpatrick SJ, Prentice P, Jones RL, et al. Reducing maternal deaths through state maternal mortality review. J Womens Health (Larchmt) 2012 Sep;21:905-9. PMID: 22621323.
17. Della Torre M, Kilpatrick SJ, Hibbard JU, et al. Assessing preventability for obstetric hemorrhage. Am J Perinatol 2011 Dec;28:753-60. PMID: 21698554.
18. McLintock C, James AH. Obstetric hemorrhage. J Thromb Haemost 2011 Aug;9:1441-51. PMID: 21668737.
19. ACOG Practice Bulletin: Clinical Management Guidelines for Obstetrician-Gynecologists Number 76, October 2006: postpartum hemorrhage. Obstet Gynecol 2006 Oct;108:1039-47. PMID: 17012482.
20. Zelop CM. Postpartum hemorrhage: becoming more evidence-based. Obstet Gynecol 2010 Jan;117:3-5. PMID: 21173639.
21. Active management of the third stage of labour: prevention and treatment of postpartum hemorrhage: No. 235 October 2009 (Replaces No. 88, April 2000). Int J Gynaecol Obstet 2010 Mar;108:258-67. PMID: 20196196.

22. Royal College of Obstetricians and Gynaecologists. Prevention and management of postpartum haemorrhage. RCOG Green-top Guideline No. 52. London: Royal College of O, Gynaecologists; 2009. Available at http://www.rcog.org.uk/womens-health/clinical-guidance/prevention-and-management-postpartum-haemorrhage-green-top-52

23. International joint policy statement. FIGO/ICM global initiative to prevent post-partum hemorrhage. J Obstet Gynaecol Can 2005 Dec;26:1100-2, 8-11. PMID: 15696639.

24. Lalonde A. Prevention and treatment of postpartum hemorrhage in low-resource settings. Int J Gynaecol Obstet 2012 May;117:108-18. PMID: 22502595.

25. California Maternity Care Quality Collaborative : OB Hemorrhage Toolkit Update 2014. Available at https://www.cmqcc.org/ob_hemorrhage_toolkit_update_2014

26. Miller S, Ojengbede O, Turan JM, et al. A comparative study of the non-pneumatic anti-shock garment for the treatment of obstetric hemorrhage in Nigeria. Int J Gynaecol Obstet 2009 Nov;107:121-5. PMID: 19628207.

27. Miller S, Fathalla MM, Youssif MM, et al. A comparative study of the non-pneumatic anti-shock garment for the treatment of obstetric hemorrhage in Egypt. Int J Gynaecol Obstet 2010 Apr;109:20-4. PMID: 20096836.

28. Abdul-Kadir R, McLintock C, Ducloy AS, et al. Evaluation and management of postpartum hemorrhage: consensus from an international expert panel. Transfusion 2014 Mar 12PMID: 24617726.

29. Soltan MH, Faragallah MF, Mosabah MH, et al. External aortic compression device: the first aid for postpartum hemorrhage control. J Obstet Gynaecol Res 2009 Jun;35:453-8. PMID: 19527382.

30. Keogh J, Tsokos N. Aortic compression in massive postpartum haemorrhage--an old but lifesaving technique. Aust N Z J Obstet Gynaecol 1997 May;37:237-8. PMID: 9222477.

31. Haeri S, Dildy GA, 3rd. Maternal mortality from hemorrhage. Semin Perinatol 2012 Feb;36:48-55. PMID: 22280866.

32. Bateman BT, Tsen LC, Liu J, et al. Patterns of Second-Line Uterotonic Use in a Large Sample of Hospitalizations for Childbirth in the United States: 2007-2011. Anesth Analg 2014 Aug 27PMID: 25166464.

33. Franchini M, Franchi M, Bergamini V, et al. The use of recombinant activated FVII in postpartum hemorrhage. Clin Obstet Gynecol 2010 Mar;53:219-27. PMID: 20142658.

34. Skupski DW, Lowenwirt IP, Weinbaum FI, et al. Improving hospital systems for the care of women with major obstetric hemorrhage. Obstet Gynecol 2006 May;107:977-83. PMID: 16648399.

35. Rizvi F, Mackey R, Barrett T, et al. Successful reduction of massive postpartum haemorrhage by use of guidelines and staff education. BJOG 2004 May;111:495-8. PMID: 15104617.

36. Audureau E, Deneux-Tharaux C, Lefevre P, et al. Practices for prevention, diagnosis and management of postpartum haemorrhage: impact of a regional multifaceted intervention. BJOG 2009 Sep;116:1325-33. PMID: 19538416.

37. Deneux-Tharaux C, Dupont C, Colin C, et al. Multifaceted intervention to decrease the rate of severe postpartum haemorrhage: the PITHAGORE6 cluster-randomised controlled trial. BJOG 2010 Sep;117:1278-87. PMID: 20573150.

38. Dupont C, Touzet S, Colin C, et al. Incidence and management of postpartum haemorrhage following the dissemination of guidelines in a network of 16 maternity units in France. Int J Obstet Anesth 2009 Oct;18:320-7. PMID: 19733052.

39. Mousa HA, Alfirevic Z. Treatment for primary postpartum haemorrhage. Cochrane Database Syst Rev 2007:CD003249. PMID: 17253486.

40. Alexander J, Thomas P, Sanghera J. Treatments for secondary postpartum haemorrhage. Cochrane Database Syst Rev 2002:CD002867. PMID: 11869640.

41. Tindell K, Garfinkel R, Abu-Haydar E, et al. Uterine balloon tamponade for the treatment of postpartum haemorrhage in resource-poor settings: a systematic review. BJOG 2012 Jan;120:5-14. PMID: 22882240.

42. Rossi AC, Lee RH, Chmait RH. Emergency postpartum hysterectomy for uncontrolled postpartum bleeding: a systematic review. Obstet Gynecol 2010 Mar;115:637-44. PMID: 20177297.

43. Ferrer P, Roberts I, Sydenham E, et al. Anti-fibrinolytic agents in post partum haemorrhage: a systematic review. BMC Pregnancy Childbirth 2009;9:29. PMID: 19604358.

44. Gizzo S, Saccardi C, Patrelli TS, et al. Fertility rate and subsequent pregnancy outcomes after conservative surgical techniques in postpartum hemorrhage: 15 years of literature. Fertil Steril 2013 Jun;99:2097-107. PMID: 23498891.

45. Wright JD, Herzog TJ, Shah M, et al. Regionalization of care for obstetric hemorrhage and its effect on maternal mortality. Obstet Gynecol 2010 Jun;115:1194-200. PMID: 20502290.

46. Methods Guide for Effectiveness and Comparative Effectiveness Reviews. AHRQ Publication No. 10(14)-EHC063-EF. Rockville, MD: Agency for Healthcare Research and Quality. January 2014. Chapters available at: www.effectivehealthcare.ahrq.gov.

47. Matsubara S, Yano H, Ohkuchi A, et al. Uterine compression sutures for postpartum hemorrhage: an overview. Acta Obstet Gynecol Scand 2013 Apr;92:378-85. PMID: 23330882.

48. Merland JJ, Houdart E, Herbreteau D, et al. Place of emergency arterial embolisation in obstetric haemorrhage about 16 personal cases. Eur J Obstet Gynecol Reprod Biol 1996 Mar;65:141-3. PMID: 8706947.

49. Kim TH, Lee HH, Kim JM, et al. Uterine artery embolization for primary postpartum hemorrhage. Iran J Reprod Med 2014 Jun;11:511-8. PMID: 24639786.

50. Hofmeyr GJ, Gulmezoglu AM, Novikova N, et al. Misoprostol to prevent and treat postpartum haemorrhage: a systematic review and meta-analysis of maternal deaths and dose-related effects. Bull World Health Organ 2009 Sep;87:666-77. PMID: 19784446.

51. World Health Organization (WHO). WHO recommendations for the prevention of postpartum haemorrhage WHO. Geneva: 2007. Available at http://whqlibdoc.who.int/hq/2007/WHO_MPS_07.06_eng.pdf

52. Snelgrove JW. Postpartum haemorrhage in the developing world a review of clinical management strategies. Mcgill J Med 2009;12:61. PMID: 21264044.

53. Geller SE, Adams MG, Kelly PJ, et al. Postpartum hemorrhage in resource-poor settings. Int J Gynaecol Obstet 2006 Mar;92(3):202-11. PMID: 16427056.

54. Higgins JP, Altman DG, Gotzsche PC, et al. The Cochrane Collaboration's tool for assessing risk of bias in randomised trials. BMJ 2011;343:d5928. PMID: 22008217.

55. Wells P, Shea B, O'Connell D, et al. The Newcastle-Ottawa Scale (NOS) for assessing the quality of nonrandomised studies in meta-analyses. Available at http://www.ohri.ca/programs/clinical_epidemiology/oxford.asp.

56. National Heart, Lung, and Blood Institute. Quality Assessment Tool for Before-After (Pre-Post) Studies With No Control Group. 2014. Available at http://www.nhlbi.nih.gov/health-pro/guidelines/in-develop/cardiovascular-risk-reduction/tools/before-after.htm

57. Viswanathan M, Berkman ND, Dryden DM, Hartling L. Assessing Risk of Bias and Confounding in Observational Studies of Interventions or Exposures: Further Development of the RTI Item Bank . Methods Research Report. (Prepared by RTI – UNC Evidence - based Practice Center under Contract No. 290-2007-10 056-I). AHRQ Publication No. 13-EHC106-EF . Rockville, MD: Agency for Healthcare Research and Quality; August 2013. www. effectivehealthcare.ahrq.gov/reports/final.cfm.

58. Santaguida P, Raina P. McMaster Quality Assessment Scale of Harms (McHarm) for primary studies: Manual for use of the McHarm.

59. Berkman ND, Lohr KN, Ansari M, et al. Grading the Strength of a Body of Evidence When Assessing Health Care Interventions for the Effective Health Care Program of the Agency for Healthcare Research and Quality: An Update. Methods Guide for Effectiveness and Comparative Effectiveness Reviews. Rockville (MD); 2008.

60. Bateman BT, Huybrechts KF, Hernandez-Diaz S, et al. Methylergonovine maleate and the risk of myocardial ischemia and infarction. Am J Obstet Gynecol 2013 Nov;209:459.e1-.e13. PMID: 23850529.

61. Chauleur C, Cochery-Nouvellon E, Mercier E, et al. Analysis of the venous thromboembolic risk associated with severe postpartum haemorrhage in the NOHA First cohort. Thromb Haemost 2008 Nov;100:773-9. PMID: 18989520.

62. An GH, Ryu HM, Kim MY, et al. Outcomes of subsequent pregnancies after uterine compression sutures for postpartum hemorrhage. Obstet Gynecol 2013 Sep;122:565-70. PMID: 23921861.

63. Balki M, Dhumne S, Kasodekar S, et al. Blood transfusion for primary postpartum hemorrhage: a tertiary care hospital review. J Obstet Gynaecol Can 2009 Nov;30:1002-7. PMID: 19126281.

64. Akinbiyi AA, Olatunbosun OA. Emergency obstetric hysterectomies (how many are potentially preventable?): A 28-year experience in Saskatoon. Journal of Gynecologic Surgery 2004 Fall;20:81-7.

65. Teofili L, Bianchi M, Zanfini BA, et al. Acute Lung Injury Complicating Blood Transfusion in Post-Partum Hemorrhage: Incidence and Risk Factors. Mediterr J Hematol Infect Dis 2014;6(1):e2014069. PMID: 25408855.

66. Cowan AD, Miller ES, Grobman WA. Subsequent pregnancy outcome after B-lynch suture placement. Obstet Gynecol 2014 Sep;124(3):558-61. PMID: 25162256.

67. Shields LE, Smalarz K, Reffigee L, et al. Comprehensive maternal hemorrhage protocols improve patient safety and reduce utilization of blood products. Am J Obstet Gynecol 2011 Oct;205:368 e1-8. PMID: 22083059.

68. Shields LE, Wiesner S, Fulton J, et al. Comprehensive maternal hemorrhage protocols reduce the use of blood products and improve patient safety. Am J Obstet Gynecol 2014 Jul 12PMID: 25025944.

69. Ducloy-Bouthors AS, Jude B, Duhamel A, et al. High-dose tranexamic acid reduces blood loss in postpartum haemorrhage. Crit Care 2011;15:R117. PMID: 21496253.

70. Schmitz T, Tararbit K, Dupont C, et al. Prostaglandin E2 analogue sulprostone for treatment of atonic postpartum hemorrhage. Obstet Gynecol 2011 Aug;118:257-65. PMID: 21775840.

71. Oleen MA, Mariano JP. Controlling refractory atonic postpartum hemorrhage with Hemabate sterile solution. Am J Obstet Gynecol 1990 Jan;162:205-8. PMID: 2405676.

72. Sugawara J, Suenaga K, Hoshiai T, et al. Efficacy of recombinant human soluble thrombomodulin in severe postpartum hemorrhage with disseminated intravascular coagulation. Clin Appl Thromb Hemost 2012 Sep;19:557-61. PMID: 22496090.

73. Ahonen J, Jokela R, Korttila K. An open non-randomized study of recombinant activated factor VII in major postpartum haemorrhage. Acta Anaesthesiol Scand 2007 Aug;51:929-36. PMID: 17488316.

74. McMorrow RC, Ryan SM, Blunnie WP, et al. Use of recombinant factor VIIa in massive post-partum haemorrhage. Eur J Anaesthesiol 2008 Apr;25:293-8. PMID: 18177539.

75. Alfirevic Z, Elbourne D, Pavord S, et al. Use of recombinant activated factor VII in primary postpartum hemorrhage: the Northern European registry 2000-2004. Obstet Gynecol 2007 Dec;110:1270-8. PMID: 18055720.

76. Phillips LE, McLintock C, Pollock W, et al. Recombinant activated factor VII in obstetric hemorrhage: experiences from the Australian and New Zealand Haemostasis Registry. Anesth Analg 2009 Dec;109:1908-15. PMID: 19923520.

77. Kayem G, Kurinczuk JJ, Alfirevic Z, et al. Specific second-line therapies for postpartum haemorrhage: a national cohort study. BJOG 2011 Jun;118:856-64. PMID: 21392247.

78. Baruah M, Cohn GM. Efficacy of rectal misoprostol as second-line therapy for the treatment of primary postpartum hemorrhage. J Reprod Med 2008 Mar;53:203-6. PMID: 18441726.

79. Chan LL, Lo TK, Lau WL, et al. Use of second-line therapies for management of massive primary postpartum hemorrhage. Int J Gynaecol Obstet 2013 Sep;122:238-43. PMID: 23806248.

80. Zatta A, McQuilten Z, Kandane-Rathnayake R, et al. The Australian and New Zealand Haemostasis Registry: ten years of data on off-licence use of recombinant activated factor VII. Blood Transfus 2014 Jun 5:1-14. PMID: 24960661.

81. Bonnet MP, Deneux-Tharaux C, Dupont C, et al. Transfusion practices in postpartum hemorrhage: a population-based study. Acta Obstet Gynecol Scand 2012 Apr;92:404-13. PMID: 23215892.

82. Kayem G, Kurinczuk JJ, Alfirevic Z, et al. Uterine compression sutures for the management of severe postpartum hemorrhage. Obstet Gynecol 2011 Jan;117:14-20. PMID: 21213474.

83. Alexander JM, Sarode R, McIntire DD, et al. Whole blood in the management of hypovolemia due to obstetric hemorrhage. Obstet Gynecol 2009 Jun;113:1320-6. PMID: 19461429.

84. Ahmed S, Harrity C, Johnson S, et al. The efficacy of fibrinogen concentrate compared with cryoprecipitate in major obstetric haemorrhage--an observational study. Transfus Med 2012 Oct;22:344-9. PMID: 22994449.

85. Sohn CH, Kim WY, Kim SR, et al. An increase in initial shock index is associated with the requirement for massive transfusion in emergency department patients with primary postpartum hemorrhage. Shock 2013 Aug;40:101-5. PMID: 23707978.

86. Mallaiah S, Barclay P, Harrod I, et al. Introduction of an algorithm for ROTEM-guided fibrinogen concentrate administration in major obstetric haemorrhage. Anaesthesia 2014 Oct 7PMID: 25289791.

87. Laas E, Bui C, Popowski T, et al. Trends in the rate of invasive procedures after the addition of the intrauterine tamponade test to a protocol for management of severe postpartum hemorrhage. Am J Obstet Gynecol 2012 Oct;207:281 e1-7. PMID: 23021688.

88. Dildy GA, Belfort MA, Adair CD, et al. Initial experience with a dual-balloon catheter for the management of postpartum hemorrhage. Am J Obstet Gynecol 2013 Sep 18PMID: 24055586.

89. Ferrazzani S, Iadarola R, Perrelli A, et al. Use of an intrauterine inflated catheter balloon in massive post-partum hemorrhage: a series of 52 cases. J Obstet Gynaecol Res 2014 Jun;40:1603-10. PMID: 24888923.

90. Gronvall M, Tikkanen M, Tallberg E, et al. Use of Bakri balloon tamponade in the treatment of postpartum hemorrhage: a series of 50 cases from a tertiary teaching hospital. Acta Obstet Gynecol Scand 2012 Apr;92:433-8. PMID: 22913383.

91. Hardeman S, Decroisette E, Marin B, et al. Fertility after embolization of the uterine arteries to treat obstetrical hemorrhage: a review of 53 cases. Fertil Steril 2010 Dec;94:2574-9. PMID: 20381035.

92. Sentilhes L, Gromez A, Clavier E, et al. Fertility and pregnancy following pelvic arterial embolisation for postpartum haemorrhage. BJOG 2009 Jan;117:84-93. PMID: 19832826.

93. Sentilhes L, Gromez A, Clavier E, et al. Long-term psychological impact of severe postpartum hemorrhage. Acta Obstet Gynecol Scand 2011 Jun;90:615-20. PMID: 21370999.

94. Sentilhes L, Gromez A, Clavier E, et al. Predictors of failed pelvic arterial embolization for severe postpartum hemorrhage. Obstet Gynecol 2009 May;113:992-9. PMID: 19384113.

95. Chauleur C, Fanget C, Tourne G, et al. Serious primary post-partum hemorrhage, arterial embolization and future fertility: a retrospective study of 46 cases. Hum Reprod 2008 Jul;23:1553-9. PMID: 18460450.

96. Ledee N, Ville Y, Musset D, et al. Management in intractable obstetric haemorrhage: an audit study on 61 cases. Eur J Obstet Gynecol Reprod Biol 2001 Feb;94:189-96. PMID: 11165724.

97. Fiori O, Deux JF, Kambale JC, et al. Impact of pelvic arterial embolization for intractable postpartum hemorrhage on fertility. Am J Obstet Gynecol 2009 Apr;200:384 e1-4. PMID: 19217597.

98. Gaia G, Chabrot P, Cassagnes L, et al. Menses recovery and fertility after artery embolization for PPH: a single-center retrospective observational study. Eur Radiol 2008 Feb;19:481-7. PMID: 18766350.

99. Ganguli S, Stecker MS, Pyne D, et al. Uterine artery embolization in the treatment of postpartum uterine hemorrhage. J Vasc Interv Radiol 2010 Feb;22:169-76. PMID: 21183360.

100. Kim YJ, Yoon CJ, Seong NJ, et al. Failed pelvic arterial embolization for postpartum hemorrhage: clinical outcomes and predictive factors. J Vasc Interv Radiol 2013 May;24:703-9. PMID: 23622042.

101. Lee HY, Shin JH, Kim J, et al. Primary postpartum hemorrhage: outcome of pelvic arterial embolization in 251 patients at a single institution. Radiology 2012 Sep;264:903-9. PMID: 22829685.

102. Poujade O, Zappa M, Letendre I, et al. Predictive factors for failure of pelvic arterial embolization for postpartum hemorrhage. Int J Gynaecol Obstet 2012 May;117:119-23. PMID: 22361480.

103. Touboul C, Badiou W, Saada J, et al. Efficacy of selective arterial embolisation for the treatment of life-threatening post-partum haemorrhage in a large population. PLoS One 2008;3:e3819. PMID: 19043573.

104. Yamasaki Y, Morita H, Miyahara Y, et al. The factors associated with the failure of transcatheter pelvic arterial embolization for intractable postpartum hemorrhage. J Perinat Med 2013 Dec 5:1-4. PMID: 24310770.

105. Lee HJ, Jeon GS, Kim MD, et al. Usefulness of pelvic artery embolization in cesarean section compared with vaginal delivery in 176 patients. J Vasc Interv Radiol 2013 Jan;24:103-9. PMID: 23273701.

106. Cheong JY, Kong TW, Son JH, et al. Outcome of pelvic arterial embolization for postpartum hemorrhage: A retrospective review of 117 cases. Obstet Gynecol Sci 2014 Jan;57(1):17-27. PMID: 24596814.

107. Park HS, Shin JH, Yoon HK, et al. Transcatheter Arterial Embolization for Secondary Postpartum Hemorrhage: Outcome in 52 Patients at a Single Tertiary Referral Center. J Vasc Interv Radiol 2014 Jun 27PMID: 24985718.

108. Inoue S, Masuyama H, Hiramatsu Y. Efficacy of transarterial embolisation in the management of post-partum haemorrhage and its impact on subsequent pregnancies. Aust N Z J Obstet Gynaecol 2014 Oct 28PMID: 25350565.

109. Zwart JJ, Dijk PD, van Roosmalen J. Peripartum hysterectomy and arterial embolization for major obstetric hemorrhage: a 2-year nationwide cohort study in the Netherlands. Am J Obstet Gynecol 2009 Feb;202:150 e1-7. PMID: 19922900.

110. Lone F, Sultan AH, Thakar R, et al. Risk factors and management patterns for emergency obstetric hysterectomy over 2 decades. Int J Gynaecol Obstet 2009 Apr;109:12-5. PMID: 19951818.

111. Palacios-Jaraquemada JM. Efficacy of surgical techniques to control obstetric hemorrhage: analysis of 539 cases. Acta Obstet Gynecol Scand 2011 Sep;90:1036-42. PMID: 21564024.

112. O'Leary JA. Uterine artery ligation in the control of postcesarean hemorrhage. J Reprod Med 1995 Mar;40:189-93. PMID: 7776302.

113. Blanc J, Courbiere B, Desbriere R, et al. Uterine-sparing surgical management of postpartum hemorrhage: is it always effective? Arch Gynecol Obstet 2011 Apr;285:925-30. PMID: 21932086.

114. Glaze S, Ekwalanga P, Roberts G, et al. Peripartum hysterectomy: 1999 to 2006. Obstet Gynecol 2008 Mar;111:732-8. PMID: 18310378.

115. Sakse A, Weber T, Nickelsen C, et al. Peripartum hysterectomy in Denmark 1995-2004. Acta Obstet Gynecol Scand 2007;86:1472-5. PMID: 18027114.

116. Knight M. Peripartum hysterectomy in the UK: management and outcomes of the associated haemorrhage. BJOG 2007 Nov;114:1380-7. PMID: 17877772.

117. Forna F, Miles AM, Jamieson DJ. Emergency peripartum hysterectomy: a comparison of cesarean and postpartum hysterectomy. Am J Obstet Gynecol 2004 May;190:1440-4. PMID: 15167863.

118. Gayat E, Resche-Rigon M, Morel O, et al. Predictive factors of advanced interventional procedures in a multicentre severe postpartum haemorrhage study. Intensive Care Med 2011 Nov;37:1816-25. PMID: 21805157.

119. Feigenberg T, Eitan Y, Sela HY, et al. Surgical versus medical treatment for secondary post-partum hemorrhage. Acta Obstet Gynecol Scand 2009;88:909-13. PMID: 19565365.

120. Hoveyda F, MacKenzie IZ. Secondary postpartum haemorrhage: incidence, morbidity and current management. BJOG 2001 Sep;108:927-30. PMID: 11563461.

121. Boyd BK, Katz VL, Hansen WF. Delayed postpartum hemorrhage: a retrospective analysis. Journal of Maternal-Fetal Medicine 1995 1995 Jan-Feb;4:19-23.

122. Meyer NP, Ward GH, Chandraharan E. Conservative approach to the management of morbidly adherent placentae. Ceylon Med J 2012 Mar;57:36-9. PMID: 22453709.

123. Buzaglo N, Harlev A, Sergienko R, et al. Risk factors for early postpartum hemorrhage (PPH) in the first vaginal delivery, and obstetrical outcomes in subsequent pregnancy. J Matern Fetal Neonatal Med 2014 Aug 5:1-6. PMID: 25023434.

124. Oberg AS, Hernandez-Diaz S, Palmsten K, et al. Patterns of recurrence of postpartum hemorrhage in a large population-based cohort. Am J Obstet Gynecol 2014 Mar;210(3):229.e1-8. PMID: 24351791.

125. Prick B, Jansen A, Steegers E, et al. Transfusion policy after severe postpartum haemorrhage: a randomised non-inferiority trial. BJOG 2014 Jan 10PMID: 24405687.

126. Prick BW, Duvekot JJ, van der Moer PE, et al. Cost-effectiveness of red blood cell transfusion vs. non-intervention in women with acute anaemia after postpartum haemorrhage. Vox Sang 2014 Jul 31PMID: 25130704.

127. Froessler B, Cocchiaro C, Saadat-Gilani K, et al. Intravenous iron sucrose versus oral iron ferrous sulfate for antenatal and postpartum iron deficiency anemia: a randomized trial. J Matern Fetal Neonatal Med 2012 May;26:654-9. PMID: 23130909.

128. Lappen JR, Seidman D, Burke C, et al. Changes in care associated with the introduction of a postpartum hemorrhage patient safety program. Am J Perinatol 2013 Nov;30:833-8. PMID: 23359234.

129. Markova V, Sorensen JL, Holm C, et al. Evaluation of multi-professional obstetric skills training for postpartum hemorrhage. Acta Obstet Gynecol Scand 2011 Mar;91:346-52. PMID: 22171606.

130. Dupont C, Deneux-Tharaux C, Touzet S, et al. Clinical audit: a useful tool for reducing severe postpartum haemorrhages? Int J Qual Health Care 2011 Oct;23:583-9. PMID: 21733978.

131. Dupont C, Occelli P, Deneux-Tharaux C, et al. Severe postpartum haemorrhage after vaginal delivery: a statistical process control chart to report seven years of continuous quality improvement. Eur J Obstet Gynecol Reprod Biol 2014 Jul;178:169-75. PMID: 24813084.

132. Einerson BD, Miller ES, Grobman WA. Does a postpartum hemorrhage patient safety program result in sustained changes in management and outcomes? Am J Obstet Gynecol 2014 Jul 11PMID: 25019484.

133. Mousa HA, Blum J, Abou El Senoun G, et al. Treatment for primary postpartum haemorrhage. Cochrane Database Syst Rev 2014;2:Cd003249. PMID: 24523225.

134. Hofmeyr GJ, Gulmezoglu AM, Novikova N, et al. Postpartum misoprostol for preventing maternal mortality and morbidity. Cochrane Database Syst Rev 2013;7:CD008982. PMID: 23857523.

135. Olefile KM, Khondowe O, M'Rithaa D. Misoprostol for prevention and treatment of postpartum haemorrhage: A systematic review. Curationis 2013;36:E1-E10. PMID: 23718882.

136. Simpson E, Lin Y, Stanworth S, et al. Recombinant factor VIIa for the prevention and treatment of bleeding in patients without haemophilia. Cochrane Database Syst Rev 2012;3:CD005011. PMID: 22419303.

137. Doumouchtsis S, Nikolopoulos K, Talaulikar V, et al. Menstrual and fertility outcomes following the surgical management of postpartum haemorrhage: a systematic review. Bjog 2013 Dec 9PMID: 24321038.

138. Nadisauskiene RJ, Kliucinskas M, Dobozinskas P, et al. The impact of postpartum haemorrhage management guidelines implemented in clinical practice: a systematic review of the literature. Eur J Obstet Gynecol Reprod Biol 2014 Jul;178:21-6. PMID: 24792537.

Abbreviations and Acronyms

AHRQ	Agency for Healthcare Research and Quality
ANZHR	Australian and New Zealand Haemostasis Registry
ARDS	Acute respiratory distress syndrome
BMI	Body Mass Index
CER	Comparative Effectiveness Review
CI	Confidence Interval
DIC	Disseminated Intravascular Coagulation
DVT	Deep Vein Thrombosis
EBL	Estimated blood loss
EPC	Evidence-Based Practice Center
FFP	Fresh Frozen Plasma
ICU	Intensive Care Unit
Hb	Hemoglobin
HELLP	Hemolysis, Elevated Liver enzymes, Low Platelet counts syndrome
KQ	Key Question
L	Liter
LOS	Length of Stay
mL	Milliliter
MRI	Magnetic Resonance Imaging
NHLBI	National Heart, Lung, and Blood Institute
NR	Not Reported
OR	Odds ratio
PE	Pulmonary Embolism
PICOTS	Population, Intervention, Comparator, Outcomes, Timing, and Setting
PPH	Post-Partum Hemorrhage
PRBCs	Packed Red Blood Cells
PT	Prothrombin Time
RBC	Red Blood Cells
RCT	Randomized Controlled Trial
rFVIIa	Recombinant activated factor VII
RR	Relative risk
rTM	Recombinant Human Soluble Thrombomodulin
SD	Standard Deviation
SVT	Superficial Venous Thrombosis
TEP	Technical Expert Panel
TRALI	Transfusion-related acute lung injury
TXA	Tranexamic Acid
UKOSS	U.K. Obstetric Surveillance System

Appendix A. Search Strategies

Table A-1. MEDLINE search strategies (PubMed interface)

Search terms		Search results
#1	"postpartum hemorrhage"[MeSH Terms] OR "postpartum hemorrhage"[tiab] OR "postpartum haemorrhage"[tiab] OR (PPH[tiab] AND postpartum[tiab]) OR “obstetric hemorrhage”[tiab] OR “obstetric haemorrhage”[tiab] OR (("postpartum period"[MeSH Terms] OR post-partum[tiab]) AND ("hemorrhage"[MeSH Terms] OR hemorrhage[tiab] OR haemorrhage[tiab]))	7128
#2	management[tiab] OR therapy[tiab] OR "Therapeutics"[Mesh:NoExp] OR treatment[tiab] OR "fundal massage"[tiab] OR "uterine massage"[tiab] OR ((fundus[tiab] OR fundal[tiab] OR uterus[tiab] OR "uterus"[MeSH Terms] OR uterine[tiab]) AND (massage[tiab] OR "massage"[MeSH Terms])) OR compression[tiab] OR “antishock garment”[tiab] OR “antishock garments”[tiab] OR “Gravity Suits”[MeSH Terms] OR "Fluid Therapy"[mh] OR uterotonic[tiab] OR oxytocin[tiab] OR "oxytocin"[MeSH Terms] OR Pitocin[tiab] OR oxytoxic[tiab] OR Oxytocics[mesh] OR misoprostol[tiab] OR "misoprostol"[MeSH Terms] OR Cytotec[tiab] OR methylergonovine[tiab] OR "methylergonovine"[MeSH Terms] OR methergine[tiab] OR ergonovine[tiab] OR "ergonovine"[MeSH Terms] OR ergotrate[tiab] OR "Ergot Alkaloids"[mh] OR ergot[tiab] OR ergometrine[tiab] OR carboprost[tiab] OR "carboprost"[MeSH Terms] OR "carboprost tromethamine"[Supplementary Concept] OR “PGE1”[tiab] OR hemabate[tiab] OR transfusion[tiab] OR "Blood Transfusion"[mh] OR "fluid resuscitation"[tiab] OR "isotonic crystalloids"[tiab] OR "isotonic crystalloid"[tiab] OR "crystalloid solutions"[Supplementary Concept] OR "Ringer's Lactate"[tiab] OR "lactated ringer's"[tiab] OR "Ringer's lactate"[Supplementary Concept] OR "isotonic saline"[tiab] OR "blood products"[tiab] OR “volume replacement”[tiab] OR fibrinogen[tiab] OR "fibrinogen"[MeSH Terms] OR "fresh frozen plasma"[tiab] OR "plasma"[MeSH Terms] OR "packed cells"[tiab] OR cryoprecipitate[tiab] OR "uterine tamponade"[tiab] OR "balloon tamponade"[tiab] OR "intrauterine balloon"[tiab] OR “uterine balloon”[tiab] OR "Uterine Balloon Tamponade"[mh] OR "Bakri balloon"[tiab] OR ((uterus[tiab] OR "uterus"[MeSH Terms] OR uterine[tiab] OR intrauterine[tiab]) AND pack*[tiab]) OR "Bakri balloon"[tiab] OR "arterial embolization"[tiab] OR "artery embolization"[tiab] OR "Embolization, Therapeutic"[mh] OR "artery ligation"[tiab] OR "ligation"[MeSH Terms] OR "arterial ligation"[tiab] OR “laceration repair"[tiab] OR "recombinant activated factor VII"[tiab] OR "rFVIIa"[tiab] OR "Factor VIIa"[mh] OR Laparotomy[tiab] OR "laparotomy"[MeSH Terms] OR Hysterectomy[tiab] OR "hysterectomy"[MeSH Terms] OR “B-lynch”[tiab] OR “Suture Techniques”[MeSH Terms] OR suture[tiab] OR suturing[tiab] OR "Uterine Inertia/prevention and control"[Mesh] OR "Uterine Inertia/therapy"[Mesh] OR “Uterine Inversion/therapy”[Mesh] OR “Uterine Rupture/therapy”[Mesh] OR "Dilatation and Curettage"[MeSH Terms] OR curettage[tiab] OR "uterine exploration"[tiab] OR "urinary catheterization"[tiab] OR "Urinary Catheterization"[Mesh] OR "catheter balloon"[tiab] OR "balloon catheter"[tiab] OR "foley catheter"[tiab] OR "condom catheter"[tiab] OR "condom tamponade"[tiab] OR (Condoms[Mesh] AND balloon[tiab]) OR "Rusch balloon"[tiab] OR "Sengstaken-Blakemore"[tiab] OR ("manual removal"[tiab] AND placenta[tiab]) OR "Placenta, Retained/therapy"[Mesh] OR "Resource Allocation"[Mesh] OR "Delivery of Health Care"[Mesh:NoExp] OR "Program Development"[Mesh] OR "Critical Pathways"[Mesh] OR "Guideline Adherence"[Mesh] OR "Clinical Protocols"[Mesh] OR "Algorithms"[Mesh] OR algorithm*[tiab] OR protocol*[tiab] OR system[tiab] OR systems[tiab] OR systemic*[tiab] OR "Patient Care Team/organization and administration"[Mesh] OR "Practice Guidelines as Topic"[Mesh] OR "Checklist"[Mesh] OR "adverse effects"[Subheading] OR unsafe[tiab] OR safety[tiab] OR harm[tiab] OR harms[tiab] OR harmful[tiab] OR complication[tiab] OR complications[tiab] OR "side-effect"[tiab] OR "side-effects"[tiab] OR ((undesirable OR adverse) AND (effect OR effects OR reaction OR reactions OR event OR events OR outcome OR outcomes)) OR sequelae[tiab] OR sequela[tiab] OR "Postoperative Complications"[Mesh] OR ((postoperative[tiab] OR surgical[tiab] OR postsurgical[tiab] OR "post operative"[tiab] OR "post surgical"[tiab]) AND (complication[tiab] OR complications[tiab])) OR "adverse effects"[Subheading] OR complications[Subheading] OR contraindications[Subheading]	8820233
#3	#1 AND #2 AND English[lang]	4379
#4	newspaper article[pt] OR letter[pt] OR comment[pt] OR case reports[pt] OR review[pt] OR practice	5019085

	guideline[pt] OR guideline[pt] OR news[pt] OR editorial[pt] OR historical article[pt] OR legal cases[pt] OR published erratum[pt] OR congresses[pt]	
#5	#3 NOT #4	2729
#6	#5 AND ("1990/01/01"[PDAT] : "3000/12/31"[PDAT])	2124*

Key: [mh] Medical Subject Heading; [tiab] title/abstract word; [pt] publication type; [sh] subheading; [PDAT] publication date
*Note: numbers do not tally as some articles are excluded in more than one category

Table A-2. CINAHL (via Ebsco) search results

Search terms		Search results
#1	(MH "Postpartum Hemorrhage") OR "postpartum hemorrhage" OR "postpartum haemorrhage" OR "obstetric hemorrhage" OR "obstetric haemorrhage" OR ("PPH" AND "postpartum") OR (((MH "Postnatal Period") OR "post-partum") AND ((MH "Hemorrhage") OR (MH "Uterine Hemorrhage") OR hemorrhage OR "haemorrhage" OR "excessive bleeding" OR "excessive blood loss"))	1258
#2	"management" OR "therapy" OR (MH "Therapeutics") OR treatment OR "fundal massage" OR "uterine massage" OR (((MH "Uterine Fundus") OR fundus OR fundal OR (MH "Uterus") OR uterus OR uterine) AND ((MH "Massage") OR massage)) OR compression OR (MH "Compression Garments") OR (MH "Compression Therapy") OR "antishock garment" OR "antishock garments" OR (MH "Fluid Therapy") OR "fluid therapy" OR "uterotonic" OR (MH "Oxytocin") OR "oxytocin" OR "oxytoxic" OR "oxytoxics" OR (MH "Misoprostol") OR "misoprostol" OR "cytotec" OR "methylergonovine" OR "methergine" OR (MH "Ergonovine") OR "ergonovine" OR "ergotrate" OR (MH "Ergot Alkaloids") OR "ergot" OR "ergometrine" OR "carboprost" OR "PGE1" OR "hemabate" OR (MH "Blood Transfusion") OR "transfusion" OR (MH "Fluid Resuscitation") OR "fluid resuscitation" OR (MH "Isotonic Solutions") OR (MH "Crystalloid Solutions") OR "isotonic crystalloids" OR "isotonic crystalloid" OR (MH "Lactated Ringer's Solution") OR "ringer's lactate" OR "isotonic saline" OR (MH "Normal Saline") OR "blood products" OR "volume replacement" OR (MH "Fibrinogen") OR "fibrinogen" OR "fresh frozen plasma" OR (MH "Plasma") OR "cryoprecipitate" OR "uterine tamponade" OR (MH "Balloon Dilatation") OR "balloon tamponade" OR "intrauterine balloon" OR "uterine balloon" OR (((MH "Uterus") OR "uterus" OR "uterine" OR "intrauterine") AND "pack*") OR (MH "Uterine Artery Embolization") OR "arterial embolization" OR "artery embolilization" OR (MH "Embolization, Therapeutic") OR "artery ligation" OR (MH "Ligation") OR "arterial ligation" OR "laceration repair" OR "recombinant activated factor VII" OR "Factor VIIa" OR (MH "Blood Coagulation Factors") OR (MH "Laparotomy") OR "laparotomy" OR (MH "Hysterectomy") OR "hysterectomy" OR "B-lynch" OR (MH "Suture Techniques") OR (MH "Sutures") OR "suture" OR "suturing" OR (MH "Uterine Inertia/TH/PC") OR (MH "Uterine Inversion/TH") OR (MH "Uterine Rupture/TH") OR (MH "Dilatation and Curettage") OR "curettage"	842318
#3	#1 AND #2	872
#4	#3 AND limiters: English language, Exclude MEDLINE records	196*

Key: [mh] Medical Subject Heading
*Note: numbers do not tally as some articles are excluded in more than one category

Table A-3. Embase search strategy (OvidSP interface, MEDLINE results)

Search terms		Search results
#1	postpartum hemorrhage/ OR "postpartum hemorrhage" OR "postpartum haemorrhage" OR (PPH AND postpartum) OR "obstetric hemorrhage" OR "obstetric haemorrhage" OR ((puerperium/ OR post-partum) AND (hemorrhage OR haemorrhage))	10554
#2	management OR therapy OR therapy/ OR treatment OR fundal massage OR ((fundus OR uterine fundus/ OR fundal OR uterus OR uterus/ OR uterine) AND (massage OR massage/)) OR compression OR compression instrument/ OR artery compression/ OR compression stocking/ or compression bandage/ or compression sleeve/ or compression/ or compression therapy/ or compression garment/ OR mast suit/ OR "antishock garment" OR "antishock garments" OR "fluid therapy" OR fluid therapy/ OR uterotonic OR oxytocin OR oxytocin/ OR pitocin or uterotonic agent/ OR oxytocic agent/ OR misoprostol/ OR misoprostol OR cytotecOR methylergometrine/ OR methylergonovine OR methergine OR methylergometrine maleate/ OR ergometrine/ OR ergonovine OR ergotrate OR ergot alkaloid/ OR carboprost/ OR carboprost	8527763

	trometamol/ OR "carboprost tromethamine" OR prostaglandin E1/ OR PGE1 OR hemabate OR transfusion OR blood transfusion/ OR fluid resuscitation/ OR "isotonic crystalloids" OR "isotonic crystalloid" OR "crystalloid solutions" OR "crystalloid solution" OR crystalloid/ OR Ringer lactate solution/ OR "ringer's lactate" OR "lactated ringer's" OR isotonic solution/ OR "isotonic saline" OR whole blood/ OR blood product/ OR "blood products" OR "volume replacement" OR fibrinogen/ OR fibrinogen OR fresh frozen plasma/ OR "fresh frozen plasma" OR plasma/ OR erythrocyte concentrate/ OR "packed cells" OR cryoprecipitate/ OR cryoprecipitate OR uterine tamponade/ OR "uterine tamponade" OR "balloon tamponade" OR intrauterine balloon/ OR "intrauterine balloon" OR "uterine balloon tamponade" OR "Bakri balloon" OR ((uterus OR uterus/ OR uterine OR intrauterine) AND (pack?)) OR artificial embolism/ OR "arterial embolization" OR "artery embolization" OR "therapeutic embolization" OR artery ligation/ OR "artery ligation" OR "arterial ligation" OR "laceration repair" OR laceration/su OR recombinant blood clotting factor 7a/ OR "recombinant activated factor VII" OR "rFVIIa" OR blood clotting factor 7a/ AND laparotomy/ OR laparotomy OR hysterectomy/ OR hysterectomy OR "B-lynch" OR suturing method/ OR suture? OR suturing OR uterine atony/dm, dt, su, th OR uterus rupture/dm, su, th, dt OR curettage OR curettage/ OR "uterine exploration" OR bladder catheterization/ OR "urinary catheterization" OR "catheter balloon" OR balloon catheter/ OR Foley balloon catheter/ OR "foley catheter" OR condom catheter/ OR "condom catheter" OR "condom tamponade" OR (condom/ AND balloon) OR "Rusch balloon" OR "Sengstaken-Blakemore" OR ("manual removal" AND placenta) OR retained placenta/dt, su, th OR resource allocation/ OR "resource allocation" OR health care delivery/ OR program development/ OR "program development" OR clinical pathway/ OR "critical pathways" OR "guideline adherence" OR clinical protocol/ OR "clinical protocol" OR "clinical protocols" OR algorithm/ OR algorithm? OR protocol? OR system OR systems OR systemic OR patient care/ OR "guideline implementation" OR checklist/ OR checklist? OR ae.fs OR unsafe OR safety OR harm OR harms OR harmful OR complication/ OR complication OR complications OR side effect/ OR adverse drug reaction/ OR "side effect" OR "side effects" OR ((undesirable OR adverse) AND (effect OR effects OR reaction OR reactions OR event OR events OR outcome OR outcomes)) OR sequelae OR sequela OR postoperative complication/ OR "postoperative complications" OR ((postoperative OR surgical OR postsurgical OR "post operative" OR "post surgical") AND (complication OR complications)) OR drug contraindication/ OR treatment contraindication/ OR co.fs	
#3	#1 AND #2	7916
	Limit #3 to (human and english language and yr="1990 -Current")	5624

Key: ?=truncation; fs=floating subheading; / s all subheadings; ae=adverse drug reaction subheading; co=complication subheading; dm=disease management subheading; dt=drug therapy subheading; su=surgery subheading; th=therapy subheading;
*Note: numbers do not tally as some articles are excluded in more than one category

Table A-4. MEDLINE search strategies (PubMed interface) for Key Question 4

Search terms		Search results
#1	"postpartum hemorrhage"[MeSH Terms] OR "postpartum hemorrhage"[tiab] OR "postpartum haemorrhage"[tiab] OR (PPH[tiab] AND postpartum[tiab]) OR “obstetric hemorrhage”[tiab] OR “obstetric haemorrhage”[tiab] OR (("postpartum period"[MeSH Terms] OR post-partum[tiab]) AND ("hemorrhage"[MeSH Terms] OR hemorrhage[tiab] OR haemorrhage[tiab]))	7348
#2	"Anemia, Iron-Deficiency/therapy"[mesh] OR ((Erythropoietin[mesh] OR erythropoietin*[tiab] OR epoetin*[tiab] OR ferric*[tiab] OR ferrous*[tiab] OR "Iron Compounds"[mesh] OR Iron[mesh] OR iron*[tiab]) AND ("Anemia, Iron-Deficiency" [mesh] OR anemia[tiab] OR anaemia[tiab] OR anemic[tiab]))	25489
#3	#1 AND #2 AND English[lang]	36
#4	newspaper article[pt] OR letter[pt] OR comment[pt] OR case reports[pt] OR review[pt] OR practice guideline[pt] OR guideline[pt] OR news[pt] OR editorial[pt] OR historical article[pt] OR legal cases[pt] OR published erratum[pt] OR congresses[pt]	5118038
#5	#3 NOT #4	21

#6	#5 AND ("1990/01/01"[PDAT] : "3000/12/31"[PDAT])	18*

Key: [mh] Medical Subject Heading; [tiab] title/abstract word; [pt] publication type; [sh] subheading; [PDAT] publication date
*Note: numbers do not tally as some articles are excluded in more than one category

Table A-5. CINAHL search strategies (EbscoHost interface) for Key Question 4

Search terms		Search results
#1	((MH "Postpartum Hemorrhage") OR "postpartum hemorrhage" OR "postpartum haemorrhage" OR (PPH AND postpartum) OR "obstetric hemorrhage" OR "obstetric haemorrhage") OR ((MH "Postnatal Period+") OR postpartum OR post-partum) AND ((MH "Hemorrhage") OR (MH "Uterine Hemorrhage+") OR hemorrhage OR haemorrhage))	1450
#2	(MH "Anemia, Iron Deficiency/TH") OR (((MH "Erythropoietin") OR erythropoietin* OR epoetin* OR ferric* OR ferrous* OR iron* OR (MH "Iron Compounds+") OR (MH "Iron")) AND ((MH "Anemia, Iron Deficiency") OR anemia OR anaemia OR anemic))	3724
#3	#1 AND #2	10
#4	#3 AND limiters: English language, Human, Exclude MEDLINE records	1
#5	#5 AND limiter: Published Date: 19900101-20140731	1*

Key: [mh] Medical Subject Heading;
*Note: numbers do not tally as some articles are excluded in more than one category

Table A-6. Embase search strategy (OvidSP interface) for Key Question 4

Search terms		Search results
#1	exp postpartum hemorrhage/ OR "postpartum hemorrhage" OR "postpartum haemorrhage" OR (PPH AND postpartum) OR "obstetric hemorrhage" OR "obstetric haemorrhage" OR obstetric hemorrhage/ OR ((puerperium/ OR postpartum OR post-partum) AND (bleeding/ OR hemorrhage OR haemorrhage))	11971
#2	iron deficiency anemia/th OR ((erythropoietin/ OR recombinant erythropoietin/ OR erythropoietin* OR epoetin* OR ferric* OR ferrous* OR iron derivative/ OR iron/ OR iron therapy/ OR iron*) AND (iron deficiency anemia/ OR anemia OR anaemia OR anemic* OR anaemic*))	6883
#3	#1 AND #2	19
#4	Limit #3 to (human and english language and yr="1990 -Current")	15

Key: exp=explode, s terms narrower than the search term;
*Note: numbers do not tally as some articles are excluded in more than one category

Appendix B. Screening and Quality Assessment Forms

Screening Forms

Abstract Review Form

1. Is the paper original research (*excludes* editorials, commentaries, letters to the editor, and reviews of the literature)?
□ Yes □ No □ Cannot Determine

2. What country(s) is the study population located? (check as many as applicable)

□ Andorra
□ Argentina
□ Australia
□ Austria
□ Barbados
□ Belgium
□ Brunei Darussalam
□ Canada
□ Chile
□ Croatia
□ Cyprus
□ Czech Republic
□ Denmark
□ Estonia
□ Finland
□ France
□ Germany
□ Greece
□ Hong Kong, China (SAR)
□ Hungary
□ Iceland
□ Ireland
□ Israel
□ Italy
□ Japan
□ Korea, Republic of
□ Latvia
□ Liechtenstein
□ Lithuania
□ Luxembourg
□ Malta
□ Netherlands
□ New Zealand
□ Norway
□ Poland
□ Portugal
□ Qatar
□ Seychelles
□ Singapore
□ Slovakia
□ Slovenia
□ Spain
□ Sweden
□ Switzerland
□ United Arab Emirates
□ United Kingdom
□ United States
□ Multi-site
□ Other: _____
□ Cannot Determine

3. Does the study MORE THAN ONE woman with postpartum hemorrhage (PPH)—any age and severity?
□ Yes □ No □ Cannot Determine

4. Does the study address one or more of the following:

- Outcomes of treatment/management of PPH
- Systems-level studies of approaches for treatment/management of PPH
- Followup treatment/management for women with anemia following PPH
- Harms of treatment/management for PPH

□ Yes □ No □ Cannot Determine

5. If, 'NO', does study address (check all that apply)**:**
□ Prevalence or incidence study

□ Prevention of PPH only (does not treatment/management)
□ Active management of 3rd stage of labor
□ Basic science or anatomy study
□ Imaging or diagnostic study
□ Other _____

6. Retain for:
□ Background/Discussion □ Review of References □ Other

7. Comments:

Full-Text Review Form

1. Is the paper original research (*excludes* editorials, commentaries, letters to the editor, and reviews/systematic reviews of the literature)?
□ Yes □ No

2. In what country(s) is the study population located? (check as many as applicable)

□ Andorra
□ Argentina
□ Australia
□ Austria
□ Barbados
□ Belgium
□ Brunei Darussalam
□ Canada
□ Chile
□ Croatia
□ Cyprus
□ Czech Republic
□ Denmark
□ Estonia
□ Finland
□ France
□ Germany
□ Greece
□ Hong Kong, China (SAR)
□ Hungary
□ Iceland
□ Ireland
□ Israel
□ Italy
□ Japan
□ Korea, Republic of
□ Latvia
□ Liechtenstein
□ Lithuania
□ Luxembourg
□ Malta
□ Netherlands
□ New Zealand
□ Norway
□ Poland
□ Portugal
□ Qatar
□ Seychelles
□ Singapore
□ Slovakia
□ Slovenia
□ Spain
□ Sweden
□ Switzerland
□ United Arab Emirates
□ United Kingdom
□ United States
□ Multi-site
□ Other: _____
□ Cannot Determine

3. Does the study address one or more of the following (check all that apply)?:
□ Outcomes of treatment/management of PPH; outcomes blood loss, transfusion, ICU admission, anemia, length of stay, mortality, uterine preservation, future fertility, psychological impact, breastfeeding
□ Outcomes of systems-level studies of approaches for treatment/management of PPH in women
□ Outcomes or harms of treatment/management for anemia following PPH
□ Timing OR order of intervention(s) for PPH management in women
□ Harms of treatment/management for PPH in women
□ None of the above

4. Is the study one of the following (check all that apply)**:**
□ RCT or prospective or retrospective cohort study addressing intervention(s) and outcomes of interventions to manage/treat PPH
□ RCT or prospective or retrospective cohort study addressing harms/adverse effects of interventions to manage PPH
□ RCT or prospective or retrospective cohort study addressing outcomes of treatment for anemia following PPH OR harms/adverse effects of treatment of anemia in women with stabilized PPH
□ RCT or prospective or retrospective cohort study addressing timing/selection of interventions for PPH
□ Population-based (state or region) case series/registry study with at least 50 women with PPH and addressing outcomes of interventions to manage PPH
□ Case series with at least 50 women with PPH and addressing harms/adverse effects of treatment for PPH
□ Comparative (s intervention and comparison or pre/post group) study addressing systems-level interventions for PPH
□ Case series with <50 women with PPH addressing outcomes/harms of intervention for PPH (will not be d—data collection question)
□ None of these

5. Please record total N participants with PPH:

_____

6. If excluded, retain for:
□ Background/Discussion □ Review of References □ Other

7. Comments:

Quality Assessment Forms

Cochrane Collaboration Modified Tool for Assessing Risk of Bias in RCTs

REF ID:				**Reviewer:**	
Domain	***Description***	***High risk of bias***	***Low risk of bias***	***Unclear risk of bias***	***Reviewer Assessment***
Selection bias ***Random sequence generation***	Described the method used to generate the allocation sequence in sufficient detail to allow an assessment of whether it should produce comparable groups. **Reviewer Comments:**	Selection bias (biased allocation to interventions) due to inadequate generation of a randomized sequence.	Random sequence generation method should produce comparable groups	Not described in sufficient detail	**Judgment: Random Sequence generation** □ **High** □ **Low** □ **Unclear**
Selection bias ***Allocation concealment***	Described the method used to conceal the allocation sequence in sufficient detail to determine whether intervention allocations could have been foreseen in advance of, or during, enrollment. **Reviewer Comments:**	Selection bias (biased allocation to interventions) due to inadequate concealment of allocations prior to assignment.	Intervention allocations likely could not have been foreseen in advance of, or during, enrollment	Not described in sufficient detail	**Judgment: Allocation concealment** □ **High** □ **Low** □ **Unclear**
Reporting Bias ***Selective reporting***	State how the possibility of selective outcome reporting was examined by the authors and what was found. **Reviewer Comments:**	Reporting bias due to selective outcome reporting.	Selective outcome reporting bias not detected	Insufficient information to permit judgment of 'Low risk' or 'High risk'. (*It is likely that the majority of studies will fall into this category.)*	**Judgment: Selective reporting** □ **High** □ **Low** □ **Unclear**
Other bias ***Other sources of bias***	Any important concerns about bias not addressed above. If particular questions/entries were pre-specified in the study's protocol, responses should be provided for each question/entry. **Reviewer**	Bias due to problems not covered elsewhere in the table.	No other bias detected	There may be a risk of bias, but there is either: Insufficient information to assess whether an important risk of bias exists; or Insufficient rationale or evidence that an identified problem will introduce bias.	**Judgment: Other sources of bias** □ **High** □ **Low** □ **Unclear**

	Comments:				

Outcome(s):					
Domain	***Description***	***High risk of bias***	***Low risk of bias***	***Unclear risk of bias***	***Reviewer Assessment***
Performance bias ***Blinding (participants and personnel)***	Described all measures used, if any, to blind study participants and personnel from knowledge of which intervention a participant received. Provided any information relating to whether the intended blinding was effective. **Reviewer Comments:**	Performance bias due to knowledge of the allocated interventions by participants and personnel during the study.	Blinding was likely effective.	Not described in sufficient detail	**Judgment: Blinding (participants and personnel)** □ **High** □ **Low** □ **Unclear**
Detection bias ***Blinding (outcome assessment)***	Described all measures used, if any, to blind outcome assessors from knowledge of which intervention a participant received. Provided any information relating to whether the intended blinding was effective. **Reviewer Comments:**	Detection bias due to knowledge of the allocated interventions by outcome assessors.	Blinding was likely effective.	Not described in sufficient detail	**Judgment: Blinding (outcome assessment)** □ **High** □ **Low** □ **Unclear**
Attrition bias ***Incomplete outcome data***	Described the completeness of outcome data for each main outcome, including attrition and exclusions from the analysis. Stated whether attrition and exclusions were reported, the numbers in each intervention group (compared with total randomized participants), reasons for attrition/exclusions where reported. **Reviewer**	Attrition bias due to amount, nature or handling of incomplete outcome data.	Handling of incomplete outcome data was complete and unlikely to have produced bias	Insufficient reporting of attrition/exclusions to permit judgment of 'Low risk' or 'High risk' (e.g. number randomized not stated, no reasons for missing data provided)	**Judgment: Incomplete outcome data** □ **High** □ **Low** □ **Unclear**

	Comments:				

Newcastle-Ottawa Quality Assessment Form for Case-Control Studies

Note: A study can be given a maximum of one star for each numbered item within the Selection and Exposure categories. A maximum of two stars can be given for Comparability.

Reviewer: _____ **Ref ID:** _____

Selection

1) Is the case definition adequate?: _____
   a) Yes, with independent validation ***(one star)***
   b) Yes, e.g., record linkage or based on self report
   c) No description

2) Representativeness of the cases: _____
   a) Consecutive or obviously representative series of cases ***(one star)***
   b) Potential for selection biases or not stated

3) Selection of controls: _____
   a) Community controls ***(one star)***
   b) Hospital controls
   c) No description

4) Definition of controls: _____
   a) No history of disease (endpoint) ***(one star)***
   b) No description of source

Comparability

1) Comparability of cases and controls on the basis of the design or analysis controlled for confounders: _____
   □ The study controls for age ***(one star)***
   □ Study controls for other factors (list) _____ ***(one star)***
   □ Cohorts are not comparable on the basis of the design or analysis controlled for confounders

Exposure

1) Ascertainment of exposure: _____
   a) Secure record (e.g., surgical record) ***(one star)***
   b) Structured interview where blind to case/control status ***(one star)***
   c) Interview not blinded to case/control status
   d) Written self report or medical record only
   e) No description

2) Same method of ascertainment for cases and controls: _____
   □ Yes ***(one star)***
   □ No

3) Non-response rate: _____
   a) Same rate for both groups ***(one star)***
   b) Non-respondents described
   c) Rate different between cases and controls with no description

Newcastle-Ottawa Quality Assessment Form for Cohort Studies

Note: A study can be given a maximum of one star for each numbered item within the Selection and Outcome categories. A maximum of two stars can be given for Comparability.

Reviewer: _____ **Ref ID:** _____

Selection

1) Representativeness of the exposed cohort: _____
   a) Truly representative ***(one star)***
   b) Somewhat representative ***(one star)***
   c) Selected group
   d) No description of the derivation of the cohort

2) Selection of the non-exposed cohort
   a) Drawn from the same community as the exposed cohort ***(one star)***
   b) Drawn from a different source
   c) No description of the derivation of the non exposed cohort

3) Ascertainment of exposure: ____
   a) Secure record (e.g., surgical record) ***(one star)***
   b) Structured interview ***(one star)***
   c) Written self report
   d) No description
   e) Other

4) Demonstration that outcome of interest was not present at start of study: ____
   a) Yes ***(one star)***
   b) No

Comparability

1) Comparability of cohorts on the basis of the design or analysis controlled for confounders: _____
   a) The study controls for age ***(one star)***
   b) Study controls for other factors (list) _____***(one star)***
   c) Cohorts are not comparable on the basis of the design or analysis controlled for confounders

Outcome

1) Assessment of outcome: ____
   a) Independent blind assessment ***(one star)***
   b) Record linkage ***(one star)***
   c) Self report
   d) No description
   e) Other

2) Was follow-up long enough for outcomes to occur: _____
   a) Yes ***(one star)***
   b) No

Indicate the median duration of follow-up and a brief rationale for the assessment above:_____

3) Adequacy of follow-up of cohorts: _____
   a) Complete follow up- all subject accounted for ***(one star)***
   b) Subjects lost to follow up unlikely to introduce bias- number lost less than or equal to 20% or description of those lost suggested no different from those followed. ***(one star)***
   c) Follow up rate greater than 80% and no description of those lost
   d) No statement

Case Series Quality/Risk of Bias Form

Reviewer Initials: _____ Ref ID: _____

Risk of Bias	Criterion	YES	NO	NA	NR	COMMENTS
Selection bias and confounding	1. Were the important confounding and modifying variables taken into account in the design and analysis?					
Performance bias	2. Was any impact from a concurrent intervention or an unintended exposure that might bias results ruled out by the researchers?					
	3. Was the study free from variations from the study protocol that could compromise the conclusions of the study?					
Attrition bias	4. Was there a low rate of differential or overall attrition? (note: low≤20%)					
	5. Attrition did not result in a difference in group characteristics between baseline and follow-up					
Detection bias	6. Were the outcome assessors blinded to the intervention or exposure status of participants?					
	7a. Are the inclusion/exclusion criteria clearly stated? (note: consider whether level of detail would allow for replication)					
	7b. Were the measures implemented consistently across all study participants?					
	8a. Are interventions/exposures assessed using appropriate measures?					
	8b. Were the interventions implemented consistently across all study participants?					
	9a. Are primary outcome measurement approaches clearly described? List outcome. Outcome1:_____					
	Outcome 2: _____					
	Outcome 3: _____					
	Outcome 4: _____					
	Outcome 5: _____					
	Outcome 6: _____					
	9b. Are primary outcomes assessed using appropriate measures? List outcome. Outcome 1:_____					
	Outcome 2: _____					

	Outcome 3: _____					
	Outcome 4:_____					
	Outcome 5:_____					
	Outcome 6: _____					
	9b. Was outcome assessment implemented consistently across all study participants?					
	10a. Are confounding variables assessed using appropriate measures?					
	10b. Was assessment of confounding variables implemented consistently across all study participants?					
	11. Did the study account for secular trends and regression to the mean?					
Reporting bias	12a. Are the potential outcomes pre-specified by the researchers?					
	12b. Are harms pre-specified by the researchers?					
	13. Are all pre-specified outcomes reported?					
	13a. Are all pre-specified harms reported?					

Harms Risk of Bias Assessment Form

Reviewer: _____ Ref ID: _____

Question	Yes	No	Comments
Were the harms predefined using standardized or precise definitions? (mcharms)			
Are all pre-specified harms reported? (RTI case series)			
Did the author(s) use STANDARD scale(s) or checklist(s) for harms collection? (mcharms)			
Are the statistical methods used to assess the main harm or adverse event outcomes adequate? (RTI cohort)			

Appendix C. Excluded Studies

Reasons for Exclusion

X-1 Not original research
X-2 Ineligible country
X-3 Ineligible population
X-4 Does not address outcomes or population of interest
X-5 Ineligible study design
X-6 Article not obtainable

1. Aggregate analysis of oxytocin incidents. X-1
2. Abdel-Aleem H, Aboelnasr MF, Jayousi TM, et al. Indwelling bladder catheterisation as part of intraoperative and postoperative care for caesarean section. PMID: X-3, X-4
3. Abdel-Aleem H, Alhusaini TK, Abdel-Aleem MA, et al. Effectiveness of tranexamic acid on blood loss in patients undergoing elective cesarean section: randomized clinical trial. PMID: X-2, X-4
4. Abdul Sultan A, Grainge MJ, West J, et al. Impact of risk factors on the timing of first postpartum venous thromboembolism: a population-based cohort study from England. PMID: X-4
5. Abdul Sultan A, Tata LJ, Fleming KM, et al. Pregnancy Complications and Adverse Birth Outcomes Among Women With Celiac Disease: A Population-Based Study From England. PMID: X-3, X-4
6. Abramovici A, Szychowski JM, Biggio JR, et al. Epidural Use and Clinical Chorioamnionitis among Women Who Delivered Vaginally. PMID: X-4
7. Adeniran AS, Fawole AA, Fakeye OO, et al. Grandmultiparity: evaluating obstetric and neonatal outcomes after eliminating confounders. PMID: X-4
8. Aditya V. LMN Facial Palsy in Pregnancy: An Opportunity to Predict Preeclampsia-Report and Review. PMID: X-3, X-4
9. Aggarwal RS, Mishra VV, Jasani AF, et al. Acute renal failure in pregnancy: our experience. PMID: X-2, X-4
10. Ahmadzia HK, Thomas SM, Heine RP, et al. Survey of peripartum hysterectomy experiences: anticipated, unplanned, or averted. X-4, X-5
11. Alfirevic Z, Aflaifel N, Weeks A. Oral misoprostol for induction of labour. PMID: X-1, X-4
12. Allam IS, Gomaa IA, Fathi HM, et al. Incidence of emergency peripartum hysterectomy in Ain-shams University Maternity Hospital, Egypt: aretrospective study. PMID: X-2, X-4
13. Almansa C, Camano I, Villar O, et al. Puerperal curettage after cesarean section delivery. X-4, X-5
14. Almeida LM, Santos CC, Caldas JP, et al. Obstetric care in a migrant population with free access to health care. PMID: X-4
15. Amsalem H, Aldrich CJ, Oskamp M, et al. Postpartum uterine response to oxytocin and carbetocin. PMID: X-4, X-5
16. Arrowsmith S, Wray S. Oxytocin: its mechanism of action and receptor signalling in the myometrium. PMID: X-1, X-4
17. Fareh OI, Rizk DE, Thomas L, et al. PMM.21 Antenatal Haemoglobin Levels and Blood Transfusion. PMID: X-3, X-4
18. Zimmermann R, Breymann C, Richter C, et al. PMM.74 Are We Forgetting The Folates? PMID: X-1
19. . Recent ACOG bulletin covers management of postpartum hemorrhage. Am Fam Physician. 1990 Oct;42:1117-9. PMID: 2220516; X-1, X-2, X-4, X-5
20. Alabi EM. Cultural practices in Nigeria. Newsl Inter Afr Comm Tradit Pract Affect Health Women Child. 1990 May:6-7. PMID: 12157983; X-2

21. Andres RL, Piacquadio KM, Resnik R. A reappraisal of the need for autologous blood donation in the obstetric patient. Am J Obstet Gynecol. 1990 Nov;163:1551-3. PMID: 2240105; X-4

22. Begley CM. The effect of ergometrine on breast feeding. Midwifery. 1990 Jun;6:60-72. PMID: 2195299; X-3

23. Begley CM. A comparison of 'active' and 'physiological' management of the third stage of labour. Midwifery. 1990 Mar;6:3-17. PMID: 2182978; X-4

24. Chattopadhyay SK, Deb Roy B, Edrees YB. Surgical control of obstetric hemorrhage: hypogastric artery ligation or hysterectomy? Int J Gynaecol Obstet. 1990 Aug;32:345-51. PMID: 1977629; X-2, X-4, X-5

25. Evaldson GR. The grand multipara in modern obstetrics. Gynecol Obstet Invest. 1990;30:217-23. PMID: 2289702; X-2, X-4

26. Healey JM. The Jehovah's Witness parent's right to refuse treatment. Conn Med. 1990 Jun;54:357. PMID: 2373012; X-1, X-5

27. Hood DD, Holubec DM. Elective repeat cesarean section. Effect of anesthesia type on blood loss. J Reprod Med. 1990 Apr;35:368-72. PMID: 2352227; X-4, X-5

28. Imberti R, Preseglio I, Trotta V, et al. Blood transfusion during cesarean section. A 12 years' retrospective analysis. Acta Anaesthesiol Belg. 1990;41:139-44. PMID: 2371803; X-1, X-4

29. Lao TT, Huengsburg M. Labour and delivery in mothers with asthma. Eur J Obstet Gynecol Reprod Biol. 1990 May-Jun;35:183-90. PMID: 2335253; X-4

30. Levy DB, Peppers MP, Miller K. A last resort for postpartum hemorrhage. Emergency. 1990;22:16-7. PMID: X-1

31. P OP, Suthutvoravut S, Chaturachinda K. Hydrops fetalis due to Bart hemoglobinopathy at Ramathibodi Hospital (1978-1987): a 10-year review. J Med Assoc Thai. 1990 Feb;73 Suppl 1:65-8. PMID: 2351917; X-1, X-3, X-4

32. Peyser MR, Kupferminc MJ. Management of severe postpartum hemorrhage by intrauterine irrigation with prostaglandin E2. Am J Obstet Gynecol. 1990 Mar;162:694-6. PMID: 2316571; X-2, X-4, X-5

33. Sofat R. Post-partum Copper-T insertion -- a trial. Indian J Matern Child Health. 1990 Jan-Mar;1:23-4. PMID: 12319239; X-1, X-4

34. Sonneveld SW, Correy JF. Outcome of pregnancies complicated by epilepsy in Tasmania 1981-1988. Aust N Z J Obstet Gynaecol. 1990 Nov;30:286-9. PMID: 2082881; X-2, X-3, X-4

35. St George L, Crandon AJ. Immediate postpartum complications. Aust N Z J Obstet Gynaecol. 1990 Feb;30:52-6. PMID: 2346452; X-4

36. Sweeney G, Holbrook AM, Levine M, et al. Pharmacokinetics of carbetocin, a long-acting oxytocin analogue, in nonpregnant women. Current Therapeutic Research - Clinical and Experimental. 1990;47:528-40. PMID: X-1, X-3, X-4

37. Thomas IL, Jeffers TM, Brazier JM, et al. Does cord drainage of placental blood facilitate delivery of the placenta? Aust N Z J Obstet Gynaecol. 1990 Nov;30:314-8. PMID: 2082886; X-4

38. Thorp JM, Jr., Fowler WC, Donehoo R, et al. Antepartum and intrapartum events in women exposed in utero to diethylstilbestrol. Obstet Gynecol. 1990 Nov;76:828-32. PMID: 2216234; X-4

39. Woodcock HC, Read AW, Moore DJ, et al. Planned homebirths in Western Australia 1981-1987: a descriptive study. Med J Aust. 1990 Dec 3-17;153:672-8. PMID: 2246990; X-4

40. . Recently introduced products. Drug Ther Bull. 1991 Mar 4;29:17-9. PMID: 1935601; X-1, X-4

41. . When is manual placental extraction necessary? Emergency Medicine (00136654). 1991;23:90-1. PMID: X-1, X-4, X-5

42. Abdel-razik MS. Postpartum haemorrhage as a public health problem. J Egypt Soc Obstet Gynecol. 1991 Jan;17:51-61. PMID: 12317331; X-1, X-4

43. Bigrigg A, Chissell S, Read MD. Use of intra myometrial 15-methyl prostaglandin F2 alpha to control atonic postpartum haemorrhage following vaginal delivery and failure of conventional therapy. Br J Obstet Gynaecol. 1991 Jul;98:734-6. PMID: 1883806; X-1, X-2, X-4, X-5

44. Choudhury PA. The perils of motherhood. MARHIA. 1991 Apr-Jun;4:1, 6-8. PMID: 12285838; X-1, X-4

45. Combs CA, Laros RK, Jr. Prolonged third stage of labor: morbidity and risk factors. Obstet Gynecol. 1991 Jun;77:863-7. PMID: 2030858; X-4, X-5

46. Combs CA, Murphy EL, Laros RK, Jr. Factors associated with hemorrhage in cesarean deliveries. Obstet Gynecol. 1991 Jan;77:77-82. PMID: 1984231; X-4

47. Combs CA, Murphy EL, Laros RK, Jr. Factors associated with postpartum hemorrhage with vaginal birth. Obstet Gynecol. 1991 Jan;77:69-76. PMID: 1984230; X-4

48. Coyaji BJ. Maternal mortality and morbidity in the developing countries like India. Indian J Matern Child Health. 1991;2:3-9. PMID: 12288706; X-2, X-4

49. Crosby ET. Obstetrical anaesthesia for patients with the syndrome of haemolysis, elevated liver enzymes and low platelets. Can J Anaesth. 1991 Mar;38:227-33. PMID: 2021995; X-1, X-4

50. Donner C, McGinnis JA, Simon P, et al. Multifetal pregnancy reduction: a Belgian experience. Eur J Obstet Gynecol Reprod Biol. 1991 Feb 25;38:183-7. PMID: 2007443; X-1, X-4

51. Duthie SJ, Ven D, Yung GL, et al. Discrepancy between laboratory determination and visual estimation of blood loss during normal delivery. Eur J Obstet Gynecol Reprod Biol. 1991 Jan 30;38:119-24. PMID: 1995380; X-3, X-4

52. Endeshaw Y. Malaria in pregnancy: clinical features and outcome of treatment. Ethiop Med J. 1991 Jul;29:103-8. PMID: 1915317; X-2, X-3

53. Fauveau V, Stewart K, Khan SA, et al. Effect on mortality of community-based maternity-care programme in rural Bangladesh. Lancet. 1991 Nov 9;338:1183-6. PMID: 1682600; X-4

54. Gachiri JR, Rogo KO. Foetal and maternal outcome of vacuum extraction. East Afr Med J. 1991 Jul;68:539-46. PMID: 1756706; X-2, X-4

55. Goldman M, Blajchman MA, Ali MA. Overestimation of fetomaternal haemorrhage by the acid-elution technique in mothers with beta-thalassaemia minor. Transfus Med. 1991 Jun;1:129-32. PMID: 9259839; X-3, X-4

56. Greer IA, Lowe GD, Walker JJ, et al. Haemorrhagic problems in obstetrics and gynaecology in patients with congenital coagulopathies. Br J Obstet Gynaecol. 1991 Sep;98:909-18. PMID: 1911610; X-4, X-5

57. Long P. Bleeding and the third stage of labor. NAACOGS Clin Issu Perinat Womens Health Nurs. 1991;2:385-95. PMID: 1931386; X-1

58. Ozumba BC, Mbagwu SC. Emergency obstetric hysterectomy in eastern Nigeria. Int Surg. 1991 Apr-Jun;76:109-11. PMID: 1869383; X-2

59. Ozumba BC, Uchegbu H. Incidence and management of obstructed labour in eastern Nigeria. Aust N Z J Obstet Gynaecol. 1991 Aug;31:213-6. PMID: 1804080; X-2, X-4

60. Penney DS. Autologous blood use in obstetrics. NAACOGS Clin Issu Perinat Womens Health Nurs. 1991;2:344-8. PMID: 1931380; X-1

61. Penney DS. Hemorrhage and culture: management in the developing world and cultural implications for nursing care. NAACOGS Clin Issu Perinat Womens Health Nurs. 1991;2:339-43. PMID: 1931379; X-1

62. Perlis DW. Bleeding in women. NAACOG's Clinical Issues in Perinatal & Women's Health Nursing. 1991;2:xi-420. PMID: X-1, X-4

63. Poeschmann RP, Doesburg WH, Eskes TK. A randomized comparison of oxytocin, sulprostone and placebo in the management of the third stage of labour. Br J Obstet Gynaecol. 1991 Jun;98:528-30. PMID: 1873241; X-4

64. Porter KB, O'Brien WF, Collins MK, et al. A randomized comparison of umbilical vein and intravenous oxytocin during the puerperium. Obstet Gynecol. 1991 Aug;78:254-6. PMID: 2067772; X-4, X-5

65. Roopnarinesingh S, Ramoutar P, Bassaw B. Maternal mortality at Mount Hope Women's Hospital, Trinidad. West Indian Med J. 1991 Sep;40:139-41. PMID: 1957523; X-2, X-4

66. Sapire KE. A study of bleeding patterns with two injectable contraceptives given postpartum and the effect of two non-hormonal treatments. Adv Contracept. 1991 Dec;7:379-87. PMID: 1837974; X-3, X-4

67. Schuitemaker NW, Gravenhorst JB, Van Geijn HP, et al. Maternal mortality and its prevention. Eur J Obstet Gynecol Reprod Biol. 1991 Dec;42 Suppl:S31-5. PMID: 1809606; X-1

68. Smith LF. GP trainees' views on hospital obstetric vocational training. BMJ. 1991 Dec 7;303:1447-50. PMID: 1773153; X-3, X-4

69. Smith VG, Leman AD, Seaman WJ, et al. Pig weaning weight and changes in hematology and blood chemistry of sows injected with recombinant porcine somatotropin during lactation. J Anim Sci. 1991 Sep;69:3501-10. PMID: 1938637; X-1, X-3, X-4

70. Toppozada M. The use of prostaglandins in post-partum haemorrhage. J Egypt Soc Obstet Gynecol. 1991 Jan;17:9-18. PMID: 12317332; X-6

71. Waldenstrom U, Gottvall K. A randomized trial of birthing stool or conventional semirecumbent position for second-stage labor. Birth. 1991 Mar;18:5-10. PMID: 2006963; X-4

72. Wells SR, Thorp JM, Jr., Bowes WA, Jr. Management of the nonvertex second twin. Surg Gynecol Obstet. 1991 May;172:383-5. PMID: 2028373; X-4

73. Yamashita Y, Takahashi M, Ito M, et al. Transcatheter arterial embolization in the management of postpartum hemorrhage due to genital tract injury. Obstet Gynecol. 1991 Jan;77:160-3. PMID: 1984217; X-5

74. Zulkifli SN, Paine LL, Greener DL, et al. Trends in selected obstetric complications from University Hospital, Kuala Lumpur, Malaysia. Int J Gynaecol Obstet. 1991 May;35:29-36. PMID: 1680072; X-2, X-4

75. . What is needed to ensure the health and survival of mother and baby? Safe Mother. 1992 Jul-Oct:4-5. PMID: 12345881; X-1, X-4

76. . Bangladesh: village midwives save lives. Safe Mother. 1992 Mar-Jul:8. PMID: 12285232; X-2

77. . Family planning needed for all women. Fam Plann Today. 1992 May;3:1. PMID: 12343826; X-1

78. Adetoro OO. Primary post-partum haemorrhage at a university hospital in Nigeria. West Afr J Med. 1992 Jul-Sep;11:172-8. PMID: 1476960; X-2, X-4

79. Alvarez M, Lockwood CJ, Ghidini A, et al. Prophylactic and emergent arterial catheterization for selective embolization in obstetric hemorrhage. Am J Perinatol. 1992 Sep-Nov;9:441-4. PMID: 1418152; X-4, X-5

80. Bakri YN, Linjawi T. Angiographic embolization for control of pelvic genital tract hemorrhage. Report of 14 cases. Acta Obstet Gynecol Scand. 1992 Jan;71:17-21. PMID: 1315091; X-2, X-5

81. Buckshee K, Kriplani A, Kapil A, et al. Hypothyroidism complicating pregnancy. Aust N Z J Obstet Gynaecol. 1992 Aug;32:240-2. PMID: 1445136; X-2, X-4

82. Combs CA, Murphy EL, Laros RK, Jr. Cost-benefit analysis of autologous blood donation in obstetrics. Obstet Gynecol. 1992 Oct;80:621-5. PMID: 1407883; X-4

83. Copplestone JA. Asymptomatic thrombocytopenia developing during pregnancy (gestational thrombocytopenia)--a clinical study. Q J Med. 1992 Aug;84:593-601. PMID: 1484938; X-3, X-4

84. Doan-Wiggins L. Oxytocin use in prehospital care. Emergency Medical Services. 1992;21:26-31. PMID: X-1, X-4, X-5

85. Gilbert WM, Moore TR, Resnik R, et al. Angiographic embolization in the management of hemorrhagic complications of pregnancy. Am J Obstet Gynecol. 1992 Feb;166:493-7. PMID: 1536217; X-2, X-5

86. Hadley AG, Poole GD, Amphlett NW, et al. The use of interferon-gamma-treated U937 cells in chemiluminescence assays to detect red cell, platelet and granulocyte antibodies of potential clinical significance. Clin Lab Haematol. 1992;14:315-26. PMID: 1478011; X-3, X-4

87. Heymann SJ, Brewer TF. The problem of transfusion-associated acquired immunodeficiency syndrome in Africa: a quantitative approach. Am J Infect Control. 1992 Oct;20:256-62. PMID: 1443758; X-2, X-3, X-4

88. Kane TT, el-Kady AA, Saleh S, et al. Maternal mortality in Giza, Egypt: magnitude, causes, and prevention. Stud Fam Plann. 1992 Jan-Feb;23:45-57. PMID: 1557794; X-1, X-2, X-4

89. Kavoo L, Rogo KO. Factors influencing early perinatal mortality in a rural district hospital. East Afr Med J. 1992 Apr;69:181-7. PMID: 1644026; X-2, X-4

90. McCarthy TG, Ratnam SS. Intrauterine devices. Contemp Rev Obstet Gynaecol. 1992 Oct;4:215-22. PMID: 12345158; X-1, X-4

91. Nelson SH, Suresh MS. Lack of reactivity of uterine arteries from patients with obstetric hemorrhage. Am J Obstet Gynecol. 1992 May;166:1436-43. PMID: 1317676; X-2, X-4, X-5

92. O'Hanley K, Huber DH. Postpartum IUDS: keys for success. Contraception. 1992 Apr;45:351-61. PMID: 1516367; X-1, X-4

93. Pierre F, Mesnard L, Body G. For a systematic policy of i.v. oxytocin inducted placenta deliveries in a unit where a fairly active management of third stage of labour is yet applied: results of a controlled trial. Eur J Obstet Gynecol Reprod Biol. 1992 Jan 31;43:131-5. PMID: 1563560; X-4

94. Rosenfield A. Maternal mortality: community-based interventions. Int J Gynaecol Obstet. 1992 Jun;38 Suppl:S17-22. PMID: 1354177; X-1

95. Sarin AR, Singla P, Kaur H. Maternal mortality -- aetiological factors: analytic study from a teaching hospital of Punjab. Indian J Matern Child Health. 1992 Jul-Sep;3:69-73. PMID: 12288813; X-2

96. Saunders NS, Paterson CM, Wadsworth J. Neonatal and maternal morbidity in relation to the length of the second stage of labour. Br J Obstet Gynaecol. 1992 May;99:381-5. PMID: 1622909; X-4, X-5

97. Sherman SJ, Greenspoon JS, Nelson JM, et al. Identifying the obstetric patient at high risk of multiple-unit blood transfusions. J Reprod Med. 1992 Jul;37:649-52. PMID: 1522573; X-4, X-5

98. Stern C, Permezel M, Petterson C, et al. The Royal Women's Hospital Family Birth Centre: the first 10 years reviewed. Aust N Z J Obstet Gynaecol. 1992 Nov;32:291-6. PMID: 1290421; X-4

99. Viegas OA, Wiknsosastro G, Sahagun GH, et al. Safe childbirth needs more than medical services. World Health Forum. 1992;13:59-65. PMID: 1637477; X-1

100. Zerbe M, Bashore RG. Critical hemorrhage during pregnancy. Crit Care Nurs Clin North Am. 1992 Dec;4:729-36. PMID: 1288597; X-1

101. . China: training village doctors. Safe Mother. 1993 Feb:9. PMID: 12344831; X-2

102. . Midwifery modules. Safe Mother. 1993 Feb:6. PMID: 12344826; X-1, X-4

103. . Developing skills for delivery and maternity care. Safe Mother. 1993 Feb:1. PMID: 12344821; X-1

104. . New study could help women at risk after childbirth. Essent Drugs Monit. 1993:8. PMID: 12286992; X-1, X-3, X-4

105. Abdel-Aleem H, Abol-Oyoun EM, Moustafa SA, et al. Carboprost trometamol in the management of the third stage of labor. Int J Gynaecol Obstet. 1993 Sep;42:247-50. PMID: 7901080; X-2, X-4, X-5

106. Abouzahr C. Maternity care for all. ORGYN. 1993:12-6. PMID: 12318474; X-1, X-4

107. Achiron R, Goldenberg M, Lipitz S, et al. Transvaginal duplex Doppler ultrasonography in bleeding patients suspected of having residual trophoblastic tissue. Obstet Gynecol. 1993 Apr;81:507-11. PMID: 8459957; X-4

108. Allahbadia G, Ambiye V, Vaidya P. Unconventional use of oxytocin. J Indian Med Assoc. 1993 Feb;91:40-1. PMID: 8501312; X-2, X-3, X-4

109. Bolaji, II, Meehan FP. Caesarean section survey in Galway--1973 through 1987. Eur J Obstet Gynecol Reprod Biol. 1993 Jan;48:1-8. PMID: 8449255; X-4, X-5

110. Bolaji I, Meehan FP. Caesarean section survey in Galway--1973 through 1987. Eur J Obstet Gynecol Reprod Biol. 1993 Jan;48(1):1-8. PMID: 8449255; X-4

111. Chua S, Arulkumaran S, Adaikan G, et al. The effect of oxytocics stored at high temperatures on postpartum uterine activity. Br J Obstet Gynaecol. 1993 Sep;100:874-5. PMID: 8218018; X-2, X-4, X-5

112. Dahlman TC. Osteoporotic fractures and the recurrence of thromboembolism during pregnancy and the puerperium in 184 women undergoing thromboprophylaxis with heparin. Am J Obstet Gynecol. 1993 Apr;168:1265-70. PMID: 8475973; X-3, X-4

113. Dickie MB, Arbeiter K. Diagnosis and therapy of the subinvolution of placental sites in the bitch. J Reprod Fertil Suppl. 1993;47:471-5. PMID: 8229965; X-3, X-4

114. Fenelon VS, Poulain DA, Theodosis DT. Oxytocin neuron activation and Fos expression: a quantitative immunocytochemical analysis of the effect of lactation, parturition, osmotic and cardiovascular stimulation. Neuroscience. 1993 Mar;53:77-89. PMID: 8469314; X-3, X-4

115. Hauser I, Gisslinger H, Locker G, et al. Postpartum factor VIII inhibitors. Report of two cases with special reference to the efficacy of various treatments. Wien Klin Wochenschr. 1993;105:355-8. PMID: 8333206; X-4

116. Hibbard B, Milner D. Reports on confidential enquiries into maternal deaths: an audit of previous recommendations. Health Trends. 1993;26:26-8. PMID: 10136286; X-1, X-4

117. Hwa HL, Chen RJ, Chen YC, et al. Maternal and fetal outcome of pregnant women with idiopathic thrombocytopenic purpura: retrospective analysis of 25 pregnancies. J Formos Med Assoc. 1993 Nov;92:957-61. PMID: 7910066; X-4

118. Iyasu S, Saftlas AK, Rowley DL, et al. The epidemiology of placenta previa in the United States, 1979 through 1987. Am J Obstet Gynecol. 1993 May;168:1424-9. PMID: 8498422; X-4

119. Khong TY, Khong TK. Delayed postpartum hemorrhage: a morphologic study of causes and their relation to other pregnancy disorders. Obstet Gynecol. 1993 Jul;82:17-22. PMID: 8515920; X-4, X-5

120. Konkle BA, Josephson NC, Nakaya Fletcher S. Hemophilia B. In: Pagon RA, Adam MP, Ardinger HH, Bird TD, Dolan CR, Fong CT, et al., eds. GeneReviews(R). Seattle (WA): University of Washington, Seattle University of Washington, Seattle. All rights reserved.; 1993.

121. Leung AS, Millar LK, Koonings PP, et al. Perinatal outcome in hypothyroid pregnancies. Obstet Gynecol. 1993 Mar;81:349-53. PMID: 8437784; X-4

122. Levine RU, Berkowitz KM. Conservative management and pregnancy outcome in diethylstilbestrol-exposed women with and without gross genital tract abnormalities. Am J Obstet Gynecol. 1993 Nov;169:1125-9. PMID: 8238171; X-4

123. Mahomed K, Grant D, James DK. Amniotic fluid zinc and pregnancy outcome. Eur J Obstet Gynecol Reprod Biol. 1993 Dec 30;52:157-61. PMID: 8163029; X-3, X-4

124. Martey JO, Djan JO, Twum S, et al. Maternal mortality due to hemorrhage in Ghana. Int J Gynaecol Obstet. 1993 Sep;42:237-41. PMID: 7901078; X-2, X-4

125. Mate-Kole MO, Yeboah ED, Affram RK, et al. Anuric acute renal failure due to bilateral accidental ureteric ligation during abdominal hysterectomy. Int J Gynaecol Obstet. 1993 Apr;41:67-73. PMID: 8098298; X-2, X-3, X-4

126. McDonald SJ, Prendiville WJ, Blair E. Randomised controlled trial of oxytocin alone versus oxytocin and ergometrine in active management of third stage of labour. BMJ. 1993 Nov 6;307:1167-71. PMID: 8251842; X-4

127. Mitty HA, Sterling KM, Alvarez M, et al. Obstetric hemorrhage: prophylactic and emergency arterial catheterization and embolotherapy. Radiology. 1993 Jul;188:183-7. PMID: 8511294; X-4, X-5

128. Mordel N, Ezra Y, Benshushan A, et al. Transverse versus longitudinal uterine incision in cesarean delivery of triplets. J Reprod Med. 1993 Sep;38:695-6. PMID: 8254591; X-1, X-4

129. Murta EF, Carneiro JG, De Freitas MM. Total hysterectomy versus subtotal hysterectomy: which procedure should be performed during the pregnant-puerperal period? Rev Paul Med. 1993 Mar-Apr;111:354-8. PMID: 8284578; X-2, X-3, X-4

130. Orhue AA. A randomized trial of 30-min and 15-min oxytocin infusion regimen for induction of labor at term in women of low parity. Int J Gynaecol Obstet. 1993 Mar;40:219-25. PMID: 8096473; X-3, X-4

131. Orhue AA. A randomised trial of 45 minutes and 15 minutes incremental oxytocin infusion regimes for the induction of labour in women of high parity. Br J Obstet Gynaecol. 1993 Feb;100:126-9. PMID: 8476802; X-2, X-4

132. Petrulis AS, Dierker LJ, Jr. Renal artery aneurysm rupture: an unusual cause of postpartum hemorrhage. Journal of Maternal-Fetal Medicine. 1993;2:121-3. PMID: X-2, X-4, X-5

133. Phuapradit W, Saropala N, Rangsipragarn R. Treatment of atonic postpartum hemorrhage with a prostaglandin E2 analogue. J Med Assoc Thai. 1993 Jun;76:303-7. PMID: 8083621; X-2, X-5

134. Pinchun P, Chullapram T. A 10-year review of maternal mortality in Chon Buri Hospital, Thailand. J Med Assoc Thai. 1993 Jun;76:308-13. PMID: 8083622; X-2, X-4

135. Sherman SJ, Greenspoon JS, Nelson JM, et al. Obstetric hemorrhage and blood utilization. J Reprod Med. 1993 Dec;38:929-34. PMID: 8120849; X-4, X-5

136. Sibai BM, Caritis SN, Thom E, et al. Prevention of preeclampsia with low-dose aspirin in healthy, nulliparous pregnant women. The National Institute of Child Health and Human Development Network of Maternal-Fetal Medicine Units. N Engl J Med. 1993 Oct 21;329:1213-8. PMID: 8413387; X-3, X-4

137. Stones RW, Paterson CM, Saunders NJ. Risk factors for major obstetric haemorrhage. Eur J Obstet Gynecol Reprod Biol. 1993 Jan;48:15-8. PMID: 8449256; X-4

138. Thilaganathan B, Cutner A, Latimer J, et al. Management of the third stage of labour in women at low risk of postpartum haemorrhage. Eur J Obstet Gynecol Reprod Biol. 1993 Jan;48:19-22. PMID: 8449257; X-4

139. . Postpartum care is crucial for health and survival. Safe Mother. 1994 Feb:4-5. PMID: 12345457; X-1, X-4

140. . Clinical update. Injectable contraception an important option post-partum. Nursing RSA Verpleging. 1994;9:43-. PMID: X-1, X-4

141. AbdRabbo SA. Stepwise uterine devascularization: a novel technique for management of uncontrolled postpartum hemorrhage with preservation of the uterus. Am J Obstet Gynecol. 1994 Sep;171:694-700. PMID: 8092217; X-2, X-4

142. Akins S. Postpartum hemorrhage. A 90s approach to an age-old problem. J Nurse Midwifery. 1994 Mar-Apr;39:123s-34s. PMID: 8035242; X-1

143. Allahbadia G. Hypogastric artery ligation: a new perspective. J Gynecol Surg. 1994 Spring;9:35-42. PMID: 10148525; X-2, X-3

144. de Groot AN, Vree TB, Hekster YA, et al. Pharmacokinetics and bioavailability of oral ergometrine in male volunteers. Biopharm Drug Dispos. 1994 Jan;15:65-73. PMID: 8161717; X-3, X-4

145. Dua JA. Postpartum eclampsia associated with ergometrine maleate administration. Br J Obstet Gynaecol. 1994 Jan;101:72-3. PMID: 8297875; X-4, X-5

146. Duvekot E, Wijnen M. A comparison between health centre deliveries and deliveries born before arrival in the Aitape district. P N G Med J. 1994 Sep;37:173-7. PMID: 7668055; X-2, X-4

147. Fenelon VS, Theodosis DT, Poulain DA. Fos synthesis in identified magnocellular neurons varies with phenotype, stimulus, location in the hypothalamus and reproductive state. Brain Res. 1994 Oct 31;662:165-77. PMID: 7859070; X-3, X-4

148. Garner P, Lai D, Baea M. Childbirth in rural areas: maternal deaths, village deliveries and obstetric service use. P N G Med J. 1994 Sep;37:166-72. PMID: 7668054; X-2, X-4

149. Gupta U, Chitra R. Destructive operations still have a place in developing countries. Int J Gynaecol Obstet. 1994 Jan;44:15-9. PMID: 7907053; X-2, X-4

150. Gupta U, Ganesh K. Emergency hysterectomy in obstetrics: review of 15 years. Asia Oceania J Obstet Gynaecol. 1994 Mar;20:1-5. PMID: 8172519; X-2, X-4

151. Irons DW, Sriskandabalan P, Bullough CH. A simple alternative to parenteral oxytocics for the third stage of labor. Int J Gynaecol Obstet. 1994 Jul;46:15-8. PMID: 7805977; X-2, X-4, X-5

152. Katesmark M, Brown R, Raju KS. Successful use of a Sengstaken-Blakemore tube to control massive postpartum haemorrhage. Br J Obstet Gynaecol. 1994 Mar;101:259-60. PMID: 8193105; X-4, X-5

153. Lee CN, Wu CC, Lin PY, et al. Pregnancy following cardiac prosthetic valve replacement. Obstet Gynecol. 1994 Mar;83:353-6. PMID: 8127524; X-4

154. Louisy C, Fraser R. Post partum haemorrhage. Care of the Critically Ill. 1994 1994 Jan-Feb;10:31-4. PMID: X-1

155. Lunt CC, Satin AJ, Barth WH, Jr., et al. The effect of indomethacin tocolysis on maternal coagulation status. Obstet Gynecol. 1994 Nov;84:820-2. PMID: 7936519; X-3, X-4

156. MacLennan AH, Chan FY, Eckert K. The safety of vaginal prostaglandin F2 alpha for the stimulation of labour. Aust N Z J Obstet Gynaecol. 1994 May;34:154-8. PMID: 7980303; X-4

157. Mahon TR, Chazotte C, Cohen WR. Short labor: characteristics and outcome. Obstet Gynecol. 1994 Jul;84:47-51. PMID: 8008321; X-4

158. Makhseed M, el-Tomi N, Moussa M. A retrospective analysis of pathological placental implantation--site and penetration. Int J Gynaecol Obstet. 1994 Nov;47:127-34. PMID: 7843481; X-2, X-4

159. Malhotra AD. Safe motherhood: with whom the responsibility rests? Nurs J India. 1994 Aug;85:193-5. PMID: 7838776; X-1, X-4

160. Martey JO, Djan JO, Twum S, et al. Maternal mortality and related factors in Ejisu District, Ghana. East Afr Med J. 1994 Oct;71:656-60. PMID: 7821246; X-2, X-4

161. Naef RW, 3rd, Chauhan SP, Chevalier SP, et al. Prediction of hemorrhage at cesarean delivery. Obstet Gynecol. 1994 Jun;83:923-6. PMID: 8190432; X-4

162. Orhue AA. Incremental increases in oxytocin infusion regimens for induction of labor at term in primigravidas: a randomized controlled trial. Obstet Gynecol. 1994 Feb;83:229-33. PMID: 8290185; X-4

163. Phillips CA, Kinch RA. Management of the third stage of labor: a survey of practice among Texas obstetricians. Tex Med. 1994 Dec;90:44-7. PMID: 7817327; X-3, X-4

164. Qian YM, Jones RL, Chan KM, et al. Potent contractile actions of prostanoid EP3-receptor agonists on human isolated pulmonary artery. Br J Pharmacol. 1994 Oct;113:369-74. PMID: 7834185; X-3, X-4

165. Riley DP, Burgess RW. External abdominal aortic compression: a study of a resuscitation manoeuvre for postpartum haemorrhage. Anaesth Intensive Care. 1994 Oct;22:571-5. PMID: 7818062; X-3

166. Roberts CL, Algert CS, March LM. Delayed childbearing--are there any risks? Med J Aust. 1994 May 2;160:539-44. PMID: 8164551; X-4

167. Roberts WE, Perry KG, Jr., Woods JB, et al. The intrapartum platelet count in patients with HELLP (hemolysis, elevated liver enzymes, and low platelets) syndrome: is it predictive of later hemorrhagic complications? Am J Obstet Gynecol. 1994 Sep;171:799-804. PMID: 8092232; X-4

168. Schoenfeld A, Hod M, Merlob P, et al. Safety of maternal long-term indomethacin tocolysis. Int J Risk Saf Med. 1994;4:215-22. PMID: 23511259; X-3, X-4

169. Spence RK, Norcross ED, Costabile J, et al. Perfluorocarbons as blood substitutes: The early years. Experience with fluosol DA-20% in the 1980s. 1994;22:955-63. PMID: X-1, X-4

170. Tayal SC, Bansal SK, Chadha DK. Hypopituitarism: a difficult diagnosis in elderly people but worth a search. Age Ageing. 1994 Jul;23:320-2. PMID: 7976781; X-1, X-4

171. Tsu VD. Antenatal screening: its use in assessing obstetric risk factors in Zimbabwe. J Epidemiol Community Health. 1994 Jun;48:297-305. PMID: 8051531; X-2, X-4

172. Vergani P, Ghidini A, Strobelt N, et al. Do uterine leiomyomas influence pregnancy outcome? Am J Perinatol. 1994 Sep;11:356-8. PMID: 7993518; X-4

173. Voisin DL, Chapman C, Poulain DA, et al. Extracellular GABA concentrations in rat supraoptic nucleus during lactation and following haemodynamic changes: an in vivo microdialysis study. Neuroscience. 1994 Nov;63:547-58. PMID: 7891864; X-3, X-4

174. Walraven GE, Mkanje RJ, van Roosmalen J, et al. Assessment of maternal mortality in Tanzania. Br J Obstet Gynaecol. 1994 May;101:414-7. PMID: 8018613; X-2, X-4

175. Wardell DW. Commentary on OB emergencies: postpartum hemorrhage [original article by Dildy G et al appears in CONTEMP OB GYN 1993;38(08):21-9]. AWHONN's Women's Health Nursing Scan. 1994 1994 Jan-Feb;8:10-. PMID: X-1

176. Woodcock HC, Read AW, Bower C, et al. A matched cohort study of planned home and hospital births in Western Australia 1981-1987. Midwifery. 1994 Sep;10:125-35. PMID: 7639843; X-4

177. Yamashita Y, Harada M, Yamamoto H, et al. Transcatheter arterial embolization of obstetric and gynaecological bleeding: efficacy and clinical outcome. Br J Radiol. 1994 Jun;67:530-4. PMID: 8032805; X-5

178. . Midwives to receive safe motherhood training. Safe Mother. 1995 Mar-Jun:1-2. PMID: 12346354; X-1, X-4

179. . Failure to lactate -- two cases explained. Breastfeeding Review. 1995;3:92-4. PMID: X-1, X-4

180. Berenson AB, Wilkinson GS, Lopez LA. Substance use during pregnancy and peripartum complications in a triethnic population. Int J Addict. 1995 Jan;30:135-45. PMID: 7759168; X-4

181. Bobrowski RA, Jones TB. A thrombogenic uterine pack for postpartum hemorrhage. Obstet Gynecol. 1995 May;85:836-7. PMID: 7724130; X-5

182. Chandramohan D, Cutts F, Millard P. The effect of stay in a maternity waiting home on perinatal mortality in rural Zimbabwe. J Trop Med Hyg. 1995 Aug;98:261-7. PMID: 7636923; X-2, X-4

183. Chen LH, Tan KH, Yeo GS. A ten-year review of uterine rupture in modern obstetric practice. Ann Acad Med Singapore. 1995 Nov;24:830-5. PMID: 8838990; X-2, X-4, X-5

184. Chua S, Chew SL, Yeoh CL, et al. A randomized controlled study of prostaglandin 15-methyl F2 alpha compared with syntometrine for prophylactic use in the third stage of labour. Aust N Z J Obstet Gynaecol. 1995 Nov;35:413-6. PMID: 8717567; X-4

185. Cryns YL. Postpartum hemorrhage: prevention and treatment. Midwifery Today Childbirth Educ. 1995 Summer:37-9, 52. PMID: 7787905; X-1, X-4

186. Dasgupta S. Reproductive morbidity. J Indian Med Assoc. 1995 Feb;93:55-7. PMID: 7658038; X-1, X-4

187. Davis RB, Vinal D. When things go wrong at home: obstetrical emergencies outside the hospital. JEMS: Journal of Emergency Medical Services. 1995;20:30. PMID: X-1, X-4

188. de Groot AN, Hekster YA, Vree TB, et al. Oxytocin and desamino-oxytocin tablets are not stable under simulated tropical conditions. J Clin Pharm Ther. 1995 Apr;20:115-9. PMID: 7650072; X-3, X-4

189. de Groot AN, Hekster YA, Vree TB, et al. Ergometrine and methylergometrine tablets are not stable under simulated tropical conditions. J Clin Pharm Ther. 1995 Apr;20:109-13. PMID: 7650071; X-1, X-3, X-4

190. De Groot AN, Vree TB, Hekster YA, et al. Bioavailability and pharmacokinetics of sublingual oxytocin in male volunteers. J Pharm Pharmacol. 1995 Jul;47:571-5. PMID: 8568623; X-3, X-4

191. de Koning YW, Plaisier PW, Tan IL, et al. Critical limb ischemia after accidental subcutaneous infusion of sulprostone. Eur J Obstet Gynecol Reprod Biol. 1995 Aug;61:171-3. PMID: 7556841; X-5

192. Dehne KL, Wacker J, Cowley J. Training birth attendants in the Sahel. World Health Forum. 1995;16:415-9. PMID: 8534351; X-1, X-2, X-4

193. Donnelly JA, Smith EA, Runcie CJ. Transfer of the critically ill obstetric patient: experience of a specialist team and guidelines for the non-specialist. Int J Obstet Anesth. 1995 Jul;4:145-9. PMID: 15636997; X-5

194. Eltabbakh GH, Watson JD. Postpartum hysterectomy. Int J Gynaecol Obstet. 1995 Sep;50:257-62. PMID: 8543108; X-2, X-4, X-5

195. Fauveau VA. The Lao People's Democratic Republic: maternal mortality and female mortality: determining causes of deaths. World Health Stat Q. 1995;48:44-6. PMID: 7571711; X-2, X-3, X-4

196. Foster PA. The reproductive health of women with von Willebrand Disease unresponsive to DDAVP: results of an international survey. On behalf of the Subcommittee on von Willebrand Factor of the Scientific and Standardization Committee of the ISTH. Thromb Haemost. 1995 Aug;74:784-90. PMID: 8585022; X-4, X-5

197. Goodburn EA, Gazi R, Chowdhury M. Beliefs and practices regarding delivery and postpartum maternal morbidity in rural Bangladesh. Stud Fam Plann. 1995 Jan-Feb;26:22-32. PMID: 7785065; X-1, X-2, X-4

198. Granovsky-Grisaru S, Aboulafia Y, Diamant YZ, et al. Gynecologic and obstetric aspects of Gaucher's disease: a survey of 53 patients. Am J Obstet Gynecol. 1995 Apr;172:1284-90. PMID: 7726271; X-4

199. Haththotuwa R, Arulkumaran S, Chua S, et al. Postpartum haemorrhage: suggestions to reduce maternal mortality and morbidity. J Indian Med Assoc. 1995 Feb;93:67-70, 40, 57. PMID: 7658042; X-1, X-4

200. Jafarova V. Implementing the ICPD Plan of Action in Central Asian Republics and Kazakhstan (CARAK). Azerbaijan. Urgent need for family planning. Entre Nous Cph Den. 1995 May:12. PMID: 12222266; X-1, X-4

201. Khan GQ, John IS, Chan T, et al. Abu Dhabi third stage trial: oxytocin versus Syntometrine in the active management of the third stage of labour. Eur J Obstet Gynecol Reprod Biol. 1995 Feb;58:147-51. PMID: 7774741; X-2, X-4

202. Knuppel RA, Hatangadi SB. Acute hypotension related to hemorrhage in the obstetric patient. Obstet Gynecol Clin North Am. 1995 Mar;22:111-29. PMID: 7784033; X-1

203. Koong DK, McKenna KM. Is the fibroid a uterus? Aust N Z J Obstet Gynaecol. 1995 Aug;35:332-4. PMID: 8546659; X-1, X-4

204. Korejo R, Jafarey SN. Obstetrics hysterectomy--five years experience at Jinnah Postgraduate Medical Centre, Karachi. J Pak Med Assoc. 1995 Apr;45:86-8. PMID: 7623403; X-2, X-4

205. Lackmann GM, Tollner U. The predictive value of elevation in specific serum enzymes for subsequent development of hypoxic-ischemic encephalopathy or intraventricular hemorrhage in full-term and premature asphyxiated newborns. Neuropediatrics. 1995 Aug;26:192-8. PMID: 8544957; X-3, X-4

206. Leonard R, Parker RK, O'Grady JP. Postpartum hemorrhage: working with the anesthesiologist. Contemporary OB/GYN. 1995;40:46--8, 51, 5 passim. PMID: X-1

207. Magann EF, Winchester MI, Carter DP, et al. Factors adversely affecting pregnancy outcome in the military. Am J Perinatol. 1995 Nov;12:462-6. PMID: 8579664; X-4

208. Makhseed M, Moussa MA. The outcome of placenta accreta in Kuwait (1981-1993). Int J Gynaecol Obstet. 1995 Aug;50:139-44. PMID: 7589748; X-2, X-4

209. McLean MT. Tips for bimanual compression. Midwifery Today Childbirth Educ. 1995 Summer:52. PMID: 7787908; X-1, X-2, X-4, X-5

210. Naef RW, 3rd, Ray MA, Chauhan SP, et al. Trial of labor after cesarean delivery with a lower-segment, vertical uterine incision: is it safe? Am J Obstet Gynecol. 1995 Jun;172:1666-73; discussion 73-4. PMID: 7778619; X-3, X-4

211. Oelrichs PB, Ng JC, Seawright AA, et al. Isolation and identification of a compound from avocado (Persea americana) leaves which causes necrosis of the acinar epithelium of the lactating mammary gland and the myocardium. Nat Toxins. 1995;3:344-9. PMID: 8581318; X-1, X-3, X-4

212. Oosterbaan MM. Guinea-Bissau: maternal mortality assessment. World Health Stat Q. 1995;48:34-8. PMID: 7571708; X-1, X-2

213. Phemister DA, Laurent S, Harrison FN, Jr. Use of Norplant contraceptive implants in the immediate postpartum period: safety and tolerance. Am J Obstet Gynecol. 1995 Jan;172:175-9. PMID: 7847530; X-1, X-3, X-4

214. Ploeckinger B, Ulm MR, Chalubinski K, et al. Epidural anaesthesia in labour: influence on surgical delivery rates, intrapartum fever and blood loss. Gynecol Obstet Invest. 1995;39:24-7. PMID: 7890248; X-1, X-4

215. Prakash J, Tripathi K, Pandey LK, et al. Spectrum of renal cortical necrosis in acute renal failure in eastern India. Postgrad Med J. 1995 Apr;71:208-10. PMID: 7784278; X-1, X-2, X-4

216. Prysak M, Lorenz RP, Kisly A. Pregnancy outcome in nulliparous women 35 years and older. Obstet Gynecol. 1995 Jan;85:65-70. PMID: 7800328; X-4

217. Rajapaksa DS, Karunathilaka DH. Idiopathic thrombocytopaenic purpura presenting as post-partum haemorrhage. Ceylon Med J. 1995 Mar;40:39-40. PMID: 7781093; X-1, X-4

218. Sibai BM, Caritis SN, Thom E, et al. Low-dose aspirin in nulliparous women: safety of continuous epidural block and correlation between bleeding time and maternal-neonatal bleeding complications. National Institute of Child Health and Human Developmental Maternal-Fetal Medicine Network. Am J Obstet Gynecol. 1995 May;172:1553-7. PMID: 7755070; X-3, X-4

219. Stenius-Aarniala B, Riikonen S, Teramo K. Slow-release theophylline in pregnant asthmatics. Chest. 1995 Mar;107:642-7. PMID: 7874930; X-2, X-4

220. Stewart MK, Festin M. Validation study of women's reporting and recall of major obstetric complications treated at the Philippine General Hospital. Int J Gynaecol Obstet. 1995 Jun;48 Suppl:S53-66. PMID: 7672175; X-1, X-2, X-4

221. Toohey JS, Keegan KA, Jr., Morgan MA, et al. The "dangerous multipara": fact or fiction? Am J Obstet Gynecol. 1995 Feb;172:683-6. PMID: 7856706; X-4

222. Tuncer RA, Erkaya S, Sipahi T, et al. Maternal mortality in a maternity hospital in Turkey. Acta Obstet Gynecol Scand. 1995 Sep;74:604-6. PMID: 7660764; X-2, X-4

223. Valenzuela GJ, Craig J, Bernhardt MD, et al. Placental passage of the oxytocin antagonist atosiban. Am J Obstet Gynecol. 1995 Apr;172:1304-6. PMID: 7726274; X-4, X-5

224. Van Selm M, Kanhai HH, Keirse MJ. Preventing the recurrence of atonic postpartum hemorrhage: a double-blind trial. Acta Obstet Gynecol Scand. 1995 Apr;74:270-4. PMID: 7732799; X-3, X-4

225. Varaklis K, Stubblefield PG. Evaluating the role of incidental diagnostic dilation and curettage in young women undergoing elective laparoscopic sterilization. J Reprod Med. 1995 Jun;40:415-7. PMID: 7650651; X-3, X-4

226. Versi E, Liu KL, Chia P, et al. Obstetric outcome of Bangladeshi women in east London. Br J Obstet Gynaecol. 1995 Aug;102:630-7. PMID: 7654641; X-3, X-4

227. Xu Z. China: lowering maternal mortality in Miyun County, Beijing. World Health Stat Q. 1995;48:11-4. PMID: 7571702; X-2

228. Yuen PM, Chan NS, Yim SF, et al. A randomised double blind comparison of Syntometrine and Syntocinon in the management of the third stage of labour. Br J Obstet Gynaecol. 1995 May;102:377-80. PMID: 7612530; X-2, X-4, X-5

229. Zimmermann R, Breymann C, Richter C, et al. rhEPO treatment of postpartum anemia. J Perinat Med. 1995;23:111-7. PMID: 7658310; X-2, X-4, X-5

230. . Team saves women's life, then she sues for being left with limp from stirrups. OB-GYN Malpractice Prevention. 1996;3:85-6. PMID: X-1, X-4

231. . Tricks of the trade... midwifery. Midwifery Today & Childbirth Education. 1996:10-. PMID: X-1, X-4

232. . Can maternal height and weight be used to predict pregnancy outcome? Safe Mother. 1996:10-1. PMID: 12292433; X-1

233. Albrecht JL, Tomich PG. The maternal and neonatal outcome of triplet gestations. Am J Obstet Gynecol. 1996 May;174:1551-6. PMID: 9065128; X-4

234. As AK, Hagen P, Webb JB. Tranexamic acid in the management of postpartum haemorrhage. Br J Obstet Gynaecol. 1996 Dec;103:1250-1. PMID: 8968245; X-5

235. de Groot AN, van Roosmalen J, van Dongen PW, et al. A placebo-controlled trial of oral ergometrine to reduce postpartum hemorrhage. Acta Obstet Gynecol Scand. 1996 May;75:464-8. PMID: 8677772; X-4

236. Goldberg CC, Kallen MA, McCurdy CM, et al. Effect of intrapartum use of oxytocin on estimated blood loss and hematocrit change at vaginal delivery. Am J Perinatol. 1996 Aug;13:373-6. PMID: 8865985; X-4

237. Hofmeyr GJ, Kulier R. Tocolysis for preventing fetal distress in second stage of labour. Cochrane Database of Systematic Reviews. 1996PMID: X-1

238. Jacques SM, Qureshi F, Trent VS, et al. Placenta accreta: mild cases diagnosed by placental examination. Int J Gynecol Pathol. 1996 Jan;15:28-33. PMID: 8852443; X-1, X-4, X-5

239. Jegasothy R, Paranthaman S. Sublingual nifedipine compared with intravenous hydrallazine in the acute treatment of severe hypertension in pregnancy: potential for use in rural practice. J Obstet Gynaecol Res. 1996 Feb;22:21-4. PMID: 8624887; X-2, X-3, X-4

240. Lao TT, Lee CP, Mak WP. Postpartum anaemia is not related to maternal iron status in the third trimester. Eur J Obstet Gynecol Reprod Biol. 1996 Jan;64:7-10. PMID: 8801154; X-4

241. Lecuru F, Desnos M, Taurelle R. Anticoagulant therapy in pregnancy. Report of 54 cases. Acta Obstet Gynecol Scand. 1996 Mar;75:217-21. PMID: 8607332; X-4

242. Lee HY, Subramaniam N, Nordin MM. Vacuum delivery at The Maternity Hospital Kuala Lumpur: a comparison of metal and silicone cups. Singapore Med J. 1996 Feb;37:55-60. PMID: 8783915; X-2, X-4

243. Ma J, Bauman A. Obstetric profiles and pregnancy outcomes of immigrant women in New South Wales, 1990-1992. Aust N Z J Obstet Gynaecol. 1996 May;36:119-25. PMID: 8798294; X-4

244. Makhseed M, Musini VM. Eclampsia in Kuwait 1981-1993. Aust N Z J Obstet Gynaecol. 1996 Aug;36:258-63. PMID: 8883746; X-2, X-4

245. Naqvi R, Ahmed E, Akhtar F, et al. Analysis of factors causing acute renal failure. J Pak Med Assoc. 1996 Feb;46:29-30. PMID: 8683843; X-2, X-4

246. Naqvi R, Akhtar F, Ahmed E, et al. Acute renal failure of obstetrical origin during 1994 at one center. Ren Fail. 1996 Jul;18:681-3. PMID: 8875696; X-3, X-4

247. Petherbridge J. Case study: postpartum haemorrhage with associated disseminated intravascular coagulation and acute renal failure. Nursing Monograph. 1996:8p. PMID: X-4

248. Rutherford JM, Rubin PC. Management of epilepsy in pregnancy: therapeutic aspects. Br J Hosp Med. 1996 May 15-Jun 4;55:620-2. PMID: 8762119; X-1, X-3, X-4

249. Shava J, Masihleho GE, Mazibuko MD. Peripartum hysterectomy at Ga-Rankuwa Hospital: a two and a half year review. Cent Afr J Med. 1996 Jan;42:25-8. PMID: 8868382; X-2, X-4

250. Soriano D, Dulitzki M, Schiff E, et al. A prospective cohort study of oxytocin plus ergometrine compared with oxytocin alone for prevention of postpartum haemorrhage. Br J Obstet Gynaecol. 1996 Nov;103:1068-73. PMID: 8916990; X-4, X-5

251. Tammelleo AD. Court bans non-consensual transfusions. Regan Report on Hospital Law. 1996;37:1-. PMID: X-1

252. Vermunt JJ, Greenough PR. Sole haemorrhages in dairy heifers managed under different underfoot and environmental conditions. Br Vet J. 1996 Jan;152:57-73. PMID: 8634866; X-3, X-4

253. Wolman I, Jaffa AJ, Pauzner D, et al. Transvaginal sonohysterography: a new aid in the diagnosis of residual trophoblastic tissue. J Clin Ultrasound. 1996 Jun;24:257-61. PMID: 8723514; X-4, X-5

254. . Postpartum care -- what's best for mother and baby. Safe Mother. 1997:4-8. PMID: 12321360; X-1, X-4

255. . OB sued after surgery saves patient's life. OB-GYN Malpractice Prevention. 1997;4:85-6. PMID: X-1, X-4

256. Asnis DS, Milman PJ. Massive lower gastrointestinal hemorrhage secondary to colonic tuberculosis in a postpartum patient. Infectious Diseases in Clinical Practice. 1997 November;6:548-52. PMID: X-1, X-4, X-5

257. C BL, Coker A, Lawal AH, et al. The B-Lynch surgical technique for the control of massive postpartum haemorrhage: an alternative to hysterectomy? Five cases reported. Br J Obstet Gynaecol. 1997 Mar;104:372-5. PMID: 9091019; X-1, X-5

258. Chipchase J, James D. Randomised trial of expectant versus surgical management of spontaneous miscarriage. Br J Obstet Gynaecol. 1997 Jul;104:840-1. PMID: 9236651; X-3

259. Chiwuzie J, Okolocha C, Okojie O, et al. Sociocultural aspects of haemorrhage in pregnancy. World Health Forum. 1997;18:185-8. PMID: 9393003; X-1

260. Diejomaoh FM, Bukhadour N, al-Yattamah M. Severe primary postpartum hemorrhage. Int J Gynaecol Obstet. 1997 Jun;57:315-6. PMID: 9215496; X-1, X-2

261. Drife J. Management of primary postpartum haemorrhage. Br J Obstet Gynaecol. 1997 Mar;104:275-7. PMID: 9091001; X-1, X-4, X-5

262. el-Refaey H, O'Brien P, Morafa W, et al. Use of oral misoprostol in the prevention of postpartum haemorrhage. Br J Obstet Gynaecol. 1997 Mar;104:336-9. PMID: 9091012; X-4

263. Etuk SJ, Asuquo EE. Maternal mortality following post-partum haemorrhage in Calabar a 6-year review. West Afr J Med. 1997 Jul-Sep;16:165-9. PMID: 9329285; X-2, X-4

264. Fawcus S, Mbizvo M, Lindmark G, et al. A community-based investigation of maternal mortality from obstetric haemorrhage in rural Zimbabwe. Maternal Mortality Study Group. Trop Doct. 1997 Jul;27:159-63. PMID: 9227011; X-2, X-4

265. Gherman RB, Goodwin TM, Souter I, et al. The McRoberts' maneuver for the alleviation of shoulder dystocia: how successful is it? Am J Obstet Gynecol. 1997 Mar;176:656-61. PMID: 9077624; X-4

266. Goldenberg M, Schiff E, Achiron R, et al. Managing residual trophoblastic tissue. Hysteroscopy for directing curettage. J Reprod Med. 1997 Jan;42:26-8. PMID: 9018641; X-1, X-3, X-4

267. Hobisch-Hagen P, Mortl M, Schobersberger W. Hemostatic disorders in pregnancy and the peripartum period. Acta Anaesthesiol Scand Suppl. 1997;111:216-7. PMID: 9421019; X-1, X-2, X-4, X-5

268. Hood DD. Anesthetic techniques in obstetric emergencies. Acta Anaesthesiol Scand Suppl. 1997;111:172-3. PMID: 9421000; X-1, X-2, X-5

269. Hsieh TT, Hung TH, Hsu JJ, et al. Prediction of adverse perinatal outcome by maternal serum screening for Down syndrome in an Asian population. Obstet Gynecol. 1997 Jun;89:937-40. PMID: 9170469; X-2, X-3, X-4

270. Hunt BJ, Doughty HA, Majumdar G, et al. Thromboprophylaxis with low molecular weight heparin (Fragmin) in high risk pregnancies. Thromb Haemost. 1997 Jan;77:39-43. PMID: 9031446; X-3, X-4

271. Itina SM. Characteristics of traditional birth attendants and their beliefs and practices in the Offot Clan, Nigeria. Bull World Health Organ. 1997;75:563-7. PMID: 9509629; X-2, X-3, X-4

272. Johnson N, Lilford R, Guthrie K, et al. Randomised trial comparing a policy of early with selective amniotomy in uncomplicated labour at term. Br J Obstet Gynaecol. 1997 Mar;104:340-6. PMID: 9091013; X-2, X-4, X-5

273. Kadir RA, Economides DL, Braithwaite J, et al. The obstetric experience of carriers of haemophilia. Br J Obstet Gynaecol. 1997 Jul;104:803-10. PMID: 9236645; X-4, X-5

274. Keogh J, Tsokos N. Aortic compression in massive postpartum haemorrhage--an old but lifesaving technique. Aust N Z J Obstet Gynaecol. 1997 May;37:237-8. PMID: 9222477; X-1, X-2, X-5

275. Khan GQ, John IS, Wani S, et al. Controlled cord traction versus minimal intervention techniques in delivery of the placenta: a randomized controlled trial. Am J Obstet Gynecol. 1997 Oct;177:770-4. PMID: 9369817; X-2, X-4, X-5

276. Lau WC, Fung HY, Rogers MS. Ten years experience of caesarean and postpartum hysterectomy in a teaching hospital in Hong Kong. Eur J Obstet Gynecol Reprod Biol. 1997 Aug;74:133-7. PMID: 9306105; X-5

277. Nelson-Piercy C, Letsky EA, de Swiet M. Low-molecular-weight heparin for obstetric thromboprophylaxis: experience of sixty-nine pregnancies in sixty-one women at high risk. Am J Obstet Gynecol. 1997 May;176:1062-8. PMID: 9166169; X-4

278. Nordstrom L, Fogelstam K, Fridman G, et al. Routine oxytocin in the third stage of labour: a placebo controlled randomised trial. Br J Obstet Gynaecol. 1997 Jul;104:781-6. PMID: 9236641; X-4, X-5

279. Ogunniyi SO, Sanusi YO, Faleyimu BL. Forceps delivery at Wesley Guild Hospital, Ilesa, Nigeria: a ten year review. West Afr J Med. 1997 Jan-Mar;16:30-5. PMID: 9133821; X-2, X-4

280. Persad PS, Hiscock C, Mitchell T. Midwives' own perception of competence in obstetric procedures. British Journal of Midwifery. 1997;5:706-8. PMID: X-3, X-4

281. Roberts RG, Bell HS, Wall EM, et al. Trial of labor or repeated cesarean section. The woman's choice. Arch Fam Med. 1997 Mar-Apr;6:120-5. PMID: 9075445; X-1, X-4

282. Ruggeri M, Schiavotto C, Castaman G, et al. Gestational thrombocytopenia: a prospective study. Haematologica. 1997 May-Jun;82:341-2. PMID: 9234586; X-4, X-5

283. Selo-Ojeme DO, Okonofua FE. Risk factors for primary postpartum haemorrhage. A case control study. Arch Gynecol Obstet. 1997;259:179-87. PMID: 9271837; X-2, X-4

284. Simon L, Santi TM, Sacquin P, et al. Pre-anaesthetic assessment of coagulation abnormalities in obstetric patients: usefulness, timing and clinical implications. Br J Anaesth. 1997 Jun;78:678-83. PMID: 9215019; X-1, X-4

285. Srisomboon J, Piyamongkol W, Aiewsakul P. Comparison of intracervical and intravaginal misoprostol for cervical ripening and labour induction in patients with an unfavourable cervix. J Med Assoc Thai. 1997 Mar;80:189-94. PMID: 9175387; X-2, X-4

286. Srisomboon J, Tongsong T, Pongpisuttinun S. Termination of second-trimester pregnancy with intracervicovaginal misoprostol. J Med Assoc Thai. 1997 Apr;80:242-6. PMID: 9175393; X-4

287. Stancato-Pasik A, Mitty HA, Richard HM, 3rd, et al. Obstetric embolotherapy: effect on menses and pregnancy. Radiology. 1997 Sep;204:791-3. PMID: 9280261; X-5

288. Vedantham S, Goodwin SC, McLucas B, et al. Uterine artery embolization: an underused method of controlling pelvic hemorrhage. Am J Obstet Gynecol. 1997 Apr;176:938-48. PMID: 9125624; X-1

289. Walder J. Misoprostol: preventing postpartum haemorrhage. Mod Midwife. 1997 Sep;7:23-7. PMID: 9370621; X-1

290. Witlin AG, Friedman SA, Sibai BM. The effect of magnesium sulfate therapy on the duration of labor in women with mild preeclampsia at term: a randomized, double-blind, placebo-controlled trial. Am J Obstet Gynecol. 1997 Mar;176:623-7. PMID: 9077617; X-4

291. Wolman I, Hartoov J, Pauzner D, et al. Transvaginal sonohysterography for the early diagnosis of residual trophoblastic tissue. J Ultrasound Med. 1997 Apr;16:257-61. PMID: 9315153; X-4, X-5

292. Zuckerman J, Levine D, McNicholas MM, et al. Imaging of pelvic postpartum complications. AJR Am J Roentgenol. 1997 Mar;168:663-8. PMID: 9057511; X-1

293. Abu-Heija AT, Chalabi HE. Great grand multiparity: is it a risk? Int J Gynaecol Obstet. 1998 Dec;59:213-6. PMID: 9486509; X-1, X-4

294. Ahmad Z, Jaafar R, Hassan MH, et al. A halfway house for pregnant women. World Health Forum. 1998;19:133-5. PMID: 9652210; X-1

295. Alcazar JL. Transvaginal ultrasonography combined with color velocity imaging and pulsed Doppler to detect residual trophoblastic tissue. Ultrasound Obstet Gynecol. 1998 Jan;11:54-8. PMID: 9511197; X-2, X-5

296. Alexander S, Dodds L, Armson BA. Perinatal outcomes in women with asthma during pregnancy. Obstet Gynecol. 1998 Sep;92:435-40. PMID: 9721785; X-4

297. Andersen B, Andersen LL, Sorensen T. Methylergometrine during the early puerperium; a prospective randomized double blind study. Acta Obstet Gynecol Scand. 1998 Jan;77:54-7. PMID: 9492719; X-4, X-5

298. Anderson H, Brandt L, Ericson A, et al. Blood transfusion at delivery and risk of subsequent malignant lymphoma in the mother. Vox Sang. 1998;75:145-8. PMID: 9784669; X-4, X-5

299. Andersson K, Ryde-Blomqvist E, Lindell K, et al. Perforations with intrauterine devices. Report from a Swedish survey. Contraception. 1998 Apr;57:251-5. PMID: 9649917; X-3

300. Assaley J, Baron JM, Cibils LA. Effects of magnesium sulfate infusion upon clotting parameters in patients with pre-eclampsia. J Perinat Med. 1998;26:115-9. PMID: 9650132; X-4

301. Baker S. Parenthood. Shattered dreams: the story of Matilda. British Journal of Midwifery. 1998;6:518-21. PMID: X-1

302. Bamigboye AA, Hofmeyr GJ, Merrell DA. Rectal misoprostol in the prevention of postpartum hemorrhage: a placebo-controlled trial. Am J Obstet Gynecol. 1998 Oct;179:1043-6. PMID: 9790395; X-2, X-4, X-5

303. Bamigboye AA, Merrell DA, Hofmeyr GJ, et al. Randomized comparison of rectal misoprostol with Syntometrine for management of third stage of labor. Acta Obstet Gynecol Scand. 1998 Feb;77:178-81. PMID: 9512323; X-3, X-4

304. Barry H. Can intraumbilical oxytocin reduce the duration of the third stage of labor, reduce the use of manual placental extraction, and prevention postpartum hemorrhage? Evidence-Based Practice. 1998;1:8, insert 2p. PMID: X-1, X-4

305. Barry H. Does the active management of the third stage of labor reduce hemorrhage? Evidence-Based Practice. 1998;1:5-6, insert 2p. PMID: X-1, X-4

306. Berger R, Bender S, Sefkow S, et al. Peri/intraventricular haemorrhage: a cranial ultrasound study on 5286 neonates. Eur J Obstet Gynecol Reprod Biol. 1998 Dec;75:191-203. PMID: 9447373; X-3

307. Boucher M, Horbay GL, Griffin P, et al. Double-blind, randomized comparison of the effect of carbetocin and oxytocin on intraoperative blood loss and uterine tone of patients undergoing cesarean section. J Perinatol. 1998 May-Jun;18:202-7. PMID: 9659650; X-4, X-5

308. Bruner JP, Drummond SB, Meenan AL, et al. All-fours maneuver for reducing shoulder dystocia during labor. J Reprod Med. 1998 May;43:439-43. PMID: 9610468; X-4

309. Chen JH, Wu SC, Shao WQ, et al. The comparative trial of TCu 380A IUD and progesterone-releasing vaginal ring used by lactating women. Contraception. 1998 Jun;57:371-9. PMID: 9693396; X-1, X-3, X-4

310. Chew S, Biswas A. Caesarean and postpartum hysterectomy. Singapore Med J. 1998 Jan;39:9-13. PMID: 9557096; X-2, X-4

311. Chez RA. The B-Lynch suture for control of massive postpartum hemorrhage. Contemporary OB/GYN. 1998;43:93. PMID: X-1, X-4, X-5

312. Choo WL, Chua S, Chong YS, et al. Correlation of change in uterine activity to blood loss in the third stage of labour. Gynecol Obstet Invest. 1998;46:178-80. PMID: 9736799; X-3, X-4

313. Craig S, Dalton R, Tuck M, et al. Sublingual glyceryl trinitrate for uterine relaxation at Caeserean section--a prospective trial. Aust N Z J Obstet Gynaecol. 1998 Feb;38:34-9. PMID: 9521387; X-3, X-4

314. Dagli AC. Management of the third stage of labor. J Fam Pract. 1998 Jun;46:452-3. PMID: 9638101; X-1, X-4, X-5

315. Das BN, Biswas AK. Ligation of internal iliac arteries in pelvic haemorrhage. J Obstet Gynaecol Res. 1998 Aug;24:251-4. PMID: 9798353; X-2, X-4, X-5

316. Gazvani MR, Luckas MJ, Drakeley AJ, et al. Intraumbilical oxytocin for the management of retained placenta: a randomized controlled trial. Obstet Gynecol. 1998 Feb;91:203-7. PMID: 9469276; X-4, X-5

317. Golding J. A randomised trial of low dose aspirin for primiparae in pregnancy. The Jamaica Low Dose Aspirin Study Group. Br J Obstet Gynaecol. 1998 Mar;105:293-9. PMID: 9532989; X-2, X-4

318. Gregory KD, Henry OA, Ramicone E, et al. Maternal and infant complications in high and normal weight infants by method of delivery. Obstet Gynecol. 1998 Oct;92:507-13. PMID: 9764620; X-4

319. Hepner DL, Gutsche BB. Obstetric hemorrhage. Current Reviews for PeriAnesthesia Nurses. 1998;20:134-44. PMID: X-1, X-4

320. Hofmeyr GJ, Nikodem VC, de Jager M, et al. A randomised placebo controlled trial of oral misoprostol in the third stage of labour. Br J Obstet Gynaecol. 1998 Sep;105:971-5. PMID: 9763047; X-2, X-4, X-5

321. Kadir RA, Lee CA, Sabin CA, et al. Pregnancy in women with von Willebrand's disease or factor XI deficiency. Br J Obstet Gynaecol. 1998 Mar;105:314-21. PMID: 9532993; X-4

322. Kovavisarach E, Rojsangruang S. Effect of umbilical vein oxytocin injection on the third stage of labor: a randomized controlled study. J Med Assoc Thai. 1998 Sep;81:693-7. PMID: 9737127; X-2, X-4

323. Kupferminc MJ, Gull I, Bar-Am A, et al. Intrauterine irrigation with prostaglandin F2-alpha for management of severe postpartum hemorrhage. Acta Obstet Gynecol Scand. 1998 May;77:548-50. PMID: 9654178; X-2, X-5

324. Lao TT, Ho LF, Liu KL. Gestational diabetes mellitus in teenage pregnancy: a case-control study. Diabet Med. 1998 Dec;15:1036-8. PMID: 9868978; X-4

325. Lavender T, Alfirevic Z, Walkinshaw S. Partogram action line study: a randomised trial. Br J Obstet Gynaecol. 1998 Sep;105:976-80. PMID: 9763048; X-4

326. Leroy V, Ladner J, Nyiraziraje M, et al. Effect of HIV-1 infection on pregnancy outcome in women in Kigali, Rwanda, 1992-1994. Pregnancy and HIV Study Group. AIDS. 1998 Apr 16;12:643-50. PMID: 9583605; X-2, X-4

327. Lindqvist PG, Svensson PJ, Dahlback B, et al. Factor V Q506 mutation (activated protein C resistance) associated with reduced intrapartum blood loss--a possible evolutionary selection mechanism. Thromb Haemost. 1998 Jan;79:69-73. PMID: 9459326; X-4

328. MacLeod J, Rhode R. Retrospective follow-up of maternal deaths and their associated risk factors in a rural district of Tanzania. Trop Med Int Health. 1998 Feb;3:130-7. PMID: 9537275; X-2, X-4

329. Malone FD, Kaufman GE, Chelmow D, et al. Maternal morbidity associated with triplet pregnancy. Am J Perinatol. 1998 Jan;15:73-7. PMID: 9475692; X-4

330. Martindale EA, Subiris JF, Wake CR. Severe secondary postpartum haemorrhage successfully managed by vaginal myomectomy. J Obstet Gynaecol. 1998 Jul;18(4):380-1. PMID: 15512116; X-4, X-5

331. Mattera CJ. Emergency childbirth: part two of a two-part series: deliveries, complications and post-delivery care. JEMS: Journal of Emergency Medical Services. 1998;23:60--4, 6-70, 2-4 passim. PMID: X-1, X-4

332. Mazor M, Hershkovitz R, Bashiri A, et al. Meconium stained amniotic fluid in preterm delivery is an independent risk factor for perinatal complications. Eur J Obstet Gynecol Reprod Biol. 1998 Oct;81:9-13. PMID: 9846706; X-4

333. Morey SS. ACOG releases report on risk factors, causes and management of postpartum hemorrhage. Am Fam Physician. 1998 Sep 15;58:1002, 4. PMID: 9767732; X-1

334. Nkyekyer K. Arrival in the labour ward in second stage of labour--any prognostic significance? East Afr Med J. 1998 May;75:282-7. PMID: 9746999; X-2, X-4

335. O'Brien P, El-Refaey H, Gordon A, et al. Rectally administered misoprostol for the treatment of postpartum hemorrhage unresponsive to oxytocin and ergometrine: a descriptive study. Obstet Gynecol. 1998 Aug;92:212-4. PMID: 9699753; X-4, X-5

336. Odent M. Don't manage the third stage of labour!... reprinted from The Practising Midwife, September 1998, vol. 1, no. 9. Midwifery Today. 1998:39-40. PMID: X-1

337. Oei PL, Chua S, Tan L, et al. Arterial embolization for bleeding following hysterectomy for intractable postpartum hemorrhage. Int J Gynaecol Obstet. 1998 Jul;62:83-6. PMID: 9722131; X-5

338. Orlikowski CE, Rocke DA. The coagulopathic parturient: anesthetic management. Anesthesiology Clinics of North America. 1998;16:349-73. PMID: X-1

339. Pelage JP, Le Dref O, Mateo J, et al. Life-threatening primary postpartum hemorrhage: treatment with emergency selective arterial embolization. Radiology. 1998 Aug;208:359-62. PMID: 9680559; X-5

340. Ransom SB, Fundaro G, Dombrowski MP. The cost-effectiveness of routine type and screen admission testing for expected vaginal delivery. Obstet Gynecol. 1998 Oct;92:493-5. PMID: 9764617; X-4

341. Ries LT, Kopelman JN, Macri CI. Evaluation of routine antepartum and postpartum blood counts. J Reprod Med. 1998 Jul;43:581-5. PMID: 9693408; X-4

342. Robinson J. Maternal deaths -- thrombosis the main killer... the maternal death enquiry report. AIMS Journal. 1998;10:15-6. PMID: X-1, X-4, X-5

343. Rogers J, Wood J, McCandlish R, et al. Active versus expectant management of third stage of labour: the Hinchingbrooke randomised controlled trial. Lancet. 1998 Mar 7;351:693-9. PMID: 9504513; X-4

344. Ronsmans C, Vanneste AM, Chakraborty J, et al. Decline in maternal mortality in Matlab, Bangladesh: a cautionary tale. Lancet. 1998 Dec 20-27;350:1810-4. PMID: 9428252; X-2

345. Roungsipragarn R, Herabutya Y. Shoulder dystocia: fifteen years' experience in Ramathibodi Hospital. J Med Assoc Thai. 1998 Nov;81:821-3. PMID: 9803079; X-2, X-4

346. Singh K, Fong YF, Arulkumaran S. Anaemia in pregnancy--a cross-sectional study in Singapore. Eur J Clin Nutr. 1998 Jan;52:65-70. PMID: 9481535; X-4

347. Solymoss S. Postpartum acquired factor VIII inhibitors: results of a survey. Am J Hematol. 1998 Sep;59:1-4. PMID: 9723568; X-2, X-4, X-5

348. Tang LC, Kwok AC, Wong AY, et al. Critical care in obstetrical patients: an eight-year review. Chin Med J (Engl). 1998 Dec;110:936-41. PMID: 9772406; X-2, X-4

349. Templeton A. Misoprostol for all? Br J Obstet Gynaecol. 1998 Sep;105:937-9. PMID: 9763042; X-1, X-4, X-5

350. Vaarst M, Hindhede J, Enevoldsen C. Sole disorders in conventionally managed and organic dairy herds using different housing systems. J Dairy Res. 1998 May;65:175-86. PMID: 9627837; X-3, X-4

351. van Dongen PW, Verbruggen MM, de Groot AN, et al. Ascending dose tolerance study of intramuscular carbetocin administered after normal vaginal birth. Eur J Obstet Gynecol Reprod Biol. 1998 Apr;77:181-7. PMID: 9578276; X-4, X-5

352. Williams-Judge S. Managing postpartum hemorrhage. Mother Baby Journal. 1998;3:5. PMID: X-1

353. Zaki ZM, Bahar AM, Ali ME, et al. Risk factors and morbidity in patients with placenta previa accreta compared to placenta previa non-accreta. Acta Obstet Gynecol Scand. 1998 Apr;77:391-4. PMID: 9598946; X-2, X-4, X-5

354. . Case lessons. Mother dies of postpartum hemorrhage after attending doubts junior resident: $5 million settlement. OB-GYN Malpractice Prevention. 1999;6:20-. PMID: X-1, X-4

355. Amant F, Spitz B, Timmerman D, et al. Misoprostol compared with methylergometrine for the prevention of postpartum haemorrhage: a double-blind randomised trial. Br J Obstet Gynaecol. 1999 Oct;106:1066-70. PMID: 10519433; X-4, X-5

356. Anderson T. Prophylactic syntometrine vs oxytocin in the third stage of labour. Pract Midwife. 1999 Oct;1:40-1. PMID: 10026588; X-1, X-4

357. Babinszki A, Kerenyi T, Torok O, et al. Perinatal outcome in grand and great-grand multiparity: effects of parity on obstetric risk factors. Am J Obstet Gynecol. 1999 Sep;181:669-74. PMID: 10486482; X-4, X-5

358. Chandramohan D, Rodrigues LC, Maude GH, et al. The validity of verbal autopsies for assessing the causes of institutional maternal death. Stud Fam Plann. 1999 Dec;29:414-22. PMID: 9919634; X-1, X-2, X-4

359. Chowdhury BR. Unusual presentation of non-puerperal uterine inversion: A case report. Bangladesh Journal of Obstetrics and Gynecology. 1999;14:78-80. PMID: X-2, X-3, X-4

360. Dansereau J, Joshi AK, Helewa ME, et al. Double-blind comparison of carbetocin versus oxytocin in prevention of uterine atony after cesarean section. Am J Obstet Gynecol. 1999 Mar;180:670-6. PMID: 10076146; X-3, X-4

361. Davidson MRM. Outcomes of nurse midwifery care in a high-risk population: George Mason University; 1999.

362. Dobson LS, Gillespie AM, Coleman RE, et al. The presentation and management of post-partum choriocarcinoma. Br J Cancer. 1999 Mar;79:1531-3. PMID: 10188902; X-4, X-5

363. Featherstone IE. Clinical. Physiological third stage of labour. British Journal of Midwifery. 1999;7:216-21. PMID: X-1, X-4

364. Hansch E, Chitkara U, McAlpine J, et al. Pelvic arterial embolization for control of obstetric hemorrhage: a five-year experience. Am J Obstet Gynecol. 1999 Jun;180:1454-60. PMID: 10368488; X-5

365. Hoj L, Stensballe J, Aaby P. Maternal mortality in Guinea-Bissau: the use of verbal autopsy in a multi-ethnic population. Int J Epidemiol. 1999 Feb;28:70-6. PMID: 10195667; X-2, X-4

366. Jain KA, Olcott EW. Magnetic resonance imaging of postpartum pelvic hematomas: early experience in diagnosis and treatment planning. Magn Reson Imaging. 1999 Sep;17:973-7. PMID: 10463646; X-4, X-5

367. Juul SE, Stallings SA, Christensen RD. Erythropoietin in the cerebrospinal fluid of neonates who sustained CNS injury. Pediatr Res. 1999 Nov;46:543-7. PMID: 10541316; X-3, X-4

368. Kovavisarach E, Varanuntakul T. Neonatal and maternal complications among pregnant women delivered by vacuum extraction or forceps extraction. J Med Assoc Thai. 1999 Apr;82:319-24. PMID: 10410490; X-2, X-4

369. Krivak TC, Drewes P, Horowitz GM. Kielland vs. nonrotational forceps for the second stage of labor. J Reprod Med. 1999 Jun;44:511-7. PMID: 10394545; X-4

370. Lee CA. Women and von Willebrand disease. Haemophilia. 1999 May;5 Suppl 2:38-45. PMID: 23401898; X-1

371. Lind B, Thorsen S. A novel missense mutation in the human plasmin inhibitor (alpha2-antiplasmin) gene associated with a bleeding tendency. Br J Haematol. 1999 Nov;107:317-22. PMID: 10583218; X-4

372. Lindqvist PG, Svensson PJ, Marsaal K, et al. Activated protein C resistance (FV:Q506) and pregnancy. Thromb Haemost. 1999 Apr;81:532-7. PMID: 10235434; X-3, X-4

373. Mahutte NG, Murphy-Kaulbeck L, Le Q, et al. Obstetric admissions to the intensive care unit. Obstet Gynecol. 1999 Aug;94:263-6. PMID: 10432140; X-2, X-4, X-5

374. Makhseed M, Musini VM, Hassan NA, et al. Post-invasion change in the trend of complications and outcome of pregnancy in Maternity Hospital Kuwait from 1981 to 1995. Med Confl Surviv. 1999 Apr-Jun;15:161-70. PMID: 10371871; X-2, X-4

375. Manor M, Blickstein I, Ben-Arie A, et al. Case series of labor induction in twin gestations with an Intrauterine Balloon catheter. Gynecol Obstet Invest. 1999;47:244-6. PMID: 10352385; X-3, X-4

376. Nishimoto K, Shiiki H, Nishino T, et al. Glomerular hypertrophy in preeclamptic patients with focal segmental glomerulosclerosis. A morphometric analysis. Clin Nephrol. 1999 Apr;51:209-19. PMID: 10230553; X-3, X-4

377. Palacios Jaraquemada JM. Selective vascular ligation versus embolization in obstetric hemorrhage. Radiology. 1999 Mar;210:876-8. PMID: 10207497; X-1, X-2, X-4, X-5

378. Pelage JP, Le Dref O, Jacob D, et al. Selective arterial embolization of the uterine arteries in the management of intractable post-partum hemorrhage. Acta Obstet Gynecol Scand. 1999 Sep;78:698-703. PMID: 10468062; X-4, X-5

379. Pelage JP, Soyer P, Repiquet D, et al. Secondary postpartum hemorrhage: treatment with selective arterial embolization. Radiology. 1999 Aug;212:385-9. PMID: 10429694; X-5

380. Pettila V, Kaaja R, Leinonen P, et al. Thromboprophylaxis with low molecular weight heparin (dalteparin) in pregnancy. Thromb Res. 1999 Nov 15;96:275-82. PMID: 10593430; X-4, X-5

381. Prentice-Bjerkeseth R. Perioperative anesthetic management of trauma in pregnancy. Anesthesiology Clinics of North America. 1999;17:277-94. PMID: X-1

382. Robinson J. Managing the third stage. AIMS Journal. 1999;11:4-6. PMID: X-1

383. Santagostino E, Gringeri A, Mannucci PM. Home treatment with recombinant activated factor VII in patients with factor VIII inhibitors: the advantages of early intervention. Br J Haematol. 1999 Jan;104:22-6. PMID: 10027707; X-3, X-4

384. Schonholz DH. Blood transfusion and the pregnant Jehovah's witness patient: avoiding a dilemma. Mt Sinai J Med. 1999 Sep;66:277-9. PMID: 10477484; X-1

385. Sherer DM, Onyeije CI, Bernstein PS, et al. Utilization of real-time ultrasound on labor and delivery in an active academic teaching hospital. Am J Perinatol. 1999;16:303-7. PMID: 10586984; X-4

386. Stevenson J. Midwifery guidelines. Midwifery Matters. 1999:32-4. PMID: X-1

387. Suleiman AB, Mathews A, Jegasothy R, et al. A strategy for reducing maternal mortality. Bull World Health Organ. 1999;77:190-3. PMID: 10083722; X-2

388. Surbek DV, Fehr PM, Hosli I, et al. Oral misoprostol for third stage of labor: a randomized placebo-controlled trial. Obstet Gynecol. 1999 Aug;94:255-8. PMID: 10432138; X-4, X-5

389. Swaim LS, Perriatt S, Andres RL, et al. Clinical utility of routine postpartum hemoglobin determinations. Am J Perinatol. 1999;16:333-7. PMID: 10614700; X-4

390. Szal SE, Croughan-Minihane MS, Kilpatrick SJ. Effect of magnesium prophylaxis and preeclampsia on the duration of labor. Am J Obstet Gynecol. 1999 Jun;180:1475-9. PMID: 10368493; X-4

391. Taylor-Adams S, Vincent C, Stanhope N. Applying human factors methods to the investigation and analysis of clinical adverse events. Safety Science. 1999 March;31:143-59. PMID: X-1

392. Whitehead A, Bailey AJ, Elbourne D. Combining summaries of binary outcomes with those of continuous outcomes in a meta-analysis. J Biopharm Stat. 1999 Mar;9:1-16. PMID: 10091907; X-1, X-5

393. Wong SF, Ho LC. Labour outcome of low-risk multiparas of 40 years and older. A case-control study. Aust N Z J Obstet Gynaecol. 1999 Nov;38:388-90. PMID: 9890215; X-4

394. Wu YC, Ho CM, Tsou MY, et al. Successful management of malignant hyperthermia susceptibility during cesarean hysterectomy for postpartum hemorrhage. Acta Obstet Gynecol Scand. 1999 Sep;78:738-9. PMID: 10468070; X-2, X-4, X-5

395. Yin CS, Lee YT, Chan CC, et al. Severe delayed postpartum hemorrhage following cesarean section. Tzu Chi Medical Journal. 1999;11:93-6. PMID: X-2, X-4, X-5

396. . A review of maternal deaths in South Africa during 1998. National Committee on Confidential Enquiries into Maternal Deaths. S Afr Med J. 2000 Apr;90:367-73. PMID: 10957921; X-1, X-2, X-4

397. Al Sakka M, Dauleh W, Al Hassani S. Case series of uterine rupture and subsequent pregnancy outcome. Int J Fertil Womens Med. 2000 Nov-Dec;44:297-300. PMID: 10617251; X-5

398. Allaire AD, Moos MK, Wells SR. Complementary and alternative medicine in pregnancy: a survey of North Carolina certified nurse-midwives. Obstet Gynecol. 2000 Jan;95:19-23. PMID: 10636495; X-4, X-5

399. Ascher-Walsh C, Tharakan T, Baxi L. Is induction of labor with continuous release dinoprostone vaginal pessary a viable option in patients with preeclampsia? Prim Care Update Ob Gyns. 2000 Jul 1;5:183. PMID: 10838342; X-3, X-4

400. Aso S, Ehara H, Anai M, et al. Effects on growth of rat offspring born from dams treated subcutaneously with a surfactant, polyoxyethylene(10)nonylphenyl ether(NP-10), during lactational period. J Toxicol Sci. 2000 Dec;24 Suppl 2:129-40. PMID: 10664960; X-3

401. Atalla RK, Thompson JR, Oppenheimer CA, et al. Reactive thrombocytosis after caesarean section and vaginal delivery: implications for maternal thromboembolism and its prevention. BJOG. 2000 Mar;107:411-4. PMID: 10740340; X-3, X-4

402. Azeez Pasha SA, Kooheji AJ, Azeez A. Anesthetic management of peripartum hemorrhage. Seminars in Anesthesia, Perioperative Medicine & Pain. 2000;19:225-36. PMID: X-1, X-4, X-5

403. Bangerter M, Guthner C, Beneke H, et al. Pregnancy in essential thrombocythaemia: treatment and outcome of 17 pregnancies. Eur J Haematol. 2000 Sep;65:165-9. PMID: 11007051; X-3

404. Bowers D, Cohen WR. Obesity and related pregnancy complications in an inner-city clinic. J Perinatol. 2000 Apr-May;19:216-9. PMID: 10685225; X-4

405. Calhoun BC, Jennings BM, Peniston J, et al. Focused obstetrical clinic for active duty junior enlisted service women: model for improved outcomes. Mil Med. 2000 Jan;165:45-8. PMID: 10658428; X-4, X-5

406. Cho JH, Jun HS, Lee CN. Hemostatic suturing technique for uterine bleeding during cesarean delivery. Obstet Gynecol. 2000 Jul;96:129-31. PMID: 10928901; X-2, X-5

407. Clements C. Changing practice. Critical incident analysis of the third stage of labour. British Journal of Midwifery. 2000;8:500-4. PMID: X-1

408. Conde-Agudelo A, Belizan JM. Maternal morbidity and mortality associated with interpregnancy interval: cross sectional study. BMJ. 2000 Nov 18;321:1255-9. PMID: 11082085; X-2, X-4

409. Conde-Agudelo A, Belizan JM, Lindmark G. Maternal morbidity and mortality associated with multiple gestations. Obstet Gynecol. 2000 Jun;95:899-904. PMID: 10831988; X-2, X-4

410. Cook CM, Spurrett B, Murray H. A randomized clinical trial comparing oral misoprostol with synthetic oxytocin or syntometrine in the third stage of labour. Aust N Z J Obstet Gynaecol. 2000 Nov;39:414-9. PMID: 10687755; X-4

411. De Reu PA, Nijhuis JG, Oosterbaan HP, et al. Perinatal audit on avoidable mortality in a Dutch rural region: a retrospective study. Eur J Obstet Gynecol Reprod Biol. 2000 Jan;88:65-9. PMID: 10659919; X-3

412. Dewerchin M, Liang Z, Moons L, et al. Blood coagulation factor X deficiency causes partial embryonic lethality and fatal neonatal bleeding in mice. Thromb Haemost. 2000 Feb;83:185-90. PMID: 10739370; X-3, X-4

413. Dweck MF, Lynch CM, Spellacy WN. Use of methergine for the prevention of postoperative endometritis in non-elective cesarean section patients. Infect Dis Obstet Gynecol. 2000;8:151-4. PMID: 10968597; X-3, X-4

414. Ellison J, Walker ID, Greer IA. Antenatal use of enoxaparin for prevention and treatment of thromboembolism in pregnancy. BJOG. 2000 Sep;107:1116-21. PMID: 11002955; X-4

415. El-Refaey H, Nooh R, O'Brien P, et al. The misoprostol third stage of labour study: a randomised controlled comparison between orally administered misoprostol and standard management. BJOG. 2000 Sep;107:1104-10. PMID: 11002953; X-4

416. Etuk SJ, Itam IH, Asuquo EE. Morbidity and mortality in booked women who deliver outside orthodox health facilities in Calabar, Nigeria. Acta Trop. 2000 May 31;75:309-13. PMID: 10838214; X-2, X-4

417. Etuk SJ, Itam IH, Asuquo EE. Role of the spiritual churches in antenatal clinic default in Calabar, Nigeria. East Afr Med J. 2000 Nov;76:639-43. PMID: 10734525; X-2, X-4

418. Faisel H, Pittrof R. Vitamin A and causes of maternal mortality: association and biological plausibility. Public Health Nutr. 2000 Sep;3:321-7. PMID: 10979152; X-1

419. Feerasta SH, Motiei A, Motiwala S, et al. Uterine atony at a tertiary care hospital in Pakistan: a risk factor analysis. J Pak Med Assoc. 2000 Apr;50:132-6. PMID: 10851836; X-2, X-3, X-4

420. Font F, Alonso Gonzalez M, Nathan R, et al. Maternal mortality in a rural district of southeastern Tanzania: an application of the sisterhood method. Int J Epidemiol. 2000 Feb;29:107-12. PMID: 10750611; X-2, X-4

421. Giacalone PL, Vignal J, Daures JP, et al. A randomised evaluation of two techniques of management of the third stage of labour in women at low risk of postpartum haemorrhage. BJOG. 2000 Mar;107:396-400. PMID: 10740337; X-4

422. Huang YY, Ting MK, Hsu BR, et al. Demonstration of reserved anterior pituitary function among patients with amenorrhea after postpartum hemorrhage. Gynecol Endocrinol. 2000 Apr;14:99-104. PMID: 10836196; X-2, X-5

423. Jamila B, Jabeen F. Bilateral uterine artery ligation for control of obstetric haemorrhage and an alternative to hysterectomy. JK Practitioner. 2000;7:208-9. PMID: X-4

424. Jolly M, Sebire N, Harris J, et al. The risks associated with pregnancy in women aged 35 years or older. Hum Reprod. 2000 Nov;15:2433-7. PMID: 11056148; X-4, X-5

425. Kabir MZ, Chowdhury MAA, Rahman MH, et al. Pregnancy related acute renal failure - Still a major problem. Bangladesh Journal of Obstetrics and Gynecology. 2000;15:52-8. PMID: X-2, X-4

426. Lawal AN. Pregnancy outcome in grandmultiparous women in Lagos University Teaching Hospital (LUTH). West African Journal of Nursing. 2000;11:53-60. PMID: X-1, X-2, X-3, X-4

427. Livingstone VH, Willis CE, Abdel-Wareth LO, et al. Neonatal hypernatremic dehydration associated with breast-feeding malnutrition: a retrospective survey. CMAJ. 2000 Mar 7;162:647-52. PMID: 10738450; X-2, X-4, X-5

428. Lydon-Rochelle M, Holt VL, Martin DP, et al. Association between method of delivery and maternal rehospitalization. JAMA. 2000 May 10;283:2411-6. PMID: 10815084; X-4

429. Maymon R, Sehmi IK, Herman A, et al. Serum inhibin A levels in pregnant women with systemic lupus erythematosus or antiphospholipid syndrome. Prenat Diagn. 2000 Jan;20:12-6. PMID: 10701844; X-3, X-4

430. Munim S, Rahbar MH, Rizvi M, et al. The effect of grandmultiparity on pregnancy related complications: the Aga Khan University experience. J Pak Med Assoc. 2000 Feb;50:54-8. PMID: 10769523; X-2, X-4

431. Nielsen PE, Thomson BA, Jackson RB, et al. Standard obstetric record charting system: evaluation of a new electronic medical record. Obstet Gynecol. 2000 Dec;96:1003-8. PMID: 11084193; X-3, X-4

432. Otigbah CM, Dhanjal MK, Harmsworth G, et al. A retrospective comparison of water births and conventional vaginal deliveries. Eur J Obstet Gynecol Reprod Biol. 2000 Jul;91:15-20. PMID: 10817872; X-4

433. Panchal S, Arria AM, Harris AP. Intensive care utilization during hospital admission for delivery: prevalence, risk factors, and outcomes in a statewide population. Anesthesiology. 2000 Jun;92:1537-44. PMID: 10839902; X-4, X-5

434. Quddusi H, Baloch SN. Intrarectal prostaglandin in the management of postpartum hemorrhage. Pakistan Journal of Medical Sciences. 2000;16:242-5. PMID: X-2, X-4

435. Remijn MR, Finch JA, Gordon AC, et al. Placenta accreta leading to severe post partum haemorrhage controlled by selective iliac artery branch embolisation. Care of the Critically Ill. 2000;16:189-91. PMID: X-1, X-4, X-5

436. Robson J. Obstetric hysterectomy -- an alarming report. AIMS Journal. 2000;12:18-. PMID: X-1

437. Sadler LC, Davison T, McCowan LM. A randomised controlled trial and meta-analysis of active management of labour. BJOG. 2000 Jul;107:909-15. PMID: 10901564; X-4

438. Saunders GK, Blodgett DJ, Hutchins TA, et al. Suspected citrus pulp toxicosis in dairy cattle. J Vet Diagn Invest. 2000 May;12:269-71. PMID: 10826844; X-1, X-3, X-4

439. Schuurmans N, MacKinnon, C., Lane, C., & Etches, D. . Prevention and management of postpartum haemorrhage. J Soc Obstet Gynaecol Can. 2000;22(4):271-81. PMID: X-1

440. Scott TD, Flora R, Deveny TC. Elective repeat cesarean delivery vs trial of labor: a comparison of morbidities in a community hospital setting. Prim Care Update Ob Gyns. 2000 Jul 1;5:188. PMID: 10838354; X-4

441. Selcuk NY, Odabas AR, Cetinkaya R, et al. Outcome of pregnancies with HELLP syndrome complicated by acute renal failure (1989-1999). Ren Fail. 2000 May;22:319-27. PMID: 10843242; X-2, X-4, X-5

442. Sivalingam N, Looi KW. Clinical experience with management of "near-miss" cases in obstetrics. Med J Malaysia. 2000 Dec;54:496-503. PMID: 11072469; X-2, X-4, X-5

443. Slawson D. Is oral misoprostol effective in minimizing blood loss in the third stage of labor? Evidence-Based Practice. 2000;3:7-8, 2p. PMID: X-1, X-4

444. Song SQ, Zhang GN, Wu YL, et al. A case of mammary metastasis from choriocarcinoma. Chinese Journal of Cancer Research. 2000;12:151. PMID: X-1

445. Velling TE, Brennan FJ, Hall LD, et al. Role of the interventional radiologist in treating obstetric-gynecologic pathology. AJR Am J Roentgenol. 2000 Nov;175:1273-8. PMID: 11044021; X-1, X-4, X-5

446. Wagaarachchi PT, Fernando L. Fertility following ligation of internal iliac arteries for life-threatening obstetric haemorrhage: case report. Hum Reprod. 2000 Jun;15:1311-3. PMID: 10831561; X-2, X-5

447. Walley RL, Wilson JB, Crane JM, et al. A double-blind placebo controlled randomised trial of misoprostol and oxytocin in the management of the third stage of labour. BJOG. 2000 Sep;107:1111-5. PMID: 11002954; X-2, X-4

448. Witlin AG, Mattar F, Sibai BM. Postpartum stroke: a twenty-year experience. Am J Obstet Gynecol. 2000 Jul;183:83-8. PMID: 10920313; X-3, X-4

449. Wolman I, Gordon D, Yaron Y, et al. Transvaginal sonohysterography for the evaluation and treatment of retained products of conception. Gynecol Obstet Invest. 2000;50:73-6. PMID: 10965186; X-4, X-5

450. Wong WC, Kun KY, Tai CM. Emergency obstetric hysterectomies for postpartum haemorrhage. J Obstet Gynaecol Res. 2000 Dec;25:425-30. PMID: 10680341; X-5

451. Yaegashi N, Chiba-Sekii A, Okamura K. Emergency postpartum hysterectomy in women with placenta previa and prior cesarean section. Int J Gynaecol Obstet. 2000 Jan;68:49-52. PMID: 10687838; X-2, X-4, X-5

452. Ynag W, Shen Z. Acute fatty liver of pregnancy: an experience in diagnosis and management of eight cases. Prim Care Update Ob Gyns. 2000 Jul 1;5:191. PMID: 10838362; X-2, X-4, X-5

453. . Anna's story. Midwifery Matters. 2001:9-11. PMID: X-1, X-4

454. . $7.6 million verdict: mother hemorrhages, dies of ARDS 2 months postpartum. OB-GYN Malpractice Prevention. 2001;8:85-. PMID: X-1, X-4

455. Abdel-Aleem H, El-Nashar I, Abdel-Aleem A. Management of severe postpartum hemorrhage with misoprostol. Int J Gynaecol Obstet. 2001 Jan;72:75-6. PMID: 11146081; X-1, X-2, X-4, X-5

456. Acharya G, Al-Sammarai MT, Patel N, et al. A randomized, controlled trial comparing effect of oral misoprostol and intravenous syntocinon on intra-operative blood loss during cesarean section. Acta Obstet Gynecol Scand. 2001 Mar;80:245-50. PMID: 11207490; X-4

457. Bais JM, van der Borden DM, Pel M, et al. Vaginal birth after caesarean section in a population with a low overall caesarean section rate. Eur J Obstet Gynecol Reprod Biol. 2001 Jun;96:158-62. PMID: 11384799; X-4

458. Bakri YN, Amri A, Abdul Jabbar F. Tamponade-balloon for obstetrical bleeding. Int J Gynaecol Obstet. 2001 Aug;74:139-42. PMID: 11502292; X-2, X-4, X-5

459. Banatvala N, Griffin PM, Greene KD, et al. The United States National Prospective Hemolytic Uremic Syndrome Study: microbiologic, serologic, clinical, and epidemiologic findings. J Infect Dis. 2001 Apr 1;183:1063-70. PMID: 11237831; X-1, X-4

460. Batukan C, Holzgreve W, Danzer E, et al. Large placental chorioangioma as a cause of sudden intrauterine fetal death. A case report. Fetal Diagn Ther. 2001 Nov-Dec;16:394-7. PMID: 11694744; X-1

461. Ben-Aroya Z, Yochai D, Silberstein T, et al. Oxytocin use in grand-multiparous patients: safety and complications. J Matern Fetal Med. 2001 Oct;10:328-31. PMID: 11730496; X-4

462. Bouvier-Colle MH, Ould El Joud D, Varnoux N, et al. Evaluation of the quality of care for severe obstetrical haemorrhage in three French regions. Bjog. 2001 Sep;108:898-903. PMID: 11563457; X-4, X-5

463. Bugalho A, Daniel A, Faundes A, et al. Misoprostol for prevention of postpartum hemorrhage. Int J Gynaecol Obstet. 2001 Apr;73:1-6. PMID: 11336714; X-2, X-4, X-5

464. Bukowski R, Hankins GDV. Managing postpartum hemorrhage. Contemporary OB/GYN. 2001;46:92-102. PMID: X-1, X-2, X-4, X-5

465. Chan SM, Nelson EA, Leung SS, et al. Postnatal iron status of Hong Kong Chinese women in a longitudinal study of maternal nutrition. Eur J Clin Nutr. 2001 Jul;55:538-46. PMID: 11464227; X-2, X-4

466. Chen CL, Cheng Y, Wang PH, et al. Review of pre-eclampsia in Taiwan: a multi-institutional study. Zhonghua Yi Xue Za Zhi (Taipei). 2001 Dec;63:869-75. PMID: 11195137; X-2, X-3, X-4

467. Descargues G, Douvrin F, Degre S, et al. Abnormal placentation and selective embolization of the uterine arteries. Eur J Obstet Gynecol Reprod Biol. 2001 Nov;99:47-52. PMID: 11604185; X-2, X-5

468. Deux JF, Bazot M, Le Blanche AF, et al. Is selective embolization of uterine arteries a safe alternative to hysterectomy in patients with postpartum hemorrhage? AJR Am J Roentgenol. 2001 Jul;177:145-9. PMID: 11418416; X-4, X-5

469. El-Sherbiny MT, El-Gharieb IH, Gewely HA. Vaginal misoprostol for induction of labor: 25 vs. 50 microg dose regimen. Int J Gynaecol Obstet. 2001 Jan;72:25-30. PMID: 11146073; X-4

470. Engelsen IB, Albrechtsen S, Iversen OE. Peripartum hysterectomy-incidence and maternal morbidity. Acta Obstet Gynecol Scand. 2001 May;80:409-12. PMID: 11328216; X-4, X-5

471. Galaal KA, Krolikowski A. A randomized controlled study of peritoneal closure at cesarean section. Saudi Med J. 2001 Aug;21:759-61. PMID: 11423890; X-2, X-4

472. Gardella C, Taylor M, Benedetti T, et al. The effect of sequential use of vacuum and forceps for assisted vaginal delivery on neonatal and maternal outcomes. Am J Obstet Gynecol. 2001 Oct;185:896-902. PMID: 11641674; X-4

473. Gerstenfeld TS, Wing DA. Rectal misoprostol versus intravenous oxytocin for the prevention of postpartum hemorrhage after vaginal delivery. Am J Obstet Gynecol. 2001 Oct;185:878-82. PMID: 11641670; X-2, X-4, X-5

474. Gulmezoglu AM, Villar J, Ngoc NT, et al. WHO multicentre randomised trial of misoprostol in the management of the third stage of labour. Lancet. 2001 Sep 1;358:689-95. PMID: 11551574; X-2, X-4, X-5

475. Harris T. Evidence-based care. Changing the focus for the third stage of labour. British Journal of Midwifery. 2001;9:7-12. PMID: X-1

476. Hassouna A, Allam H. Oral anticoagulation therapy during pregnancy in patients with mechanical mitral valves: a prospective study. Cardiovasc Surg. 2001 Oct;9:478-81. PMID: 11489653; X-2, X-4, X-5

477. Hazelgrove JF, Price C, Pappachan VJ, et al. Multicenter study of obstetric admissions to 14 intensive care units in southern England. Crit Care Med. 2001 Apr;29:770-5. PMID: 11373467; X-3, X-4

478. Hofmeyr GJ, Nikodem VC, de Jager M, et al. Side-effects of oral misoprostol in the third stage of labour--a randomised placebo-controlled trial. S Afr Med J. 2001 May;91:432-5. PMID: 11455810; X-2, X-4

479. Jackson KW, Jr., Allbert JR, Schemmer GK, et al. A randomized controlled trial comparing oxytocin administration before and after placental delivery in the prevention of postpartum hemorrhage. Am J Obstet Gynecol. 2001 Oct;185:873-7. PMID: 11641669; X-4, X-5

480. Johanson R, Kumar M, Obhrai M, et al. Management of massive postpartum haemorrhage: use of a hydrostatic balloon catheter to avoid laparotomy. Bjog. 2001 Apr;108:420-2. PMID: 11305551; X-5

481. Kuller JA, D'Andrea NM, McMahon MJ. Renal biopsy and pregnancy. Am J Obstet Gynecol. 2001 May;184:1093-6. PMID: 11349167; X-3, X-4

482. Kundodyiwa TW, Majoko F, Rusakaniko S. Misoprostol versus oxytocin in the third stage of labor. Int J Gynaecol Obstet. 2001 Dec;75:235-41. PMID: 11728483; X-2, X-4

483. Lak M, Peyvandi F, Mannucci PM. Clinical manifestations and complications of childbirth and replacement therapy in 385 Iranian patients with type 3 von Willebrand disease. Br J Haematol. 2001 Dec;111:1236-9. PMID: 11167767; X-2, X-4

484. Lamont RF, Morgan DJ, Logue M, et al. A prospective randomised trial to compare the efficacy and safety of hemabate and syntometrine for the prevention of primary postpartum haemorrhage. Prostaglandins Other Lipid Mediat. 2001 Oct;66:203-10. PMID: 11577783; X-4, X-5

485. Lokugamage AU, Sullivan KR, Niculescu I, et al. A randomized study comparing rectally administered misoprostol versus Syntometrine combined with an oxytocin infusion for the cessation of primary post partum hemorrhage. Acta Obstet Gynecol Scand. 2001 Sep;80:835-9. PMID: 11531635; X-2, X-5

486. Lugina HI, Christensson K, Massawe S, et al. Change in maternal concerns during the 6 weeks postpartum period: a study of primaparous mothers in Dar es Salaam, Tanzania. J Midwifery Womens Health. 2001 Jul-Aug;46:248-57. PMID: 11603640; X-2, X-3, X-4

487. Mantel GD, Moodley J. Can a developed country's maternal mortality review be used as the 'gold standard' for a developing country? Eur J Obstet Gynecol Reprod Biol. 2001 Jan 10;100:189-95. PMID: 11750963; X-1, X-2, X-4

488. Munn MB, Owen J, Vincent R, et al. Comparison of two oxytocin regimens to prevent uterine atony at cesarean delivery: a randomized controlled trial. Obstet Gynecol. 2001 Sep;98:386-90. PMID: 11530117; X-4

489. Myles T. Vaginal birth of twins after a previous Cesarean section. J Matern Fetal Med. 2001 Jun;10:171-4. PMID: 11444785; X-4

490. Nagaraja D, Taly AB, Haridas VT, et al. Heparin in haemorrhagic infarction in cerebral venous sinus thrombosis. J Assoc Physicians India. 2001 Aug;46:706-7. PMID: 11229279; X-1, X-4

491. Nasrat HA, Youssef MH, Marzoogi A, et al. "Near miss" obstetric morbidity in an inner city hospital in Saudi Arabia. East Mediterr Health J. 2001 Jul;5:717-26. PMID: 11338695; X-2, X-3, X-4

492. Ng PS, Chan AS, Sin WK, et al. A multicentre randomized controlled trial of oral misoprostol and i.m. syntometrine in the management of the third stage of labour. Hum Reprod. 2001 Jan;16:31-5. PMID: 11139532; X-4

493. Olatunji AO, Sule-Odu AO. Maternal mortality at Sagamu, Nigeria--a ten year review (1988 - 1997). Niger Postgrad Med J. 2001 Mar;8:12-5. PMID: 11487777; X-2, X-4

494. Panchal S, Arria AM, Labhsetwar SA. Maternal mortality during hospital admission for delivery: a retrospective analysis using a state-maintained database. Anesth Analg. 2001 Jul;93:134-41. PMID: 11429354; X-4, X-5

495. Ravid D, Gidoni Y, Bruchim I, et al. Postpartum chills phenomenon: is it a feto-maternal transfusion reaction? Acta Obstet Gynecol Scand. 2001 Feb;80:149-51. PMID: 11167210; X-3, X-4

496. Read JS, Tuomala R, Kpamegan E, et al. Mode of delivery and postpartum morbidity among HIV-infected women: the women and infants transmission study. J Acquir Immune Defic Syndr. 2001 Mar 1;26:236-45. PMID: 11242196; X-3, X-4

497. Robson S, Chan A, Keane RJ, et al. Subsequent birth outcomes after an unexplained stillbirth: preliminary population-based retrospective cohort study. Aust N Z J Obstet Gynaecol. 2001 Feb;41:29-35. PMID: 11284643; X-3, X-4

498. Sebire NJ, Jolly M, Harris J, et al. Is maternal underweight really a risk factor for adverse pregnancy outcome? A population-based study in London. BJOG. 2001 Jan;108:61-6. PMID: 11213006; X-4

499. Sebire NJ, Jolly M, Harris JP, et al. Maternal obesity and pregnancy outcome: a study of 287,213 pregnancies in London. Int J Obes Relat Metab Disord. 2001 Aug;25:1175-82. PMID: 11477502; X-4

500. Sebitloane MH, Moodley J. Emergency peripartum hysterectomy. East Afr Med J. 2001 Feb;78:70-4. PMID: 11682949; X-2

501. Shami N, Akbar N, Asif S. An analysis of fetal and maternal morbidity and mortality in retained second twin. Medical Forum Monthly. 2001;12:18-21. PMID: X-1, X-2, X-4

502. Singla AK, Lapinski RH, Berkowitz RL, et al. Are women who are Jehovah's Witnesses at risk of maternal death? Am J Obstet Gynecol. 2001 Oct;185:893-5. PMID: 11641673; X-4

503. Stewart R, Tuazon D, Olson G, et al. Pregnancy and primary pulmonary hypertension : successful outcome with epoprostenol therapy. Chest. 2001 Mar;119:973-5. PMID: 11243988; X-1, X-3, X-4

504. Waterstone M, Bewley S, Wolfe C. Incidence and predictors of severe obstetric morbidity: case-control study. BMJ. 2001 May 5;322:1089-93; discussion 93-4. PMID: 11337436; X-4

505. Webster AJ. Effects of housing and two forage diets on the development of claw horn lesions in dairy cows at first calving and in first lactation. Vet J. 2001 Jul;162:56-65. PMID: 11409930; X-3, X-4

506. Welkovic S, Costa LO, Faundes A, et al. Post-partum bleeding and infection after post-placental IUD insertion. Contraception. 2001 Mar;63:155-8. PMID: 11368989; X-2, X-3, X-4

507. Wen SW, Demissie K, Liu S. Adverse outcomes in pregnancies of asthmatic women: results from a Canadian population. Ann Epidemiol. 2001 Jan;11:7-12. PMID: 11164114; X-4

508. Wenham J, Matijevic R. Post-partum hysterectomies: revisited. J Perinat Med. 2001;29:260-5. PMID: 11447932; X-4, X-5

509. Yamamoto H, Sagae S, Nishikawa S, et al. Emergency postpartum hysterectomy in obstetric practice. J Obstet Gynaecol Res. 2001 Oct;26:341-5. PMID: 11147720; X-4, X-5

510. Yasmeen S, Wilkins EE, Field NT, et al. Pregnancy outcomes in women with systemic lupus erythematosus. J Matern Fetal Med. 2001 Apr;10:91-6. PMID: 11392599; X-4

511. Ziadeh S, Yahaya A. Pregnancy outcome at age 40 and older. Arch Gynecol Obstet. 2001 Mar;265:30-3. PMID: 11327090; X-4

512. . $1 million settlement: fetus dies after preeclampsia is misdiagnosed; mother dies after refusing blood transfusion. OB-GYN Malpractice Prevention. 2002;9:84-6. PMID: X-1, X-4

513. . Blunt versus sharp expansion of the uterine incision at cesarean delivery. ACOG Clinical Review. 2002;7:4-5. PMID: X-1, X-4

514. . Misoprostol for managing the third stage of labor. ACOG Clinical Review. 2002;7:4-5. PMID: X-1, X-4

515. . Oxytocin v. misoprostol for postpartum hemorrhage. Contemporary OB/GYN. 2002;47:35-. PMID: X-1

516. . Placenta accreta leads to disastrous hemorrhage. OB-GYN Malpractice Prevention. 2002;9:21-2. PMID: X-1, X-4

517. . Mothers have heavy burden in West Africa. Safe Mother. 2002:10. PMID: 12293572; X-1

518. Abelin Tornblom S, Ostlund E, Granstrom L, et al. Pre-term cervical ripening and labor induction. Eur J Obstet Gynecol Reprod Biol. 2002 Sep 10;104:120-3. PMID: 12206923; X-3, X-4

519. Abu-Omar AA. Prevention of postpartum hemorrhage, safety and efficacy. Saudi Med J. 2002 Dec;22:1118-21. PMID: 11802188; X-2, X-4

520. Ahsan S, Naeem S, Ahsan A. A case notes analysis of hysterectomy performed for non-neoplastic indications at Liaquat National Hospital, Karachi. J Pak Med Assoc. 2002 Oct;51:346-9. PMID: 11768934; X-2, X-3, X-4

521. Alexander J, Thomas P, Sanghera J. Treatments for secondary postpartum haemorrhage. Cochrane Database Syst Rev. 2002:CD002867. PMID: 11869640; X-1, X-2, X-5

522. Ali AM, Abu-Heija AT. Obstetric and perinatal outcome of women para > or = 5 including one lower segment cesarean section. J Obstet Gynaecol Res. 2002 Jun;28:163-5. PMID: 12214833; X-2, X-4

523. Al-Nuaim LA, Mustafa MS, Abdel Gader AG. Disseminated intravascular coagulation and massive obstetric hemorrhage. Management dilemma. Saudi Med J. 2002 Jun;23:658-62. PMID: 12070542; X-2

524. bij de Vaate A, Coleman R, Manneh H, et al. Knowledge, attitudes and practices of trained traditional birth attendants in the Gambia in the prevention, recognition and management of postpartum haemorrhage. Midwifery. 2002 Mar;18:3-11. PMID: 11945047; X-2, X-3

525. Burton R, Belfort M, Anthony J. Management of the pregnant ICU patient. Clinical Pulmonary Medicine. 2002;9:87-96. PMID: X-1

526. Caliskan E, Meydanli MM, Dilbaz B, et al. Is rectal misoprostol really effective in the treatment of third stage of labor? A randomized controlled trial. Am J Obstet Gynecol. 2002 Oct;187:1038-45. PMID: 12389002; X-2, X-4, X-5

527. Choy CM, Lau WC, Tam WH, et al. A randomised controlled trial of intramuscular syntometrine and intravenous oxytocin in the management of the third stage of labour. BJOG. 2002 Feb;109:173-7. PMID: 11905429; X-4, X-5

528. Clark S, Blum J, Blanchard K, et al. Misoprostol use in obstetrics and gynecology in Brazil, Jamaica, and the United States. Int J Gynaecol Obstet. 2002 Jan;76:65-74. PMID: 11818096; X-2, X-3

529. Cordonnier C, Ha-Vien DE, Depret S, et al. Foetal growth restriction in the next pregnancy after uterine artery embolisation for post-partum haemorrhage. Eur J Obstet Gynecol Reprod Biol. 2002 Jul 10;103:183-4. PMID: 12069745; X-5

530. Cottier JP, Fignon A, Tranquart F, et al. Uterine necrosis after arterial embolization for postpartum hemorrhage. Obstet Gynecol. 2002 Nov;100:1074-7. PMID: 12423810; X-5

531. Cunha MA, de Souza Maia MR, Gomes MSR, et al. Profile of post delivery assisted at a maternity state of Rio Branco -- Acre-Brazil. Online Brazilian Journal of Nursing. 2002;1(1):4p. PMID: 2004096751. Language: English. Entry Date: 20040618. Revision Date: 20091218. Publication Type: journal article; X-2, X-4

532. Cunha MA, Mr, Gomes MSR, et al. Profile of post delivery assisted at a maternity state of Rio Branco -- Acre-Brazil. Online Brazilian Journal of Nursing. 2002;1:4p. PMID: X-2, X-4

533. de Boer MA, van Gemund N, Scherjon SA, et al. Low dose sulprostone for termination of second and third trimester pregnancies. Eur J Obstet Gynecol Reprod Biol. 2002 Dec 1;99:244-8. PMID: 11788180; X-4

534. French L. Does oral misoprostol prevent postpartum hemorrhage as well as parenteral oxytocin? Evidence-Based Practice. 2002;5:10-1, insert 2p. PMID: X-1, X-4

535. Geelhoed D, Visser L, Agordzo P, et al. Active versus expectant management of the third stage of labor in rural Ghana. Acta Obstet Gynecol Scand. 2002 Feb;81:172-3. PMID: 11942910; X-2, X-4

536. Goldberg J, Pereira L, Berghella V. Pregnancy after uterine artery embolization. Obstet Gynecol. 2002 Nov;100:869-72. PMID: 12423843; X-2, X-5

537. Goswami R, Kochupillai N, Crock PA, et al. Pituitary autoimmunity in patients with Sheehan's syndrome. J Clin Endocrinol Metab. 2002 Sep;87:4137-41. PMID: 12213861; X-2, X-4

538. Hayman RG, Arulkumaran S, Steer PJ. Uterine compression sutures: surgical management of postpartum hemorrhage. Obstet Gynecol. 2002 Mar;99:502-6. PMID: 11864681; X-4, X-5

539. Hebisch G, Huch A. Vaginal uterine artery ligation avoids high blood loss and puerperal hysterectomy in postpartum hemorrhage. Obstet Gynecol. 2002 Sep;100:574-8. PMID: 12220781; X-5

540. Holland R. A tale of two births. Pract Midwife. 2002 Apr;5:46. PMID: 11987892; X-1

541. Hundegger R, Husslein P, Berghammer P, et al. Postpartum bleeding and von Willebrand's disease. Arch Gynecol Obstet. 2002 Jul;266:160-2. PMID: 12197557; X-4

542. Karkanis SG, Caloia D, Salenieks ME, et al. Randomized controlled trial of rectal misoprostol versus oxytocin in third stage management. J Obstet Gynaecol Can. 2002 Feb;24:149-54. PMID: 12196880; X-2, X-4, X-5

543. Kastner ES, Figueroa R, Garry D, et al. Emergency peripartum hysterectomy: experience at a community teaching hospital. Obstet Gynecol. 2002 Jun;99:971-5. PMID: 12052583; X-5

544. Kodio B, de Bernis L, Ba M, et al. Levels and causes of maternal mortality in Senegal. Trop Med Int Health. 2002 Jun;7:499-505. PMID: 12031071; X-2, X-4

545. Lee WC, Cheng YF, Chen JB. Treating hyponatremia in an empty sella syndrome patient complicated with possible myelinolysis. 2002;25:838-43. PMID: X-1, X-3

546. Levin A, Dmytraczenko T, Ssengooba F, et al. Uganda: improving maternal health care efficiency and financing. Health Reform Prior Serv. 2002 Summer-Fall:7-9. PMID: 12222168; X-2

547. Li YT, Yin CS, Chen FM, et al. A useful technique for the control of severe cesarean hemorrhage: report of three cases. 2002;25:548-52. PMID: X-2, X-4, X-5

548. Lind J, Wallenburg HC. Pregnancy and the Ehlers-Danlos syndrome: a retrospective study in a Dutch population. Acta Obstet Gynecol Scand. 2002 Apr;81:293-300. PMID: 11952457; X-4

549. Liu J, Han F, Bian X. Optimal management of postpartum hemorrhage. Chin Med J (Engl). 2002 Dec;114:1280-2. PMID: 11793853; X-2, X-4, X-5

550. Loverro G, Pansini V, Greco P, et al. Indications and outcome for intensive care unit admission during puerperium. Arch Gynecol Obstet. 2002 Nov;265:195-8. PMID: 11789744; X-4, X-5

551. Lubetsky A, Martinowitz U, Luboshitz J, et al. Efficacy and safety of a factor VIII-von Willebrand factor concentrate 8Y: stability, bacteriological safety, pharmacokinetic analysis and clinical experience. Haemophilia. 2002 Sep;8:622-8. PMID: 12199669; X-3, X-4

552. Lukoschus H, Nierhaus M, Vetter K. Misoprostol in gynaecology and obstetrics. Gynakologische Praxis. 2002;26:9-21. PMID: X-1

553. Lumbiganon P, Villar J, Piaggio G, et al. Side effects of oral misoprostol during the first 24 hours after administration in the third stage of labour. BJOG. 2002 Nov;109:1222-6. PMID: 12452458; X-2, X-3, X-4

554. Magann EF, Chauhan SP, Bufkin L, et al. Intra-operative haemorrhage by blunt versus sharp expansion of the uterine incision at caesarean delivery: a randomised clinical trial. BJOG. 2002 Apr;109:448-52. PMID: 12013167; X-4

555. Malhotra M, Sharma JB, Batra S, et al. Maternal and perinatal outcome in varying degrees of anemia. Int J Gynaecol Obstet. 2002 Nov;79:93-100. PMID: 12427391; X-2, X-4, X-5

556. Manske T, Hultgren J, Bergsten C. The effect of claw trimming on the hoof health of Swedish dairy cattle. Prev Vet Med. 2002 Jun 25;54:113-29. PMID: 12069775; X-1, X-3, X-4

557. Marchant S, Alexander J, Garcia J. Postnatal vaginal bleeding problems and General Practice. Midwifery. 2002 Mar;18:21-4. PMID: 11945049; X-2, X-4, X-5

558. Massai MR, Diaz S, Quinteros E, et al. Contraceptive efficacy and clinical performance of Nestorone implants in postpartum women. Contraception. 2002 Dec;64:369-76. PMID: 11834236; X-3, X-4

559. Mousa HA, Alfirevic Z. Major postpartum hemorrhage: survey of maternity units in the United Kingdom. Acta Obstet Gynecol Scand. 2002 Aug;81:727-30. PMID: 12174156; X-2, X-4, X-5

560. Neill AC, Nixon RM, Thornton S. A comparison of clinical assessment with ultrasound in the management of secondary postpartum haemorrhage. Eur J Obstet Gynecol Reprod Biol. 2002 Sep 10;104:113-5. PMID: 12206921; X-4

561. Nkyekyer K. Twin and singleton births in Ghana--a case-control study. Twin Res. 2002 Aug;5:265-9. PMID: 12217231; X-2, X-4

562. Ochoa M, Allaire AD, Stitely ML. Pyometria after hemostatic square suture technique. Obstet Gynecol. 2002 Mar;99:506-9. PMID: 11864682; X-2, X-5

563. Palmer CM. Obstetric emergencies and anesthetic management. Current Reviews for PeriAnesthesia Nurses. 2002;24:123. PMID: X-1, X-4, X-5

564. Petersen LA, Lindner DS, Kleiber CM, et al. Factors that predict low hematocrit levels in the postpartum patient after vaginal delivery. Am J Obstet Gynecol. 2002 Apr;186:737-44. PMID: 11967500; X-3, X-4

565. Sadler LC, Davison T, McCowan LM. Maternal satisfaction with active management of labor: a randomized controlled trial. Birth. 2002 Dec;28:225-35. PMID: 11903210; X-4

566. Salamat SM, Landy HJ, O'Sullivan MJ. Labor induction after fetal death. A retrospective analysis. J Reprod Med. 2002 Jan;47:23-6. PMID: 11838305; X-3, X-4

567. Sami S, Baloch SN. Maternal mortality in Balochistan: A challenge for the obstetricians. Medical Forum Monthly. 2002 01 Jul;13:15-8. PMID: X-2, X-4

568. Sheiner E, Shoham-Vardi I, Hallak M, et al. Placenta previa: obstetric risk factors and pregnancy outcome. J Matern Fetal Med. 2002 Dec;10:414-9. PMID: 11798453; X-4

569. Singla AK, Berkowitz RL, Saphier CJ. Obstetric hemorrhage in Jehovah's Witnesses. Contemporary OB/GYN. 2002;47:32-, 5-6, 8 passim. PMID: X-1

570. Sulzdorf L. Uterine arteriovenous malformation: Sonographic diagnosis in a patient presenting with heavy postpartum vaginal bleeding. Journal of Diagnostic Medical Sonography. 2002;18:25-30. PMID: X-1

571. Treger M, Hallak M, Silberstein T, et al. Post-term pregnancy: should induction of labor be considered before 42 weeks? J Matern Fetal Neonatal Med. 2002 Jan;11:50-3. PMID: 12380609; X-4

572. Tsu VD, Free MJ. Using technology to reduce maternal mortality in low-resource settings: challenges and opportunities. J Am Med Womens Assoc. 2002 Summer;57:149-53. PMID: 12146606; X-1

573. Villar J, Gulmezoglu AM, Hofmeyr GJ, et al. Systematic review of randomized controlled trials of misoprostol to prevent postpartum hemorrhage. Obstet Gynecol. 2002 Dec;100:1301-12. PMID: 12468178; X-1, X-4

574. Vitzthum VJ, Spielvogel H, Caceres E, et al. Vaginal bleeding patterns among rural highland Bolivian women: relationship to fecundity and fetal loss. Contraception. 2002 Nov;64:319-25. PMID: 11777494; X-2, X-3, X-4

575. Wagaarachchi PT, Fernando L. Trends in maternal mortality and assessment of substandard care in a tertiary care hospital. Eur J Obstet Gynecol Reprod Biol. 2002 Feb 10;101:36-40. PMID: 11803098; X-2, X-4, X-5

576. White PM. Crossing the river: Khmer women's perceptions of pregnancy and postpartum. J Midwifery Womens Health. 2002 Jul-Aug;47:239-46. PMID: 12138931; X-1, X-2, X-4

577. Yang W, Shen Z, Peng G, et al. Acute fatty liver of pregnancy: diagnosis and management of 8 cases. Chin Med J (Engl). 2002 Jun;113:540-3. PMID: 11775876; X-4

578. Yazbak FE, Diodati CJ. Postpartum live virus vaccination: lessons from veterinary medicine. Med Hypotheses. 2002 Sep;59:280-2. PMID: 12208153; X-1, X-2, X-4, X-5

579. Zamora LA. A randomized controlled trial of oxytocin administered at the end of the second stage of labor versus oxytocin administered at the end of the third stage of labor in the prevention of postpartum hemorrhage. Philipp J Obstet Gynecol. 2002 Oct-Dec;23:125-33. PMID: 12179676; X-4

580. . Management of the 3rd stage of labour to prevent post-partum haemorrhage: joint statement: International Confederation of Midwives (ICM) International Federation of Gynaecologists and Obstetricians (FIGO). International Midwifery. 2003;16:66-7. PMID: X-1

581. Aggarwal N, Suri V, Bapuraj JR, et al. Percutanous uterine artery embolization to control severe haemorrhage from gestational trophoblastic disease. Bulletin, Postgraduate Institute of Medical Education and Research, Chandigarh. 2003;37:170-4. PMID: X-1, X-2

582. Aimakhu CO, Olayemi O, Enabor OO, et al. Forceps delivery at the University College Hospital, Ibadan, Nigeria. West Afr J Med. 2003 Sep;22:222-4. PMID: 14696945; X-2, X-4

583. Akhter S, Begum MR, Kabir Z, et al. Use of a condom to control massive postpartum hemorrhage. MedGenMed. 2003 Sep 11;5:38. PMID: 14600674; X-2

584. Allen VM, O'Connell CM, Liston RM, et al. Maternal morbidity associated with cesarean delivery without labor compared with spontaneous onset of labor at term. Obstet Gynecol. 2003 Sep;102:477-82. PMID: 12962927; X-4

585. Al-Ojaimi EH. Medical quiz. Bahrain Medical Bulletin. 2003 June;25:83+94. PMID: X-1, X-4

586. Bai SW, Lee HJ, Cho JS, et al. Peripartum hysterectomy and associated factors. J Reprod Med. 2003 Mar;48:148-52. PMID: 12698770; X-2, X-4, X-5

587. Baskett TF. Emergency obstetric hysterectomy. J Obstet Gynaecol. 2003 Jul;23:353-5. PMID: 12881069; X-5

588. Baudo F, de Cataldo F. Acquired factor VIII inhibitors in pregnancy: data from the Italian Haemophilia Register relevant to clinical practice. BJOG. 2003 Mar;110:311-4. PMID: 12628274; X-4, X-5

589. Bhutta SZ, Aziz S, Korejo R. Pregnancy following cardiac surgery. J Pak Med Assoc. 2003 Sep;53:407-13. PMID: 14620316; X-4

590. Bodner K, Bodner-Adler B, Wierrani F, et al. Effects of water birth on maternal and neonatal outcomes. Wien Klin Wochenschr. 2003 Jun 14;114:391-5. PMID: 12708093; X-4

591. Bohra U, Donnelly J, O'Connell MP, et al. Active management of labour revisited: the first 1000 primiparous labours in 2000. J Obstet Gynaecol. 2003 Mar;23:118-20. PMID: 12745551; X-4

592. Bouwmeester FW, Jonkhoff AR, Verheijen RH, et al. Successful treatment of life-threatening postpartum hemorrhage with recombinant activated factor VII. Obstet Gynecol. 2003 Jun;101:1174-6. PMID: 12798521; X-4, X-5

593. Caliskan E, Dilbaz B, Meydanli MM, et al. Oral misoprostol for the third stage of labor: a randomized controlled trial. Obstet Gynecol. 2003 May;101:921-8. PMID: 12738151; X-2, X-4, X-5

594. Chung JW, Jeong HJ, Joh JH, et al. Percutaneous transcatheter angiographic embolization in the management of obstetric hemorrhage. J Reprod Med. 2003 Apr;48:268-76. PMID: 12746991; X-2, X-4, X-5

595. Cochet L, Pattinson RC, Macdonald AP. Severe acute maternal morbidity and maternal death audit--a rapid diagnostic tool for evaluating maternal care. S Afr Med J. 2003 Sep;93:700-2. PMID: 14635560; X-2, X-4

596. Condous GS, Arulkumaran S, Symonds I, et al. The "tamponade test" in the management of massive postpartum hemorrhage. Obstet Gynecol. 2003 Apr;101:767-72. PMID: 12681884; X-4, X-5

597. Delaney T, Young DC. Spontaneous versus induced labor after a previous cesarean delivery. Obstet Gynecol. 2003 Jul;102:39-44. PMID: 12850605; X-4

598. Di Benedetto P, Baciarello M, Cabetti L, et al. Thrombelastography. Present and future perspectives in clinical practice. Minerva Anestesiol. 2003 Jun;69:501-9, 9-15. PMID: 14564249; X-1

599. El-Jallad MF, Zayed F, Al-Rimawi HS. Emergency peripartum hysterectomy in Northern Jordan: indications and obstetric outcome (an 8-year review). Arch Gynecol Obstet. 2003 Dec;270:271-3. PMID: 14676963; X-2

600. Festin MR, Lumbiganon P, Tolosa JE, et al. International survey on variations in practice of the management of the third stage of labour. Bull World Health Organ. 2003;81:286-91. PMID: 12764495; X-3, X-4

601. Forna F, Jamieson DJ, Sanders D, et al. Pregnancy outcomes in foreign-born and US-born women. Int J Gynaecol Obstet. 2003 Dec;83:257-65. PMID: 14643035; X-4

602. Foy R, Penney G, Greer I. The impact of national clinical guidelines on obstetricians in Scotland. Health Bull (Edinb). 2003 Nov;59:364-72. PMID: 12661386; X-2, X-4, X-5

603. French L. How does rectal misoprostol compare with other methods of preventing postpartum hemorrhage? Evidence-Based Practice. 2003;6:3-4, 2p. PMID: X-1, X-4

604. Goldszmidt E, Davies S. Two cases of hemorrhage secondary to amniotic fluid embolus managed with uterine artery embolization. Can J Anaesth. 2003 Nov;50:917-21. PMID: 14617589; X-2, X-5

605. Harrigill KM, Miller HS, Haynes DE. The effect of intraabdominal irrigation at cesarean delivery on maternal morbidity: a randomized trial. Obstet Gynecol. 2003 Jan;101:80-5. PMID: 12517650; X-4, X-5

606. Harris T. Choice in third stage: challenging and changing practice. Midwifery Matters. 2003:12-5. PMID: X-1

607. Heep A, Behrendt D, Nitsch P, et al. Increased serum levels of interleukin 6 are associated with severe intraventricular haemorrhage in extremely premature infants. Arch Dis Child Fetal Neonatal Ed. 2003 Nov;88:F501-4. PMID: 14602698; X-3, X-4

608. Hiruta Y. A survey of maternity care in practice in Japan. British Journal of Midwifery. 2003;11:38-42. PMID: X-2, X-3, X-4

609. Hong TM, Tseng HS, Lee RC, et al. Uterine artery embolization: an effective treatment for intractable obstetric haemorrhage. Clin Radiol. 2003 Jan;59:96-101. PMID: 14697382; X-2, X-4, X-5

610. Hsu S, Rodgers B, Lele A, et al. Use of packing in obstetric hemorrhage of uterine origin. J Reprod Med. 2003 Feb;48:69-71. PMID: 12621788; X-2, X-5

611. Humphrey MD. Is grand multiparity an independent predictor of pregnancy risk? A retrospective observational study. Med J Aust. 2003 Sep 15;179:294-6. PMID: 12964911; X-4

612. Ijaiya MA, Aboyeji AP, Abubakar D. Analysis of 348 consecutive cases of primary postpartum haemorrhage at a tertiary hospital in Nigeria. J Obstet Gynaecol. 2003 Jul;23:374-7. PMID: 12881075; X-2, X-4

613. Islam MA, Chowdhury RI, Chakraborty N, et al. A multistage model for maternal morbidity during antenatal, delivery and postpartum periods. Stat Med. 2003 Jan 15;23:137-58. PMID: 14695645; X-2, X-4

614. Jolly MC, Sebire NJ, Harris JP, et al. Risk factors for macrosomia and its clinical consequences: a study of 350,311 pregnancies. Eur J Obstet Gynecol Reprod Biol. 2003 Nov 10;111:9-14. PMID: 14557004; X-4

615. Karpati PC, Rossignol M, Pirot M, et al. High incidence of myocardial ischemia during postpartum hemorrhage. Anesthesiology. 2003 Jan;100:30-6; discussion 5A. PMID: 14695721; X-4, X-5

616. Kaye D, Mirembe F, Aziga F, et al. Maternal mortality and associated near-misses among emergency intrapartum obstetric referrals in Mulago Hospital, Kampala, Uganda. East Afr Med J. 2003 Mar;80:144-9. PMID: 12762430; X-2, X-4

617. Khan RU, El-Refaey H. Pharmacokinetics and adverse-effect profile of rectally administered misoprostol in the third stage of labor. Obstet Gynecol. 2003 May;101:968-74. PMID: 12738159; X-4

618. Kirtava A, Drews C, Lally C, et al. Medical, reproductive and psychosocial experiences of women diagnosed with von Willebrand's disease receiving care in haemophilia treatment centres: a case-control study. Haemophilia. 2003 May;9:292-7. PMID: 12694520; X-4

619. Langdana F, Geary M, Haw W, et al. Peripartum hysterectomy in the 1990s: any new lessons? J Obstet Gynaecol. 2003 Mar;21:121-3. PMID: 12521876; X-5

620. Lim JH, Tan BC, Jammal AE, et al. Delivery of macrosomic babies: management and outcomes of 330 cases. J Obstet Gynaecol. 2003 Jul;22:370-4. PMID: 12521456; X-2, X-4

621. Majoko F, Nystrom L, Lindmark G. No benefit, but increased harm from high dose (100 microg) misoprostol for induction of labour: a randomised trial of high vs. low (50 microg) dose misoprostol. J Obstet Gynaecol. 2003 Nov;22:614-7. PMID: 12554247; X-2, X-4

622. Mathai M. Preventing infection during manual removal of the placenta. Natl Med J India. 2003 Nov-Dec;15:349-50. PMID: 12540070; X-1, X-2, X-4, X-5

623. Mekbib T, Kassaye E, Getachew A, et al. The FIGO Save the Mothers Initiative: the Ethiopia-Sweden collaboration. Int J Gynaecol Obstet. 2003 Apr;81:93-102. PMID: 12676407; X-1, X-2

624. Mesko N, Osrin D, Tamang S, et al. Care for perinatal illness in rural Nepal: a descriptive study with cross-sectional and qualitative components. BMC Int Health Hum Rights. 2003 Aug 21;3:3. PMID: 12932300; X-2, X-4

625. Mesko N, Osrin D, Tamang S, et al. Care for perinatal illness in rural Nepal: A descriptive study with cross-sectional and qualitative components. United Kingdom: BioMed Central Ltd.; 2003. http://www.biomedcentral.com/1472-698X/3/3http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed6&NEWS=N&AN=2004472735. Accessed on (Mesko, Osrin, Costello) International Perinatal Care Unit, Institute of Child Health, University College, London, United Kingdom 3.

626. Moodley J. Saving mothers: 1999-2001. S Afr Med J. 2003 May;93:364-6. PMID: 12830600; X-1

627. Morales T, Sawchenko PE. Brainstem prolactin-releasing peptide neurons are sensitive to stress and lactation. Neuroscience. 2003;121:771-8. PMID: 14568035; X-1, X-3, X-4

628. Mozurkewich E, Horrocks J, Daley S, et al. The MisoPROM study: a multicenter randomized comparison of oral misoprostol and oxytocin for premature rupture of membranes at term. Am J Obstet Gynecol. 2003 Oct;189:1026-30. PMID: 14586349; X-4, X-5

629. Myles TD. Is there an obstetric July phenomenon? Obstet Gynecol. 2003 Nov;102:1080-4. PMID: 14672490; X-4

630. Myles TD, Santolaya J. Maternal and neonatal outcomes in patients with a prolonged second stage of labor. Obstet Gynecol. 2003 Jul;102:52-8. PMID: 12850607; X-4

631. Naqvi MM. Outcome of twin pregnancy in booked versus unbooked cases. J Coll Physicians Surg Pak. 2003 Sep;13:498-500. PMID: 12971867; X-2, X-4

632. Nizard J, Barrinque L, Frydman R, et al. Fertility and pregnancy outcomes following hypogastric artery ligation for severe post-partum haemorrhage. Hum Reprod. 2003 Apr;18:844-8. PMID: 12660282; X-4, X-5

633. Oboro VO, Tabowei TO. A randomised controlled trial of misoprostol versus oxytocin in the active management of the third stage of labour. J Obstet Gynaecol. 2003 Jan;23:13-6. PMID: 12623474; X-4

634. Odukogbe AA, Adewole IF, Ojengbede OA, et al. Grandmultiparity--trends and complications: a study in two hospital settings. J Obstet Gynaecol. 2003 Jul;21:361-7. PMID: 12521827; X-2, X-4

635. Ofir K, Sheiner E, Levy A, et al. Uterine rupture: risk factors and pregnancy outcome. Am J Obstet Gynecol. 2003 Oct;189:1042-6. PMID: 14586352; X-4

636. Ogueh O, Morin L, Usher RH, et al. Obstetric implications of low-lying placentas diagnosed in the second trimester. Int J Gynaecol Obstet. 2003 Oct;83:11-7. PMID: 14511867; X-4

637. Ohkuchi A, Onagawa T, Usui R, et al. Effect of maternal age on blood loss during parturition: a retrospective multivariate analysis of 10,053 cases. J Perinat Med. 2003;31:209-15. PMID: 12825476; X-4

638. Okogbenin SA, Gharoro EP, Otoide VO, et al. Obstetric hysterectomy: fifteen years' experience in a Nigerian tertiary centre. J Obstet Gynaecol. 2003 Jul;23:356-9. PMID: 12881070; X-2, X-3, X-4

639. Olesen AW, Westergaard JG, Olsen J. Perinatal and maternal complications related to postterm delivery: a national register-based study, 1978-1993. Am J Obstet Gynecol. 2003 Jul;189:222-7. PMID: 12861166; X-4

640. Onwudiegwu U, Ezechi OC. Emergency obstetric admissions: late referrals, misdiagnoses and consequences. J Obstet Gynaecol. 2003 Nov;21:570-5. PMID: 12521770; X-2, X-4

641. Ornan D, White R, Pollak J, et al. Pelvic embolization for intractable postpartum hemorrhage: long-term follow-up and implications for fertility. Obstet Gynecol. 2003 Nov;102:904-10. PMID: 14672461; X-5

642. Pal M, Biswas AK, Bhattacharya SM. B-Lynch Brace Suturing in primary post-partum hemorrhage during cesarean section. J Obstet Gynaecol Res. 2003 Oct;29:317-20. PMID: 14641702; X-2, X-5

643. Pattinson RC, Buchmann E, Mantel G, et al. Can enquiries into severe acute maternal morbidity act as a surrogate for maternal death enquiries? BJOG. 2003 Oct;110:889-93. PMID: 14550357; X-2, X-4

644. Phillip H, Fletcher H, Reid M. The impact of induced labour on postpartum blood loss. J Obstet Gynaecol. 2003 Jan;24:12-5. PMID: 14675973; X-2, X-4

645. Picone O, Salomon LJ, Ville Y, et al. Fetal growth and Doppler assessment in patients with a history of bilateral internal iliac artery embolization. J Matern Fetal Neonatal Med. 2003 May;13:305-8. PMID: 12916679; X-2, X-5

646. Praneshwari Devi RK, Das P, Tomba Singh K. A case of morbid adhesion of placenta. JMS - Journal of Medical Society. 2003 May;17:72-3. PMID: X-1

647. Qiu H, Zhu H, Ouyang W, et al. Clinical effects and mechanism of chanlibao in accelerating second stage of labor. J Tongji Med Univ. 2003;19:141-4. PMID: 12840859; X-4

648. Reyal F, Sibony O, Oury JF, et al. Criteria for transfusion in severe postpartum hemorrhage: analysis of practice and risk factors. Eur J Obstet Gynecol Reprod Biol. 2003 Jan 15;112:61-4. PMID: 14687741; X-5

649. Rivlin ME, Carroll CS, Sr., Morrison JC. Uterine incisional necrosis complicating cesarean section. J Reprod Med. 2003 Sep;48:687-91. PMID: 14562632; X-2, X-4, X-5

650. Roman AS, Rebarber A. Seven ways to control postpartum hemorrhage. Contemporary OB/GYN. 2003;48:34--6, 8, 41-2 passim. PMID: X-1

651. Roopnarinesingh R, Fay L, McKenna P. A 27-year review of obstetric hysterectomy. J Obstet Gynaecol. 2003 May;23:252-4. PMID: 12850853; X-4, X-5

652. Salomon LJ, deTayrac R, Castaigne-Meary V, et al. Fertility and pregnancy outcome following pelvic arterial embolization for severe post-partum haemorrhage. A cohort study. Hum Reprod. 2003 Apr;18:849-52. PMID: 12660283; X-4, X-5

653. Schiff E, Friedman SA, Zolti M, et al. A matched controlled study of Kielland's forceps for transverse arrest of the fetal vertex. J Obstet Gynaecol. 2003 Nov;21:576-9. PMID: 12521771; X-4

654. Segal S, Shemesh IY, Blumenthal R, et al. Treatment of obstetric hemorrhage with recombinant activated factor VII (rFVIIa). Arch Gynecol Obstet. 2003 Oct;268:266-7. PMID: 14504866; X-5

655. Sert M, Tetiker T, Kirim S, et al. Clinical report of 28 patients with Sheehan's syndrome. Endocr J. 2003 Jun;50:297-301. PMID: 12940458; X-2, X-4, X-5

656. Sheiner E, Levy A, Katz M, et al. Identifying risk factors for peripartum cesarean hysterectomy. A population-based study. J Reprod Med. 2003 Aug;48:622-6. PMID: 12971143; X-2, X-4, X-5

657. Singh KC, Jain P, Goel N, et al. Drotaverine hydrochloride for augmentation of labor. Int J Gynaecol Obstet. 2003 Jan;84:17-22. PMID: 14698825; X-3, X-4

658. Skandalakis JE, Mirilas P. Nihilism: a benign denial. World J Surg. 2003 Jun;27:748-52. PMID: 12732992; X-1

659. Smith KL, Baskett TF. Uterine compression sutures as an alternative to hysterectomy for severe postpartum hemorrhage. J Obstet Gynaecol Can. 2003 Mar;25:197-200. PMID: 12610671; X-5

660. Strand RT, da Silva F, Bergstrom S. Use of cholera beds in the delivery room: a simple and appropriate method for direct measurement of postpartum bleeding. Trop Doct. 2003 Oct;33:215-6. PMID: 14620424; X-2, X-4

661. Tahir S, Aleem M, Akram S. Indication and maternal outcome of emergency peripartum hysterectomy. Pakistan Journal of Medical Sciences. 2003 July/September;19:182-6. PMID: X-2, X-4

662. Tsu VD, Sutanto A, Vaidya K, et al. Oxytocin in prefilled Uniject injection devices for managing third-stage labor in Indonesia. Int J Gynaecol Obstet. 2003 Oct;83:103-11. PMID: 14511884; X-2, X-4

663. Walsh D. Birthwrite. Haemorrhage and the third stage of labour. British Journal of Midwifery. 2003;11:72-. PMID: X-1, X-4

664. Weerasekera DS, Premaratne S. A randomised prospective trial of the obstetric forceps versus vacuum extraction using defined criteria. J Obstet Gynaecol. 2003 Jul;22:344-5. PMID: 12521450; X-4

665. Wehbe SA, Ghulmiyyah LM, Carroll KT, et al. Correlations from gadopentetate dimeglumine-enhanced magnetic resonance imaging after methotrexate chemotherapy for hemorrhagic placenta increta. Biomagn Res Technol. 2003 Nov 14;1:3. PMID: 14617375; X-2, X-4, X-5

666. Westerway SC, Keogh J, Heard R, et al. Incidence of fetal macrosomia and birth complications in Chinese immigrant women. Aust N Z J Obstet Gynaecol. 2003 Feb;43:46-9. PMID: 12755347; X-4

667. Wright JM, Newton W. Is rectal misoprostol as effective as oxytocin in preventing postpartum hemorrhage? J Fam Pract. 2003 Apr;52:281-2. PMID: 12681086; X-1, X-2, X-4, X-5

668. Yamani Zamzami TY. Indication of emergency peripartum hysterectomy: review of 17 cases. Arch Gynecol Obstet. 2003 Aug;268:131-5. PMID: 12756583; X-2

669. Zeeman GG, Wendel GD, Jr., Cunningham FG. A blueprint for obstetric critical care. Am J Obstet Gynecol. 2003 Feb;188:532-6. PMID: 12592267; X-4, X-5

670. . Prevention and treatment of postpartum hemorrhage: new advances for low resource settings (#2004/042). J Midwifery Womens Health. 2004 Jul-Aug;49:375-6. PMID: 15257274; X-1, X-2, X-4, X-5

671. . Long-term follow-up of pelvic embolization. ACOG Clinical Review. 2004;9:6-. PMID: X-1, X-4

672. . Postpartum hemorrhage and pelvic embolization. ACOG Clinical Review. 2004;9:4-. PMID: X-1, X-4

673. Aali BS, Ghafoorian J, Mohamad-Alizadeh S. Severe preeclampsia and eclampsia in Kerman, Iran: complications and outcomes. Med Sci Monit. 2004 Apr;10:CR163-7. PMID: 15039647; X-2, X-4

674. Abu-Heija AT, Chalabi HE. Great grand multiparity: is it a risk? J Obstet Gynaecol. 2004 Mar;18:136-8. PMID: 15512031; X-1, X-4

675. Alfirevic Z, Edwards G, Platt MJ. The impact of delivery suite guidelines on intrapartum care in 'standard primigravida'. Eur J Obstet Gynecol Reprod Biol. 2004 Jul 15;115:28-31. PMID: 15223161; X-4, X-5

676. Almog B, Levin I, Winkler N, et al. The contribution of laminaria placement for cervical ripening in second trimester termination of pregnancy induced by intra-amniotic injection of prostaglandin F(2)alpha followed by concentrated oxytocin infusion. Eur J Obstet Gynecol Reprod Biol. 2004 Jan 10;118:32-5. PMID: 15596269; X-4

677. Andolina KL, Tolosa JE, Monzo JM, et al. Oral misoprostol is rapidly absorbed in postpartum women at term. J Matern Fetal Neonatal Med. 2004 Oct;14:229-32. PMID: 14738167; X-3, X-4

678. Anwari JS, Butt AA, Al-Dar MA. Obstetric admissions to the intensive care unit. Saudi Med J. 2004 Oct;25:1394-9. PMID: 15494809; X-2

679. Bagga R, Jain V, Kalra J, et al. Uterovaginal packing with rolled gauze in postpartum hemorrhage. MedGenMed : Medscape general medicine. 2004;6:50. PMID: X-1, X-2, X-5

680. Bailit JL, Blanchard MH. The effect of house staff working hours on the quality of obstetric and gynecologic care. Obstet Gynecol. 2004 Apr;103:613-6. PMID: 15051548; X-4

681. Bais JM, Eskes M, Pel M, et al. Postpartum haemorrhage in nulliparous women: incidence and risk factors in low and high risk women. A Dutch population-based cohort study on standard (> or = 500 ml) and severe (> or = 1000 ml) postpartum haemorrhage. Eur J Obstet Gynecol Reprod Biol. 2004 Aug 10;115:166-72. PMID: 15262350; X-4

682. Bang RA, Bang AT, Reddy MH, et al. Maternal morbidity during labour and the puerperium in rural homes and the need for medical attention: A prospective observational study in Gadchiroli, India. BJOG. 2004 Mar;111:231-8. PMID: 14961884; X-2, X-4

683. Bashiri A, Smolin A, Sheiner E, et al. Maternal rehospitalization after singleton term vaginal delivery. J Matern Fetal Neonatal Med. 2004 Nov;14:344-8. PMID: 14986810; X-4

684. Baskett TF. Surgical management of severe obstetric hemorrhage: experience with an obstetric hemorrhage equipment tray. J Obstet Gynaecol Can. 2004 Sep;26:805-8. PMID: 15361276; X-5

685. Bhullar A, Carlan SJ, Hamm J, et al. Buccal misoprostol to decrease blood loss after vaginal delivery: a randomized trial. Obstet Gynecol. 2004 Dec;104:1282-8. PMID: 15572491; X-4, X-5

686. Biaggi A, Paradisi G, Ferrazzani S, et al. Maternal mortality in Italy, 1980-1996. Eur J Obstet Gynecol Reprod Biol. 2004 Jun 15;114:144-9. PMID: 15140506; X-4, X-5

687. Bloom AI, Verstandig A, Gielchinsky Y, et al. Arterial embolisation for persistent primary postpartum haemorrhage: before or after hysterectomy? Bjog. 2004 Aug;111:880-4. PMID: 15270943; X-5

688. Bodnar LM, Siega-Riz AM, Arab L, et al. Predictors of pregnancy and postpartum haemoglobin concentrations in low-income women. Public Health Nutr. 2004 Sep;7:701-11. PMID: 15369607; X-4

689. Bodner-Adler B, Bodner K, Kimberger O, et al. Influence of the birth attendant on maternal and neonatal outcomes during normal vaginal delivery: a comparison between midwife and physician management. Wien Klin Wochenschr. 2004 Jun 30;116:379-84. PMID: 15291290; X-4

690. Boucher M, Nimrod CA, Tawagi GF, et al. Comparison of carbetocin and oxytocin for the prevention of postpartum hemorrhage following vaginal delivery:a double-blind randomized trial. J Obstet Gynaecol Can. 2004 May;26:481-8. PMID: 15151735; X-4

691. Boulleret C, Chahid T, Gallot D, et al. Hypogastric arterial selective and superselective embolization for severe postpartum hemorrhage: a retrospective review of 36 cases. Cardiovasc Intervent Radiol. 2004 Jul-Aug;27:344-8. PMID: 15129337; X-1, X-4, X-5

692. Brace V, Penney G, Hall M. Quantifying severe maternal morbidity: a Scottish population study. BJOG. 2004 May;111:481-4. PMID: 15104614; X-4

693. Buckland RH, Popham PA. Lymphocytic hypophysitis complicated by post-partum haemorrhage. Int J Obstet Anesth. 2004 Oct;7:263-6. PMID: 15321191; X-1, X-4, X-5

694. Carvalho JC, Balki M, Kingdom J, et al. Oxytocin requirements at elective cesarean delivery: a dose-finding study. Obstet Gynecol. 2004 Nov;104:1005-10. PMID: 15516392; X-3, X-4

695. Catling SJ, Freites O, Krishnan S, et al. Clinical experience with cell salvage in obstetrics: 4 cases from one UK centre. Int J Obstet Anesth. 2004 Apr;11:128-34. PMID: 15321566; X-5

696. Chandra S, Persad V, Young D, et al. A preliminary study of cutaneous blood flow associated with postpartum use of oral misoprostol. J Obstet Gynaecol Can. 2004 Dec;26:1073-6. PMID: 15607043; X-3, X-4

697. Cheng YY, Hwang JI, Hung SW, et al. Angiographic embolization for emergent and prophylactic management of obstetric hemorrhage: a four-year experience. J Chin Med Assoc. 2004 Dec;66:727-34. PMID: 15015822; X-2, X-5

698. Cherine M, Khalil K, Hassanein N, et al. Management of the third stage of labor in an Egyptian teaching hospital. Int J Gynaecol Obstet. 2004 Oct;87:54-8. PMID: 15464784; X-2, X-4

699. Chou YJ, Cheng YF, Shen CC, et al. Failure of uterine arterial embolization: placenta accreta with profuse postpartum hemorrhage. Acta Obstet Gynecol Scand. 2004 Jul;83:688-90. PMID: 15225198; X-2, X-4, X-5

700. Dehbashi S, Honarvar M, Fardi FH. Manual removal or spontaneous placental delivery and postcesarean endometritis and bleeding. Int J Gynaecol Obstet. 2004 Jul;86:12-5. PMID: 15207663; X-4

701. Demirkiran O, Dikmen Y, Utku T, et al. Critically ill obstetric patients in the intensive care unit. Int J Obstet Anesth. 2004 Oct;12:266-70. PMID: 15321455; X-2, X-4, X-5

702. Demissie K, Rhoads GG, Smulian JC, et al. Operative vaginal delivery and neonatal and infant adverse outcomes: population based retrospective analysis. BMJ. 2004 Jul 3;329:24-9. PMID: 15231617; X-4

703. Descargues G, Mauger Tinlot F, Douvrin F, et al. Menses, fertility and pregnancy after arterial embolization for the control of postpartum haemorrhage. Hum Reprod. 2004 Feb;19:339-43. PMID: 14747177; X-5

704. Donovan GA, Risco CA, Temple GM, et al. Influence of transition diets on occurrence of subclinical laminitis in Holstein dairy cows. J Dairy Sci. 2004 Jan;87:73-84. PMID: 14765813; X-3

705. Duff E. No more 'quarrelling at the mother's bedside': inter-professional approaches can help to stop women dying. MIDIRS Midwifery Digest. 2004;14:35-6. PMID: X-1, X-4

706. Ezechi OC, Fasubaa OB, Dare FO. Socioeconomic barriers to safe motherhood among booked patients in rural Nigerian communities. J Obstet Gynaecol. 2004 Jan;20:32-4. PMID: 15512461; X-2, X-4

707. Ezechi OC, Kalu BK, Njokanma FO, et al. Vaginal misoprostol induction of labour: a Nigerian hospital experience. J Obstet Gynaecol. 2004 Apr;24:239-42. PMID: 15203615; X-2, X-4

708. Ezechi OC, Kalu BK, Njokanma FO, et al. Emergency peripartum hysterectomy in a Nigerian hospital: a 20-year review. J Obstet Gynaecol. 2004 Jun;24:372-3. PMID: 15203573; X-2, X-4

709. Gai MY, Wu LF, Su QF, et al. Clinical observation of blood loss reduced by tranexamic acid during and after caesarian section: a multi-center, randomized trial. Eur J Obstet Gynecol Reprod Biol. 2004 Feb 10;112:154-7. PMID: 14746950; X-4

710. Geller SE, Patel A, Niak VA, et al. Conducting international collaborative research in developing nations. Int J Gynaecol Obstet. 2004 Dec;87:267-71. PMID: 15548406; X-1

711. Ghourab S, Al-Nuaim L, Al-Jabari A, et al. Abdomino-pelvic packing to control severe haemorrhage following caesarean hysterectomy. J Obstet Gynaecol. 2004 Mar;19:155-8. PMID: 15512258; X-2, X-5

712. Goldberg J, Pereira L, Berghella V, et al. Pregnancy outcomes after treatment for fibromyomata: uterine artery embolization versus laparoscopic myomectomy. Am J Obstet Gynecol. 2004 Jul;191:18-21. PMID: 15295339; X-4

713. Gould DA, Butler-Manuel SA, Turner MJ, et al. Emergency obstetric hysterectomy - an increasing incidence. J Obstet Gynaecol. 2004 Nov;19:580-3. PMID: 15512405; X-2, X-5

714. Hazra S, Chilaka VN, Rajendran S, et al. Massive postpartum haemorrhage as a cause of maternal morbidity in a large tertiary hospital. J Obstet Gynaecol. 2004 Aug;24:519-20. PMID: 15369931; X-4

715. Healey S, Buzaglo K, Seti L, et al. Ovarian function after uterine artery embolization and hysterectomy. J Am Assoc Gynecol Laparosc. 2004 Aug;11(3):348-52. PMID: 15559347; X-3, X-4

716. Hebisch G, Neumaier-Wagner PM, Huch R, et al. Maternal serum interleukin-1 beta, -6 and -8 levels and potential determinants in pregnancy and peripartum. J Perinat Med. 2004;32:475-80. PMID: 15576267; X-3, X-4

717. Heinonen S, Tyrvainen E, Saarikoski S, et al. Need for maternal critical care in obstetrics: a population-based analysis. Int J Obstet Anesth. 2004 Oct;11:260-4. PMID: 15321532; X-4

718. Hidar S, Jennane TM, Bouguizane S, et al. The effect of placental removal method at cesarean delivery on perioperative hemorrhage: a randomized clinical trial ISRCTN 49779257. Eur J Obstet Gynecol Reprod Biol. 2004 Dec 1;117:179-82. PMID: 15541854; X-2, X-4, X-5

719. Hofmeyr GJ, Ferreira S, Nikodem VC, et al. Misoprostol for treating postpartum haemorrhage: a randomized controlled trial [ISRCTN72263357]. BMC Pregnancy Childbirth. 2004 Aug 6;4:16. PMID: 15298718; X-2

720. Holtsema H, Nijland R, Huisman A, et al. The B-Lynch technique for postpartum haemorrhage: an option for every gynaecologist. Eur J Obstet Gynecol Reprod Biol. 2004 Jul 15;115:39-42. PMID: 15223163; X-2, X-5

721. Hughes S, Goodyear P, Sansome A. The anaesthetic management of a woman with a 31-week abdominal pregnancy. Int J Obstet Anesth. 2004 Oct;10:321-4. PMID: 15321592; X-1

722. Huh WK, Chelmow D, Malone FD. A double-blinded, randomized controlled trial of oxytocin at the beginning versus the end of the third stage of labor for prevention of postpartum hemorrhage. Gynecol Obstet Invest. 2004;58:72-6. PMID: 15103233; X-4

723. Ioscovich A, Elstein Y, Halpern S, et al. Anesthesia for obstetric patients with Gaucher disease: survey and review. Int J Obstet Anesth. 2004 Oct;13:244-50. PMID: 15477054; X-3, X-4

724. Karnad DR, Lapsia V, Krishnan A, et al. Prognostic factors in obstetric patients admitted to an Indian intensive care unit. Crit Care Med. 2004 Jun;32:1294-9. PMID: 15187509; X-2, X-4

725. Khanal R. Caesarean delivery at Nepal Medical College Teaching Hospital, Kathmandu, Nepal. Nepal Med Coll J. 2004 Jun;6:53-5. PMID: 15449656; X-2, X-4

726. Kodkany BS, Derman RJ, Goudar SS, et al. Initiating a novel therapy in preventing postpartum hemorrhage in rural India: a joint collaboration between the United States and India. Int J Fertil Womens Med. 2004 Mar-Apr;49:91-6. PMID: 15188836; X-1, X-2, X-4

727. Koroukian SM. Relative risk of postpartum complications in the Ohio Medicaid population: vaginal versus cesarean delivery. Med Care Res Rev. 2004 Jun;61:203-24. PMID: 15155052; X-4

728. Kurdi AM, Mesleh RA, Al-Hakeem MM, et al. Multiple pregnancy and preterm labor. Saudi Med J. 2004 May;25:632-7. PMID: 15138532; X-2, X-3, X-4

729. Lam H, Tang OS, Lee CP, et al. A pilot-randomized comparison of sublingual misoprostol with syntometrine on the blood loss in third stage of labor. Acta Obstet Gynecol Scand. 2004 Jul;83:647-50. PMID: 15225189; X-4

730. Laven RA, Livesey CT, May SA. Relationship between acute phase proteins and hoof horn haemorrhages in postpartum first-lactation heifers. Vet Rec. 2004 Mar 27;154:389-95. PMID: 15083972; X-3, X-4

731. Lazarus JV, Lalonde A. Reducing postpartum hemorrhage in Africa. Int J Gynaecol Obstet. 2004 Jan;88:89-90. PMID: 15617720; X-1

732. Leverment J, Turner R, Bowman M, et al. Report of the use of hyperbaric oxygen therapy (HBO2) in an unusual case of secondary infertility. Undersea Hyperb Med. 2004 Summer;31:245-50. PMID: 15485087; X-3, X-4

733. Mascola MA, Schellpfeffer MA, Kruse TK, et al. Pregnancy-associated deaths and pregnancy-related deaths in Wisconsin, 1998-2001. WMJ. 2004;103:61-6. PMID: 15553567; X-4

734. Meldrum DJ, Evans G, Popham P. Spinal anaesthesia and dysfibrinogenaemia. Int J Obstet Anesth. 2004 Jan;10:64-7. PMID: 15321654; X-4, X-5

735. Mesleh R, Ayoub H, Algwiser A, et al. Emergency peripartum hysterectomy. J Obstet Gynaecol. 2004 Nov;18:533-7. PMID: 15512170; X-2, X-4

736. Mirghani HM, Hamed M, Ezimokhai M, et al. Pregnancy-related admissions to the intensive care unit. Int J Obstet Anesth. 2004 Apr;13:82-5. PMID: 15321409; X-4, X-5

737. Nahar S, Begum S, Yasnur S, et al. Use of Misoprostol for induction of labour in unfavorable cervix in eclampsia. Pakistan Journal of Medical Sciences. 2004 July/September;20:181-5. PMID: X-2, X-4

738. Nanda S, Sharma N, Dahiya K, et al. Eyes do not see what the mind does not know: Pitfalls in the diagnosis of intraligamentary pregnancy. Journal of Gynecologic Surgery. 2004 Winter;20:131-4. PMID: X-1

739. Nizard J, Pessel M, De Keersmaecker B, et al. High-intensity focused ultrasound in the treatment of postpartum hemorrhage: an animal model. Ultrasound Obstet Gynecol. 2004 Mar;23:262-6. PMID: 15027015; X-3, X-4

740. Noor S, Halimi M, Faiz NR, et al. Magnesium sulphate in the prophylaxis and treatment of eclampsia. J Ayub Med Coll Abbottabad. 2004 Apr-Jun;16:50-4. PMID: 15455618; X-2, X-4

741. O'Donoghue K, Byrne BM. Antenatal detection of abnormal liver function tests - a marker for poor perinatal outcome. J Obstet Gynaecol. 2004 Sep;20:475-8. PMID: 15512630; X-4

742. Ofir K, Sheiner E, Levy A, et al. Uterine rupture: differences between a scarred and an unscarred uterus. Am J Obstet Gynecol. 2004 Aug;191:425-9. PMID: 15343216; X-4

743. Ozden S, Yildirim G, Basaran T, et al. Analysis of 59 cases of emergent peripartum hysterectomies during a 13-year period. Arch Gynecol Obstet. 2004 Apr;271:363-7. PMID: 15205986; X-2, X-4

744. Potts M, Campbell M. Three meetings and fewer funerals--misoprostol in postpartum haemorrhage. Lancet. 2004 Sep 25-Oct 1;364:1110-1. PMID: 15451208; X-1, X-4, X-5

745. Ramsey PS, Savage K, Lincoln T, et al. Vaginal misoprostol versus concentrated oxytocin and vaginal PGE2 for second-trimester labor induction. Obstet Gynecol. 2004 Jul;104:138-45. PMID: 15229013; X-4, X-5

746. Robinson J. Why are more mothers dying? AIMS Journal. 2004;16:1. PMID: X-1

747. Ruano R, Dumez Y, Cabrol D, et al. Second- and third-trimester therapeutic terminations of pregnancy in cases with complete placenta previa--does feticide decrease postdelivery maternal hemorrhage? Fetal Diagn Ther. 2004 Nov-Dec;19:475-8. PMID: 15539869; X-4, X-5

748. Segal S, Shemesh IY, Blumental R, et al. The use of recombinant factor VIIa in severe postpartum hemorrhage. Acta Obstet Gynecol Scand. 2004 Aug;83:771-2. PMID: 15255852; X-5

749. Serjeant GR, Loy LL, Crowther M, et al. Outcome of pregnancy in homozygous sickle cell disease. Obstet Gynecol. 2004 Jun;103:1278-85. PMID: 15172865; X-4

750. Sharma JB, Pundir P, Malhotra M, et al. Evaluation of placental drainage as a method of placental delivery in vaginal deliveries. Arch Gynecol Obstet. 2004 Apr;271:343-5. PMID: 15034720; X-3, X-4

751. Sheiner E, Levy A, Mazor M. Precipitate labor: higher rates of maternal complications. Eur J Obstet Gynecol Reprod Biol. 2004 Sep 10;116:43-7. PMID: 15294366; X-4

752. Sibley L, Buffington ST, Haileyesus D. The American College of Nurse-Midwives' home-based lifesaving skills program: a review of the Ethiopia field test. J Midwifery Womens Health. 2004 Jul-Aug;49:320-8. PMID: 15236712; X-2, X-3, X-4

753. Simmonds M. Hemiparesis following post-partum haemorrhage and eclampsia. Int J Obstet Anesth. 2004 Oct;8:273-8. PMID: 15321123; X-1, X-4

754. Sokol ER, Casele H, Haney EI. Ultrasound examination of the postpartum uterus: what is normal? J Matern Fetal Neonatal Med. 2004 Feb;15:95-9. PMID: 15209115; X-3, X-4

755. Stotland NE, Caughey AB, Breed EM, et al. Risk factors and obstetric complications associated with macrosomia. Int J Gynaecol Obstet. 2004 Dec;87:220-6. PMID: 15548393; X-4

756. Sullivan EA, Ford JB, Chambers G, et al. Maternal mortality in Australia, 1973-1996. Aust N Z J Obstet Gynaecol. 2004 Oct;44:452-7; discussion 377. PMID: 15387869; X-4

757. Tanaka YO, Shigemitsu S, Ichikawa Y, et al. Postpartum MR diagnosis of retained placenta accreta. Eur Radiol. 2004 Jun;14:945-52. PMID: 15045519; X-4

758. Thonneau PF, Matsudai T, Alihonou E, et al. Distribution of causes of maternal mortality during delivery and post-partum: results of an African multicentre hospital-based study. Eur J Obstet Gynecol Reprod Biol. 2004 Jun 15;114:150-4. PMID: 15140507; X-2, X-4

759. Tsang ML, Wong WC, Kun KY, et al. Arterial embolisation in intractable primary post-partum haemorrhage: case series. Hong Kong Med J. 2004 Oct;10:301-6. PMID: 15479957; X-4, X-5

760. Tsukahara T, Ezaki T, Moriguchi J, et al. No effects of hematuria and proteinuria in school days, and probably current pregnancy and current lactation also, as risk factors of cadmium-induced renal tubular dysfunction among adult women in general populations in Japan. Arch Environ Contam Toxicol. 2004 Apr;46:413-8. PMID: 15195814; X-3, X-4

761. Ural SH. Management of catastrophic obstetrical hemorrhages: review questions. Hospital Physician. 2004;40:35-6. PMID: X-1

762. Valbonesi M, Giannini G. Nine years of cascade filtration for thrombotic thrombocytopenic purpura. Ther Apher Dial. 2004 Apr;8:87-92. PMID: 15255122; X-2, X-4, X-5

763. Vanderjagt DJ, Patel RJ, El-Nafaty AU, et al. High-density lipoprotein and homocysteine levels correlate inversely in preeclamptic women in northern Nigeria. Acta Obstet Gynecol Scand. 2004 Jun;83:536-42. PMID: 15144334; X-2, X-3, X-4

764. Vanek M, Sheiner E, Levy A, et al. Chronic hypertension and the risk for adverse pregnancy outcome after superimposed pre-eclampsia. Int J Gynaecol Obstet. 2004 Jul;86:7-11. PMID: 15207662; X-4

765. Vimala N, Mittal S, Kumar S, et al. Sublingual misoprostol versus methylergometrine for active management of the third stage of labor. Int J Gynaecol Obstet. 2004 Oct;87:1-5. PMID: 15464767; X-3, X-4

766. Vogel D, Burkhardt T, Rentsch K, et al. Misoprostol versus methylergometrine: pharmacokinetics in human milk. Am J Obstet Gynecol. 2004 Dec;191:2168-73. PMID: 15592308; X-4, X-5

767. Walker MC, Murphy KE, Pan S, et al. Adverse maternal outcomes in multifetal pregnancies. BJOG. 2004 Nov;111:1294-6. PMID: 15521878; X-4

768. Walraven G, Dampha Y, Bittaye B, et al. Misoprostol in the treatment of postpartum haemorrhage in addition to routine management: a placebo randomised controlled trial. BJOG. 2004 Sep;111:1014-7. PMID: 15327620; X-2, X-4, X-5

769. Weerasekera DS. Placenta praevia and scarred uterus - an obstetrician's dilemma. J Obstet Gynaecol. 2004 Sep;20:484-5. PMID: 15512632; X-1, X-4

770. Weerasekera DS. The role of forceps in modern obstetrics. J Obstet Gynaecol. 2004 Mar;19:146-9. PMID: 15512255; X-2, X-4

771. Yamani Zamzami TY. Vaginal birth after cesarean section in grand multiparous women. Arch Gynecol Obstet. 2004 Jul;270:21-4. PMID: 15224215; X-2, X-4

772. Zhou W, Gao E, Che Y, et al. Induced abortion and duration of third stage labour in a subsequent pregnancy. J Obstet Gynaecol. 2004 Jul;19:349-54. PMID: 15512328; X-2, X-4

773. . International joint policy statement. FIGO/ICM global initiative to prevent post-partum hemorrhage. J Obstet Gynaecol Can. 2005 Dec;26:1100-2, 8-11. PMID: 15696639; X-1, X-2, X-4, X-5

774. . Accidental child poisoning with methylergometrine intended for the mother. Prescrire Int. 2005 Feb;14:23-4. PMID: 15751178; X-1

775. . Nettalk. Midwifery Matters. 2005:32-6. PMID: X-1, X-4

776. Adams V, Miller S, Craig S, et al. The challenge of cross-cultural clinical trials research: case report from the Tibetan Autonomous Region, People's Republic of China. Med Anthropol Q. 2005 Sep;19:267-89. PMID: 16222962; X-2, X-3, X-4

777. Adeniran JO, Abdur-Rahman L. One-stage correction of intermediate imperforate anus in males. Pediatr Surg Int. 2005 Feb;21:88-90. PMID: 15630587; X-3

778. Aggarwal N, Suri V, Malhotra S. Use of misoprostol for control of post-partum haemorrhage in a case of aplastic anaemia. Bulletin, Postgraduate Institute of Medical Education and Research, Chandigarh. 2005 September;39:121-2. PMID: X-2, X-4

779. Ahonen J, Jokela R. Recombinant factor VIIa for life-threatening post-partum haemorrhage. Br J Anaesth. 2005 May;94:592-5. PMID: 15708871; X-5

780. Aisien AO, Oronsaye AU. Vaginal birth after one previous caesarean section in a tertiary institution in Nigeria. J Obstet Gynaecol. 2005 Nov;24:886-90. PMID: 16147643; X-2, X-3, X-4

781. Akhter S, Begum MR, Kabir J. Condom hydrostatic tamponade for massive postpartum hemorrhage. Int J Gynaecol Obstet. 2005 Aug;90:134-5. PMID: 15913618; X-2, X-5

782. Al Sakka M, Rasul KI, Dauleh W, et al. Presentation and management of post-partum choriocarcinoma in Qatar. Qatar Medical Journal. 2005 June;14:20-2. PMID: X-1, X-2

783. Alder CM, Patterson DK. Radiological case of the month... complete uterine perforation by an intrauterine contraceptive device. Applied Radiology. 2005;34:41. PMID: X-1, X-4, X-5

784. Ali SI, Ibraham RC, Joseph L. Transfusion related acute lung injury: A case report. Pakistan Journal of Medical Sciences. 2005 April/June;21:223-4. PMID: X-1, X-2

785. Allam MS, C BL. The B-Lynch and other uterine compression suture techniques. Int J Gynaecol Obstet. 2005 Jun;89:236-41. PMID: 15919388; X-1

786. Baksu A, Kalan A, Ozkan A, et al. The effect of placental removal method and site of uterine repair on postcesarean endometritis and operative blood loss. Acta Obstet Gynecol Scand. 2005 Mar;84:266-9. PMID: 15715535; X-3

787. Baskett TF, O'Connell CM. Severe obstetric maternal morbidity: a 15-year population-based study. J Obstet Gynaecol. 2005 Jan;25:7-9. PMID: 16147683; X-4

788. Ben-Ami I, Schneider D, Maymon R, et al. Sonographic versus clinical evaluation as predictors of residual trophoblastic tissue. Hum Reprod. 2005 Apr;20:1107-11. PMID: 15650045; X-3

789. Berg C, Ludwig M, Sturm N, et al. Intraamniotic ethacridine lactate instillation versus vaginal PGE1 in second trimester termination of pregnancy. Eur J Obstet Gynecol Reprod Biol. 2005 Jun 1;126:193-6. PMID: 16188373; X-3, X-4

790. Berg CJ, Harper MA, Atkinson SM, et al. Preventability of pregnancy-related deaths: results of a state-wide review. Obstet Gynecol. 2005 Dec;106:1228-34. PMID: 16319245; X-4

791. Bessos H, Seghatchian J. What's happening? The expanding role of apheresis platelet support in neonatal alloimmune thrombocytopenia: current status and future trends. Transfus Apher Sci. 2005 Oct;33:191-7. PMID: 16140039; X-1

792. Betts D. Post natal acupuncture. Journal of Chinese Medicine. 2005:5-16. PMID: X-1, X-4, X-5

793. Beuker JM, Erwich JJ, Khong TY. Is endomyometrial injury during termination of pregnancy or curettage following miscarriage the precursor to placenta accreta? J Clin Pathol. 2005 Mar;58:273-5. PMID: 15735159; X-4

794. Bolbos G, Sindos M. The Bolbos technique for the management of uncontrollable intra-caesarean uterine bleeding. Arch Gynecol Obstet. 2005 Jul;272:142-4. PMID: 15770514; X-1, X-5

795. Bondagji N. The perinatal and neonatal outcome in grand-grand multiparous women, a comparative case control study. Bahrain Medical Bulletin. 2005 December;27:180-2. PMID: X-2, X-4

796. Carpenter TT, Walker WJ. Pregnancy following uterine artery embolisation for symptomatic fibroids: a series of 26 completed pregnancies. BJOG. 2005 Mar;112:321-5. PMID: 15713147; X-3, X-4

797. Chandhiok N, Dhillon BS, Datey S, et al. Oral misoprostol for prevention of postpartum hemorrhage by paramedical workers in India. Int J Gynaecol Obstet. 2005 Feb;92:170-5. PMID: 16371228; X-2, X-4

798. Clark V. Facilities for blood salvage (cell saver technique) must be available in every obstetric theatre. Int J Obstet Anesth. 2005 Jan;14:50-2. PMID: 15627540; X-1, X-2, X-4, X-5

799. Collins D. Legally speaking: risk management in obstetrics and gynecology. Contemporary OB/GYN. 2005;50:23. PMID: X-1, X-4, X-5

800. Conde-Agudelo A, Belizan JM, Lammers C. Maternal-perinatal morbidity and mortality associated with adolescent pregnancy in Latin America: Cross-sectional study. Am J Obstet Gynecol. 2005 Feb;192:342-9. PMID: 15695970; X-2, X-4

801. Daramola AO, Banjo AA, Elesha SO. Maternal deaths in the Lagos University Teaching Hospital: a ten-year review (1989 - 1998). Niger Postgrad Med J. 2005 Dec;11:274-8. PMID: 15627156; X-2, X-4

802. Davies GA, Tessier JL, Woodman MC, et al. Maternal hemodynamics after oxytocin bolus compared with infusion in the third stage of labor: a randomized controlled trial. Obstet Gynecol. 2005 Feb;105:294-9. PMID: 15684155; X-4

803. Demirci F, Ozdemir I, Safak A, et al. Comparison of colour Doppler indices of pelvic arteries in women with bilateral hypogastric artery ligation and controls. J Obstet Gynaecol. 2005 Apr;25:273-4. PMID: 16147734; X-2, X-5

804. Denton J. Twins and more--1. Some current thinking on multiple births. J Fam Health Care. 2005;15:143-6. PMID: 16315682; X-1

805. Detti L, Mecacci F, Piccioli A, et al. Postpartum heparin therapy for patients with the syndrome of hemolysis, elevated liver enzymes, and low platelets (HELLP) is associated with significant hemorrhagic complications. J Perinatol. 2005 Apr;25:236-40. PMID: 15703776; X-5

806. El-Hamamy E, C BL. A worldwide review of the uses of the uterine compression suture techniques as alternative to hysterectomy in the management of severe post-partum haemorrhage. J Obstet Gynaecol. 2005 Feb;25:143-9. PMID: 15814393; X-1

807. Epiney M, Boehlen F, Boulvain M, et al. D-dimer levels during delivery and the postpartum. J Thromb Haemost. 2005 Feb;3:268-71. PMID: 15670031; X-3, X-4

808. Fareh OI, Rizk DE, Thomas L, et al. Obstetric impact of anaemia in pregnant women in United Arab Emirates. J Obstet Gynaecol. 2005 Jul;25:440-4. PMID: 16183576; X-4

809. Fenton JJ, Baumeister LM, Fogarty J. Active management of the third stage of labor among American Indian women. Fam Med. 2005 Jun;37:410-4. PMID: 15933913; X-2, X-4, X-5

810. Fischer A, LaCoursiere DY, Barnard P, et al. Differences between hospitals in cesarean rates for term primigravidas with cephalic presentation. Obstet Gynecol. 2005 Apr;105:816-21. PMID: 15802411; X-4

811. Garg P, Batra S, Gandhi G. Oral misoprostol versus injectable methylergometrine in management of the third stage of labor. Int J Gynaecol Obstet. 2005 Nov;91:160-1. PMID: 16126208; X-4

812. Hamm J, Russell Z, Botha T, et al. Buccal misoprostol to prevent hemorrhage at cesarean delivery: a randomized study. Am J Obstet Gynecol. 2005 May;192:1404-6. PMID: 15902121; X-2, X-4, X-5

813. Hamoda H, Critchley HO, Paterson K, et al. The acceptability of home medical abortion to women in UK settings. BJOG. 2005 Jun;112:781-5. PMID: 15924537; X-3, X-4

814. Haq G, Tayyab S. Control of postpartum and post abortal haemorrhage with uterine packing. J Pak Med Assoc. 2005 Sep;55:369-71. PMID: 16302468; X-2, X-5

815. Harvey P. The role of the ODP in obstetric haemorrhage. Journal of Operating Department Practice. 2005;1:16-9. PMID: X-1, X-4

816. Henry A, Birch MR, Sullivan EA, et al. Primary postpartum haemorrhage in an Australian tertiary hospital: a case-control study. Aust N Z J Obstet Gynaecol. 2005 Jun;45:233-6. PMID: 15904450; X-4

817. Hoj L, Cardoso P, Nielsen BB, et al. Effect of sublingual misoprostol on severe postpartum haemorrhage in a primary health centre in Guinea-Bissau: randomised double blind clinical trial. BMJ. 2005 Oct 1;331:723. PMID: 16195287; X-2, X-4

818. Hwu YM, Chen CP, Chen HS, et al. Parallel vertical compression sutures: a technique to control bleeding from placenta praevia or accreta during caesarean section. Bjog. 2005 Oct;112:1420-3. PMID: 16167948; X-2, X-5

819. Islam MA, Chowdhury RI, Chakraborty N, et al. Factors associated with delivery complications in rural Bangladesh. Eur J Contracept Reprod Health Care. 2005 Dec;9:203-13. PMID: 15799179; X-2, X-4

820. James AH, Bushnell CD, Jamison MG, et al. Incidence and risk factors for stroke in pregnancy and the puerperium. Obstet Gynecol. 2005 Sep;106:509-16. PMID: 16135580; X-4, X-5

821. Jerbi M, Hidar S, Zardi H, et al. Previous cesarean scar exploration following vaginal delivery and hemorrhagic morbidity. Int J Gynaecol Obstet. 2005 Feb;92:135-6. PMID: 16378610; X-2, X-4, X-5

822. Jyotsna A, Jopir E, Devi Kh I, et al. An observational study on the outcomes of pregnancy with myomas. JMS - Journal of Medical Society. 2005 September;19:117-20. PMID: X-2, X-4

823. Kelestimur F, Jonsson P, Molvalilar S, et al. Sheehan's syndrome: baseline characteristics and effect of 2 years of growth hormone replacement therapy in 91 patients in KIMS - Pfizer International Metabolic Database. Eur J Endocrinol. 2005 Apr;152:581-7. PMID: 15817914; X-4, X-5

824. Kwee A, Bots ML, Visser GH, et al. Emergency peripartum hysterectomy: A prospective study in The Netherlands. Eur J Obstet Gynecol Reprod Biol. 2005 Feb 1;124:187-92. PMID: 16026917; X-2, X-5

825. Larsen R, Titlestad K, Lillevang ST, et al. Cesarean section: is pretransfusion testing for red cell alloantibodies necessary? Acta Obstet Gynecol Scand. 2005 May;84:448-55. PMID: 15842209; X-3, X-4

826. Lema VM, Changole J, Kanyighe C, et al. Maternal mortality at the Queen Elizabeth Central Teaching Hospital, Blantyre, Malawi. East Afr Med J. 2005 Jan;82:3-9. PMID: 16122104; X-2, X-4

827. Liu S, Heaman M, Joseph KS, et al. Risk of maternal postpartum readmission associated with mode of delivery. Obstet Gynecol. 2005 Apr;105:836-42. PMID: 15802414; X-4

828. Maclean AB. Ergometrine. J Obstet Gynaecol. 2005 Jan;25:1-2. PMID: 16147681; X-1, X-4, X-5

829. Magann EF, Evans S, Chauhan SP, et al. The length of the third stage of labor and the risk of postpartum hemorrhage. Obstet Gynecol. 2005 Feb;105:290-3. PMID: 15684154; X-4

830. Magann EF, Evans S, Hutchinson M, et al. Postpartum hemorrhage after vaginal birth: an analysis of risk factors. South Med J. 2005 Apr;98:419-22. PMID: 15898516; X-4

831. Magann EF, Evans S, Hutchinson M, et al. Postpartum hemorrhage after cesarean delivery: an analysis of risk factors. South Med J. 2005 Jul;98:681-5. PMID: 16108235; X-4

832. Malik AM, Shah IA, Iqbal T, et al. A study to determine the risks associated with grand multiparity. Medical Forum Monthly. 2005 February;16:17-20. PMID: X-2, X-4

833. Maslovitz S, Many A, Landsberg JA, et al. The safety of low molecular weight heparin therapy during labor. J Matern Fetal Neonatal Med. 2005 Jan;17:39-43. PMID: 15804785; X-4

834. Mathew M, Machado L, Al-Ghabshi R, et al. Fetal macrosomia. Risk factor and outcome. Saudi Med J. 2005 Jan;26:96-100. PMID: 15756361; X-2, X-4

835. Mazouni C, Bretelle F, Collette E, et al. Maternal and neonatal morbidity after first vaginal delivery using Thierry's spatulas. Aust N Z J Obstet Gynaecol. 2005 Oct;45:405-9. PMID: 16171477; X-3, X-4

836. McLean MT. Marion's message. Unchanging protocols. Midwifery Today Int Midwife. 2005 Spring:9, 66. PMID: 15835835; X-1, X-2, X-4, X-5

837. McLintock C. Postpartum haemorrhage. Thromb Res. 2005 Feb;115 Suppl 1:65-8. PMID: 15790159; X-1

838. Mesogitis S, Pilalis A, Daskalakis G, et al. Management of early viable cervical pregnancy. BJOG. 2005 Apr;112:409-11. PMID: 15777436; X-4, X-5

839. Milan M. Independent midwifery compared with other caseload practice. MIDIRS Midwifery Digest. 2005;15:439-49. PMID: X-1, X-4

840. Moiloa MRA. The toxic effects of the African pitocine: Leucas capensis in relation to the law of similars. Homoeopathic Links. 2005;18:209-13. PMID: X-2, X-4, X-5

841. Nwagha UI, Okaro JM, Nwagha TU. Intraoperative uterine packing with mops: an effective, but under utilized method of controlling post partum haemorrhage-experience from South Eastern Nigeria. Niger J Med. 2005 Jul-Sep;14:279-82. PMID: 16350697; X-2

842. Oberbaum M, Galoyan N, Lerner-Geva L, et al. The effect of the homeopathic remedies Arnica montana and Bellis perennis on mild postpartum bleeding--a randomized, double-blind, placebo-controlled study--preliminary results. Complement Ther Med. 2005 Jun;13:87-90. PMID: 16036165; X-4, X-5

843. Ojala K, Perala J, Kariniemi J, et al. Arterial embolization and prophylactic catheterization for the treatment for severe obstetric hemorrhage*. Acta Obstet Gynecol Scand. 2005 Nov;84:1075-80. PMID: 16232175; X-5

844. Ozkaya O, Sezik M, Kaya H, et al. Placebo-controlled randomized comparison of vaginal with rectal misoprostol in the prevention of postpartum hemorrhage. J Obstet Gynaecol Res. 2005 Oct;31:389-93. PMID: 16176505; X-4

845. Papp Z, Toth-Pal E, Papp C, et al. Hypogastric artery ligation for intractable pelvic hemorrhage. Int J Gynaecol Obstet. 2005 Jan;92:27-31. PMID: 16242133; X-5

846. Pather S, Ford M, Reid R, et al. Postpartum curettage: an audit of 200 cases. Aust N Z J Obstet Gynaecol. 2005 Oct;45:368-71. PMID: 16171469; X-4, X-5

847. Pereira A, Nunes F, Pedroso S, et al. Compressive uterine sutures to treat postpartum bleeding secondary to uterine atony. Obstet Gynecol. 2005 Sep;106:569-72. PMID: 16135589; X-5

848. Prata N, Mbaruku G, Campbell M. Using the kanga to measure postpartum blood loss. Int J Gynaecol Obstet. 2005 Apr;89:49-50. PMID: 15777900; X-2, X-4, X-5

849. Prata N, Mbaruku G, Campbell M, et al. Controlling postpartum hemorrhage after home births in Tanzania. Int J Gynaecol Obstet. 2005 Jul;90:51-5. PMID: 15919088; X-2

850. Rabelo E, Rezende RL, Bertics SJ, et al. Effects of pre- and postfresh transition diets varying in dietary energy density on metabolic status of periparturient dairy cows. J Dairy Sci. 2005 Dec;88:4375-83. PMID: 16291629; X-3, X-4

851. Romano PS, Yasmeen S, Schembri ME, et al. Coding of perineal lacerations and other complications of obstetric care in hospital discharge data. Obstet Gynecol. 2005 Oct;106:717-25. PMID: 16199627; X-3, X-4

852. Rudra A, Rautji R, Behera C, et al. Fatal uterine inversion in a home delivery - A case report. International Journal of Medical Toxicology and Legal Medicine. 2005 July/December;8:15-6. PMID: X-1

853. Salomon O, Steinberg DM, Pshithizki M, et al. The influence of prothrombotic polymorphisms and obstetrical and medical variables on the length of secondary postpartum hemorrhage. J Womens Health (Larchmt). 2005 May;14:306-10. PMID: 15916503; X-4

854. Salomon O, Steinberg DM, Tamarin I, et al. Plasma replacement therapy during labor is not mandatory for women with severe factor XI deficiency. Blood Coagul Fibrinolysis. 2005 Jan;16:37-41. PMID: 15650544; X-4, X-5

855. Samuels N, Oberbaum M. The effect of the homoeopathic remedies Arnica montana and Bellis perennis on postpartum bleeding -- a randomised, double-blind, placebo-controlled study... 12th Annual Symposium on Complementary Health Care -- Abstracts: 19th-21st September 2005, Exeter, UK. Focus on Alternative & Complementary Therapies. 2005;10:47-. PMID: X-2, X-4, X-5

856. Schaaps JP, Tsatsaris V, Goffin F, et al. Shunting the intervillous space: new concepts in human uteroplacental vascularization. Am J Obstet Gynecol. 2005 Jan;192:323-32. PMID: 15672043; X-3, X-4

857. Schaff EA, DiCenzo R, Fielding SL. Comparison of misoprostol plasma concentrations following buccal and sublingual administration. Contraception. 2005 Jan;71:22-5. PMID: 15639067; X-3, X-4

858. Selo-Ojeme DO, Bhattacharjee P, Izuwa-Njoku NF, et al. Emergency peripartum hysterectomy in a tertiary London hospital. Arch Gynecol Obstet. 2005 Feb;271:154-9. PMID: 15690169; X-4, X-5

859. Serjeant GR, Hambleton I, Thame M. Fecundity and pregnancy outcome in a cohort with sickle cell-haemoglobin C disease followed from birth. BJOG. 2005 Sep;112:1308-14. PMID: 16101613; X-2, X-4

860. Seror J, Allouche C, Elhaik S. Use of Sengstaken-Blakemore tube in massive postpartum hemorrhage: a series of 17 cases. Acta Obstet Gynecol Scand. 2005 Jul;84:660-4. PMID: 15954876; X-5

861. Sharma S, Tandon VR, Gupta S. Alternative obstetrics. JK Science. 2005 October/December;7:236-8. PMID: X-1

862. Sheiner E, Sarid L, Levy A, et al. Obstetric risk factors and outcome of pregnancies complicated with early postpartum hemorrhage: a population-based study. J Matern Fetal Neonatal Med. 2005 Sep;18:149-54. PMID: 16272036; X-4, X-5

863. Shen JJ, Tymkow C, MacMullen N. Disparities in maternal outcomes among four ethnic populations. Ethn Dis. 2005 Summer;15:492-7. PMID: 16108310; X-4

864. Shoukrey MN, Fakokunde AF, Whitlow B, et al. Postpartum transcervical endometrial resection under laparoscopic control for retained degenerated products of conception. Gynecological Surgery. 2005 September;2:201-3. PMID: X-2, X-5

865. Sieunarine K, Moxey P, Boyle DC, et al. Selective vessel ligation in the pelvis: an invaluable tool in certain surgical procedures. Int J Gynecol Cancer. 2005 Sep-Oct;15:967-73. PMID: 16174253; X-3, X-4

866. Simon CE, Grobman WA. When has an induction failed? Obstet Gynecol. 2005 Apr;105:705-9. PMID: 15802394; X-2, X-4, X-5

867. Sinclair D, Gaither K, Mason TC. Fertility outcomes following myomectomy in an urban hospital setting. J Natl Med Assoc. 2005 Oct;97:1346-8. PMID: 16353656; X-4

868. Strand RT, Da Silva F, Jangsten E, et al. Postpartum hemorrhage: a prospective, comparative study in Angola using a new disposable device for oxytocin administration. Acta Obstet Gynecol Scand. 2005 Mar;84:260-5. PMID: 15715534; X-2, X-4

869. Tabassum S, Afridi B, Aman Z. Phloroglucinol for acceleration of labour: double blind, randomized controlled trial. J Pak Med Assoc. 2005 Jul;55:270-3. PMID: 16108507; X-2, X-4

870. Tata LJ, Card TR, Logan RF, et al. Fertility and pregnancy-related events in women with celiac disease: a population-based cohort study. Gastroenterology. 2005 Apr;128:849-55. PMID: 15825068; X-4

871. Taylor LK, Simpson JM, Roberts CL, et al. Risk of complications in a second pregnancy following caesarean section in the first pregnancy: a population-based study. Med J Aust. 2005 Nov 21;183:515-9. PMID: 16296964; X-4

872. Thomas D. Facilities for blood salvage (cell saver technique) must be available in every obstetric theatre. Int J Obstet Anesth. 2005 Jan;14(1):48-50. PMID: 15627539; X-1

873. Usha Kiran TS, Hemmadi S, Bethel J, et al. Outcome of pregnancy in a woman with an increased body mass index. BJOG. 2005 Jun;112:768-72. PMID: 15924535; X-4

874. Vardhan S, Behra RC, Jose T, et al. Hydramnios associated with foetal duodenal atresia. Medical Journal Armed Forces India. 2005 October;61:387-8. PMID: X-1, X-2

875. Vasegh FR, Bahiraie A, Mahmoudi M, et al. Comparison of active and physiologic management of third stage of labor. HAYAT. 2005 2005 Winter;10:102-. PMID: X-1

876. Vegas G, Illescas T, Munoz M, et al. Selective pelvic arterial embolization in the management of obstetric hemorrhage. Eur J Obstet Gynecol Reprod Biol. 2005 Jul;127:68-72. PMID: 16229935; X-5

877. Vimala N, Mittal S, Kumar S. Sublingual misoprostol versus oxytocin infusion to reduce blood loss at cesarean section. Int J Gynaecol Obstet. 2005 Feb;92:106-10. PMID: 16343498; X-3, X-4

878. Walraven G, Blum J, Dampha Y, et al. Misoprostol in the management of the third stage of labour in the home delivery setting in rural Gambia: a randomised controlled trial. BJOG. 2005 Sep;112:1277-83. PMID: 16101608; X-2, X-4

879. Weiniger CF, Elram T, Ginosar Y, et al. Anaesthetic management of placenta accreta: use of a pre-operative high and low suspicion classification. Anaesthesia. 2005 Nov;60:1079-84. PMID: 16229692; X-4, X-5

880. Wen SW, Huang L, Liston R, et al. Severe maternal morbidity in Canada, 1991-2001. CMAJ. 2005 Sep 27;173:759-64. PMID: 16186582; X-4

881. Wu HH, Yeh GP. Uterine cavity synechiae after hemostatic square suturing technique. Obstet Gynecol. 2005 May;105:1176-8. PMID: 15863572; X-2, X-5

882. Yamada T, Mori H, Ueki M. Autologous blood transfusion in patients with placenta previa. Acta Obstet Gynecol Scand. 2005 Mar;84:255-9. PMID: 15715533; X-4

883. Yasmeen S, Danielsen B, Moshesh M, et al. Is grandmultiparity an independent risk factor for adverse perinatal outcomes? J Matern Fetal Neonatal Med. 2005 Apr;17:277-80. PMID: 16147837; X-4

884. Zachariah ES, Naidu M, Seshadri L. Oral misoprostol in the third stage of labor. Int J Gynaecol Obstet. 2005 Jan;92:23-6. PMID: 16271721; X-2, X-5

885. Zeteroglu S, Sahin HG, Sahin HA. Induction of labor in great grandmultipara with misoprostol. Eur J Obstet Gynecol Reprod Biol. 2005 May 1;126:27-32. PMID: 16129547; X-4

886. Zeteroglu S, Ustun Y, Engin-Ustun Y, et al. Peripartum hysterectomy in a teaching hospital in the eastern region of Turkey. Eur J Obstet Gynecol Reprod Biol. 2005 May 1;120:57-62. PMID: 15866087; X-2

887. . ACOG Practice Bulletin: Clinical Management Guidelines for Obstetrician-Gynecologists Number 76, October 2006: postpartum hemorrhage. Obstet Gynecol. 2006 Oct;108:1039-47. PMID: 17012482; X-1

888. . In vitro fertilization and multiple pregnancies: an evidence-based analysis. Ont Health Technol Assess Ser. 2006;6:1-63. PMID: 23074488; X-1, X-3

889. Abdel-Aleem H, Hofmeyr GJ, Shokry M, et al. Uterine massage and postpartum blood loss. Int J Gynaecol Obstet. 2006 Jun;93:238-9. PMID: 16678826; X-2, X-4, X-5

890. Abdullah LS. Hysterectomy: A clinicopathologic correlation. Bahrain Medical Bulletin. 2006 June;28:77-9. PMID: X-1, X-2, X-3, X-4

891. Allahdin S, Aird C, Danielian P. B-Lynch sutures for major primary postpartum haemorrhage at caesarean section. J Obstet Gynaecol. 2006 Oct;26:639-42. PMID: 17071430; X-2, X-5

892. Allen VM, O'Connell CM, Baskett TF. Maternal morbidity associated with cesarean delivery without labor compared with induction of labor at term. Obstet Gynecol. 2006 Aug;108:286-94. PMID: 16880297; X-2, X-4

893. Al-Suleiman SA, Qutub HO, Rahman J, et al. Obstetric admissions to the intensive care unit: a 12-year review. Arch Gynecol Obstet. 2006 Apr;274:4-8. PMID: 16432668; X-2, X-4, X-5

894. Al-Taani MI. Termination of second trimester, complicated gestation. East Mediterr Health J. 2006 Jul;11:657-62. PMID: 16700381; X-2, X-4, X-5

895. Armbruster D. International survey of the management of the third stage of labor. Journal of Midwifery & Women's Health. 2006;51:387-. PMID: X-1, X-4, X-5

896. Ayuk PT. Hypertensive disorders of pregnancy are an evolutionary adaptation to mitigate the reproductive consequences of the human physique. Med Hypotheses. 2006;67:796-801. PMID: 16759809; X-1

897. Bainbridge J. Anti-shock suit to control postpartum haemorrhage could save lives. British Journal of Midwifery. 2006;14:186-. PMID: X-1

898. Banks E, Meirik O, Farley T, et al. Female genital mutilation and obstetric outcome: WHO collaborative prospective study in six African countries. Lancet. 2006 Jun 3;367:1835-41. PMID: 16753486; X-2, X-3, X-4

899. Berg M. Obstetric hemorrhage. Laboratory Medicine. 2006;37:45. PMID: X-1, X-2, X-4, X-5

900. Bista BK, Rana A. Acute hepatitis E in pregnancy--study of 16 cases. JNMA J Nepal Med Assoc. 2006 Jan-Mar;45:182-5. PMID: 17160094; X-1, X-2, X-4

901. Borna S, Borna H, Khazardoost S. Maternal and neonatal outcomes in pregnant women with immune thrombocytopenic purpura. Arch Iran Med. 2006 Apr;9:115-8. PMID: 16649352; X-2, X-4

902. Bose P, Regan F, Paterson-Brown S. Improving the accuracy of estimated blood loss at obstetric haemorrhage using clinical reconstructions. BJOG. 2006 Aug;113:919-24. PMID: 16907938; X-3, X-4

903. Cameron CA, Roberts CL, Olive EC, et al. Trends in postpartum haemorrhage. Aust N Z J Public Health. 2006 Apr;30:151-6. PMID: 16681337; X-4

904. Caughey AB, Bishop JT. Maternal complications of pregnancy increase beyond 40 weeks of gestation in low-risk women. J Perinatol. 2006 Sep;26:540-5. PMID: 16837930; X-3, X-4

905. Ceriani Cernadas JM, Carroli G, Pellegrini L, et al. The effect of timing of cord clamping on neonatal venous hematocrit values and clinical outcome at term: a randomized, controlled trial. Pediatrics. 2006 Apr;117:e779-86. PMID: 16567393; X-3, X-4

906. Charbit B, Mandelbrot L, Samain E, et al. The decrease of fibrinogen is an early predictor of the severity of postpartum hemorrhage. J Thromb Haemost. 2006 Feb;5:266-73. PMID: 17087729; X-4

907. Chi C, Shiltagh N, Kingman CE, et al. Identification and management of women with inherited bleeding disorders: a survey of obstetricians and gynaecologists in the United Kingdom. Haemophilia. 2006 Jul;12:405-12. PMID: 16834742; X-3, X-4

908. Deans R, Dietz HP. Ultrasound of the post-partum uterus. Aust N Z J Obstet Gynaecol. 2006 Aug;46:345-9. PMID: 16866798; X-3, X-4

909. Demers C, Derzko C, David M, et al. Gynaecological and obstetric management of women with inherited bleeding disorders. Int J Gynaecol Obstet. 2006 Oct;95:75-87. PMID: 17106950; X-1

910. Deneux-Tharaux C, Carmona E, Bouvier-Colle MH, et al. Postpartum maternal mortality and cesarean delivery. Obstet Gynecol. 2006 Sep;108:541-8. PMID: 16946213; X-4

911. Derman RJ, Kodkany BS, Goudar SS, et al. Oral misoprostol in preventing postpartum haemorrhage in resource-poor communities: a randomised controlled trial. Lancet. 2006 Oct 7;368:1248-53. PMID: 17027730; X-2, X-4

912. Dildy GA, Scott JR, Saffer CS, et al. An effective pressure pack for severe pelvic hemorrhage. Obstet Gynecol. 2006 Nov;108:1222-6. PMID: 17077246; X-2, X-5

913. Doherty DA, Magann EF, Francis J, et al. Pre-pregnancy body mass index and pregnancy outcomes. Int J Gynaecol Obstet. 2006 Dec;95:242-7. PMID: 17007857; X-4

914. Eniola OA, Bewley S, Waterstone M, et al. Obstetric hysterectomy in a population of South East England. J Obstet Gynaecol. 2006 Feb;26:104-9. PMID: 16483963; X-5

915. Francois K. Grand rounds. Critical care in OB part 1: managing uterine atony and hemorrhagic shock. Contemporary OB/GYN. 2006;51:52-9. PMID: X-1

916. Fujimoto M, Takeuchi K, Sugimoto M, et al. Prevention of postpartum hemorrhage by uterotonic agents: comparison of oxytocin and methylergometrine in the management of the third stage of labor. Acta Obstet Gynecol Scand. 2006;85:1310-4. PMID: 17091409; X-2, X-4

917. Fuller AJ, Carvalho B, Brummel C, et al. Epidural anesthesia for elective cesarean delivery with intraoperative arterial occlusion balloon catheter placement. Anesth Analg. 2006 Feb;102:585-7. PMID: 16428566; X-4, X-5

918. Geelhoed D, Agadzi F, Visser L, et al. Maternal and fetal outcome after severe anemia in pregnancy in rural Ghana. Acta Obstet Gynecol Scand. 2006;85:49-55. PMID: 16521680; X-2, X-4

919. Ghaem-Maghami S, Brockbank E, Bridges J. Survey of surgical experience during training in obstetrics and gynaecology in the UK. J Obstet Gynaecol. 2006 May;26:297-301. PMID: 16753675; X-1, X-3, X-4

920. Girolami A, Randi ML, Ruzzon E, et al. Pregnancy and oral contraceptives in congenital bleeding disorders of the vitamin K-dependent coagulation factors. Acta Haematol. 2006;115:58-63. PMID: 16424651; X-4, X-5

921. Guendelman S, Thornton D, Gould J, et al. Obstetric complications during labor and delivery: assessing ethnic differences in California. Womens Health Issues. 2006 Jul-Aug;16:189-97. PMID: 16920523; X-4

922. Habek D, Becarevic R. Emergency peripartum hysterectomy in a tertiary obstetric center: 8-year evaluation. Fetal Diagn Ther. 2006;22:139-42. PMID: 17139172; X-5

923. Habek D, Vranjes M, Bobic Vukovic M, et al. Successful term pregnancy after B-Lynch compression suture in a previous pregnancy on account of massive primary postpartum hemorrhage. Fetal Diagn Ther. 2006;21:475-6. PMID: 16912499; X-5

924. Hadar A, Rabinovich A, Sheiner E, et al. Obstetric characteristics and neonatal outcome of unplanned out-of-hospital term deliveries: a prospective, case-control study. J Reprod Med. 2006 Nov;50:832-6. PMID: 16419631; X-4

925. Haynes J, Laffan M, Plaat F. Use of recombinant activated factor VII in massive obstetric haemorrhage. Int J Obstet Anesth. 2006 Jan;16:40-9. PMID: 17126006; X-5

926. Henshaw A. Uterine fibroids: potential complications and impact on pregnancy. British Journal of Midwifery. 2006;14:73-5. PMID: X-1

927. Hibbard JU, Della Torre M. When mom requests a cesarean. Contemporary OB/GYN. 2006;51:38. PMID: X-1

928. Ifnan F, Jameel MB. Maternal morbidity and mortality associated with delivery after intrauterine fetal death. J Coll Physicians Surg Pak. 2006 Oct;16:648-51. PMID: 17007753; X-2, X-4

929. Jadesimi A, Okonofua FE. Tackling the unacceptable: Nigeria approves misoprostol for postpartum haemorrhage. J Fam Plann Reprod Health Care. 2006 Oct;32:213-4. PMID: 17032506; X-1, X-2

930. Jangsten E, Strand R, Gomez de Freitas EG, et al. Women's perceptions of pain and discomfort after childbirth in Angola. Afr J Reprod Health. 2006 Dec;9:148-58. PMID: 16623199; X-2, X-4

931. Kapyepye H, Klopper H, Bodkin C. Haemorrhage in pregnancy: information given to women in Chiradzulu (Malawi). Curationis. 2006 May;29:48-55. PMID: 16910134; X-2, X-3, X-4

932. Karagiannis V, Daniilidis A, Rousso D, et al. Experience from the use of absorbable type I collagen as haemostatic agent in obstetric and gynecological operations. Hippokratia. 2006 October/December;10:182-4. PMID: X-4, X-5

933. Kaul V, Bagga R, Jain V, et al. The impact of primary postpartum hemorrhage in "near-miss" morbidity and mortality in a tertiary care hospital in North India. Indian J Med Sci. 2006 Jun;60:233-40. PMID: 16790949; X-2, X-4

934. Kavle JA, Khalfan SS, Stoltzfus RJ, et al. Measurement of blood loss at childbirth and postpartum. Int J Gynaecol Obstet. 2006 Oct;95:24-8. PMID: 16919628; X-2, X-4

935. Keizer JL, Zwart JJ, Meerman RH, et al. Obstetric intensive care admissions: a 12-year review in a tertiary care centre. Eur J Obstet Gynecol Reprod Biol. 2006 Sep-Oct;128:152-6. PMID: 16443319; X-4, X-5

936. Keriakos R, Mukhopadhyay A. The use of the Rusch balloon for management of severe postpartum haemorrhage. J Obstet Gynaecol. 2006 May;26:335-8. PMID: 16753685; X-5

937. Kim BJ, An SJ, Shim SS, et al. Pregnancy outcomes in women with mechanical heart valves. J Reprod Med. 2006 Aug;51:649-54. PMID: 16967636; X-4

938. Kirchner L, Helmer H, Heinze G, et al. Amnionitis with Ureaplasma urealyticum or other microbes leads to increased morbidity and prolonged hospitalization in very low birth weight infants. Eur J Obstet Gynecol Reprod Biol. 2006 Sep;134:44-50. PMID: 17095137; X-3, X-4

939. Kulkarni AA, Lee CA, Kadir RA. Pregnancy in women with congenital factor VII deficiency. Haemophilia. 2006 Jul;12:413-6. PMID: 16834743; X-4, X-5

940. Kushtagi P, Verghese LM. Evaluation of two uterotonic medications for the management of the third stage of labor. Int J Gynaecol Obstet. 2006 Jul;94:47-8. PMID: 16762355; X-2, X-4, X-5

941. Lalonde A, Daviss BA, Acosta A, et al. Postpartum hemorrhage today: ICM/FIGO initiative 2004-2006. Int J Gynaecol Obstet. 2006 Sep;94:243-53. PMID: 16842791; X-1, X-5

942. Lam KW, Wong HS, Pun TC. The practice of episiotomy in public hospitals in Hong Kong. Hong Kong Med J. 2006 Apr;12:94-8. PMID: 16603774; X-4

943. Lapaire O, Schneider MC, Stotz M, et al. Oral misoprostol vs. intravenous oxytocin in reducing blood loss after emergency cesarean delivery. Int J Gynaecol Obstet. 2006 Oct;95:2-7. PMID: 16934269; X-4

944. Leung SW, Ng PS, Wong WY, et al. A randomised trial of carbetocin versus syntometrine in the management of the third stage of labour. BJOG. 2006 Dec;113:1459-64. PMID: 17176279; X-4

945. Loder E, Golub J, Rizzoli P, et al. Postpartum headache: avoiding diagnostic and therapeutic pitfalls. Headache & Pain: Diagnostic Challenges, Current Therapy. 2006;17:155-65. PMID: X-1, X-3, X-4

946. Loughney A, Collis R, Dastgir S. Birth before arrival at delivery suite: associations and consequences. British Journal of Midwifery. 2006;14:204-8. PMID: X-4

947. Magann EF, Doherty DA, Turner K, et al. Second trimester placental location as a predictor of an adverse pregnancy outcome. J Perinatol. 2006 Jan;27:9-14. PMID: 17080095; X-4

948. Marchant S, Alexander J, Thomas P, et al. Risk factors for hospital admission related to excessive and/or prolonged postpartum vaginal blood loss after the first 24 h following childbirth. Paediatr Perinat Epidemiol. 2006 Sep;20:392-402. PMID: 16911017; X-4

949. Martinez R. Clinical challenge. Case #2: postpartum problems that last for 16 years. Clinical Advisor for Nurse Practitioners. 2006;9:102-3. PMID: X-1

950. Matalon S, Sheiner E, Levy A, et al. Relationship of treated maternal hypothyroidism and perinatal outcome. J Reprod Med. 2006 Jan;51:59-63. PMID: 16482779; X-4

951. Mayberry L. Nursing implications of the 2006 NIH State of the Science Conference Statement: Cesarean Delivery on Maternal Request. MCN Am J Matern Child Nurs. 2006 Sep-Oct;31:286-9. PMID: 17013066; X-1

952. Mechery J, Burch D. Alternative management of placenta accreta. Gynecological Surgery. 2006 March;3:41-2. PMID: X-1

953. Mercer SW, Sevar K, Sadutshan TD. Using clinical audit to improve the quality of obstetric care at the Tibetan Delek Hospital in North India: a longitudinal study. Reprod Health. 2006;3:4. PMID: 16759384; X-2, X-4

954. Miller S, Hamza S, Bray EH, et al. First aid for obstetric haemorrhage: the pilot study of the non-pneumatic anti-shock garment in Egypt. BJOG. 2006 Apr;113:424-9. PMID: 16553654; X-2

955. Mjahed K, Hamoudi D, Salmi S, et al. Obstetric patients in a surgical intensive care unit: prognostic factors and outcome. J Obstet Gynaecol. 2006 Jul;26:418-23. PMID: 16846867; X-4

956. Moodliar S, Moodley J, Esterhuizen TM. Complications associated with caesarean delivery in a setting with high HIV prevalence rates. Eur J Obstet Gynecol Reprod Biol. 2006 Apr;131:138-45. PMID: 16806653; X-2, X-4

957. Muir H. Dicing with death : there's a good chance that the pills your doctor prescribed will do you no good and might even harm you. New Sci. 2006 Jul 29-Aug 4;191:38-41. PMID: 17115486; X-1, X-4

958. Mulic-Lutvica A, Axelsson O. Ultrasound finding of an echogenic mass in women with secondary postpartum hemorrhage is associated with retained placental tissue. Ultrasound Obstet Gynecol. 2006 Sep;28:312-9. PMID: 16888708; X-4, X-5

959. Nama V, Karoshi M, Kakumani V. The single unit transfusion in post partum hemorrhage: A new perspective. Int J Fertil Womens Med. 2006 Mar-Apr;51:58-63. PMID: 16881380; X-1

960. Nellore V, Mittal S, Dadhwal V. Rectal misoprostol vs. 15-methyl prostaglandin F2alpha for the prevention of postpartum hemorrhage. Int J Gynaecol Obstet. 2006 Jul;94:45-6. PMID: 16764879; X-2, X-4, X-5

961. Ng PS, Lai CY, Sahota DS, et al. A double-blind randomized controlled trial of oral misoprostol and intramuscular syntometrine in the management of the third stage of labor. Gynecol Obstet Invest. 2006;63:55-60. PMID: 16940738; X-2, X-4, X-5

962. Nordin NM, Fen CK, Isa S, et al. Is grandmultiparity a significant risk factor in this new millennium? Malays J Med Sci. 2006 Jul;13:52-60. PMID: 22589605; X-2, X-4

963. Nugent D, Hassadia A, Everard J, et al. Postpartum choriocarcinoma presentation, management and survival. J Reprod Med. 2006 Oct;51:819-24. PMID: 17086810; X-4

964. Okong P, Byamugisha J, Mirembe F, et al. Audit of severe maternal morbidity in Uganda--implications for quality of obstetric care. Acta Obstet Gynecol Scand. 2006;85:797-804. PMID: 16817076; X-2, X-4

965. Padhye SM, Lakhey B. "Brought Dead" - cases of maternal mortality. Kathmandu Univ Med J (KUMJ). 2006 Jul-Sep;1:184-6. PMID: 16388227; X-1, X-2, X-4

966. Pelage JP, Laissy JP. [Management of life-threatening postpartum hemorrhage: indications and technique of arterial embolization]. J Radiol. 2006 May;87:533-40. PMID: 16733409; X-1

967. Plesinac S, Plecas D, Babovic I. Influence of uterine myomas on course and outcome of pregnancy. Geburtshilfe und Frauenheilkunde. 2006 July;66:674-6. PMID: X-3, X-4

968. Potts M, Hemmerling A. The worldwide burden of postpartum haemorrhage: Policy development where inaction is lethal. Int J Gynaecol Obstet. 2006 Nov;94 Suppl 2:S116-21. PMID: 17161133; X-1

969. Prata N, Hamza S, Gypson R, et al. Misoprostol and active management of the third stage of labor. Int J Gynaecol Obstet. 2006 Aug;94:149-55. PMID: 16828767; X-1, X-4

970. Price N, Lynch C. Uterine necrosis following B-Lynch suture for primary postpartum haemorrhage. Bjog. 2006 Nov;113:1341; author reply 2. PMID: 17059399; X-1, X-4, X-5

971. Qidwai GI, Caughey AB, Jacoby AF. Obstetric outcomes in women with sonographically identified uterine leiomyomata. Obstet Gynecol. 2006 Feb;107:376-82. PMID: 16449127; X-4

972. Rahim R, Shafqat T, Faiz NR. An analysis of direct causes of maternal mortality. Journal of Postgraduate Medical Institute. 2006;20:86-91. PMID: X-4

973. Rajab KE, Issa AA, Mohammed AM, et al. Sickle cell disease and pregnancy in Bahrain. Int J Gynaecol Obstet. 2006 May;93:171-5. PMID: 16563397; X-2, X-4

974. Reyftmann L, Morau E, Dechaud H, et al. Extracorporeal membrane oxygenation therapy for circulatory arrest due to postpartum hemorrhage. Obstet Gynecol. 2006 Feb;107:511-4. PMID: 16449168; X-1

975. Rouse DJ, MacPherson C, Landon M, et al. Blood transfusion and cesarean delivery. Obstet Gynecol. 2006 Oct;108:891-7. PMID: 17012451; X-4, X-5

976. Saleem S. Efficacy of dinoprostone, intracervical foleys and misoprostol in labor induction. J Coll Physicians Surg Pak. 2006 Apr;16:276-9. PMID: 16624192; X-2, X-4

977. Sarwar I, Abbasi A, Islam A. Abruptio placentae and its complications at Ayub Teaching Hospital Abbottabad. J Ayub Med Coll Abbottabad. 2006 Jan-Mar;18:27-31. PMID: 16773965; X-2, X-4

978. Seracchioli R, Manuzzi L, Vianello F, et al. Obstetric and delivery outcome of pregnancies achieved after laparoscopic myomectomy. Fertil Steril. 2006 Jul;86:159-65. PMID: 16764876; X-3, X-4

979. Sheikh L, Zuberi NF, Riaz R, et al. Massive primary postpartum haemorrhage: setting up standards of care. J Pak Med Assoc. 2006 Jan;56:26-31. PMID: 16454132; X-2, X-4

980. Shim JY, Yoon HK, Won HS, et al. Angiographic embolization for obstetrical hemorrhage: effectiveness and follow-up outcome of fertility. Acta Obstet Gynecol Scand. 2006;85:815-20. PMID: 16817079; X-5

981. Sobieszczyk S, Breborowicz GH, Platicanov V, et al. Recombinant factor VIIa in the management of postpartum bleeds: an audit of clinical use. Acta Obstet Gynecol Scand. 2006;85:1239-47. PMID: 17068684; X-5

982. Sogstad AM, Osteras O, Fjeldaas T. Bovine claw and limb disorders related to reproductive performance and production diseases. J Dairy Sci. 2006 Jul;89:2519-28. PMID: 16772570; X-1, X-3, X-4

983. Tan LK, Kanagalingam D, Tan HK, et al. Obstetric outcomes in women with end-stage renal failure requiring renal dialysis. Int J Gynaecol Obstet. 2006 Jul;94:17-22. PMID: 16756981; X-4

984. Terry RR, Westcott J, O'Shea L, et al. Postpartum outcomes in supine delivery by physicians vs nonsupine delivery by midwives. J Am Osteopath Assoc. 2006 Apr;106:199-202. PMID: 16627774; X-4

985. Thangaraju P, Moey CB. Perineal cold pads versus oral analgesics in the relief of postpartum perineal wound pain. Singapore General Hospital Proceedings. 2006;15:8-12. PMID: X-1, X-3, X-4

986. Tonks A. Short cuts: what's new in the other general journals. BMJ: British Medical Journal (International Edition). 2006;333:799-800. PMID: X-1

987. Trinder J, Brocklehurst P, Porter R, et al. Management of miscarriage: expectant, medical, or surgical? Results of randomised controlled trial (miscarriage treatment (MIST) trial). BMJ. 2006 May 27;332:1235-40. PMID: 16707509; X-3, X-4

988. Tsu VD, Mai TT, Nguyen YH, et al. Reducing postpartum hemorrhage in Vietnam: assessing the effectiveness of active management of third-stage labor. J Obstet Gynaecol Res. 2006 Oct;32:489-96. PMID: 16984516; X-2, X-4

989. Tsukamoto H, Fukuoka H, Inoue K, et al. Restricting weight gain during pregnancy in Japan: a controversial factor in reducing perinatal complications. Eur J Obstet Gynecol Reprod Biol. 2006 Jul;133:53-9. PMID: 16934385; X-3, X-4

990. Tucker MJ, Berg CJ, Callaghan WM, et al. The Black-White disparity in pregnancy-related mortality from 5 conditions: differences in prevalence and case-fatality rates. Am J Public Health. 2006 Feb;97:247-51. PMID: 17194867; X-4

991. Tuladhar H, Dali SM, Pradhanang V. Complications of home delivery: a retrospective analysis. JNMA J Nepal Med Assoc. 2006 Jul-Sep;44:87-91. PMID: 16554861; X-2, X-4

992. Tuzovic L. Complete versus incomplete placenta previa and obstetric outcome. Int J Gynaecol Obstet. 2006 May;93:110-7. PMID: 16563394; X-4

993. Umeora OU, Onuh SO, Umeora MC. Socio-cultural barriers to voluntary blood donation for obstetric use in a rural Nigerian village. Afr J Reprod Health. 2006 Dec;9:72-6. PMID: 16623191; X-2, X-3, X-4

994. Verma U, Goharkhay N, Beydoun S. Conservative management of preterm premature rupture of membranes between 18 and 23 weeks of gestation--maternal and neonatal outcome. Eur J Obstet Gynecol Reprod Biol. 2006 Sep-Oct;128:119-24. PMID: 16446024; X-4

995. Walker WJ, McDowell SJ. Pregnancy after uterine artery embolization for leiomyomata: a series of 56 completed pregnancies. Am J Obstet Gynecol. 2006 Nov;195:1266-71. PMID: 16796984; X-4

996. Wang YL, Su TH. Obstetric uterine rupture of the unscarred uterus: a twenty-year clinical analysis. Gynecol Obstet Invest. 2006;62:131-5. PMID: 16675909; X-2, X-4

997. Wohlmuth CT, Gumbs J, Quebral-Ivie J. B-Lynch suture: a case series. Int J Fertil Womens Med. 2006 Jul-Aug;50:164-73. PMID: 16405101; X-4, X-5

998. Yong SP, Cheung KB. Management of primary postpartum haemorrhage with arterial embolisation in Hong Kong public hospitals. Hong Kong Med J. 2006 Dec;12:437-41. PMID: 17148796; X-2, X-4, X-5

999. Yoong W, Massiah N, Oluwu A. Obstetric hysterectomy: changing trends over 20 years in a multiethnic high risk population. Arch Gynecol Obstet. 2006 Apr;274:37-40. PMID: 16491372; X-4, X-5

1000. Yucel O, Ozdemir I, Yucel N, et al. Emergency peripartum hysterectomy: a 9-year review. Arch Gynecol Obstet. 2006 May;274:84-7. PMID: 16463166; X-2, X-5

1001. Zamzami TY. Maternal and perinatal outcome of massive postpartum hemorrhage: a review of 33 cases. Ann Saudi Med. 2006 May-Jul;23:135-9. PMID: 16985301; X-2, X-5

1002. Zeteroglu S, Sahin GH, Sahin HA. Induction of labor with misoprostol in pregnancies with advanced maternal age. Eur J Obstet Gynecol Reprod Biol. 2006 Dec;129:140-4. PMID: 16406221; X-4

1003. . Federal update. Obstetrics & Gynecology. 2007;109:755-. PMID: X-1, X-4, X-5

1004. . In the news. World health roundup. American Journal of Nursing. 2007;107:21-. PMID: X-1, X-4, X-5

1005. . New campaign to reduce maternal deaths. Practising Midwife. 2007;10:11-. PMID: X-1, X-4

1006. . News from ICM and partners. International Midwifery. 2007;20:30-1. PMID: X-1, X-4

1007. . 'Shared action on a deadly but preventable condition': new ICM/FIGO statement on prevention and treatment of PPH in low resource settings. Midwifery. 2007;23:3-4. PMID: X-1, X-2, X-4, X-5

1008. Abdel-Hady el S, Mashaly AM, Sherief LS, et al. Why do mothers die in Dakahlia, Egypt? J Obstet Gynaecol Res. 2007 Jun;33:283-7. PMID: 17578356; X-2, X-4

1009. Adams V, Miller S, Craig S, et al. Informed Consent in cross-cultural perspective: clinical research in the Tibetan Autonomous Region, PRC. Cult Med Psychiatry. 2007 Dec;31:445-72. PMID: 17968637; X-1, X-2

1010. Al-Assadi AF, Al-Waeely FA, Kadhim SS. The use of extraamniotic dexamethasone for ripening the unfavourable cervix. Journal of the Bahrain Medical Society. 2007 October;19:148-53. PMID: X-2, X-3, X-4

1011. Amarin ZO, Alchalabi HA, Khader YS, et al. Variation in repeat caesarean section complication rates among 3 hospitals in northern Jordan. East Mediterr Health J. 2007 Sep;12:610-8. PMID: 17333801; X-2, X-4

1012. Amelink-Verburg MP, Verloove-Vanhorick SP, Hakkenberg RM, et al. Evaluation of 280,000 cases in Dutch midwifery practices: a descriptive study. BJOG. 2007 Apr;115:570-8. PMID: 18162116; X-4, X-5

1013. Anderson FW, Naik SI, Feresu SA, et al. Perceptions of pregnancy complications in Haiti. Int J Gynaecol Obstet. 2007 Feb;100:116-23. PMID: 18076885; X-2, X-4

1014. Anderson JM, Etches D. Prevention and management of postpartum hemorrhage. Am Fam Physician. 2007 Mar 15;75:875-82. PMID: 17390600; X-1

1015. Arya R, Whitworth M, Johnston TA. Abnormal labour: an evidence-based approach. Obstetrics, Gynaecology and Reproductive Medicine. 2007 July;17:217-21. PMID: X-1

1016. Aubrey-Bassler K, Newbery S, Kelly L, et al. Maternal outcomes of cesarean sections: do generalists' patients have different outcomes than specialists' patients? Can Fam Physician. 2007 Dec;53:2132-8. PMID: 18077752; X-4

1017. Baskett TF. Uterine compression sutures for postpartum hemorrhage: efficacy, morbidity, and subsequent pregnancy. Obstet Gynecol. 2007 Jul;110:68-71. PMID: 17601898; X-5

1018. Baskett TF, Persad VL, Clough HJ, et al. Misoprostol versus oxytocin for the reduction of postpartum blood loss. Int J Gynaecol Obstet. 2007 Apr;97:2-5. PMID: 17321529; X-4, X-5

1019. Belizan M, Meier A, Althabe F, et al. Facilitators and barriers to adoption of evidence-based perinatal care in Latin American hospitals: a qualitative study. Health Educ Res. 2007 Dec;22:839-53. PMID: 17395605; X-2, X-3

1020. Bhattacharya S, Campbell DM, Liston WA. Effect of Body Mass Index on pregnancy outcomes in nulliparous women delivering singleton babies. BMC Public Health. 2007;7:168. PMID: 17650297; X-4, X-5

1021. Bhide A, Guven M, Prefumo F, et al. Maternal and neonatal outcome after failed ventouse delivery: comparison of forceps versus cesarean section. J Matern Fetal Neonatal Med. 2007 Jul;20:541-5. PMID: 17674268; X-4, X-5

1022. Birch L, Jones N, Doyle PM, et al. Obstetric skills drills: evaluation of teaching methods. Nurse Educ Today. 2007 Nov;27:915-22. PMID: 17376563; X-4, X-5

1023. Boriboonhirunsarn D, Talungjit P, Sunsaneevithayakul P, et al. Adverse pregnancy outcomes in gestational diabetes mellitus. J Med Assoc Thai. 2007 Oct;89 Suppl 4:S23-8. PMID: 17725139; X-2, X-4

1024. Bouma LS, Bolte AC, van Geijn HP. Use of recombinant activated factor VII in massive postpartum haemorrhage. Eur J Obstet Gynecol Reprod Biol. 2007 Apr;137:172-7. PMID: 17928129; X-2, X-5

1025. Brace V, Kernaghan D, Penney G. Learning from adverse clinical outcomes: major obstetric haemorrhage in Scotland, 2003-05. BJOG. 2007 Nov;114:1388-96. PMID: 17949379; X-2, X-4, X-5

1026. Bradley SE, Prata N, Young-Lin N, et al. Cost-effectiveness of misoprostol to control postpartum hemorrhage in low-resource settings. Int J Gynaecol Obstet. 2007 Apr;97:52-6. PMID: 17316646; X-2, X-4, X-5

1027. Bretelle F, Courbiere B, Mazouni C, et al. Management of placenta accreta: morbidity and outcome. Eur J Obstet Gynecol Reprod Biol. 2007 Jul;133(1):34-9. PMID: 16965851; X-4, X-5

1028. Burtelow M, Riley E, Druzin M, et al. How we treat: management of life-threatening primary postpartum hemorrhage with a standardized massive transfusion protocol. Transfusion. 2007 Sep;47:1564-72. PMID: 17725718; X-5

1029. Byams VR. Women with bleeding disorders. J Womens Health (Larchmt). 2007 Nov;16:1249-51. PMID: 18001180; X-1

1030. Cameron CA, Roberts CL, Bell J, et al. Getting an evidence-based post-partum haemorrhage policy into practice. Aust N Z J Obstet Gynaecol. 2007 Jun;47:169-75. PMID: 17550481; X-2, X-4, X-5

1031. Cardone A, Zarcone R, Visconti S, et al. A new uterine suture technique for postpartum hemorrhage. Minerva Ginecol. 2007 Jun;59:343-6. PMID: 17576409; X-5

1032. Caughey AB, Stotland NE, Washington AE, et al. Maternal and obstetric complications of pregnancy are associated with increasing gestational age at term. Am J Obstet Gynecol. 2007 Feb;196:155 e1-6. PMID: 17306661; X-3, X-4

1033. Chandraharan E, Arulkumaran S. Massive postpartum haemorrhage and management of coagulopathy. Obstetrics, Gynaecology and Reproductive Medicine. 2007 April;17:119-22. PMID: X-1

1034. Cheng YW, Hopkins LM, Laros RK, Jr., et al. Duration of the second stage of labor in multiparous women: maternal and neonatal outcomes. Am J Obstet Gynecol. 2007 Jun;196:585 e1-6. PMID: 17547906; X-4

1035. Chi C, Lee CA, Shiltagh N, et al. Pregnancy in carriers of haemophilia. Haemophilia. 2007 Jan;14:56-64. PMID: 17941828; X-4

1036. Chittacharoen A, Singhakun D, Ayudhya NI. Pregnancy outcome of twin pregnancy in Ramathibodi Hospital. J Med Assoc Thai. 2007 Oct;89 Suppl 4:S76-80. PMID: 17725143; X-2, X-4

1037. Chittacharoen A, Wetchapruekpitak S, Suthutvoravut S. Pregnancy induced hypertension in twin pregnancy. J Med Assoc Thai. 2007 Oct;88 Suppl 2:S69-74. PMID: 17722320; X-2, X-4

1038. Clark P, Walker ID, Govan L, et al. The GOAL study: a prospective examination of the impact of factor V Leiden and ABO(H) blood groups on haemorrhagic and thrombotic pregnancy outcomes. Br J Haematol. 2007 Jan;140:236-40. PMID: 18028481; X-4

1039. Cook EL. Delayed cord clamping or immediate cord clamping?: a literature review. British Journal of Midwifery. 2007;15:562. PMID: X-1

1040. Crofts JF, Ellis D, Draycott TJ, et al. Change in knowledge of midwives and obstetricians following obstetric emergency training: a randomised controlled trial of local hospital, simulation centre and teamwork training. Bjog. 2007 Dec;114:1534-41. PMID: 17903231; X-3, X-4

1041. Cruz JR. Reduction of maternal mortality: the need for voluntary blood donors. Int J Gynaecol Obstet. 2007 Sep;98:291-3. PMID: 17374536; X-2, X-4

1042. Dabelea V, Schultze PM, McDuffie RS, Jr. Intrauterine balloon tamponade in the management of postpartum hemorrhage. Am J Perinatol. 2007 Jun;24:359-64. PMID: 17566947; X-5

1043. Dadhwal V, Gupta B, Srivastava DN, et al. Uterine artery pseudoaneurysm with AV malformation: A rare cause of secondary post partum hemorrhage. JK Science. 2007 July/September;9:142-4. PMID: X-1, X-2, X-4, X-5

1044. Dar S, Vardi IS, Holcberg G, et al. Do we need routine complete blood count following vaginal delivery? Int J Fertil Womens Med. 2007 Nov-Dec;51:270-3. PMID: 17566570; X-4, X-5

1045. Daskalakis G, Anastasakis E, Papantoniou N, et al. Emergency obstetric hysterectomy. Acta Obstet Gynecol Scand. 2007;86:223-7. PMID: 17364287; X-2, X-4, X-5

1046. de Jonge A, van Diem MT, Scheepers PL, et al. Increased blood loss in upright birthing positions originates from perineal damage. BJOG. 2007 Mar;114:349-55. PMID: 17217358; X-4

1047. Dutra F, Quintans G, Banchero G. Lesions in the central nervous system associated with perinatal lamb mortality. Aust Vet J. 2007 Oct;85:405-13. PMID: 17903128; X-3, X-4

1048. El-Sayed YY, Watkins MM, Fix M, et al. Perinatal outcomes after successful and failed trials of labor after cesarean delivery. Am J Obstet Gynecol. 2007 Jun;196:583 e1-5; discussion e5. PMID: 17547905; X-4

1049. Enakpene CA, Morhason-Bello IO, Enakpene EO, et al. Oral misoprostol for the prevention of primary post-partum hemorrhage during third stage of labor. J Obstet Gynaecol Res. 2007 Dec;33:810-7. PMID: 18001447; X-4

1050. Enyindah CE, Fiebai PO, Anya SE, et al. Episiotomy and perineal trauma prevalence and obstetric risk factors in Port Harcourt, Nigeria. Niger J Med. 2007 Jul-Sep;16:242-5. PMID: 17937162; X-2, X-4

1051. Eriksson LG, Mulic-Lutvica A, Jangland L, et al. Massive postpartum hemorrhage treated with transcatheter arterial embolization: technical aspects and long-term effects on fertility and menstrual cycle. Acta Radiol. 2007 Jul;48:635-42. PMID: 17611871; X-5

1052. Ford AA, Bateman BT, Simpson LL, et al. Nationwide data confirms absence of 'July phenomenon' in obstetrics: it's safe to deliver in July. J Perinatol. 2007 Feb;27:73-6. PMID: 17262037; X-4

1053. Ford JB, Roberts CL, Bell JC, et al. Postpartum haemorrhage occurrence and recurrence: a population-based study. Med J Aust. 2007 Oct 1;187:391-3. PMID: 17908001; X-4

1054. Ford JB, Roberts CL, Simpson JM, et al. Increased postpartum hemorrhage rates in Australia. Int J Gynaecol Obstet. 2007 Sep;98:237-43. PMID: 17482190; X-4

1055. Fry J. Physiological third stage of labour: support it or lose it. British Journal of Midwifery. 2007;15:693-5. PMID: X-1

1056. Fullerton JT, Frick KD, Fogarty LA, et al. Active management of third stage of labour saves facility costs in Guatemala and Zambia. J Health Popul Nutr. 2007 Dec;24:540-51. PMID: 17591351; X-2, X-4, X-5

1057. Gebhardt S, Arends E. Standardised maternal guideline on the management of postpartum haemorrhage. South African Journal of Obstetrics and Gynaecology. 2007 October;13:110-7. PMID: X-1

1058. Gessessew A. Twin deliveries in a zonal hospital: ten years retrospective study. Ethiop Med J. 2007 Jan;45:55-9. PMID: 17642158; X-2, X-4

1059. Gessessew A. Maternal complications--in a zonal hospital. Ethiop Med J. 2007 Jan;45:47-54. PMID: 17642157; X-2, X-4

1060. Ghezzi F, Cromi A, Uccella S, et al. The Hayman technique: a simple method to treat postpartum haemorrhage. BJOG. 2007 Mar;114:362-5. PMID: 17217361; X-2, X-5

1061. Guilliland K. The current global effort to prevent postpartum haemorrhage: how likely is it to be effective? New Zealand College of Midwives Journal. 2007;36:28-31. PMID: X-1

1062. Hackethal A, Brueggmann D, Oehmke F, et al. Uterine compression U-sutures in primary postpartum hemorrhage after Cesarean section: fertility preservation with a simple and effective technique. Hum Reprod. 2007 Jan;23:74-9. PMID: 18024985; X-5

1063. Hicks K. Survivor: a nursing challenge from the Northern Territory. ACORN: The Journal of Perioperative Nursing in Australia. 2007;20:32-3. PMID: X-1

1064. Hossain N, Shansi T, Haider S, et al. Use of recombinant activated factor VII for massive postpartum hemorrhage. Acta Obstet Gynecol Scand. 2007 Oct;86:1200-6. PMID: 17851797; X-2

1065. Htay TT. Making pregnancy safer in Myanmar: introducing misoprostol to prevent post-partum haemorrhage as part of active management of the third stage of labour. Reprod Health Matters. 2007 Nov;15:214-5. PMID: 17938087; X-2, X-4

1066. Iftikhar R. Intrapartum complications of macrosomic fetus. Journal of the Liaquat University of Medical and Health Sciences. 2007 May/August;6:52-5. PMID: X-2, X-4

1067. Jago AA, Ezechi OC, Achinge GI, et al. Effect of oxytocics on the blood pressure of normotensive Nigerian parturients. J Matern Fetal Neonatal Med. 2007 Sep;20:703-5. PMID: 17701671; X-2, X-4

1068. James AH. Prevention and management of venous thromboembolism in pregnancy. Am J Med. 2007 Oct;120:S26-34. PMID: 17916457; X-1

1069. James AH, Jamison MG. Bleeding events and other complications during pregnancy and childbirth in women with von Willebrand disease. J Thromb Haemost. 2007 Jun;5:1165-9. PMID: 17403089; X-4, X-5

1070. Javed I, Bhutta S, Shoaib T. Role of partogram in preventing prolonged labour. J Pak Med Assoc. 2007 Aug;57:408-11. PMID: 17902525; X-4

1071. Jeffery P, Das A, Dasgupta J, et al. Unmonitored intrapartum oxytocin use in home deliveries: evidence from Uttar Pradesh, India. Reprod Health Matters. 2007 Nov;15:172-8. PMID: 17938082; X-1

1072. Jerbi M, Hidar S, Elmoueddeb S, et al. Oxytocin in the third stage of labor. Int J Gynaecol Obstet. 2007 Mar;96:198-9. PMID: 17289048; X-2, X-4, X-5

1073. Joseph KS, Rouleau J, Kramer MS, et al. Investigation of an increase in postpartum haemorrhage in Canada. BJOG. 2007 Jun;114:751-9. PMID: 17516968; X-4

1074. Joshi VM, Otiv SR, Majumder R, et al. Internal iliac artery ligation for arresting postpartum haemorrhage. BJOG. 2007 Mar;114:356-61. PMID: 17261120; X-2

1075. Joyce D, Clark J, Miller S. The promise of the non-pneumatic anti-shock garment: a new tool to use against PPH. International Midwifery. 2007;20:12-3. PMID: X-1, X-4, X-5

1076. Kominiarek MA, Angelopoulos SM, Shapiro NL, et al. Low-molecular-weight heparin in pregnancy: peripartum bleeding complications. J Perinatol. 2007 Jun;27:329-34. PMID: 17443203; X-4, X-5

1077. Kroencke TJ, Kluner C, Hamm B, et al. Use of the 4F Rosch inferior mesenteric catheter in embolization procedures in the pelvis: a review of 300 cases. Cardiovasc Intervent Radiol. 2007 Mar-Apr;30:268-72. PMID: 17200899; X-2, X-4, X-5

1078. Kugler E, Shoham-Vardi I, Burstien E, et al. The safety of a trial of labor after cesarean section in a grandmultiparous population. Arch Gynecol Obstet. 2007 Apr;277:339-44. PMID: 17957377; X-4

1079. La Folie T, Vidal V, Mehanna M, et al. Results of endovascular treatment in cases of abnormal placentation with post-partum hemorrhage. J Obstet Gynaecol Res. 2007 Oct;33:624-30. PMID: 17845319; X-5

1080. Larsson C, Saltvedt S, Wiklund I, et al. Estimation of blood loss after cesarean section and vaginal delivery has low validity with a tendency to exaggeration. Acta Obstet Gynecol Scand. 2007;85:1448-52. PMID: 17260220; X-4

1081. Liabsuetrakul T, Choobun T, Peeyananjarassri K, et al. Prophylactic use of ergot alkaloids in the third stage of labour. Cochrane Database Syst Rev. 2007:CD005456. PMID: 17443592; X-1, X-4

1082. Liabsuetrakul T, Peeyananjarassri K, Tassee S, et al. Emergency obstetric care in the southernmost provinces of Thailand. Int J Qual Health Care. 2007 Aug;19:250-6. PMID: 17575277; X-2, X-4

1083. Lohmann-Bigelow J, Longo SA, Jiang X, et al. Does dilation and curettage affect future pregnancy outcomes? Ochsner J. 2007 Winter;7:173-6. PMID: 21603540; X-4

1084. Lourens R, Paterson-Brown S. Ergometrine given during caesarean section and incidence of delayed postpartum haemorrhage due to uterine atony. J Obstet Gynaecol. 2007 Nov;27:795-7. PMID: 18097896; X-2, X-4, X-5

1085. Lungu K, Ratsma Y. Does the upgrading of the radio communications network in health facilities reduce the delay in the referral of obstetric emergencies in Southern Malawi? Malawi Med J. 2007 Mar;19:1-8. PMID: 23878623; X-2, X-4

1086. Mallory J, Dresang L. Topics in maternity care. Misoprostol for prevention and treatment of postpartum hemorrhage. Evidence-Based Practice. 2007;10:8, 2p. PMID: X-1, X-4, X-5

1087. Malvasi A, Tinelli A, Serio G, et al. Comparison between the use of the Joel-Cohen incision and its modification during Stark's cesarean section. J Matern Fetal Neonatal Med. 2007 Oct;20:757-61. PMID: 17763278; X-3, X-4

1088. Marconi AM, Bozzetti P, Morabito A, et al. Comparing two dinoprostone agents for cervical ripening and induction of labor: a randomized trial. Eur J Obstet Gynecol Reprod Biol. 2007 Jun;138:135-40. PMID: 17889983; X-4

1089. Maslovitz S, Barkai G, Lessing JB, et al. Recurrent obstetric management mistakes identified by simulation. Obstet Gynecol. 2007 Jun;109:1295-300. PMID: 17540800; X-4, X-5

1090. Massiah N, Athimulam S, Loo C, et al. Obstetric care of Jehovah's Witnesses: a 14-year observational study. Arch Gynecol Obstet. 2007 Oct;276:339-43. PMID: 17522882; X-4

1091. Master FJ. Some random notes on Crocus sativus. Homoeopathic Heritage. 2007;32:2. PMID: X-1

1092. Mathai M, Gulmezoglu AM, Hill S. Saving womens lives: evidence-based recommendations for the prevention of postpartum haemorrhage. Bull World Health Organ. 2007 Apr;85:322-3. PMID: 17546315; X-1, X-2, X-4, X-5

1093. Mathe ML, Morau E, Vernhet-Kovacsik H, et al. Impact of the new French clinical practice recommendations in embolization in postpartum and post-abortion hemorrhage: study of 48 cases. J Perinat Med. 2007;35:532-7. PMID: 18052838; X-2, X-4, X-5

1094. Melhado L. Digests. International Family Planning Perspectives. 2007;33:38-43. PMID: X-1

1095. Memon A, Sikandar R. Misoprostol for induction of labour: The Hyderabad experience. Journal of the Liaquat University of Medical and Health Sciences. 2007 May/August;6:56-9. PMID: X-2, X-4

1096. Miller S, Butrick E, Turan JM, et al. The anti-shock garment for post-partum and post-abortion hemorrhage in Nigeria... Conference proceedings: abstracts from Research Forums presented at the ACNM 52nd Annual Meeting 2007. Journal of Midwifery & Women's Health. 2007;52:534-. PMID: X-2

1097. Miller S, Tudor C, Nyima, et al. Maternal and neonatal outcomes of hospital vaginal deliveries in Tibet. Int J Gynaecol Obstet. 2007 Sep;98:217-21. PMID: 17481630; X-2, X-4

1098. Miller S, Turan JM, Dau K, et al. Use of the non-pneumatic anti-shock garment (NASG) to reduce blood loss and time to recovery from shock for women with obstetric haemorrhage in Egypt. Glob Public Health. 2007;2:110-24. PMID: 19280394; X-1, X-2

1099. Moore ML. Misoprostol-is more research needed? J Perinat Educ. 2007 Summer;11:43-7. PMID: 17273309; X-1

1100. Mousa HA, Alfirevic Z. Treatment for primary postpartum haemorrhage. Cochrane Database Syst Rev. 2007:CD003249. PMID: 17253486; X-1, X-2, X-5

1101. Mulic-Lutvica A, Axelsson O. Postpartum ultrasound in women with postpartum endometritis, after cesarean section and after manual evacuation of the placenta. Acta Obstet Gynecol Scand. 2007;86:210-7. PMID: 17364285; X-3, X-4

1102. Mutihir JT. Triplet pregnancy as seen in the Jos University Teaching Hospital. Niger Postgrad Med J. 2007 Dec;14:281-4. PMID: 18163134; X-2, X-4

1103. Myers B, Pavord S, Kean L, et al. Pregnancy outcome in Factor XI deficiency: incidence of miscarriage, antenatal and postnatal haemorrhage in 33 women with Factor XI deficiency. BJOG. 2007 May;114:643-6. PMID: 17439571; X-4

1104. Naydich M, Friedman A, Aaron G, et al. Arterial embolization of vaginal arterial branches for severe postpartum hemorrhage despite hysterectomy. J Vasc Interv Radiol. 2007 Aug;18:1047-50. PMID: 17675626; X-5

1105. Nelson WL, O'Brien JM. The uterine sandwich for persistent uterine atony: combining the B-Lynch compression suture and an intrauterine Bakri balloon. Am J Obstet Gynecol. 2007 May;196:e9-10. PMID: 17466689; X-4, X-5

1106. Ngan L, Keong W, Martins R. Carbetocin versus a combination of oxytocin and ergometrine in control of postpartum blood loss. Int J Gynaecol Obstet. 2007 May;97:152-3. PMID: 17379220; X-2, X-4, X-5

1107. Nielsen PE, Goldman MB, Mann S, et al. Effects of teamwork training on adverse outcomes and process of care in labor and delivery: a randomized controlled trial. Obstet Gynecol. 2007 Jan;109:48-55. PMID: 17197587; X-4, X-5

1108. Oladapo OT, Ariba AJ, Odusoga OL. Changing patterns of emergency obstetric care at a Nigerian University hospital. Int J Gynaecol Obstet. 2007 Sep;98:278-84. PMID: 17612545; X-2, X-4

1109. Ophir E, Strulov A, Solt I, et al. Delivery mode and maternal rehospitalization. Arch Gynecol Obstet. 2007 May;277:401-4. PMID: 17922286; X-4, X-5

1110. Orji EO, Fatusi AA, Makinde NO, et al. Impact of training on the use of partograph on maternal and perinatal outcome in peripheral health centers. Journal of the Turkish German Gynecology Association. 2007 June;8:148-52. PMID: X-1, X-4

1111. Ouahba J, Piketty M, Huel C, et al. Uterine compression sutures for postpartum bleeding with uterine atony. BJOG. 2007 May;114:619-22. PMID: 17355361; X-5

1112. Paidas MJ, Rosenman S, Hossain N. Using activated factor VII in ob/gyn practice. Contemporary OB/GYN. 2007;52:46. PMID: X-1

1113. Panpaprai P, Boriboonhirunsarn D. Risk factors of retained placenta in Siriraj Hospital. J Med Assoc Thai. 2007 Jul;90:1293-7. PMID: 17710967; X-2, X-4

1114. Prakash J, Vohra R, Wani IA, et al. Decreasing incidence of renal cortical necrosis in patients with acute renal failure in developing countries: a single-centre experience of 22 years from Eastern India. Nephrol Dial Transplant. 2007 Apr;22:1213-7. PMID: 17267539; X-1, X-2, X-4

1115. Rahmanpoor H, Hosseini SN, Mousavinasab SN, et al. Comparison of Diclofenac with pethidine on the pain after Cesarean section. International Journal of Pharmacology. 2007 March;3:201-3. PMID: X-1, X-4

1116. Rajab KE, Essa A, Masaudi E. A hospital-based epidemiologic study of hypertensive disease in pregnancy. Journal of the Bahrain Medical Society. 2007 April;19:63-8. PMID: X-2, X-4

1117. Roberts LM, Homer CS, Davis GK, et al. Misoprostol to induce labour: a review of its use in a NSW hospital. Aust N Z J Obstet Gynaecol. 2007 Aug;47:291-6. PMID: 17627683; X-4, X-5

1118. Romero-Gutierrez G, Espitia-Vera A, Ponce-Ponce de Leon AL, et al. Risk factors of maternal death in Mexico. Birth. 2007 Mar;34:21-5. PMID: 17324174; X-2, X-4

1119. Saaqib S, Riaz L. Labor management in a patient with von Willebrand disease. J Coll Physicians Surg Pak. 2007 Oct;17:632-4. PMID: 17999859; X-3, X-4

1120. Sabbour SM. Epidemiological correlates of hysterectomy, a hospital based study 1995 -1996 at Ain Shams Maternity Hospital. J Egypt Public Health Assoc. 2007;76:71-87. PMID: 17216982; X-2

1121. Saito K, Haruki A, Ishikawa H, et al. Prospective study of intramuscular ergometrine compared with intramuscular oxytocin for prevention of postpartum hemorrhage. J Obstet Gynaecol Res. 2007 Jun;33:254-8. PMID: 17578351; X-4

1122. Samms V. von Willebrand disease and pregnancy. Practising Midwife. 2007;10:20-2. PMID: X-1

1123. Samuels LA, Christie L, Roberts-Gittens B, et al. The effect of hyoscine butylbromide on the first stage of labour in term pregnancies. BJOG. 2007 Dec;114:1542-6. PMID: 17903230; X-2, X-3, X-4

1124. Seal SL, Kamilya G, Bhattacharyya SK, et al. Relaparotomy after cesarean delivery: experience from an Indian teaching hospital. J Obstet Gynaecol Res. 2007 Dec;33:804-9. PMID: 18001446; X-2

1125. Sentilhes L, Goffinet F, Talbot A, et al. Attempted vaginal versus planned cesarean delivery in 195 breech first twin pregnancies. Acta Obstet Gynecol Scand. 2007;86:55-60. PMID: 17230290; X-3, X-4

1126. Seyam YS, Ahmad Riad EH, Elzain S, et al. Ultrasound prediction of fetal macrosomia in diabetic women and its effect on the route of delivery and the outcome of pregnancy. Qatar Medical Journal. 2007 June;16:30-5. PMID: X-2, X-4

1127. Shaamash AH, Ahmed AG, Abdel Latef MM, et al. Routine postpartum ultrasonography in the prediction of puerperal uterine complications. Int J Gynaecol Obstet. 2007 Aug;98:93-9. PMID: 17583710; X-2, X-4, X-5

1128. Shaheen B, Hassan L. Postpartum haemorrhage: a preventable cause of maternal mortality. J Coll Physicians Surg Pak. 2007 Oct;17:607-10. PMID: 17999851; X-2, X-4

1129. Sheikh GM, Firdous N, Taing S, et al. Comparative study of prostaglandin F2 alpha versus ergometrine in the management of post partum haemorrhage. JK Science. 2007 January/March;9:30-2. PMID: X-2

1130. Shrestha P, Babu CS. Influence of umbilical vein oxytocin on blood loss and length of third stage of labour. Nepal Med Coll J. 2007 Sep;9:176-8. PMID: 18092435; X-2, X-4

1131. Shrivastava V, Nageotte M, Major C, et al. Case-control comparison of cesarean hysterectomy with and without prophylactic placement of intravascular balloon catheters for placenta accreta. Am J Obstet Gynecol. 2007 Oct;197:402 e1-5. PMID: 17904978; X-2, X-4, X-5

1132. Sibley LM, Blum LS, Kalim N, et al. Women's descriptions of postpartum health problems: preliminary findings from Matlab, Bangladesh. J Midwifery Womens Health. 2007 Jul-Aug;52:351-60. PMID: 17603957; X-1, X-2, X-4

1133. Simoes T, Aboim L, Costa A, et al. Puerperal complications following elective Cesarean sections for twin pregnancies. J Perinat Med. 2007;35:104-7. PMID: 17302518; X-4

1134. Smith J, Mousa HA. Peripartum hysterectomy for primary postpartum haemorrhage: incidence and maternal morbidity. J Obstet Gynaecol. 2007 Jan;27:44-7. PMID: 17365458; X-2, X-4, X-5

1135. Soltan MH, El-Gendi E, Imam HH, et al. Different Doses of Sublingual Misoprostol versus Methylergometrine for the Prevention of Atonic Postpartum Haemorrhage. Int J Health Sci (Qassim). 2007 Jul;1:229-36. PMID: 21475433; X-2, X-4, X-5

1136. Soltan MH, Mohamed A, Ibrahim E, et al. El-menia air inflated balloon in controlling atonic post partum hemorrhage. Int J Health Sci (Qassim). 2007 Jan;1:53-9. PMID: 21475452; X-2

1137. Soncini E, Pelicelli A, Larini P, et al. Uterine artery embolization in the treatment and prevention of postpartum hemorrhage. Int J Gynaecol Obstet. 2007 Mar;96:181-5. PMID: 17286979; X-4, X-5

1138. Sorensen SS. Emergency drills in obstetrics: reducing risk of perinatal death or permanent injury. JONAS Healthc Law Ethics Regul. 2007 Jan-Mar;9:9-16; quiz 7-8. PMID: 17413483; X-1

1139. Stella CL, Jodicke CD, How HY, et al. Postpartum headache: is your work-up complete? Am J Obstet Gynecol. 2007 Apr;196:318 e1-7. PMID: 17403403; X-4, X-5

1140. Su LL, Chong YS, Samuel M. Oxytocin agonists for preventing postpartum haemorrhage. Cochrane Database Syst Rev. 2007:CD005457. PMID: 17636798; X-1

1141. Sumigama S, Itakura A, Ota T, et al. Placenta previa increta/percreta in Japan: a retrospective study of ultrasound findings, management and clinical course. J Obstet Gynaecol Res. 2007 Oct;33:606-11. PMID: 17845316; X-5

1142. Sundararajan V, Reidpath DD, Allotey P. Ethnicity, discrimination and health outcomes: a secondary analysis of hospital data from Victoria, Australia. Diversity in Health & Social Care. 2007;4:21-32. PMID: X-4

1143. Sunitha R, Mathew R, Thomas M. Conservative management of subdural hematoma in idiopathic thrombocytopenic purpura: Report of two cases and review of literature. Annals of Indian Academy of Neurology. 2007 01 Jul;10:184-6. PMID: X-1

1144. Suri V, Aggarwal N, Saxena S, et al. Maternal and perinatal outcome in idiopathic thrombocytopenic purpura (ITP) with pregnancy. Acta Obstet Gynecol Scand. 2007;85:1430-5. PMID: 17260217; X-2, X-3, X-4

1145. Suzuki S, Igarashi M. Clinical significance of pregnancies with succenturiate lobes of placenta. Arch Gynecol Obstet. 2007 Apr;277:299-301. PMID: 17938944; X-4

1146. Suzuki S, Kikuchi F, Ouchi N, et al. Risk factors for postpartum hemorrhage after vaginal delivery of twins. J Nippon Med Sch. 2007 Dec;74:414-7. PMID: 18084135; X-4

1147. Takeuchi K, Sugimoto M, Kitao K, et al. Pregnancy outcome of uterine arterial embolization followed by selective hysteroscopic removal of a placental polyp. Acta Obstet Gynecol Scand. 2007;86:22-5. PMID: 17230284; X-3, X-4

1148. Tattersall M, Braithwaite W. Balloon tamponade for vaginal lacerations causing severe postpartum haemorrhage. Bjog. 2007 May;114:647-8. PMID: 17362483; X-5

1149. Tsitlakidis C, Alalade A, Danso D, et al. Ten year follow-up of the effect of the B-Lynch uterine compression suture for massive postpartum hemorrhage. Int J Fertil Womens Med. 2007 Nov-Dec;51:262-5. PMID: 17566568; X-4, X-5

1150. Uddenfeldt Wort U, Hastings I, Bergstrom S, et al. Increased postpartum blood loss in pregnancies associated with placental malaria. Int J Gynaecol Obstet. 2007 Mar;96:171-5. PMID: 17280666; X-2, X-4

1151. Ullah NA, Ullah HA, Siddique S. Fetomaternal outcome of cases referred to Nishtar Hospital, Multan. Medical Forum Monthly. 2007 December;18:4-10. PMID: X-2, X-4

1152. Umezurike CC, Nkwocha G. Placenta accreta in Aba, south eastern, Nigeria. Niger J Med. 2007 Jul-Sep;16:219-22. PMID: 17937156; X-2

1153. Uygur D, Tapisiz OL, Akkalyoncu B, et al. Transfusion-Related Acute Lung Injury (TRALI) after delivery - A case report. Gazi Medical Journal. 2007 September;18:142-4. PMID: X-1, X-2

1154. Varughese J, Cohen AJ. Experience with epidural anaesthesia in pregnant women with von Willebrand disease. Haemophilia. 2007 Nov;13:730-3. PMID: 17973849; X-5

1155. Vasquez DN, Estenssoro E, Canales HS, et al. Clinical characteristics and outcomes of obstetric patients requiring ICU admission. Chest. 2007 Mar;131:718-24. PMID: 17356085; X-4

1156. Vedam S, Goff M, Marnin VN. Closing the theory-practice gap: intrapartum midwifery management of planned homebirths. J Midwifery Womens Health. 2007 May-Jun;52:291-300. PMID: 17467596; X-1

1157. Vettore MV, Leal M, Leao AT, et al. The relationship between periodontitis and preterm low birthweight. J Dent Res. 2007 Jan;87:73-8. PMID: 18096898; X-3, X-4

1158. Voke J, Keidan J, Pavord S, et al. The management of antenatal venous thromboembolism in the UK and Ireland: a prospective multicentre observational survey. Br J Haematol. 2007 Nov;139:545-58. PMID: 17916101; X-4

1159. Wedisinghe L, Macleod M, Murphy DJ. Use of oxytocin to prevent haemorrhage at caesarean section--a survey of practice in the United Kingdom. Eur J Obstet Gynecol Reprod Biol. 2007 Mar;137:27-30. PMID: 17544563; X-3, X-4

1160. West D. Inner balance. Yoga in times of excessive bleeding: when the going gets tough, flow your way through. Alternative Medicine Magazine. 2007:78-. PMID: X-1

1161. Williams C. Labour and birth. Arbitrary time limits for the second stage of labour -- do they disempower women from achieving normal birth? A literature review. MIDIRS Midwifery Digest. 2007;17:527-33. PMID: X-1

1162. Winter C, Macfarlane A, Deneux-Tharaux C, et al. Variations in policies for management of the third stage of labour and the immediate management of postpartum haemorrhage in Europe. BJOG. 2007 Jul;114:845-54. PMID: 17567419; X-2, X-4, X-5

1163. Wuttikonsammakit P, Sukcharoen N. Pregnancy outcomes of multiple repeated cesarean sections in King Chulalongkorn Memorial Hospital. J Med Assoc Thai. 2007 Oct;89 Suppl 4:S81-6. PMID: 17725144; X-2, X-4

1164. Yamaguchi ET, Cardoso MM, Torres ML. [Oxytocin in cesarean sections: what is the best way to use it?]. Rev Bras Anestesiol. 2007 Jun;57:324-50. PMID: 19466368; X-1

1165. Yamani-Zamzami TY. Delivery outcomes at term after one previous cesarean section. Saudi Med J. 2007 Dec;28:1845-9. PMID: 18060214; X-2, X-4

1166. Yap SC, Drenthen W, Pieper PG, et al. Outcome of pregnancy in women after pulmonary autograft valve replacement for congenital aortic valve disease. J Heart Valve Dis. 2007 Jul;16:398-403. PMID: 17702365; X-4

1167. Yap YY, Perrin LC, Pain SR, et al. Manual removal of suspected placenta accreta at cesarean hysterectomy. Int J Gynaecol Obstet. 2007 Feb;100:186-7. PMID: 17900586; X-4, X-5

1168. Zainur RZ, Loh KY. "Postpartum morbidity--what we can do". Med J Malaysia. 2007 Dec;61:651-6. PMID: 17623974; X-1

1169. Zhang J, Bricker L, Wray S, et al. Poor uterine contractility in obese women. BJOG. 2007 Mar;114:343-8. PMID: 17261121; X-4

1170. Zlatnik MG, Cheng YW, Norton ME, et al. Placenta previa and the risk of preterm delivery. J Matern Fetal Neonatal Med. 2007 Oct;20:719-23. PMID: 17763272; X-4

1171. . Notice of retraction for Abu-Omar AA. Prevention of postpartum hemorrhage safety and efficacy. Saudi Med J 2001;22:1118-21. Saudi Med J. 2008 Oct;29:1523. PMID: 19086102; X-1

1172. . Postpartum hemorrhage risk with SSRIs, other antidepressants. Brown University Psychopharmacology Update. 2008;19:4-. PMID: X-1, X-4, X-5

1173. . Percutaneous vascular embolization: meeting the needs of multiple patients. Journal of Vascular Nursing. 2008;26(3):87-. PMID: 2010019076. Language: English. Entry Date: 20081017. Publication Type: journal article; X-1

1174. Abbasi RM, Rizwen N, Mumtaz F, et al. Feto maternal outcome among abruptio placentae cases at a University Hospital of Sindh. Journal of the Liaquat University of Medical and Health Sciences. 2008 May/August;7:106-9. PMID: X-2, X-4

1175. Abdul MA, Ibrahim UN, Yusuf MD, et al. Efficacy and safety of misoprostol in induction of labour in a Nigerian tertiary hospital. West Afr J Med. 2008 Jul-Sep;26:213-6. PMID: 18399337; X-2, X-4

1176. Agwu UM, Umeora OU, Ejikeme BN, et al. Retained placenta aspect of clinical management in a tertiary health institution in Nigeria. Niger J Med. 2008 Apr-Jun;17:146-9. PMID: 18686828; X-2, X-4

1177. Akoury H, Sherman C. Uterine wall partial thickness necrosis following combined B-Lynch and Cho square sutures for the treatment of primary postpartum hemorrhage. J Obstet Gynaecol Can. 2008 May;30(5):421-4. PMID: 18505666; X-3

1178. Althabe F, Buekens P, Bergel E, et al. A behavioral intervention to improve obstetrical care. N Engl J Med. 2008 May 1;358:1929-40. PMID: 18450604; X-2, X-4, X-5

1179. Al-Zirqi I, Vangen S, Forsen L, et al. Prevalence and risk factors of severe obstetric haemorrhage. BJOG. 2008 Sep;115:1265-72. PMID: 18715412; X-4, X-5

1180. Arabin B, van Eyck J. Delayed-interval delivery in twin and triplet pregnancies: 17 years of experience in 1 perinatal center. Am J Obstet Gynecol. 2008 Feb;200:154 e1-8. PMID: 19110229; X-4

1181. Arnold CE, Payne M, Thompson JA, et al. Periparturient hemorrhage in mares: 73 cases (1998-2005). J Am Vet Med Assoc. 2008 May 1;232:1345-51. PMID: 18447780; X-1, X-3

1182. Baloch S, Khaskheli M, Khushk IA, et al. Frequency of second stage intervention and its outcome in relation with instrumental vaginal delivery versus caesarean section. J Ayub Med Coll Abbottabad. 2008 Jan-Mar;20:87-90. PMID: 19024196; X-2, X-4

1183. Barnett S, Nair N, Tripathy P, et al. A prospective key informant surveillance system to measure maternal mortality - findings from indigenous populations in Jharkhand and Orissa, India. BMC Pregnancy Childbirth. 2008;8:6. PMID: 18307796; X-2, X-3, X-4

1184. Bensal A, Weintraub AY, Levy A, et al. The significance of peripartum fever in women undergoing vaginal deliveries. Am J Perinatol. 2008 Oct;25:567-72. PMID: 18756433; X-4, X-5

1185. Bhattacharya S, Townend J, Shetty A, et al. Does miscarriage in an initial pregnancy lead to adverse obstetric and perinatal outcomes in the next continuing pregnancy? BJOG. 2008 Dec;115:1623-9. PMID: 18947339; X-4

1186. Bibi S, Danish N, Fawad A, et al. An audit of primary post partum hemorrhage. J Ayub Med Coll Abbottabad. 2008 Oct-Dec;19:102-6. PMID: 18693611; X-2

1187. Biswas A, Bal R, Kundu MK, et al. A study of prophylactic use of 15-methyl prostalglandin F2alpha in the active management of third stage of labour. J Indian Med Assoc. 2008 Sep;105:506, 8-9. PMID: 18338474; X-2, X-4

1188. Bricker L, Peden H, Tomlinson AJ, et al. Titrated low-dose vaginal and/or oral misoprostol to induce labour for prelabour membrane rupture: a randomised trial. BJOG. 2008 Nov;115:1503-11. PMID: 18752586; X-2, X-3, X-4

1189. Capion N, Thamsborg SM, Enevoldsen C. Prevalence and severity of foot lesions in Danish Holstein heifers through first lactation. Vet J. 2008 Oct;182:50-8. PMID: 18757216; X-1, X-3

1190. Carroli G, Cuesta C, Abalos E, et al. Epidemiology of postpartum haemorrhage: a systematic review. Best Pract Res Clin Obstet Gynaecol. 2008 Dec;22:999-1012. PMID: 18819848; X-1, X-4

1191. Chandraharan E, Arulkumaran S. Surgical aspects of postpartum haemorrhage. Best Pract Res Clin Obstet Gynaecol. 2008 Dec;22:1089-102. PMID: 18790675; X-1

1192. Chang WH, Lin CK, Chiang YJ, et al. Puerperal hematoma combined with retroperitoneal dissection and obstructive uropathy. Journal of Medical Sciences. 2008 April;28:81-3. PMID: X-1, X-2, X-4, X-5

1193. Chauleur C, Cochery-Nouvellon E, Mercier E, et al. Some hemostasis variables at the end of the population distributions are risk factors for severe postpartum hemorrhages. J Thromb Haemost. 2008 Dec;6:2067-74. PMID: 18826390; X-4

1194. Chelmow D. Postpartum haemorrhage: prevention. Clin Evid (Online). 2008;2008PMID: 19445784; X-1, X-3, X-4

1195. Chhabra S, Tickoo C. Low-dose sublingual misoprostol versus methylergometrine for active management of the third stage of labor. J Obstet Gynaecol Res. 2008 Oct;34:820-3. PMID: 18834340; X-3, X-4

1196. Chigbu B, Onwere S, Kamanu C, et al. Lessons learned from the outcome of bloodless emergency laparotomies on Jehovah's Witness women presenting in the extremis with ruptured uterus. Arch Gynecol Obstet. 2008 Apr;279:469-72. PMID: 18677500; X-3, X-4

1197. Courbiere B, Jauffret C, Provansal M, et al. Failure of conservative management in postpartum haemorrhage: uterine necrosis and hysterectomy after angiographic selective embolization with gelfoam. Eur J Obstet Gynecol Reprod Biol. 2008 Oct;140:291-3. PMID: 18541360; X-1, X-5

1198. Crofts JF, Bartlett C, Ellis D, et al. Patient-actor perception of care: a comparison of obstetric emergency training using manikins and patient-actors. Qual Saf Health Care. 2008 Feb;17:20-4. PMID: 18245215; X-3, X-4

1199. Daniels K, Parness AJ. Development and use of mechanical devices for simulation of seizure and hemorrhage in obstetrical team training. Simul Healthc. 2008 Spring;3:42-6. PMID: 19088641; X-3

1200. Dankert T, Vleugels M. Hysteroscopic resection of retained placental tissue: A feasibility study. Gynecological Surgery. 2008 May;5:121-4. PMID: X-2, X-4, X-5

1201. Dedes I, Ziogas V. Circular isthmic-cervical sutures can be an alternative method to control peripartum haemorrhage during caesarean section for placenta praevia accreta. Arch Gynecol Obstet. 2008 Dec;278:555-7. PMID: 18449555; X-5

1202. Deneux-Tharaux C, Macfarlane A, Winter C, et al. Policies for manual removal of placenta at vaginal delivery: variations in timing within Europe. BJOG. 2008 Jan;116:119-24. PMID: 19087083; X-1, X-2

1203. Desbriere R, Courbiere B, Mattei S, et al. Hemostatic multiple square suturing is an effective treatment for the surgical management of intractable obstetric hemorrhage. Eur J Obstet Gynecol Reprod Biol. 2008 Jun;138(2):244-6. PMID: 17490801; X-5

1204. Domini E, Guidi M, Guazzini S, et al. Pre-operative transvaginal clamping of uterine a. descending branches, a safe and reliable manoeuver to prevent profuse LUS bleeding during Caesarean Section for Central Placenta previa. A preliminary report. Giornale Italiano di Ostetricia e Ginecologia. 2008 May;30:179-80. PMID: X-1, X-2, X-4, X-5

1205. Doumouchtsis SK, Papageorghiou AT, Vernier C, et al. Management of postpartum hemorrhage by uterine balloon tamponade: prospective evaluation of effectiveness. Acta Obstet Gynecol Scand. 2008;87:849-55. PMID: 18704777; X-4, X-5

1206. Egging DF, van Vlijmen-Willems I, Choi J, et al. Analysis of obstetric complications and uterine connective tissue in tenascin-X-deficient humans and mice. Cell Tissue Res. 2008 Jun;332:523-32. PMID: 18335242; X-3, X-4

1207. Eskild A, Vatten LJ. Abnormal bleeding associated with preeclampsia: a population study of 315,085 pregnancies. Acta Obstet Gynecol Scand. 2008;88:154-8. PMID: 19093234; X-4

1208. Farley DM, O'Hara MH, Frazier LM, et al. Urgent delivery, diabetes and shoulder dystocia: What can we learn from observational research? Expert Review of Obstetrics and Gynecology. 2008 May;3:301-15. PMID: X-3, X-4

1209. Fenger-Eriksen C, Lindberg-Larsen M, Christensen AQ, et al. Fibrinogen concentrate substitution therapy in patients with massive haemorrhage and low plasma fibrinogen concentrations. Br J Anaesth. 2008 Dec;101:769-73. PMID: 18818192; X-5

1210. Fesslova VM, Villa L, Chessa M, et al. Prospective evaluation from single centre of pregnancy in women with congenital heart disease. Int J Cardiol. 2008 Jan 9;131:257-64. PMID: 18191250; X-4

1211. Figueras A, Narvaez E, Valsecia M, et al. An education and motivation intervention to change clinical management of the third stage of labor - the GIRMMAHP Initiative. Birth. 2008 Dec;35:283-90. PMID: 19036040; X-2, X-4, X-5

1212. Freedman RA, Bauer KA, Neuberg DS, et al. Timing of postpartum enoxaparin administration and severe postpartum hemorrhage. Blood Coagul Fibrinolysis. 2008 Jan;19:55-9. PMID: 18180616; X-4, X-5

1213. Garba SN, Ajayi AD, Isa A, et al. Incidence and causes of maternal mortality in Ahmadu Bello University Teaching Hospital, Zaria, Nigeria. West African Journal of Nursing. 2008;19:15-20. PMID: X-2, X-4

1214. Geller SE, Goudar SS, Adams MG, et al. Factors associated with acute postpartum hemorrhage in low-risk women delivering in rural India. Int J Gynaecol Obstet. 2008 Apr;101:94-9. PMID: 18291401; X-2, X-4

1215. Ghaemmaghami F, Karimi Zarchi M. Early onset of metastatic gestational trophoblastic disease after full-term pregnancy. Int J Biomed Sci. 2008 Mar;4:74-7. PMID: 23675070; X-1, X-5

1216. Ghaemmaghami F, Zarchi MK. Early onset of metastatic gestational trophoblastic disease after full-term pregnancy. United States: Master Publishing Group; 2008. http://www.ijbs.org/User/ContentFullText.aspx?VolumeNO=4&StartPage=74&Type=pdfhttp://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed8&NEWS=N&AN=2008230828. Accessed on (Ghaemmaghami) Tehran University of Medical Sciences, Tehran, Iran, Islamic Republic of 4.

1217. Gibson CS, Goldwater PN, MacLennan AH, et al. Fetal exposure to herpesviruses may be associated with pregnancy-induced hypertensive disorders and preterm birth in a Caucasian population. BJOG. 2008 Mar;115:492-500. PMID: 18271886; X-3, X-4

1218. Goudar SS, Chakraborty H, Edlavitch SA, et al. Variation in the postpartum hemorrhage rate in a clinical trial of oral misoprostol. J Matern Fetal Neonatal Med. 2008 Aug;21:559-64. PMID: 18609354; X-4, X-5

1219. Haggertay H. Should midwives delay administration of syntometrine? Midwives. 2008;11:16-. PMID: X-1

1220. Haththotuwa HR, Attygalle D, Jayatilleka AC, et al. Maternal mortality due to cardiac disease in Sri Lanka. Int J Gynaecol Obstet. 2008 Mar;104:194-8. PMID: 19081565; X-2, X-4

1221. Henry DE, Cheng YW, Shaffer BL, et al. Perinatal outcomes in the setting of active phase arrest of labor. Obstet Gynecol. 2008 Nov;112:1109-15. PMID: 18978113; X-4

1222. Heslehurst N, Simpson H, Ells LJ, et al. The impact of maternal BMI status on pregnancy outcomes with immediate short-term obstetric resource implications: a meta-analysis. Obes Rev. 2008 Nov;9:635-83. PMID: 18673307; X-1

1223. Higson A. Cord clamping... Upfront by Helen Haggertay, June/July issue (p 16). Midwives. 2008;11:14-5. PMID: X-1

1224. Hillier TA, Vesco KK, Whitlock EP, et al. U.S. Preventive Services Task Force Evidence Syntheses, formerly Systematic Evidence Reviews. Screening for Gestational Diabetes Mellitus. 2008PMID: 20722157; X-1

1225. Hinshaw K, Simpson S, Cummings S, et al. A randomised controlled trial of early versus delayed oxytocin augmentation to treat primary dysfunctional labour in nulliparous women. BJOG. 2008 Sep;115:1289-95; discussion 95-6. PMID: 18715415; X-4

1226. Hodges M. Unmet expectations: when patient safety takes a back seat. Nurs Womens Health. 2008 Feb;12:88-7. PMID: 18257893; X-1, X-4, X-5

1227. Hofmeyr GJ, Abdel-Aleem H, Abdel-Aleem MA. Uterine massage for preventing postpartum haemorrhage. Cochrane Database Syst Rev. 2008:CD006431. PMID: 18646154; X-1, X-4

1228. Hoque M, Hoque E, Kader SB. Pregnancy complications of gradmultiparity at a rural setting of South Africa. Iranian Journal of Reproductive Medicine. 2008;6:25-31. PMID: X-2, X-4

1229. Hounton SH, Sombie I, Townend J, et al. The tip of the iceberg: evidence of seasonality in institutional maternal mortality and implications for health resources management in Burkina Faso. Scand J Public Health. 2008 May;36:310-7. PMID: 18519302; X-2, X-4

1230. Ismail NA, Saharan WS, Zaleha MA, et al. Kiwi Omnicup versus Malmstrom metal cup in vacuum assisted delivery: a randomized comparative trial. J Obstet Gynaecol Res. 2008 Jun;34:350-3. PMID: 18686348; X-2, X-4, X-5

1231. Ivy R, Ahmed FU, Ara H, et al. Uterine bracing surgical suture during caesarean section to prevent post-partum haemorrage in high risk cases; a study in Maternal and Child Health Training Institute,(MCHTI), Azimpur, Dhaka. Bangladesh Journal of Obstetrics and Gynecology. 2008;23PMID: X-2, X-4

1232. Jahromi BN, Husseini Z. Pregnancy outcome at maternal age 40 and older. Taiwan J Obstet Gynecol. 2008 Sep;47:318-21. PMID: 18935996; X-2, X-4

1233. Jambor C, Kozek-Langenecker SA, Frietsch T, et al. Thrombelastography Should Be d in the Algorithm for the Management of Postpartum Hemorrhage. Transfus Med Hemother. 2008;35:391-2. PMID: 21512628; X-1, X-4, X-5

1234. James AH, Patel ST, Watson W, et al. An assessment of medical resource utilization and hospitalization cost associated with a diagnosis of anemia in women with obstetrical bleeding in the United States. J Womens Health (Larchmt). 2008 Oct;17:1279-84. PMID: 18752459; X-4

1235. Jetti A, Poovali S, Stanley KP. Prolonged pregnancy. Obstetrics, Gynaecology and Reproductive Medicine. 2008 January;18:7-11. PMID: X-1

1236. Josephs SC. Obstetric and gynecologic emergencies: a review of indications and interventional techniques. Semin Intervent Radiol. 2008 Dec;25:337-46. PMID: 21326575; X-1

1237. Kahn S, Meyer A, Beste J, et al. Clinical inquiries. Prophylactic oxytocin: Before or after placental delivery? J Fam Pract. 2008 Dec;57:817-8. PMID: 19080766; X-1, X-4

1238. Kashanian M, Fekrat M, Masoomi Z, et al. Comparison of active and expectant management on the duration of the third stage of labour and the amount of blood loss during the third and fourth stages of labour: a randomised controlled trial. Midwifery. 2008 Apr;26:241-5. PMID: 18706744; X-2, X-4

1239. Kavle JA, Stoltzfus RJ, Witter F, et al. Association between anaemia during pregnancy and blood loss at and after delivery among women with vaginal births in Pemba Island, Zanzibar, Tanzania. J Health Popul Nutr. 2008 Jun;26:232-40. PMID: 18686556; X-2, X-4

1240. Kayabasoglu F, Guzin K, Aydogdu S, et al. Emergency peripartum hysterectomy in a tertiary Istanbul hospital. Arch Gynecol Obstet. 2008 Sep;278:251-6. PMID: 18193245; X-2, X-4

1241. Kirschner R, Baker L. Percutaneous vascular embolization: meeting the needs of multiple patients. Journal of Vascular Nursing. 2008;26:87-. PMID: X-1, X-4, X-5

1242. Knight M, Kurinczuk JJ, Spark P, et al. Cesarean delivery and peripartum hysterectomy. Obstet Gynecol. 2008 Jan;111:97-105. PMID: 18165397; X-4

1243. Kongnyuy EJ, Mlava G, van den Broek N. Facility-based maternal death review in three districts in the central region of Malawi: an analysis of causes and characteristics of maternal deaths. Womens Health Issues. 2008 Jan-Feb;19:14-20. PMID: 19111783; X-2, X-4

1244. Kongnyuy EJ, Mlava G, van den Broek N. Using criteria-based audit to improve the management of postpartum haemorrhage in resource limited countries: a case study of Malawi. Matern Child Health J. 2008 Nov;13:873-8. PMID: 18780170; X-2, X-4

1245. Koskas M, Nizard J, Salomon LJ, et al. Abdominal and pelvic ultrasound findings within 24 hours following uneventful Cesarean section. Ultrasound Obstet Gynecol. 2008 Sep;32:520-6. PMID: 18683208; X-3, X-4

1246. Kovavisarach E, Nualplot P. Outcome of pregnancy among parturients complicated with heart disease in Rajavithi Hospital. J Med Assoc Thai. 2008 Nov;90:2253-9. PMID: 18181303; X-2, X-4

1247. Lambert JR, Austin SK, Peebles D, et al. Audit of the peri-delivery use of unfractionated heparin in women on therapeutic low-molecular weight heparin. Br J Haematol. 2008 Jul;142:453-6. PMID: 18510687; X-3, X-4

1248. Lefkou E, Hunt B. Haematological management of obstetric haemorrhage. Obstetrics, Gynaecology and Reproductive Medicine. 2008 October;18:265-71. PMID: X-1

1249. Low LK, Bailey JM, Sacks E, et al. Postpartum hemorrhage prevention: a case study in northern rural Honduras. J Midwifery Womens Health. 2008 Jan-Feb;53:e1-6. PMID: 18164426; X-2, X-4

1250. Lynch CM, Sheridan C, Breathnach FM, et al. Near miss maternal morbidity. Ir Med J. 2008 May;101:134-6. PMID: 18624257; X-5

1251. Maassen MS, Lambers MD, Tutein Nolthenius RP, et al. Complications and failure of uterine artery embolisation for intractable postpartum haemorrhage. Bjog. 2008 Jan;116:55-61. PMID: 19016685; X-5

1252. Macdonald S, Brown K, Wyatt M, et al. Endgames. BMJ: British Medical Journal (International Edition). 2008;337:1359-. PMID: X-1, X-4, X-5

1253. Macleod M, Strachan B, Bahl R, et al. A prospective cohort study of maternal and neonatal morbidity in relation to use of episiotomy at operative vaginal delivery. BJOG. 2008 Dec;115:1688-94. PMID: 19035943; X-4

1254. Malkiel A, Pnina M, Aloni H, et al. Primiparity: a traditional intrapartum obstetric risk reconfirmed. Isr Med Assoc J. 2008 Jul;10:508-11. PMID: 18751628; X-4

1255. Maslovitz S, Barkai G, Lessing JB, et al. Improved accuracy of postpartum blood loss estimation as assessed by simulation. Acta Obstet Gynecol Scand. 2008;87:929-34. PMID: 18720041; X-3, X-4

1256. Mathe JK. Obstetric hysterectomy in rural Democratic Republic of the Congo: an analysis of 40 cases at Katwa Hospital. Afr J Reprod Health. 2008 Apr;12:60-6. PMID: 20695156; X-2

1257. Mazhar SB, Rahim F, Furukh T. Fetomaternal outcome in triplet pregnancy. J Coll Physicians Surg Pak. 2008 Apr;18:217-21. PMID: 18474154; X-2, X-4

1258. McFarlane MEC, Plummer JM, Remy T, et al. Jejunouterine fistula: A case report. Gynecological Surgery. 2008 May;5:173-5. PMID: X-1

1259. Meydanli MM, Turkcuoglu I, Engin-Ustun Y, et al. Meydanli compression suture: new surgical procedure for postpartum hemorrhage due to uterine atony associated with abnormal placental adherence. J Obstet Gynaecol Res. 2008 Dec;34:964-70. PMID: 19012694; X-2, X-4, X-5

1260. Miller S, Tudor C, Thorsten V, et al. Comparison of maternal and newborn outcomes of Tibetan and Han Chinese delivering in Lhasa, Tibet. J Obstet Gynaecol Res. 2008 Dec;34:986-93. PMID: 19012697; X-2, X-4

1261. Misra R, Sharma BL, Gupta R, et al. Indian Rheumatology Association consensus statement on the management of adults with rheumatoid arthritis. Indian Journal of Rheumatology. 2008 November;3:S1-S16. PMID: X-1

1262. Mousa HA, Cording V, Alfirevic Z. Risk factors and interventions associated with major primary postpartum hemorrhage unresponsive to first-line conventional therapy. Acta Obstet Gynecol Scand. 2008;87:652-61. PMID: 18568465; X-4, X-5

1263. Murphy DJ, MacGregor H, Munishankar B, et al. A randomised controlled trial of oxytocin 5IU and placebo infusion versus oxytocin 5IU and 30IU infusion for the control of blood loss at elective caesarean section--pilot study. ISRCTN 40302163. Eur J Obstet Gynecol Reprod Biol. 2008 Jan;142:30-3. PMID: 18977579; X-4

1264. Narin C, Reyhanoglu H, Tulek B, et al. Comparison of different dose regimens of enoxaparin in deep vein thrombosis therapy in pregnancy. Adv Ther. 2008 Jun;25:585-94. PMID: 18568442; X-4

1265. Neilson JP. Cochrane Update: Effect of timing of umbilical cord clamping at birth of term infants on mother and baby outcomes. Obstet Gynecol. 2008 Jul;112:177-8. PMID: 18591323; X-1

1266. Nohira T, Osakabe Y, Suda S, et al. Successful management by recombinant activated factor VII in a case of disseminated intravascular coagulopathy caused by obstetric hemorrhage. Journal of Obstetrics & Gynaecology Research. 2008;34:623-30. PMID: X-4, X-5

1267. Nour NM. An introduction to maternal mortality. Rev Obstet Gynecol. 2008 Spring;1:77-81. PMID: 18769668; X-1

1268. Okonkwo CA, Ande ABA, Ovbagbedia O, et al. Iatrogenic injury to the internal iliac vein: A life threatening complication of internal iliac artery ligation. Pakistan Journal of Medical Sciences. 2008 April/June;24:325-7. PMID: X-1, X-2

1269. Olopade FE, Lawoyin TO. Maternal mortality in a Nigerian Maternity Hospital. African Journal Biomedical Research. 2008;11:267-73. PMID: X-2, X-4

1270. Orji E, Agwu F, Loto O, et al. A randomized comparative study of prophylactic oxytocin versus ergometrine in the third stage of labor. Int J Gynaecol Obstet. 2008 May;101:129-32. PMID: 18164304; X-4

1271. Owolabi AT, Dare FO, Fasubaa OB, et al. Risk factors for retained placenta in southwestern Nigeria. Singapore Med J. 2008 Jul;49:532-7. PMID: 18695860; X-2, X-4

1272. Palacios-Jaraquemada JM. Diagnosis and management of placenta accreta. Best Pract Res Clin Obstet Gynaecol. 2008 Dec;22:1133-48. PMID: 18815074; X-1

1273. Patted SS, Goudar SS, Naik VA, et al. Side effects of oral misoprostol for the prevention of postpartum hemorrhage: results of a community-based randomised controlled trial in rural India. J Matern Fetal Neonatal Med. 2008 Jan;22:24-8. PMID: 19089777; X-2, X-4

1274. Patterson DA, Winslow M, Matus CD. Spontaneous vaginal delivery. Am Fam Physician. 2008 Aug 1;78:336-41. PMID: 18711948; X-1

1275. Perez A, Bacallao J, Alcina S, et al. Severe maternal morbidity in the intensive care unit of a havana teaching hospital,1998 to 2004. MEDICC Rev. 2008 Jul;10:17-23. PMID: 21487365; X-2, X-4

1276. Phelps CL. An educational program: simulation training for common obstetrical emergencies. Communicating Nursing Research. 2008;41:354-. PMID: X-1, X-3

1277. Plaat F. Anaesthetic issues related to postpartum haemorrhage (excluding antishock garments). Best Pract Res Clin Obstet Gynaecol. 2008 Dec;22:1043-56. PMID: 18849197; X-1

1278. Pliego JF, Wehbe-Janek H, Rajab MH, et al. OB/GYN boot cAMP using high-fidelity human simulators: enhancing residents' perceived competency, confidence in taking a leadership role, and stress hardiness. Simul Healthc. 2008 Summer;3:82-9. PMID: 19088646; X-3, X-4

1279. Quiroz LH, Chang H, Blomquist JL, et al. Scheduled cesarean delivery: maternal and neonatal risks in primiparous women in a community hospital setting. Am J Perinatol. 2008 Apr;26:271-7. PMID: 19021093; X-4

1280. Rahman SS, Myers JE, Gillham JC, et al. Post partum haemorrhage secondary to uterine atony, complicated by platelet storage pool disease and partial placenta diffusa: a case report. Cases J. 2008;1:393. PMID: 19077291; X-2, X-5

1281. Ratnam LA, Gibson M, Sandhu C, et al. Transcatheter pelvic arterial embolisation for control of obstetric and gynaecological haemorrhage. J Obstet Gynaecol. 2008 Aug;28:573-9. PMID: 19003648; X-2, X-5

1282. Rayamajhi R, Thapa M, Pande S. The challenge of grandmultiparity in obstetric practice. Kathmandu Univ Med J (KUMJ). 2008 Jan-Mar;4:70-4. PMID: 18603872; X-2, X-4

1283. Raza F, Majeed S. Intracervical PGE2 gel for cervical ripening and induction of labour. Pakistan Journal of Medical Sciences. 2008 April/June;24:241-5. PMID: X-2, X-4

1284. Roberts CL, Lain SJ, Morris JM. Variation in adherence to recommendations for management of the third stage of labor. Int J Gynaecol Obstet. 2008 Nov;103:172-3. PMID: 18692186; X-2, X-4, X-5

1285. Roy A, Patra KK, Mukhopadhyay S, et al. Study of drotaverine on first stage of labour and pregnancy outcome. J Indian Med Assoc. 2008 Aug;105:450, 2. PMID: 18236908; X-2, X-4

1286. Salkeld E, Ferris LE, Juurlink DN. The risk of postpartum hemorrhage with selective serotonin reuptake inhibitors and other antidepressants. J Clin Psychopharmacol. 2008 Apr;28:230-4. PMID: 18344737; X-4

1287. Searle E, Pavord S, Alfirevic Z. Recombinant factor VIIa and other pro-haemostatic therapies in primary postpartum haemorrhage. Best Pract Res Clin Obstet Gynaecol. 2008 Dec;22:1075-88. PMID: 18838340; X-1

1288. Sentilhes L, Gromez A, Razzouk K, et al. B-Lynch suture for massive persistent postpartum hemorrhage following stepwise uterine devascularization. Acta Obstet Gynecol Scand. 2008;87:1020-6. PMID: 18927949; X-5

1289. Sentilhes L, Gromez A, Trichot C, et al. Fertility after B-Lynch suture and stepwise uterine devascularization. Fertil Steril. 2008 Mar;91:934 e5-9. PMID: 18996514; X-5

1290. Sentilhes L, Trichot C, Resch B, et al. Fertility and pregnancy outcomes following uterine devascularization for severe postpartum haemorrhage. Hum Reprod. 2008 May;23:1087-92. PMID: 18321892; X-5

1291. Shah AA, Grotegut CA, Likes CE, 3rd, et al. Heterotopic cervical pregnancy treated with transvaginal ultrasound-guided aspiration resulting in cervical site varices within the myometrium. Fertil Steril. 2008 Mar;91:934 e19-22. PMID: 19022428; X-1, X-3, X-4

1292. Sharathkumar A, Hardesty B, Greist A, et al. Variability in bleeding phenotype in Amish carriers of haemophilia B with the 31008 C-->T mutation. Haemophilia. 2008 Jan;15:91-100. PMID: 18721150; X-4

1293. Siggelkow W, Boehm D, Skala C, et al. The influence of macrosomia on the duration of labor, the mode of delivery and intrapartum complications. Arch Gynecol Obstet. 2008 Dec;278:547-53. PMID: 18379807; X-4

1294. Silvestre FT, Bartolome JA, Kamimura S, et al. Postpartum suppression of ovarian activity with a Deslorelin implant enhanced uterine involution in lactating dairy cows. Anim Reprod Sci. 2008 Jan;110:79-95. PMID: 18243603; X-1, X-3

1295. Singh Y, Shankar A, Rohatgi S. Abruptio placentae leading to fetal death and adult respiratory distress syndrome. Medical Journal Armed Forces India. 2008 October;64:389-90. PMID: X-1, X-2

1296. Soyer P, Fargeaudou Y, Morel O, et al. Severe postpartum haemorrhage from ruptured pseudoaneurysm: successful treatment with transcatheter arterial embolization. Eur Radiol. 2008 Jun;18:1181-7. PMID: 18270711; X-5

1297. Sriram S, Robertson MS. Critically ill obstetric patients in Australia: a retrospective audit of 8 years' experience in a tertiary intensive care unit. Crit Care Resusc. 2008 Jun;10:124. PMID: 18522526; X-4, X-5

1298. Stafford I, Belfort M. Placenta accreta, increta, and percreta: lifesaving strategies to stop the bleeding... part 1 of this two-part article. Contemporary OB/GYN. 2008;53:48-53. PMID: X-1

1299. Stafford I, Belfort MA. Placenta accreta, increta, and percreta: a team-based approach starts with prevention. Contemporary OB/GYN. 2008;53:76-82. PMID: X-1

1300. Stafford I, Dildy GA, Clark SL, et al. Visually estimated and calculated blood loss in vaginal and cesarean delivery. Am J Obstet Gynecol. 2008 Nov;199:519 e1-7. PMID: 18639209; X-2, X-4, X-5

1301. Steinauer JE, Diedrich JT, Wilson MW, et al. Uterine artery embolization after abortion. ACOG Clinical Review. 2008;13:11-. PMID: X-1, X-3, X-4

1302. Sutherland T, Bishai DM. Cost-effectiveness of misoprostol and prenatal iron supplementation as maternal mortality interventions in home births in rural India. Int J Gynaecol Obstet. 2008 Mar;104:189-93. PMID: 19081564; X-1, X-2, X-3, X-4

1303. Symon A. Nobody wins. British Journal of Midwifery. 2008;16:609-10. PMID: X-1

1304. Tan WM, Klein MC, Saxell L, et al. How do physicians and midwives manage the third stage of labor? Birth. 2008 Sep;35:220-9. PMID: 18844648; X-3, X-4

1305. Tantbirojn P, Crum CP, Parast MM. Pathophysiology of placenta creta: the role of decidua and extravillous trophoblast. Placenta. 2008 Jul;29:639-45. PMID: 18514815; X-1, X-4

1306. Tehseen F, Anwar A, Arfat Y. Intraumbilical veinous injection oxytocin in the active management of third stage of labour. J Coll Physicians Surg Pak. 2008 Sep;18:551-4. PMID: 18803892; X-2, X-3, X-4

1307. Tharakan T, Jha J. Randomized double blind prospective trial of active management of the third stage of labor. Archives of Medical Science. 2008 March;4:79-82. PMID: X-3, X-4

1308. Thomas SV, Sindhu K, Ajaykumar B, et al. Maternal and obstetric outcome of women with epilepsy. Seizure. 2008 Apr;18:163-6. PMID: 18805707; X-4

1309. Tibary A, Rodriguez J, Sandoval S. Reproductive emergencies in camelids. Theriogenology. 2008 Aug;70:515-34. PMID: 18514807; X-1, X-2, X-3, X-4

1310. Tsu VD, Luu HT, Mai TT. Does a novel prefilled injection device make postpartum oxytocin easier to administer? Results from midwives in Vietnam. Midwifery. 2008 Aug;25:461-5. PMID: 18281131; X-2, X-3, X-4

1311. Uchiyama D, Koganemaru M, Abe T, et al. Arterial catheterization and embolization for management of emergent or anticipated massive obstetrical hemorrhage. Radiat Med. 2008 May;26:188-97. PMID: 18509718; X-5

1312. Upadhyay K, Scholefield H. Risk management and medicolegal issues related to postpartum haemorrhage. Best Pract Res Clin Obstet Gynaecol. 2008 Dec;22:1149-69. PMID: 18819846; X-1

1313. van den Bosch T, Daemen A, Van Schoubroeck D, et al. Occurrence and outcome of residual trophoblastic tissue: a prospective study. J Ultrasound Med. 2008 Mar;27:357-61. PMID: 18314513; X-4, X-5

1314. Villers MS, Jamison MG, De Castro LM, et al. Morbidity associated with sickle cell disease in pregnancy. Am J Obstet Gynecol. 2008 Aug;199:125 e1-5. PMID: 18533123; X-4

1315. Wakasa T, Wakasa K, Nakayama M, et al. Change in morphology and oxytocin receptor expression in the uterine blood vessels during the involution process. Gynecol Obstet Invest. 2008;67:137-44. PMID: 19005262; X-3, X-4

1316. Walraven G, Wanyonyi S, Stones W. Management of post-partum hemorrhage in low-income countries. Best Pract Res Clin Obstet Gynaecol. 2008 Dec;22:1013-23. PMID: 18848808; X-1

1317. Wandabwa J, Doyle P, Todd J, et al. Risk factors for severe post partum haemorrhage in Mulago hospital, Kampala, Uganda. East Afr Med J. 2008 Feb;85:64-71. PMID: 18557249; X-2, X-4

1318. Wei S, Fraser WD. Review: misoprostol and intramuscular prostaglandins do not prevent postpartum haemorrhage more than injectable uterotonics. Evid Based Med. 2008 Jun;13:82. PMID: 18515629; X-1

1319. Winograd RH. Uterine artery embolization for postpartum hemorrhage. Best Pract Res Clin Obstet Gynaecol. 2008 Dec;22:1119-32. PMID: 18790676; X-1

1320. Wolman I, Altman E, Fait G, et al. Evacuating retained products of conception in the setting of an ultrasound unit. Fertil Steril. 2008 Apr;91:1586-8. PMID: 19064261; X-4, X-5

1321. Wong HS, Hutton J, Zuccollo J, et al. The maternal outcome in placenta accreta: the significance of antenatal diagnosis and non-separation of placenta at delivery. N Z Med J. 2008 Jul 4;121:30-8. PMID: 18677328; X-4, X-5

1322. Yadav S, Choudhary D, K.C N, et al. Adverse reproductive outcomes associated with teenage pregnancy. Canada: McGill University (3655 Promenade Sir William Osler, Montreal QUE H3G 1Y6, Canada); 2008. http://www.medicine.mcgill.ca/mjm/mjm1102.pdfhttp://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed8&NEWS=N&AN=2009145467. Accessed on (Yadav, Choudhary, K.C., Kumar, Mandal, Sharma, Chauhan, Agrawal) Department of Medicine, Department of Surgery, Institute of Medicine (IOM), Maharajgunj Campus, Maharajgunj, Kathmandu, Nepal 11.

1323. Yanagisawa S, Wakai S. Professional healthcare use for life-threatening obstetric conditions. J Obstet Gynaecol. 2008 Oct;28:713-9. PMID: 19065367; X-2, X-4

1324. Yazdanpanahi Z, Forouhari S, Parsanezhad ME. Prepregnancy body mass index and gestational weight gain and their association with some pregnancy outcomes. Iranian Red Crescent Medical Journal. 2008;10:326-31. PMID: X-1, X-2, X-4

1325. Yildirim G, Beji NK. Effects of pushing techniques in birth on mother and fetus: a randomized study. Birth. 2008 Mar;35:25-30. PMID: 18307484; X-2, X-4

1326. Yildirim Y, Gultekin E, Kocyigit A, et al. Color Doppler analysis of pelvic arteries following bilateral internal iliac artery ligation for severe postpartum hemorrhage. Int J Gynaecol Obstet. 2008 Jan;104:22-4. PMID: 18962582; X-2, X-5

1327. Yoong W, Memtsa M, Pun S, et al. Pregnancy outcomes of women with pruritus, normal bile salts and liver enzymes: a case control study. Acta Obstet Gynecol Scand. 2008;87:419-22. PMID: 18382867; X-4

1328. Yu PC, Ou HY, Tsang LL, et al. Prophylactic intraoperative uterine artery embolization to control hemorrhage in abnormal placentation during late gestation. Fertil Steril. 2008 May;91:1951-5. PMID: 18501901; X-2, X-4, X-5

1329. Zuberi NF, Durocher J, Sikander R, et al. Misoprostol in addition to routine treatment of postpartum hemorrhage: a hospital-based randomized-controlled trial in Karachi, Pakistan. BMC Pregnancy Childbirth. 2008;8:40. PMID: 18718007; X-2

1330. Zwart JJ, Richters JM, Ory F, et al. Severe maternal morbidity during pregnancy, delivery and puerperium in the Netherlands: a nationwide population-based study of 371,000 pregnancies. Bjog. 2008 Jun;115:842-50. PMID: 18485162; X-4

1331. . Carbetocin: a synthetic oxytocin analogue with no clear advantages. Prescrire Int. 2009 Aug;17:150. PMID: 19492484; X-1, X-4

1332. . Bulletin board. Journal of Women's Health (15409996). 2009;18:919-22. PMID: X-1, X-4, X-5

1333. . Induction with misoprostol increases postpartum blood loss. Contemporary OB/GYN. 2009;54:18-. PMID: X-1, X-4

1334. . Maternity and neonatal. Nursing Times. 2009;105:6-. PMID: X-1, X-4

1335. . Uterine balloon tamponade for postpartum hemorrhage. ACOG Clinical Review. 2009;14:3-. PMID: X-1, X-4

1336. . Women needed for study. Australian Nursing Journal. 2009;16:43-. PMID: X-1, X-4, X-5

1337. . WHO Guidelines Approved by the Guidelines Review Committee. WHO Guidelines for the Management of Postpartum Haemorrhage and Retained Placenta. 2009PMID: 23844453; X-1

1338. Chapter 16: caring for the woman experiencing complications during the postpartal period. Maternal-child nursing care: optimizing outcomes for mothers, children, and families. Philadelphia, PA: F.A. Davis Company; 2009:511-40.

1339. Abbasi N, Danish N, Shakoor F, et al. Effectiveness and safety of vaginal misoprostol for induction of labour in unfavourable cervix in 3rd trimester. J Ayub Med Coll Abbottabad. 2009 Jul-Sep;20:33-5. PMID: 19610511; X-2, X-4

1340. Akwuruoha E, Kamanu C, Onwere S, et al. Grandmultiparity and pregnancy outcome in Aba, Nigeria: a case-control study. Arch Gynecol Obstet. 2009 Feb;283:167-72. PMID: 19967382; X-2, X-4

1341. Al-Harazi AH, Frass KA. Sublingual misoprostol for the prevention of postpartum hemorrhage. Saudi Med J. 2009 Jul;30:912-6. PMID: 19618006; X-2, X-4

1342. Al-Harbi NA, Al-Abra ES, Alabbad NS. Utero-vaginal packing. Seven years review in the management of post partum hemorrhage due to placenta previa/accreta at a maternity hospital in Central Saudi Arabia. Saudi Med J. 2009 Feb;30:243-6. PMID: 19198714; X-2

1343. Al-Kadri HM, Tariq S, Tamim HM. Risk factors for postpartum hemorrhage among Saudi women. Saudi Med J. 2009 Oct;30:1305-10. PMID: 19838439; X-2, X-4

1344. Allen R, O'Brien BM. Uses of misoprostol in obstetrics and gynecology. Rev Obstet Gynecol. 2009 Summer;2:159-68. PMID: 19826573; X-1

1345. Allen VM, Baskett TF, O'Connell CM, et al. Maternal and perinatal outcomes with increasing duration of the second stage of labor. Obstet Gynecol. 2009 Jun;113:1248-58. PMID: 19461419; X-4

1346. Althabe F, Aleman A, Tomasso G, et al. A pilot randomized controlled trial of controlled cord traction to reduce postpartum blood loss. Int J Gynaecol Obstet. 2009 Oct;107:4-7. PMID: 19541304; X-2, X-4, X-5

1347. Al-Zirqi I, Vangen S, Forsen L, et al. Effects of onset of labor and mode of delivery on severe postpartum hemorrhage. Am J Obstet Gynecol. 2009 Sep;201:273 e1-9. PMID: 19733277; X-4

1348. Andersen AS, Berthelsen JG, Bergholt T. Venous thromboembolism in pregnancy: prophylaxis and treatment with low molecular weight heparin. Acta Obstet Gynecol Scand. 2009;89:15-21. PMID: 19916891; X-4

1349. Andreani M, Vergani P, Ghidini A, et al. Are ultrasonographic myoma characteristics associated with blood loss at delivery? Ultrasound Obstet Gynecol. 2009 Sep;34:322-5. PMID: 19670350; X-4

1350. Arduini M, Epicoco G, Clerici G, et al. B-Lynch suture, intrauterine balloon, and endouterine hemostatic suture for the management of postpartum hemorrhage due to placenta previa accreta. Int J Gynaecol Obstet. 2009 Mar;108:191-3. PMID: 19945698; X-4, X-5

1351. Arora S, Williams RM, Torrie P, et al. Sub-involution of placental site after first trimester miscarriage: sonographic appearances and a new approach to management. Ultrasound. 2009;17:103-5. PMID: X-4

1352. Asch DA, Nicholson S, Srinivas S, et al. Evaluating obstetrical residency programs using patient outcomes. JAMA. 2009 Sep 23;302:1277-83. PMID: 19773562; X-3, X-4

1353. Bahar A, Abusham A, Eskandar M, et al. Risk factors and pregnancy outcome in different types of placenta previa. J Obstet Gynaecol Can. 2009 Feb;31:126-31. PMID: 19327211; X-3

1354. Ball H. Active management of the third state of labor is rare in some developing countries. International Perspectives on Sexual & Reproductive Health. 2009;35:105-6. PMID: X-1, X-2, X-4, X-5

1355. Barillari G, Frigo MG, Casarotto M, et al. Use of recombinant activated factor VII in severe post-partum haemorrhage: data from the Italian Registry: a multicentric observational retrospective study. Thromb Res. 2009 Dec;124:e41-7. PMID: 19783283; X-2, X-4, X-5

1356. Basurko C, Carles G, Youssef M, et al. Maternal and fetal consequences of dengue fever during pregnancy. Eur J Obstet Gynecol Reprod Biol. 2009 Nov;147:29-32. PMID: 19632027; X-2, X-4

1357. Bauer ST, Bonanno C. Abnormal placentation. Semin Perinatol. 2009 Apr;33:88-96. PMID: 19324237; X-1

1358. Berg CJ, Mackay AP, Qin C, et al. Overview of maternal morbidity during hospitalization for labor and delivery in the United States: 1993-1997 and 2001-2005. Obstet Gynecol. 2009 May;113:1075-81. PMID: 19384123; X-4

1359. Bodelon C, Bernabe-Ortiz A, Schiff MA, et al. Factors associated with peripartum hysterectomy. Obstet Gynecol. 2009 Jul;114:115-23. PMID: 19546767; X-4, X-5

1360. Boel ME, Lee SJ, Rijken MJ, et al. Castor oil for induction of labour: not harmful, not helpful. Aust N Z J Obstet Gynaecol. 2009 Oct;49:499-503. PMID: 19780733; X-2, X-3, X-4

1361. Borruto F, Treisser A, Comparetto C. Utilization of carbetocin for prevention of postpartum hemorrhage after cesarean section: a randomized clinical trial. Arch Gynecol Obstet. 2009 Nov;280:707-12. PMID: 19229549; X-4, X-5

1362. Borup L, Wurlitzer W, Hedegaard M, et al. Acupuncture as pain relief during delivery: a randomized controlled trial. Birth. 2009 Mar;36:5-12. PMID: 19278378; X-3, X-4

1363. Breathnach F, Geary M. Uterine atony: definition, prevention, nonsurgical management, and uterine tamponade. Semin Perinatol. 2009 Apr;33:82-7. PMID: 19324236; X-1

1364. Butwick AJ, Aleshi P, Fontaine M, et al. Retrospective analysis of transfusion outcomes in pregnant patients at a tertiary obstetric center. Int J Obstet Anesth. 2009 Oct;18:302-8. PMID: 19628384; X-4, X-5

1365. Cabero Roura L, Keith LG. Post-partum haemorrhage: diagnosis, prevention and management. J Matern Fetal Neonatal Med. 2009;22 Suppl 2:38-45. PMID: 19951082; X-1, X-2, X-4, X-5

1366. Chantrapitak W, Srijanteok K, Puangsa-art S. Lower uterine segment compression for management of early postpartum hemorrhage after vaginal delivery at Charoenkrung Pracharak Hospital. J Med Assoc Thai. 2009 May;92:600-5. PMID: 19459518; X-2

1367. Chi C, Kulkarni A, Lee CA, et al. The obstetric experience of women with factor XI deficiency. Acta Obstet Gynecol Scand. 2009;88:1095-100. PMID: 19685354; X-4, X-5

1368. Chicoine AL, Boison JO, Parker S, et al. Kinetics and residues after intraperitoneal procaine penicillin G administration in lactating dairy cows. J Vet Pharmacol Ther. 2009 Jun;32:289-95. PMID: 19646094; X-3

1369. Christian P, Khatry SK, LeClerq SC, et al. Effects of prenatal micronutrient supplementation on complications of labor and delivery and puerperal morbidity in rural Nepal. Int J Gynaecol Obstet. 2009 Jul;106:3-7. PMID: 19368922; X-2, X-3, X-4

1370. Chunilal SD, Bates SM. Venous thromboembolism in pregnancy: diagnosis, management and prevention. Thromb Haemost. 2009 Mar;101:428-38. PMID: 19277402; X-1

1371. Coffin CS, Shaheen AA, Burak KW, et al. Pregnancy outcomes among liver transplant recipients in the United States: a nationwide case-control analysis. Liver Transpl. 2009 Jan;16:56-63. PMID: 20035524; X-4

1372. Cohen MR. Medication errors. Look-alike obstetrical drugs: too close for comfort. Nursing. 2009;39:14-. PMID: X-1

1373. Contreras KR, Kominiarek MA, Zollinger TW. The impact of tobacco smoking on perinatal outcome among patients with gestational diabetes. J Perinatol. 2009 May;30:319-23. PMID: 19907429; X-4

1374. Darkaneh RF, Asgharnia M, Aghazadeh S. Hemoperitoneum caused by placenta percreta in the third trimester of pregnancy. Iranian Journal of Medical Sciences. 2009 June;34:145-8. PMID: X-2, X-4

1375. de Vienne CM, Creveuil C, Dreyfus M. Does young maternal age increase the risk of adverse obstetric, fetal and neonatal outcomes: a cohort study. Eur J Obstet Gynecol Reprod Biol. 2009 Dec;147:151-6. PMID: 19733429; X-4

1376. Deering SH, Chinn M, Hodor J, et al. Use of a postpartum hemorrhage simulator for instruction and evaluation of residents. J Grad Med Educ. 2009 Dec;1:260-3. PMID: 21975989; X-3

1377. Delotte J, Novellas S, Koh C, et al. Obstetrical prognosis and pregnancy outcome following pelvic arterial embolisation for post-partum hemorrhage. Eur J Obstet Gynecol Reprod Biol. 2009 Aug;145:129-32. PMID: 19398259; X-1

1378. Devine PC. Obstetric hemorrhage. Semin Perinatol. 2009 Apr;33:76-81. PMID: 19324235; X-1

1379. Dixon L, Fletcher L, Tracy S, et al. Midwives care during the Third Stage of Labour: an analysis of the New Zealand College of Midwives Midwifery Database 2004-2008 [corrected] [published erratum appears in NZ COLL MIDWIVES J 2010 May;42:6]. New Zealand College of Midwives Journal. 2009;41:20-5. PMID: X-4

1380. Dupont C, Touzet S, Colin C, et al. Incidence and management of postpartum haemorrhage following the dissemination of guidelines in a network of 16 maternity units in France. Int J Obstet Anesth. 2009 Oct;18:320-7. PMID: 19733052; X-4, X-5

1381. Eftekhari N, Doroodian M, Lashkarizadeh R. The effect of sublingual misoprostol versus intravenous oxytocin in reducing bleeding after caesarean section. J Obstet Gynaecol. 2009 Oct;29:633-6. PMID: 19757270; X-2, X-4, X-5

1382. El-Hamamy E, Wright A, C BL. The B-Lynch suture technique for postpartum haemorrhage: a decade of experience and outcome. J Obstet Gynaecol. 2009 May;29:278-83. PMID: 19835492; X-1

1383. Eller AG, Porter TF, Soisson P, et al. Optimal management strategies for placenta accreta. BJOG. 2009 Apr;116:648-54. PMID: 19191778; X-2, X-5

1384. Elmir R, Schmied V, Jackson D, et al. A tale of strength. Australian Nursing Journal. 2009;17:43-. PMID: X-1, X-5

1385. ElSedeek M, Awad EE, ElSebaey SM. Evaluation of postpartum blood loss after misoprostol-induced labour. BJOG. 2009 Feb;116:431-5. PMID: 19187376; X-2, X-4, X-5

1386. Errarhay S, Kamaoui I, Bouchikhi C, et al. Sheehan's Syndrome A Case Report and Literature Review. Libyan J Med. 2009;4:81-2. PMID: 21483515; X-2, X-4

1387. Fahy KM. Third stage of labour care for women at low risk of postpartum haemorrhage. J Midwifery Womens Health. 2009 Sep-Oct;54:380-6. PMID: 19720339; X-1, X-3

1388. Fargeaudou Y, Soyer P, Morel O, et al. Severe primary postpartum hemorrhage due to genital tract laceration after operative vaginal delivery: successful treatment with transcatheter arterial embolization. Eur Radiol. 2009 Sep;19:2197-203. PMID: 19415291; X-5

1389. Fernandez MM, Coeytaux F, de Leon RG, et al. Assessing the global availability of misoprostol. Int J Gynaecol Obstet. 2009 May;105:180-6. PMID: 19286183; X-3, X-4

1390. Ferrer P, Roberts I, Sydenham E, et al. Anti-fibrinolytic agents in post partum haemorrhage: a systematic review. BMC Pregnancy Childbirth. 2009;9:29. PMID: 19604358; X-1, X-4, X-5

1391. Focho DA, Nkeng EAP, Lucha CF, et al. Ethnobotanical survey of plants used to treat diseases of the reproductive system and preliminary phytochemical screening of some species of malvaceae in Ndop Central Sub-division, Cameroon. Journal of Medicinal Plants Research. 2009;3:301-14. PMID: X-1, X-3

1392. Forster DA, McEgan K, Ford R, et al. Diabetes and antenatal milk expressing: a pilot project to inform the development of a randomised controlled trial. Midwifery. 2009 Apr;27:209-14. PMID: 19615797; X-3, X-4

1393. Fuchs KM, Miller RS, Berkowitz RL. Optimizing outcomes through protocols, multidisciplinary drills, and simulation. Semin Perinatol. 2009 Apr;33:104-8. PMID: 19324239; X-1

1394. Gadmour YB, Godid FA. Trial of vaginal delivery after previous caesarean section. Jamahiriya Medical Journal. 2009 Spring;9:36-40. PMID: X-2, X-3, X-4

1395. Gallos G, Redai I, Smiley RM. The role of the anesthesiologist in management of obstetric hemorrhage. Semin Perinatol. 2009 Apr;33:116-23. PMID: 19324241; X-1

1396. Gangat N, Wolanskyj AP, Schwager S, et al. Predictors of pregnancy outcome in essential thrombocythemia: a single institution study of 63 pregnancies. Eur J Haematol. 2009 May;82:350-3. PMID: 19243425; X-4

1397. Gaym A. Maternal mortality studies in Ethiopia--magnitude, causes and trends. Ethiop Med J. 2009 Jan;47:95-108. PMID: 19743789; X-1, X-2, X-4

1398. Girija S, Manjunath AP. Comparison of two dosing regimens of vaginal misoprostol for labour induction: A randomised controlled trial. Journal of the Turkish German Gynecology Association. 2009;10:220-5. PMID: X-2, X-3, X-4

1399. Gulmezoglu AM, Souza JP. The evolving management of the third stage of labour. BJOG. 2009 Oct;116 Suppl 1:26-8. PMID: 19740167; X-1

1400. Gulmezoglu AM, Widmer M, Merialdi M, et al. Active management of the third stage of labour without controlled cord traction: a randomized non-inferiority controlled trial. Reprod Health. 2009;6:2. PMID: 19154621; X-4

1401. Gungor T, Simsek A, Ozdemir AO, et al. Surgical treatment of intractable postpartum hemorrhage and changing trends in modern obstetric perspective. Arch Gynecol Obstet. 2009 Sep;280:351-5. PMID: 19130066; X-2, X-4, X-5

1402. Gungorduk K, Yildirim G, Dugan N, et al. Peripartum hysterectomy in Turkey: a case-control study. J Obstet Gynaecol. 2009 Nov;29:722-8. PMID: 19821666; X-2

1403. Halder A. A new uterine suture technique to control PPH in congenitally malformed uterus during caesarean section. J Obstet Gynaecol. 2009 Jul;29:402-4. PMID: 19603317; X-2, X-5

1404. Haque N, Bilkis L, Bari MS, et al. Comparative study between rectally administered misoprostol as a prophylaxis versus conventional intramuscular oxytocin in post partum hemorrhage. Mymensingh Med J. 2009 Jan;18:S40-4. PMID: 19377430; X-2, X-4

1405. Hasegawa J, Matsuoka R, Ichizuka K, et al. Predisposing factors for massive hemorrhage during Cesarean section in patients with placenta previa. Ultrasound Obstet Gynecol. 2009 Jul;34:80-4. PMID: 19565529; X-4

1406. Herdt-Losavio ML, Lin S, Druschel CM, et al. The risk of congenital malformations and other neonatal and maternal health outcomes among licensed cosmetologists. Am J Perinatol. 2009 Oct;26:625-31. PMID: 19391082; X-3, X-4

1407. Higgins CA, Martin W, Anderson L, et al. Maternal obesity and its relationship with spontaneous and oxytocin-induced contractility of human myometrium in vitro. Reprod Sci. 2009 Feb;17:177-85. PMID: 19828431; X-1, X-4

1408. Hofmeyr GJ, Gulmezoglu AM, Novikova N, et al. Misoprostol to prevent and treat postpartum haemorrhage: a systematic review and meta-analysis of maternal deaths and dose-related effects. Bull World Health Organ. 2009 Sep;87:666-77. PMID: 19784446; X-1, X-2, X-5

1409. Huissoud C, Carrabin N, Audibert F, et al. Bedside assessment of fibrinogen level in postpartum haemorrhage by thrombelastometry. BJOG. 2009 Jul;116:1097-102. PMID: 19459866; X-4, X-5

1410. Hunyinbo KI, Fawole AO, Sotiloye OS, et al. Evaluation of criteria-based clinical audit in improving quality of obstetric care in a developing country hospital. Afr J Reprod Health. 2009 Dec;12:59-70. PMID: 19435013; X-2, X-5

1411. Isma N, Svensson PJ, Lindblad B, et al. The effect of low molecular weight heparin (dalteparin) on duration and initiation of labour. J Thromb Thrombolysis. 2009 Aug;30:149-53. PMID: 19949968; X-4

1412. James AH. Von Willebrand disease in women: awareness and diagnosis. Thromb Res. 2009 Nov;124 Suppl 1:S7-10. PMID: 19944259; X-1

1413. James AH, Paglia MJ, Gernsheimer T, et al. Blood component therapy in postpartum hemorrhage. Transfusion. 2009 Nov;49:2430-3. PMID: 19624606; X-4, X-5

1414. James J. Using a reflective model to aid professional development: reactions and responsibilities in management of a major postpartum haemorrhage. MIDIRS Midwifery Digest. 2009;19:534-9. PMID: X-1, X-4

1415. Janssen PA, Saxell L, Page LA, et al. Outcomes of planned home birth with registered midwife versus planned hospital birth with midwife or physician. CMAJ. 2009 Sep 15;181:377-83. PMID: 19720688; X-4

1416. Jarvie E, Ramsay JE. Obstetric management of obesity in pregnancy. Semin Fetal Neonatal Med. 2009 Apr;15:83-8. PMID: 19880362; X-1

1417. Jeffries PR, Bambini D, Hensel D, et al. Constructing maternal-child learning experiences using clinical simulations. J Obstet Gynecol Neonatal Nurs. 2009 Sep-Oct;38:613-23. PMID: 19883484; X-1, X-3, X-4

1418. Jonas K, Johansson LM, Nissen E, et al. Effects of intrapartum oxytocin administration and epidural analgesia on the concentration of plasma oxytocin and prolactin, in response to suckling during the second day postpartum. Breastfeed Med. 2009 Jun;4:71-82. PMID: 19210132; X-3, X-4

1419. Jongkolsiri P, Manotaya S. Placental cord drainage and the effect on the duration of third stage labour, a randomized controlled trial. J Med Assoc Thai. 2009 Apr;92:457-60. PMID: 19374293; X-2, X-3, X-4

1420. Jordan S, Emery S, Watkins A, et al. Associations of drugs routinely given in labour with breastfeeding at 48 hours: analysis of the Cardiff Births Survey. BJOG. 2009 Nov;116:1622-9; discussion 30-2. PMID: 19735379; X-2, X-4, X-5

1421. Joseph KS, Fahey J. Validation of perinatal data in the Discharge Abstract Database of the Canadian Institute for Health Information. Chronic Dis Can. 2009;29:96-100. PMID: 19527567; X-3, X-4

1422. Kalim N, Anwar I, Khan J, et al. Postpartum haemorrhage and eclampsia: differences in knowledge and care-seeking behaviour in two districts of Bangladesh. J Health Popul Nutr. 2009 Apr;27:156-69. PMID: 19489413; X-2, X-3, X-4

1423. Kalinka J, Lipinska M, Serafin M, et al. The evaluation of the efficacy of carbetocin (Pabal) in the prevention of the postpartum haemorrhage among women undergoing emergency cesarean section - The preliminary report. 2009;13:47-56. PMID: X-4

1424. Karoshi M, Keith L. Challenges in managing postpartum hemorrhage in resource-poor countries. Clin Obstet Gynecol. 2009 Jun;52:285-98. PMID: 19407535; X-1

1425. King M, Wrench I, Galimberti A, et al. Introduction of cell salvage to a large obstetric unit: the first six months. Int J Obstet Anesth. 2009 Apr;18:111-7. PMID: 19144508; X-4, X-5

1426. Kirby JM, Kachura JR, Rajan DK, et al. Arterial embolization for primary postpartum hemorrhage. J Vasc Interv Radiol. 2009 Aug;20:1036-45. PMID: 19647182; X-5

1427. Kjaergaard H, Olsen J, Ottesen B, et al. Incidence and outcomes of dystocia in the active phase of labor in term nulliparous women with spontaneous labor onset. Acta Obstet Gynecol Scand. 2009;88:402-7. PMID: 19330572; X-4

1428. Knight M, Callaghan WM, Berg C, et al. Trends in postpartum hemorrhage in high resource countries: a review and recommendations from the International Postpartum Hemorrhage Collaborative Group. BMC Pregnancy Childbirth. 2009;9:55. PMID: 19943928; X-1

1429. Koh E, Devendra K, Tan LK. B-Lynch suture for the treatment of uterine atony. Singapore Med J. 2009 Jul;50:693-7. PMID: 19644624; X-5

1430. Kongnyuy EJ, van den Broek N. Developing standards for postpartum hemorrhage in a resource-limited country. Health Care Women Int. 2009 Nov;30:989-1002. PMID: 19809902; X-1, X-2

1431. Koopmans CM, Bijlenga D, Groen H, et al. Induction of labour versus expectant monitoring for gestational hypertension or mild pre-eclampsia after 36 weeks' gestation (HYPITAT): a multicentre, open-label randomised controlled trial. Lancet. 2009 Sep 19;374:979-88. PMID: 19656558; X-4

1432. Lak M, Sharifian RA, Karimi K, et al. Acquired hemophilia A: clinical features, surgery and treatment of 34 cases, and experience of using recombinant factor VIIa. Clin Appl Thromb Hemost. 2009 Jun;16:294-300. PMID: 19211581; X-3, X-4

1433. Lausman AY, Al-Yaseen E, Sam D, et al. Intrahepatic cholestasis of pregnancy in women with a multiple pregnancy: an analysis of risks and pregnancy outcomes. J Obstet Gynaecol Can. 2009 Nov;30:1008-13. PMID: 19126282; X-4

1434. Leduc D, Senikas V, Lalonde AB, et al. Active management of the third stage of labour: prevention and treatment of postpartum hemorrhage. J Obstet Gynaecol Can. 2009 Oct;31:980-93. PMID: 19941729; X-1

1435. Liang JL, Yu PC, Ou HY, et al. Intraoperative uterine artery embolization in two patients with placenta previa accreta: Comparison of two approaches to control bleeding. Chinese Journal of Radiology. 2009 September;34:227-30+31. PMID: X-2, X-5

1436. Lombaard H, Pattinson RC. Common errors and remedies in managing postpartum haemorrhage. Best Pract Res Clin Obstet Gynaecol. 2009 Jun;23:317-26. PMID: 19230783; X-1

1437. Lu MC, Korst LM, Fridman M, et al. Identifying women most likely to benefit from prevention strategies for postpartum hemorrhage. J Perinatol. 2009 Jun;29:422-7. PMID: 19177146; X-4

1438. MacArthur A. Objectives for <<Update of obstetric anesthesia>> lecture. Revista Mexicana de Anestesiologia. 2009 April/June;32:S30-S4. PMID: X-1

1439. MacArthur A. Objectives for <> lecture. 2009;32:S30-S4. PMID: X-1

1440. Mahendru R, Taneja BK, Malik S. Preservation of fertility following abnormally adherent placenta treated conservatively: A case report. Cases Journal. 2009 December;2PMID: X-1

1441. Mamula O, Severinski NS, Mamula M, et al. Complications during pregnancy, labor and puerperium in women with increased BMI at pregnancy term. Central European Journal of Medicine. 2009 March;4:71-5. PMID: X-4

1442. Matijevic R, Knezevic M, Grgic O, et al. Diagnostic accuracy of sonographic and clinical parameters in the prediction of retained products of conception. J Ultrasound Med. 2009 Mar;28:295-9. PMID: 19244064; X-4

1443. Mayi-Tsonga S, Oksana L, Ndombi I, et al. Delay in the provision of adequate care to women who died from abortion-related complications in the principal maternity hospital of Gabon. Reprod Health Matters. 2009 Nov;17:65-70. PMID: 19962639; X-2, X-3, X-4

1444. Memon S, Qazi RA, Pushpa, et al. Pattern of obstructed labour at a public sector university hospital of Sindh, Pakistan. Journal of the Liaquat University of Medical and Health Sciences. 2009 January/April;8:60-4. PMID: X-2, X-4

1445. Mfinanga GS, Kimaro GD, Ngadaya E, et al. Health facility-based Active Management of the Third Stage of Labor: findings from a national survey in Tanzania. Health Res Policy Syst. 2009;7:6. PMID: 19371418; X-2, X-4

1446. Miesbach W, Scharrer I, Henschen A, et al. Inherited dysfibrinogenemia: clinical phenotypes associated with five different fibrinogen structure defects. Blood Coagul Fibrinolysis. 2009 Jan;21:35-40. PMID: 19923982; X-3, X-4

1447. Miller S, Ojengbede O, Turan JM, et al. A comparative study of the non-pneumatic anti-shock garment for the treatment of obstetric hemorrhage in Nigeria. Int J Gynaecol Obstet. 2009 Nov;107:121-5. PMID: 19628207; X-2

1448. Miller S, Tudor C, Thorsten V, et al. Randomized double masked trial of Zhi Byed 11, a Tibetan traditional medicine, versus misoprostol to prevent postpartum hemorrhage in Lhasa, Tibet. J Midwifery Womens Health. 2009 Mar-Apr;54:133-41 e1. PMID: 19249659; X-2, X-4

1449. Milliez J, Dickens B. Ethical aspects of multiple pregnancy. International Journal of Fertility and Sterility. 2009 May-June;3:41-6. PMID: X-1

1450. Moodley J, Devjee J, Khedun SM, et al. Second-stage primary Caesarean deliveries: Are maternal complications increased? South African Family Practice. 2009;51:328-31. PMID: X-2, X-4

1451. Muench MV, Baschat AA, Malinow AM, et al. Analysis of disease in the obstetric intensive care unit at a university referral center: a 24-month review of prospective data. J Reprod Med. 2009 Dec;53:914-20. PMID: 19160649; X-4

1452. Mukherjee S, Arulkumaran S. Post-partum haemorrhage. Obstetrics, Gynaecology and Reproductive Medicine. 2009 May;19:121-6. PMID: X-1

1453. Murphy CM, Murad K, Deane R, et al. Severe maternal morbidity for 2004-2005 in the three Dublin maternity hospitals. Eur J Obstet Gynecol Reprod Biol. 2009 Mar;143:34-7. PMID: 19136192; X-4

1454. Naidoo RP, Moodley J. Rising rates of Caesarean sections: An audit of Caesarean sections in a specialist private practice. South African Family Practice. 2009;51:254-8. PMID: X-2, X-4

1455. Nasr A, Shahin AY, Elsamman AM, et al. Rectal misoprostol versus intravenous oxytocin for prevention of postpartum hemorrhage. Int J Gynaecol Obstet. 2009 Jun;105:244-7. PMID: 19249048; X-4

1456. Naz H, Sarwar I, Fawad A, et al. Maternal morbidity and mortality due to primary PPH--experience at Ayub Teaching Hospital Abbottabad. J Ayub Med Coll Abbottabad. 2009 Apr-Jun;20:59-65. PMID: 19385460; X-2, X-4

1457. Ndikom CM, Fawole AO. Evidence-based measures for reducing maternal and child mortality. African Journal of Midwifery & Women's Health. 2009;3:199-204. PMID: X-1, X-2, X-4

1458. Nidagu S. Pregnancy in the community setting. International Journal of Nursing Education. 2009;1:8-9. PMID: X-1

1459. Niles SD, Burkhart HM, Duffey DA, et al. Use of recombinant factor VIIa (NovoSeven) in pediatric cardiac surgery. J Extra Corpor Technol. 2009 Dec;40:241-8. PMID: 19192753; X-3, X-4

1460. Nirmala K, Zainuddin AA, Ghani NA, et al. Carbetocin versus syntometrine in prevention of post-partum hemorrhage following vaginal delivery. J Obstet Gynaecol Res. 2009 Feb;35:48-54. PMID: 19215547; X-4

1461. Nisar N, Sohoo NA. Emergency peripartum hysterectomy: frequency, indications and maternal outcome. J Ayub Med Coll Abbottabad. 2009 Jan-Mar;21:48-51. PMID: 20364740; X-2, X-4, X-5

1462. Okafor UV, Onwuekwe IO, Ezegwui HU. Management of pituitary adenoma with mass effect in pregnancy: A case report. Cases Journal. 2009 November;2PMID: X-1, X-2

1463. Oladapo OT, Akinola OI, Fawole AO, et al. Active management of third stage of labor: evidence versus practice. Acta Obstet Gynecol Scand. 2009;88:1252-60. PMID: 19824866; X-2, X-4

1464. Oladapo OT, Fawole AO, Loto OM, et al. Active management of third stage of labour: a survey of providers' knowledge in southwest Nigeria. Arch Gynecol Obstet. 2009 Dec;280:945-52. PMID: 19306012; X-2, X-3, X-4

1465. Ouyang DW, Khairy P, Fernandes SM, et al. Obstetric outcomes in pregnant women with congenital heart disease. Int J Cardiol. 2009 Oct 8;144:195-9. PMID: 19411123; X-4

1466. Padmanabhan A, Schwartz J, Spitalnik SL. Transfusion therapy in postpartum hemorrhage. Semin Perinatol. 2009 Apr;33:124-7. PMID: 19324242; X-1

1467. Pagel C, Lewycka S, Colbourn T, et al. Estimation of potential effects of improved community-based drug provision, to augment health-facility strengthening, on maternal mortality due to post-partum haemorrhage and sepsis in sub-Saharan Africa: an equity-effectiveness model. Lancet. 2009 Oct 24;374:1441-8. PMID: 19783291; X-2, X-3, X-4

1468. Parker J, Thompson J, Stanworth S. A retrospective one-year single-centre survey of obstetric red cell transfusions. Int J Obstet Anesth. 2009 Oct;18:309-13. PMID: 19729296; X-4, X-5

1469. Patvardhan C, Ayakannu T, Mastan M. Successful management of an unusual presentation of ruptured splenic artery aneurysm in the third trimester presenting as right sided abdominal pain. A case report. Internet Journal of Anesthesiology. 2009;19:1-7. PMID: X-1, X-3, X-4

1470. Patwardhan SK, Sawant A, Ismail M, et al. Simultaneous bladder and vaginal reconstruction using ileum in complicated vesicovaginal fistula. Indian J Urol. 2009 Jul;24:348-51. PMID: 19468466; X-2, X-3, X-4

1471. Penninx JP, Pasmans HL, Oei SG. Arterial balloon occlusion of the internal iliac arteries for treatment of life-threatening massive postpartum haemorrhage: a series of 15 consecutive cases. Eur J Obstet Gynecol Reprod Biol. 2009 Feb;148:131-4. PMID: 19962226; X-5

1472. Prata N, Gessessew A, Abraha AK, et al. Prevention of postpartum hemorrhage: options for home births in rural Ethiopia. Afr J Reprod Health. 2009 Jun;13:87-95. PMID: 20690252; X-2, X-4

1473. Prata N, Graff M, Graves A, et al. Avoidable maternal deaths: three ways to help now. Glob Public Health. 2009;4:575-87. PMID: 19326279; X-1

1474. Prata N, Mbaruku G, Grossman AA, et al. Community-based availability of misoprostol: is it safe? Afr J Reprod Health. 2009 Jun;13:117-28. PMID: 20690255; X-2

1475. Price LC, Germain S, Wyncoll D, et al. Management of the critically ill obstetric patient. Obstetrics, Gynaecology and Reproductive Medicine. 2009 December;19:350-8. PMID: X-1

1476. Raba G, Baran P. Hemodynamic parameters following bilateral internal iliac arteries ligation as a treatment of intrapartum hemorrhage. Ginekol Pol. 2009 Mar;80:179-83. PMID: 19382608; X-5

1477. Rabiu KA, Akinlusi FM, Adewunmi AA, et al. Emergency peripartum hysterectomy in a tertiary hospital in Lagos, Nigeria: a five-year review. Trop Doct. 2009 Jan;40:1-4. PMID: 19850603; X-2, X-4

1478. Rahman J, Bhattee G, Rahman MS. Shoulder dystocia in a 16-year experience in a teaching hospital. J Reprod Med. 2009 Jun;54:378-84. PMID: 19639928; X-4

1479. Rajbhandari S, Hodgins S, Sanghvi H, et al. Expanding uterotonic protection following childbirth through community-based distribution of misoprostol: operations research study in Nepal. Int J Gynaecol Obstet. 2009 Mar;108:282-8. PMID: 20034628; X-2, X-4

1480. Rana A, Pradhan N, Manandhar B, et al. Maternal mortality over the last decade: a changing pattern of death due to alarming rise in hepatitis in the latter five-year period. J Obstet Gynaecol Res. 2009 Apr;35:243-51. PMID: 19708172; X-2, X-4

1481. Rashid M, Clark A, Rashid MH. A randomised controlled trial comparing the efficacy of intramuscular syntometrine and intravenous syntocinon, in preventing postpartum haemorrhage. J Obstet Gynaecol. 2009 Jul;29:396-401. PMID: 19603316; X-4

1482. Ratanasiri T, Komwilaisak R, Sittivech A, et al. Incidence, causes and pregnancy outcomes of hydrops fetalis at Srinagarind Hospital, 1996-2005: a 10-year review. J Med Assoc Thai. 2009 May;92:594-9. PMID: 19459517; X-2, X-4

1483. Reron A, Jaworowski A, Ossowski P. Peripartum hemorrhage risk and mode of delivery. [Polish, English]. Ginekologia i Poloznictwo. 2009;13:41-6. PMID: X-4

1484. Reron A, Jaworowski A, Ossowski P. Peripartum hemorrhage risk and mode of delivery. 2009;13:41-6. PMID: X-4

1485. Richa F, Karim N, Yazbeck P. Obstetric admissions to the intensive care unit: an eight-year review. J Med Liban. 2009 Oct-Dec;56:215-9. PMID: 19115595; X-2, X-4

1486. Richey KR, Williams FL, Karlnoski R, et al. Retrospective study of product requirements for blood loss in abnormal placentation... State of the Science General and Oral Poster Sessions, AANA Annual Meeting, San Diego, California. AANA Journal. 2009;77:396-. PMID: X-1, X-4, X-5

1487. Roberts CL, Ford JB, Algert CS, et al. Trends in adverse maternal outcomes during childbirth: a population-based study of severe maternal morbidity. BMC Pregnancy Childbirth. 2009;9:7. PMID: 19243578; X-4

1488. Roberts CL, Ford JB, Thompson JF, et al. Population rates of haemorrhage and transfusions among obstetric patients in NSW: a short communication. Aust N Z J Obstet Gynaecol. 2009 Jun;49:296-8. PMID: 19566563; X-4

1489. Rouf S, Sharmin S, Dewan F, et al. Relaparotomy after cesarean section: Experience from a tertiary referral and teaching hospital of Bangladesh. Bangladesh Journal of Obstetrics and Gynecology. 2009;24:3-9. PMID: X-2, X-4

1490. Roy KK, Baruah J, Sharma JB, et al. Reproductive outcome following hysteroscopic adhesiolysis in patients with infertility due to Asherman's syndrome. Arch Gynecol Obstet. 2009 Feb;281:355-61. PMID: 19455349; X-4

1491. Saeed F, Khalid R, Khan A, et al. Peripartum hysterectomy: a ten-year experience at a tertiary care hospital in a developing country. Trop Doct. 2009 Jan;40:18-21. PMID: 20008059; X-2

1492. Salazar GM, Petrozza JC, Walker TG. Transcatheter endovascular techniques for management of obstetrical and gynecologic emergencies. Tech Vasc Interv Radiol. 2009 Jun;12:139-47. PMID: 19853231; X-1

1493. Saleem N, Ali HS, Irfan A, et al. Broad ligament haematoma following a vaginal delivery in primigravida. Pakistan Journal of Medical Sciences. 2009 July-September;25:683-5. PMID: X-1

1494. Schutte JM, Steegers EA, Schuitemaker NW, et al. Rise in maternal mortality in the Netherlands. BJOG. 2009 Mar;117:399-406. PMID: 19943828; X-4

1495. Sekhavat L, Firuzabadi RD, Karimi Zarchi M. Effect of postpartum oxygen inhalation on vaginal blood loss. J Matern Fetal Neonatal Med. 2009 Nov;22:1072-6. PMID: 19900047; X-2, X-4, X-5

1496. Shah M, Wright JD. Surgical intervention in the management of postpartum hemorrhage. Semin Perinatol. 2009 Apr;33:109-15. PMID: 19324240; X-1

1497. Shahin AY, Farghaly TA, Mohamed SA, et al. Bilateral uterine artery ligation plus B-Lynch procedure for atonic postpartum hemorrhage with placenta accreta. Int J Gynaecol Obstet. 2009 Mar;108:187-90. PMID: 19944417; X-2, X-4, X-5

1498. Siboni SM, Spreafico M, Calo L, et al. Gynaecological and obstetrical problems in women with different bleeding disorders. Haemophilia. 2009 Nov;15:1291-9. PMID: 19664014; X-4

1499. Silvestre FT, Risco CA, Lopez M, et al. Use of increasing doses of a degradable Deslorelin implant to enhance uterine involution in postpartum lactating dairy cows. Anim Reprod Sci. 2009 Dec;116:196-212. PMID: 19269118; X-1, X-3, X-4

1500. Singh G, Radhakrishnan G, Guleria K. Comparison of sublingual misoprostol, intravenous oxytocin, and intravenous methylergometrine in active management of the third stage of labor. Int J Gynaecol Obstet. 2009 Nov;107:130-4. PMID: 19628206; X-4

1501. Singh Y, Kochar SPS, Biswas M, et al. Hepatic rupture complicating HELLP syndrome in pregnancy. Medical Journal Armed Forces India. 2009;65:89-90. PMID: X-1

1502. Singi SR, Fernandez E, Pandya ST, et al. Recombinant factor VIIa: use in fatal post partum hemorrhage - Indian experience case series and review of literature. Indian J Hematol Blood Transfus. 2009 Mar;25:1-5. PMID: 23100963; X-1, X-2

1503. Sinicina I, Pankratz H, Bise K, et al. Forensic aspects of post-mortem histological detection of amniotic fluid embolism. Int J Legal Med. 2009 Jan;124:55-62. PMID: 19449024; X-1, X-3, X-4

1504. Snelgrove JW. Postpartum haemorrhage in the developing world a review of clinical management strategies. Mcgill J Med. 2009;12:61. PMID: 21264044; X-1

1505. Soltan MH, Faragallah MF, Mosabah MH, et al. External aortic compression device: the first aid for postpartum hemorrhage control. J Obstet Gynaecol Res. 2009 Jun;35:453-8. PMID: 19527382; X-2

1506. So-Osman C, Cicilia J, Brand A, et al. Triggers and appropriateness of red blood cell transfusions in the postpartum patient--a retrospective audit. Vox Sang. 2009 Jan;98:65-9. PMID: 19686225; X-5

1507. Sosa CG, Althabe F, Belizan JM, et al. Risk factors for postpartum hemorrhage in vaginal deliveries in a Latin-American population. Obstet Gynecol. 2009 Jun;113:1313-9. PMID: 19461428; X-2, X-4

1508. Stanton C, Armbruster D, Knight R, et al. Use of active management of the third stage of labour in seven developing countries. Bull World Health Organ. 2009 Mar;87:207-15. PMID: 19377717; X-2, X-4

1509. Su LL, Rauff M, Chan YH, et al. Carbetocin versus syntometrine for the third stage of labour following vaginal delivery--a double-blind randomised controlled trial. BJOG. 2009 Oct;116:1461-6. PMID: 19538418; X-4

1510. Suehiro K, Okutani R, Ogawa S. Anesthetic management for cesarean section patients with progressive muscular dystrophy. Anesthesia and Resuscitation. 2009 June;45:51-3. PMID: X-1

1511. Tabcharoen C, Pinjaroen S, Suwanrath C, et al. Pregnancy outcome after age 40 and risk of low birth weight. J Obstet Gynaecol. 2009 Jul;29:378-83. PMID: 19603312; X-4

1512. Tan PC, Ling LP, Omar SZ. The 50-g glucose challenge test and pregnancy outcome in a multiethnic Asian population at high risk for gestational diabetes. Int J Gynaecol Obstet. 2009 Apr;105:50-5. PMID: 19154997; X-3, X-4

1513. Tang CH, Wu CS, Lee TH, et al. Preeclampsia-eclampsia and the risk of stroke among peripartum in Taiwan. Stroke. 2009 Apr;40:1162-8. PMID: 19228854; X-2, X-4

1514. Thanajiraprapa T, Phupong V. Pregnancy complications in women with heart disease. J Matern Fetal Neonatal Med. 2009 Oct;23:1200-4. PMID: 19903109; X-4

1515. Thornton D, Guendelman S, Hosang N. Obstetric complications in women with diagnosed mental illness: the relative success of California's county mental health system. Health Serv Res. 2009 Feb;45:246-64. PMID: 19878345; X-4

1516. Tikkanen M, Gissler M, Metsaranta M, et al. Maternal deaths in Finland: focus on placental abruption. Acta Obstet Gynecol Scand. 2009;88:1124-7. PMID: 19707898; X-4

1517. Tixier H, Boucard C, Ferdynus C, et al. Interest of using an underbuttocks drape with collection pouch for early diagnosis of postpartum hemorrhage. Arch Gynecol Obstet. 2009 Jan;283:25-9. PMID: 19876638; X-4, X-5

1518. Tixier H, Loffroy R, Guiu B, et al. Complications and failure of uterine artery embolisation for intractable postpartum haemorrhage. Bjog. 2009 Aug;116:1276-7; author reply 7-8. PMID: 19624447; X-1, X-4, X-5

1519. Tsu VD, Levin C, Tran MP, et al. Cost-effectiveness analysis of active management of third-stage labour in Vietnam. Health Policy Plan. 2009 Nov;24:438-44. PMID: 19633018; X-2, X-3, X-4

1520. Tucker A, Ogutu D, Yoong W, et al. The unbooked mother: a cohort study of maternal and foetal outcomes in a North London Hospital. Arch Gynecol Obstet. 2009 Apr;281:613-6. PMID: 19551396; X-4

1521. Vaid A, Dadhwal V, Mittal S, et al. A randomized controlled trial of prophylactic sublingual misoprostol versus intramuscular methyl-ergometrine versus intramuscular 15-methyl PGF2alpha in active management of third stage of labor. Arch Gynecol Obstet. 2009 Dec;280:893-7. PMID: 19277690; X-3, X-4

1522. Van Wolfswinkel ME, Zwart JJ, Schutte JM, et al. Maternal mortality and serious maternal morbidity in Jehovah's witnesses in The Netherlands. BJOG. 2009 Jul;116:1103-8; discussion 8-10. PMID: 19515150; X-4

1523. Vitthala S, Tsoumpou I, Anjum ZK, et al. Use of Bakri balloon in post-partum haemorrhage: a series of 15 cases. Aust N Z J Obstet Gynaecol. 2009 Apr;49:191-4. PMID: 19432609; X-2, X-5

1524. Wangwe P, Kidanto H, Muganyizi P, et al. Active management of third stage of labour: misoprostol or oxytocin? African Journal of Midwifery & Women's Health. 2009;3:57-60. PMID: X-4

1525. Ward SL, Hisley SM. Chapter 16: caring for the woman experiencing complications during the postpartal period. Maternal-child nursing care: optimizing outcomes for mothers, children, and families. Philadelphia, PA: F.A. Davis Company; 2009:511-40.

1526. Weeks AD, Alia G, Vernon G, et al. Umbilical vein oxytocin for the treatment of retained placenta (Release Study): a double-blind, randomised controlled trial. Lancet. 2009 Jan 9;375:141-7. PMID: 20004013; X-2, X-4, X-5

1527. Weisbrod AB, Sheppard FR, Chernofsky MR, et al. Emergent management of postpartum hemorrhage for the general and acute care surgeon. World J Emerg Surg. 2009;4:43. PMID: 19939251; X-1

1528. Wissa I, Ebeid E, El-Shawarby S, et al. The role of recombinant activated Factor VII in major obstetric haemorrhage: the Farnborough experience. J Obstet Gynaecol. 2009 Jan;29:21-4. PMID: 19280490; X-5

1529. Yadav S, Choudhary D, Narayan KC, et al. Adverse reproductive outcomes associated with teenage pregnancy. Mcgill J Med. 2009 Jul;11:141-4. PMID: 19148312; X-2, X-4

1530. Ying H, Duan T, Bao YR, et al. Transverse annular compression sutures in the lower uterine segment to control postpartum hemorrhage at cesarean delivery for complete placenta previa. Int J Gynaecol Obstet. 2009 Mar;108:247-8. PMID: 19939381; X-2, X-5

1531. Yinon Y, Siu SC, Warshafsky C, et al. Use of low molecular weight heparin in pregnant women with mechanical heart valves. Am J Cardiol. 2009 Nov 1;104:1259-63. PMID: 19840573; X-4

1532. Zakariah AY, Alexander S, van Roosmalen J, et al. Reproductive age mortality survey (RAMOS) in Accra, Ghana. Reprod Health. 2009;6:7. PMID: 19497092; X-2, X-4

1533. Zhu L, Qin M, Du L, et al. Comparison of maternal mortality between migrating population and permanent residents in Shanghai, China, 1996-2005. BJOG. 2009 Feb;116:401-7. PMID: 19187372; X-2, X-4

1534. Zubor P, Szunyogh N, Dokus K, et al. Application of uterotonics on the basis of regular ultrasonic evaluation of the uterus prevents unnecessary surgical intervention in the postpartum period. Arch Gynecol Obstet. 2009 Sep;282:261-7. PMID: 19760186; X-2, X-4, X-5

1535. Zwart JJ, Dupuis JR, Richters A, et al. Obstetric intensive care unit admission: a 2-year nationwide population-based cohort study. Intensive Care Med. 2009 Feb;36:256-63. PMID: 19902177; X-4, X-5

1536. Zwart JJ, Yazdani ST, Harvey MS, et al. Underreporting of major obstetric haemorrhage in the Netherlands. Transfus Med. 2009 Apr;20:118-22. PMID: 19708894; X-4

1537. . Active management of the third stage of labour: prevention and treatment of postpartum hemorrhage: No. 235 October 2009 (Replaces No. 88, April 2000). Int J Gynaecol Obstet. 2010 Mar;108:258-67. PMID: 20196196; X-1, X-4, X-5

1538. . Misoprostol for postpartum haemorrhage. Drug Ther Bull. 2010 Jun;48:66-9. PMID: 20530028; X-1, X-3, X-4

1539. . Nosebleeds are associated with a greater risk for postpartum hemorrhage. Contemporary OB/GYN. 2010;55:24-. PMID: X-1, X-4

1540. . Trade-offs in treating postpartum hemorrhage. International Perspectives on Sexual & Reproductive Health. 2010;36(1):5-. PMID: 2010670591. Language: English. Entry Date: 20100716. Revision Date: 20100716. Publication Type: journal article; X-1

1541. Abdel-Aleem H, Singata M, Abdel-Aleem M, et al. Uterine massage to reduce postpartum hemorrhage after vaginal delivery. Int J Gynaecol Obstet. 2010 Oct;111:32-6. PMID: 20599196; X-2, X-4

1542. Abdullah A, Shaikh AA, Jamro B. Maternal and perinatal outcome associated with eclampsia in a teaching hospital, Sukkur. Rawal Medical Journal. 2010 Jan - July;35:23-6. PMID: X-2, X-4

1543. Afolabi EO, Kuti O, Orji EO, et al. Oral misoprostol versus intramuscular oxytocin in the active management of the third stage of labour. Singapore Med J. 2010 Mar;51:207-11. PMID: 20428741; X-3, X-4

1544. Agan T, Archibong EI, Ekabua JE, et al. Trends in maternal mortality at the University of Calabar Teaching Hospital, Nigeria, 1999-2009. New Zealand: Dove Medical Press Ltd (Beechfield House, Winterton Way, Macclesfield SK11 0JL, United Kingdom); 2010. http://www.dovepress.com/getfile.php?fileID=7271http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed9&NEWS=N&AN=2010438142. Accessed on (Agan, Archibong, Ekabua, Ekanem, Abeshi) Department of Obstetrics and Gynecology, College of Medical Sciences, University of Calabar Teaching Hospital, Nigeria 2.

1545. Agan TU, Archibong EI, Ekabua JE, et al. Trends in maternal mortality at the University of Calabar Teaching Hospital, Nigeria, 1999-2009. Int J Womens Health. 2010;2:249-54. PMID: 21151730; X-2, X-4

1546. Ajenifuja KO, Adepiti CA, Ogunniyi SO. Post partum haemorrhage in a teaching hospital in Nigeria: a 5-year experience. Afr Health Sci. 2010 Mar;10:71-4. PMID: 20811528; X-2, X-4

1547. Akhtar Z, Qazi Q, Khan I. Prostaglandin F2 alpha: An effective alternate to surgical control of postpartum hemorrhage in uterine atony. Journal of Postgraduate Medical Institute. 2010 January-March;24:27-30. PMID: X-2

1548. Al Kadri HM. Obstetric medical emergency teams are a step forward in maternal safety! J Emerg Trauma Shock. 2010 Oct;3:337-41. PMID: 21063555; X-1

1549. Ali M, Khurshid M, Jabeen R. Evaluation of postpartum complications in patients admitted to Nishtar Hospital, Multan. Medical Forum Monthly. 2010 November;21:5-8. PMID: X-2, X-4

1550. Almerie Y, Almerie MQ, Matar HE, et al. Obstetric near-miss and maternal mortality in maternity university hospital, Damascus, Syria: a retrospective study. BMC Pregnancy Childbirth. 2010;10:65. PMID: 20959012; X-2, X-4

1551. Al-Zirqi I, Stray-Pedersen B, Forsen L, et al. Uterine rupture after previous caesarean section. BJOG. 2010 Jun;117:809-20. PMID: 20236103; X-4

1552. Arbinder D, Nirmala A, Sonal B, et al. Prevalence of liver disease in pregnancy and its outcome with emphasis on obstetric cholestasis: An Indian scenario. Journal of Obstetrics and Gynecology of India. 2010 October;60:413-8. PMID: X-2, X-3, X-4

1553. Armand-Ugon R, Cheong T, Matapandewu G, et al. Efficacy of intravenous iron for treating postpartum anemia in low-resource African countries: a pilot study in Malawi. J Womens Health (Larchmt). 2010 Jan;20:123-7. PMID: 21091191; X-2

1554. Asherkaci HM, Fortia IM, Sraiti OA, et al. Misoprostol usefulness on Post Partum Hemorrhage (PPH) among high risk mothers. Jamahiriya Medical Journal. 2010 Autumn;10:213-5. PMID: X-2, X-4

1555. Attilakos G, Psaroudakis D, Ash J, et al. Carbetocin versus oxytocin for the prevention of postpartum haemorrhage following caesarean section: the results of a double-blind randomised trial. BJOG. 2010 Jul;117:929-36. PMID: 20482535; X-4, X-5

1556. Balci O, Mahmoud AS, Acar A, et al. Comparison of induction of labor with vaginal misoprostol plus oxytocin versus oxytocin alone in term primigravidae. J Matern Fetal Neonatal Med. 2010 Sep;24:1084-7. PMID: 21087166; X-4

1557. Balci O, Mahmoud AS, Ozdemir S, et al. Induction of labor with vaginal misoprostol plus oxytocin versus oxytocin alone. Int J Gynaecol Obstet. 2010 Jul;110:64-7. PMID: 20347088; X-4

1558. Barnett R, Kendrick B. HELLP syndrome -- a case study. New Zealand Journal of Medical Laboratory Science. 2010;64:14-7. PMID: X-1, X-4, X-5

1559. Barnett R, Kendrick B. HELLP syndrome - A case study. New Zealand Journal of Medical Laboratory Science. 2010 April;64:14-7. PMID: X-1

1560. Bas AY, Demirel N, Soysal A, et al. An unusual mimicker of a sepsis outbreak: ergot intoxication. Eur J Pediatr. 2010 May;170:633-7. PMID: 20972685; X-2, X-3

1561. Bateman BT, Berman MF, Riley LE, et al. The epidemiology of postpartum hemorrhage in a large, nationwide sample of deliveries. Anesth Analg. 2010 May 1;110:1368-73. PMID: 20237047; X-4

1562. Bell SF, Rayment R, Collins PW, et al. The use of fibrinogen concentrate to correct hypofibrinogenaemia rapidly during obstetric haemorrhage. Int J Obstet Anesth. 2010 Apr;19:218-23. PMID: 20194010; X-5

1563. Berdichevsky K, Tucker C, Martinez A, et al. Acceptance of a new technology for management of obstetric hemorrhage: a qualitative study from rural Mexico. Health Care Women Int. 2010 May;31:444-57. PMID: 20390665; X-2, X-3

1564. Bergmann RL, Richter R, Bergmann KE, et al. Prevalence and risk factors for early postpartum anemia. Eur J Obstet Gynecol Reprod Biol. 2010 Jun;150:126-31. PMID: 20303210; X-4, X-5

1565. Bimbashi A, Ndoni E, Dokle A, et al. Care during the third stage of labour: obstetricians views and practice in an Albanian maternity hospital. BMC Pregnancy Childbirth. 2010;10:4. PMID: 20102601; X-2, X-3, X-4

1566. Biron-Andreani C. Venous thromboembolic disease and pregnancy: Prevention and treatment. Phlebolymphology. 2010;17:77-86. PMID: X-1

1567. Bishai D, Bonnenfant YT, Darwish M, et al. Estimating the obstetric costs of female genital mutilation in six African countries. Bull World Health Organ. 2010 Apr;88:281-8. PMID: 20431792; X-2, X-3, X-4

1568. Blum J, Winikoff B, Raghavan S, et al. Treatment of post-partum haemorrhage with sublingual misoprostol versus oxytocin in women receiving prophylactic oxytocin: a double-blind, randomised, non-inferiority trial. Lancet. 2010 Jan 16;375:217-23. PMID: 20060162; X-2

1569. Bomken C, Mathai S, Biss T, et al. Recombinant Activated Factor VII (rFVIIa) in the Management of Major Obstetric Haemorrhage: A Case Series and a Proposed Guideline for Use. Obstet Gynecol Int. 2010;2009:364843. PMID: 20148069; X-5

1570. Borthen I, Eide MG, Daltveit AK, et al. Delivery outcome of women with epilepsy: a population-based cohort study. BJOG. 2010 Nov;117:1537-43. PMID: 20716254; X-4, X-5

1571. Boyle RK, Waters BA, O'Rourke PK. Blood transfusion for caesarean delivery complicated by placenta praevia. Aust N Z J Obstet Gynaecol. 2010 Dec;49:627-30. PMID: 20070711; X-3, X-4

1572. Buduneli N, Becerik S, Buduneli E, et al. Gingival status, crevicular fluid tissue-type plasminogen activator, plasminogen activator inhibitor-2 levels in pregnancy versus post-partum. Aust Dent J. 2010 Sep;55:292-7. PMID: 20887517; X-3, X-4

1573. Burke C. Active versus expectant management of the third stage of labor and implementation of a protocol. J Perinat Neonatal Nurs. 2010 Jul-Sep;24:215-28; quiz 29-30. PMID: 20697238; X-1

1574. Callaghan WM, Kuklina EV, Berg CJ. Trends in postpartum hemorrhage: United States, 1994-2006. Am J Obstet Gynecol. 2010 Apr;202:353 e1-6. PMID: 20350642; X-4

1575. Camuzcuoglu H, Toy H, Vural M, et al. Internal iliac artery ligation for severe postpartum hemorrhage and severe hemorrhage after postpartum hysterectomy. J Obstet Gynaecol Res. 2010 Jun;36:538-43. PMID: 20598034; X-2, X-4, X-5

1576. Cansino C, Melgar JL, Burke A. Physicians' approaches to post-abortion care in Manila, Philippines. Int J Gynaecol Obstet. 2010 Jun;109:216-8. PMID: 20176351; X-2, X-3

1577. Chaudhuri P, Banerjee GB, Mandal A. Rectally administered misoprostol versus intravenous oxytocin infusion during cesarean delivery to reduce intraoperative and postoperative blood loss. Int J Gynaecol Obstet. 2010 Apr;109:25-9. PMID: 20070961; X-2, X-4, X-5

1578. Chen KH, Chen LR, Lee YH. Exploring the relationship between preterm placental calcification and adverse maternal and fetal outcome. Ultrasound Obstet Gynecol. 2010 Mar;37:328-34. PMID: 20586039; X-4

1579. Chodzaza E, Bultemeier K. National management guidelines for obstetric emergencies. African Journal of Midwifery & Women's Health. 2010;4:57-61. PMID: X-1, X-4

1580. Cohain JS. Towards a physiological management of the third stage that prevents postpartum haemorrhage. MIDIRS Midwifery Digest. 2010;20:348-51. PMID: X-1, X-4

1581. Cole-Ceesay R, Cherian M, Sonko A, et al. Strengthening the emergency healthcare system for mothers and children in The Gambia. Reprod Health. 2010;7:21. PMID: 20718979; X-2, X-4

1582. Collins I, Chichester M. Let's Reduce Peripartum Transfusion: Identification and Treatment of Anemia. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2010;39:S88-S. PMID: X-1, X-4, X-5

1583. Cosmi E, Saccardi C, Litta P, et al. Transvaginal ultrasound and sonohysterography for assessment of postpartum residual trophoblastic tissue. Int J Gynaecol Obstet. 2010 Sep;110:262-4. PMID: 20488441; X-3

1584. Danish N, Fawad A, Abbasi N. Assessment of pregnancy outcome in primigravida: comparison between booked and un-booked patients. J Ayub Med Coll Abbottabad. 2010 Apr-Jun;22:23-5. PMID: 21702258; X-2, X-4

1585. Dasari P, Venkatesan B, Thyagarajan C, et al. Expectant and medical management of placenta increta in a primiparous woman presenting with postpartum haemorrhage: The role of Imaging. J Radiol Case Rep. 2010;4:32-40. PMID: 22470732; X-1, X-2, X-5

1586. Dinatale A, Ermito S, Fonti I, et al. Obesity and fetal-maternal outcomes. J Prenat Med. 2010 Jan;4:5-8. PMID: 22439052; X-1, X-4

1587. Dominici LS, Kuerer HM, Babiera G, et al. Wound complications from surgery in pregnancy-associated breast cancer (PABC). Breast Dis. 2010;31:1-5. PMID: 20519803; X-3

1588. Downey C, Bewley S. Childbirth practitioners' attitudes to third stage management. British Journal of Midwifery. 2010;18:576-82. PMID: X-1, X-4

1589. Driessen M, Bouvier-Colle MH, Dupont C, et al. Postpartum hemorrhage resulting from uterine atony after vaginal delivery: factors associated with severity. Obstet Gynecol. 2010 Jan;117:21-31. PMID: 21173641; X-4, X-5

1590. Durocher J, Bynum J, Leon W, et al. High fever following postpartum administration of sublingual misoprostol. BJOG. 2010 Jun;117:845-52. PMID: 20406228; X-2

1591. Dyer RA, van Dyk D, Dresner A. The use of uterotonic drugs during caesarean section. Int J Obstet Anesth. 2010 Jul;19:313-9. PMID: 20627531; X-1

1592. Esakoff TF, Sparks TN, Kaimal AJ, et al. Diagnosis and morbidity of placenta accreta. Ultrasound Obstet Gynecol. 2010 Mar;37:324-7. PMID: 20812377; X-4

1593. Fabamwo AO, Akinola OI, Mojoyinola OO. The tragic consequences of unsupervised pregnancies among patients referred to a tertiary maternity unit in Lagos, South West Nigeria. Internet Journal of Tropical Medicine. 2010;7PMID: X-2, X-4

1594. Fahy K, Hastie C, Bisits A, et al. Holistic physiological care compared with active management of the third stage of labour for women at low risk of postpartum haemorrhage: a cohort study. Women Birth. 2010 Dec;23:146-52. PMID: 20226752; X-4

1595. Fargeaudou Y, Morel O, Soyer P, et al. Persistent postpartum haemorrhage after failed arterial ligation: value of pelvic embolisation. Eur Radiol. 2010 Jul;20:1777-85. PMID: 20309561; X-5

1596. Farrar D, Tuffnell D, Airey R, et al. Care during the third stage of labour: a postal survey of UK midwives and obstetricians. BMC Pregnancy Childbirth. 2010;10:23. PMID: 20492659; X-1, X-3, X-4

1597. Fawole AO, Sotiloye OS, Hunyinbo KI, et al. A double-blind, randomized, placebo-controlled trial of misoprostol and routine uterotonics for the prevention of postpartum hemorrhage. Int J Gynaecol Obstet. 2010 Feb;112:107-11. PMID: 21130446; X-2, X-4, X-5

1598. Feng XL, Zhu J, Zhang L, et al. Socio-economic disparities in maternal mortality in China between 1996 and 2006. BJOG. 2010 Nov;117:1527-36. PMID: 20937073; X-2, X-3, X-4

1599. Fong A, Leake J, Pan D, et al. Demographic, institutional and obstetrical risk factors for postpartum haemorrhage mortality. J Obstet Gynaecol. 2010;30:470-5. PMID: 20604649; X-2, X-5

1600. Fotopoulou C, Dudenhausen JW. Uterine compression sutures for preserving fertility in severe postpartum haemorrhage: an overview 13 years after the first description. J Obstet Gynaecol. 2010 May;30:339-49. PMID: 20455714; X-1

1601. Franchini M, Franchi M, Bergamini V, et al. The use of recombinant activated FVII in postpartum hemorrhage. Clin Obstet Gynecol. 2010 Mar;53:219-27. PMID: 20142658; X-1

1602. Fuglsang K, Petersen LK. New local hemostatic treatment for postpartum hemorrhage caused by placenta previa at cesarean section. Acta Obstet Gynecol Scand. 2010 Oct;89:1346-9. PMID: 20521867; X-5

1603. Gadmour YB, Godid FA. Factors affecting the success of trial of labour after previous cesarean delivery. Jamahiriya Medical Journal. 2010 Spring;10:34-9. PMID: X-2, X-3, X-4

1604. Gahl WA, Huizing M. Hermansky-Pudlak Syndrome. 2010PMID: 20301464; X-1, X-3

1605. Gao Y, Barclay L. Availability and quality of emergency obstetric care in Shanxi Province, China. Int J Gynaecol Obstet. 2010 Aug;110:181-5. PMID: 20570261; X-2

1606. Gei-Guardia O, Soto-Herrera E, Gei-Brealey A, et al. Sheehan syndrome in Costa Rica: clinical experience with 60 cases. Endocr Pract. 2010 May-Jun;17:337-44. PMID: 21041170; X-2, X-3, X-4

1607. Geller EJ, Wu JM, Jannelli ML, et al. Maternal outcomes associated with planned vaginal versus planned primary cesarean delivery. Am J Perinatol. 2010 Oct;27:675-83. PMID: 20235001; X-4

1608. George RB, McKeen D, Chaplin AC, et al. Up-down determination of the ED(90) of oxytocin infusions for the prevention of postpartum uterine atony in parturients undergoing Cesarean delivery. Can J Anaesth. 2010 Jun;57:578-82. PMID: 20238255; X-4

1609. Gokalp D, Tuzcu A, Bahceci M, et al. Assessment of bleeding disorders in Sheehan's syndrome: are bleeding disorders the underlying cause of Sheehan's syndrome? Platelets. 2010;22:92-7. PMID: 21133650; X-2, X-4

1610. Goldfarb JM, Desai N. Options to prevent multiple pregnancies with ART. Current Women's Health Reviews. 2010;6:250-3. PMID: X-1

1611. Gonsalves M, Belli A. The role of interventional radiology in obstetric hemorrhage. Cardiovasc Intervent Radiol. 2010 Oct;33(5):887-95. PMID: 20464555; X-1

1612. Grossman A, Graves A, Rwamushaija E, et al. Misoprostol for safe motherhood: one tablet, two life-saving indications. African Journal of Midwifery & Women's Health. 2010;4:121-5. PMID: X-1, X-4, X-5

1613. Grotegut CA, Feng L, Mao L, et al. beta-Arrestin mediates oxytocin receptor signaling, which regulates uterine contractility and cellular migration. Am J Physiol Endocrinol Metab. 2010 Mar;300:E468-77. PMID: 21139074; X-1, X-3

1614. Grotegut CA, Paglia MJ, Johnson LN, et al. Oxytocin exposure during labor among women with postpartum hemorrhage secondary to uterine atony. Am J Obstet Gynecol. 2010 Jan;204:56 e1-6. PMID: 21047614; X-4

1615. Guazzelli CA, de Queiroz FT, Barbieri M, et al. Etonogestrel implant in postpartum adolescents: bleeding pattern, efficacy and discontinuation rate. Contraception. 2010 Sep;82:256-9. PMID: 20705154; X-2, X-3, X-4

1616. Gundry R, Siassakos D, Crofts JF, et al. Simulation training for obstetric procedures and emergencies. Fetal and Maternal Medicine Review. 2010 November;21:323-45. PMID: X-1, X-3, X-4

1617. Gungorduk K, Asicioglu O, Besimoglu B, et al. Using intraumbilical vein injection of oxytocin in routine practice with active management of the third stage of labor: a randomized controlled trial. Obstet Gynecol. 2010 Sep;116:619-24. PMID: 20733444; X-4

1618. Gungorduk K, Asicioglu O, Celikkol O, et al. Use of additional oxytocin to reduce blood loss at elective caesarean section: A randomised control trial. Aust N Z J Obstet Gynaecol. 2010 Feb;50:36-9. PMID: 20218995; X-2, X-4, X-5

1619. Gungorduk K, Yildirim G, Asicioglu O, et al. Efficacy of intravenous tranexamic acid in reducing blood loss after elective cesarean section: a prospective, randomized, double-blind, placebo-controlled study. Am J Perinatol. 2010 Mar;28:233-40. PMID: 20979013; X-4

1620. Gupta SD, Khanna A, Gupta R, et al. Maternal mortality ratio and predictors of maternal deaths in selected desert districts in rajasthan a community-based survey and case control study. Womens Health Issues. 2010 Jan-Feb;20:80-5. PMID: 20123178; X-2, X-4

1621. Harriott J, Christie L, Wynter S, et al. A randomized comparison of rectal misoprostol with syntometrine on blood loss in the third stage of labour. West Indian Med J. 2010 Jun;58:201-6. PMID: 20043525; X-4

1622. Hauswald M, Williamson MR, Baty GM, et al. Use of an improvised pneumatic anti-shock garment and a non-pneumatic anti-shock garment to control pelvic blood flow. Int J Emerg Med. 2010;3:173-5. PMID: 21031041; X-2, X-4, X-5

1623. Hillier TA, Vesco KK, Whitlock EP, et al. 2010 MayPMID: 20722157; X-1

1624. Hofmeyr GJ, Fawole B, Mugerwa K, et al. Administration of 400 mug of misoprostol to augment routine active management of the third stage of labor. Int J Gynaecol Obstet. 2010 Feb;112:98-102. PMID: 21130990; X-2, X-4

1625. Homer CS, Kurinczuk JJ, Spark P, et al. A novel use of a classification system to audit severe maternal morbidity. Midwifery. 2010 Oct;26:532-6. PMID: 20691518; X-4

1626. Hossain N, Khan N, Sultana SS. Abruptio placenta and adverse pregnancy outcome. J Pak Med Assoc. 2010 Jun;60:443-6. PMID: 20527640; X-2, X-4

1627. Hunter LA. Exploring the role of uterine artery embolization in the management of postpartum hemorrhage. J Perinat Neonatal Nurs. 2010 Jul-Sep;24(3):207-14. PMID: 20697237; X-1

1628. Ion I, Enache T, Drambareanu D, et al. B-lynch compressive uterine suture. 2010;58:213-8. PMID: X-1, X-2

1629. Janakiraman V, Ecker J, Kaimal AJ. Comparing the second stage in induced and spontaneous labor. Obstet Gynecol. 2010 Sep;116:606-11. PMID: 20733442; X-4

1630. Jangsten E, Mattsson LA, Lyckestam I, et al. A comparison of active management and expectant management of the third stage of labour: a Swedish randomised controlled trial. BJOG. 2010 Feb;118:362-9. PMID: 21134105; X-4

1631. Jaques AM, Amor DJ, Baker HW, et al. Adverse obstetric and perinatal outcomes in subfertile women conceiving without assisted reproductive technologies. Fertil Steril. 2010 Dec;94:2674-9. PMID: 20381039; X-3, X-4

1632. Javed M, Tariq R, Rashid M, et al. Effect of uterine fibroid on pregnancy outcome. 2010;4PMID: X-2

1633. Kamilya G, Seal SL, Mukherji J, et al. Maternal mortality and cesarean delivery: an analytical observational study. J Obstet Gynaecol Res. 2010 Apr;36:248-53. PMID: 20492373; X-4

1634. Kaplan AI. Legally speaking. Did misoprostol cause this postpartum hemorrhage? Contemporary OB/GYN. 2010;55:22. PMID: X-1

1635. Karabulut A, Caliskan A, Ozcan N, et al. Maternal mortality in Denizli region: Three years evaluation. Turkiye Klinikleri Jinekoloji Obstetrik. 2010;20:29-34. PMID: X-2, X-4

1636. Kennare RM, Keirse MJ, Tucker GR, et al. Planned home and hospital births in South Australia, 1991-2006: differences in outcomes. Med J Aust. 2010 Jan 18;192:76-80. PMID: 20078406; X-4

1637. Kerr N, Dresang LT. Does the non-pneumatic anti-shock garment (NASG) have a role in the management of postpartum hemorrhage? Evidence-Based Practice. 2010;13:6-. PMID: X-1, X-4, X-5

1638. Khalil MA, Azhar A, Anwar N, et al. Aetiology, maternal and foetal outcome in 60 cases of obstetrical acute renal failure. J Ayub Med Coll Abbottabad. 2010 Oct-Dec;21:46-9. PMID: 21067023; X-2, X-4

1639. Khan SLA. Acute renal failure in pregnancy: One year observational study at Nephrology Department Sandeman Provincial Hospital Quetta. 2010;4:188-91. PMID: X-2

1640. King KJ, Douglas MJ, Unger W, et al. Five unit bolus oxytocin at cesarean delivery in women at risk of atony: a randomized, double-blind, controlled trial. Anesth Analg. 2010 Dec;111:1460-6. PMID: 20889945; X-4, X-5

1641. Kirke AB. How safe is GP obstetrics? An assessment of antenatal risk factors and perinatal outcomes in one rural practice. Rural Remote Health. 2010 Jul-Sep;10:1545. PMID: 20815656; X-4

1642. Kolas T, Oian P, Skjeldestad FE. Risks for peroperative excessive blood loss in cesarean delivery. Acta Obstet Gynecol Scand. 2010 May;89:658-63. PMID: 20218934; X-4, X-5

1643. Lataifeh I, Amarin Z, Zayed F, et al. Indications and outcome for obstetric patients' admission to intensive care unit: a 7-year review. J Obstet Gynaecol. 2010 May;30:378-82. PMID: 20455722; X-2

1644. Lee HJ, Norwitz ER, Shaw J. Contemporary management of fibroids in pregnancy. Rev Obstet Gynecol. 2010 Winter;3:20-7. PMID: 20508779; X-1, X-4

1645. Lee JS, Shepherd SM. Endovascular treatment of postpartum hemorrhage. Clin Obstet Gynecol. 2010 Mar;53:209-18. PMID: 20142657; X-1

1646. Lee NK, Kim S, Kim CW, et al. Identification of bleeding sites in patients with postpartum hemorrhage: MDCT compared with angiography. AJR Am J Roentgenol. 2010 Feb;194:383-90. PMID: 20093600; X-4

1647. Li X, Zhu J, Dai L, et al. Trends in maternal mortality due to obstetric hemorrhage in urban and rural China, 1996-2005. J Perinat Med. 2010 Jan;39:35-41. PMID: 21138400; X-2, X-4

1648. Liang J, Zhu J, Dai L, et al. Maternal mortality in China, 1996-2005. Int J Gynaecol Obstet. 2010 Aug;110:93-6. PMID: 20471015; X-2, X-4

1649. Lie Fong S, van den Heuvel-Eibrink MM, Eijkemans MJ, et al. Pregnancy outcome in female childhood cancer survivors. Hum Reprod. 2010 May;25:1206-12. PMID: 20172864; X-4

1650. Liljestrand J, Moore J, Tholandi M. Active management of the third stage of labor and eclampsia management as critical components of skilled care during birth in Cambodia. Int J Gynaecol Obstet. 2010 Nov;111:188-9. PMID: 20650458; X-2, X-4

1651. Lim PS, Singh S, Lee A, et al. Umbilical vein oxytocin in the management of retained placenta: an alternative to manual removal of placenta? Arch Gynecol Obstet. 2010 Nov;284:1073-9. PMID: 21136267; X-4

1652. Liu S, Joseph KS, Bartholomew S, et al. Temporal trends and regional variations in severe maternal morbidity in Canada, 2003 to 2007. J Obstet Gynaecol Can. 2010 Sep;32:847-55. PMID: 21050517; X-4

1653. Lousquy R, Morel O, Soyer P, et al. Routine use of abdominopelvic ultrasonography in severe postpartum hemorrhage: retrospective evaluation in 125 patients. Am J Obstet Gynecol. 2010 Mar;204:232 e1-6. PMID: 21111397; X-4

1654. Majeed T, Mobusher I, Ali A, et al. Comparison of side effects and complications of intravaginal misoprostol with extra-amniotic prostaglandin F2 alpha for termination of second trimester pregnancy. Medical Forum Monthly. 2010 December;21:29-32. PMID: X-1, X-2

1655. Majumdar A, Saleh S, Davis M, et al. Use of balloon catheter tamponade for massive postpartum haemorrhage. J Obstet Gynaecol. 2010;30(6):586-93. PMID: 20701508; X-5

1656. Malik S, Brooks H, Singhal T. Cell saver use in obstetrics. J Obstet Gynaecol. 2010;30:826-8. PMID: 21126122; X-5

1657. Mansouri HA, Alsahly N. Rectal versus oral misoprostol for active management of third stage of labor: a randomized controlled trial. Arch Gynecol Obstet. 2010 May;283:935-9. PMID: 20422423; X-4

1658. Matar HE, Almerie MQ, Alsabbagh M, et al. Policies for care during the third stage of labour: a survey of maternity units in Syria. BMC Pregnancy Childbirth. 2010;10:32. PMID: 20569439; X-2, X-3, X-4

1659. Matthews G, Rebarber A. A practical perspective on cesarean hysterectomy: when, why, and how. Contemporary OB/GYN. 2010;55:30--2, [4], 6-8 passim. PMID: X-1

1660. McCaw-Binns A, Lewis-Bell K. Small victories, new challenges: two decades of maternal mortality surveillance in Jamaica. West Indian Med J. 2010 Dec;58:518-32. PMID: 20583677; X-2, X-4

1661. McDonnell NJ, Kennedy D, Long LJ, et al. The development and implementation of an obstetric cell salvage service. Anaesth Intensive Care. 2010 May;38:492-9. PMID: 20514958; X-4, X-5

1662. McKelvey A, Ashe R, McKenna D, et al. Caesarean section in the second stage of labour: a retrospective review of obstetric setting and morbidity. J Obstet Gynaecol. 2010 Apr;30:264-7. PMID: 20373928; X-4, X-5

1663. Miller S, Fathalla MM, Ojengbede OA, et al. Obstetric hemorrhage and shock management: using the low technology Non-pneumatic Anti-Shock Garment in Nigerian and Egyptian tertiary care facilities. BMC Pregnancy Childbirth. 2010;10:64. PMID: 20955600; X-2

1664. Miller S, Fathalla MM, Youssif MM, et al. A comparative study of the non-pneumatic anti-shock garment for the treatment of obstetric hemorrhage in Egypt. Int J Gynaecol Obstet. 2010 Apr;109:20-4. PMID: 20096836; X-2

1665. Mir S, Ahmad A. Shoulder dystocia. JK Science. 2010 Oct-Dec;12:165-7. PMID: X-1, X-4

1666. Mobeen N, Durocher J, Zuberi N, et al. Administration of misoprostol by trained traditional birth attendants to prevent postpartum haemorrhage in homebirths in Pakistan: a randomised placebo-controlled trial. BJOG. 2010 Feb;118:353-61. PMID: 21176086; X-2, X-4

1667. Mockler JC, Murphy DJ, Wallace EM. An Australian and New Zealand survey of practice of the use of oxytocin at elective caesarean section. Aust N Z J Obstet Gynaecol. 2010 Feb;50:30-5. PMID: 20218994; X-3, X-4

1668. Mohammad KI, Gamble J, Creedy DK. Prevalence and factors associated with the development of antenatal and postnatal depression among Jordanian women. Midwifery. 2010 Dec;27:e238-45. PMID: 21130548; X-2, X-3, X-5

1669. Moore J, Chandraharan E. Management of massive postpartum haemorrhage and coagulopathy. Obstetrics, Gynaecology and Reproductive Medicine. 2010;20:174-80. PMID: X-1

1670. Mourad-Youssif M, Ojengbede OA, Meyer CD, et al. Can the Non-pneumatic Anti-Shock Garment (NASG) reduce adverse maternal outcomes from postpartum hemorrhage? Evidence from Egypt and Nigeria. Reprod Health. 2010;7:24. PMID: 20809942; X-2

1671. Mustafa R, Hashmi H. Near-miss obstetrical events and maternal deaths. J Coll Physicians Surg Pak. 2010 Dec;19:781-5. PMID: 20042157; X-2, X-4

1672. Nahar S, Nargis SF, Khannam M. Simple technique of uterine compression sutures for prevention of primary postpartum hemorrhage during caesarian section. Pakistan Journal of Medical Sciences. 2010 April-June;26:319-23. PMID: X-2, X-4

1673. Natukunda B, Schonewille H, Smit Sibinga CT. Assessment of the clinical transfusion practice at a regional referral hospital in Uganda. Transfus Med. 2010 Jun;20:134-9. PMID: 20136779; X-2, X-3, X-4

1674. Naz T, Hassan L. Primary postpartum hemorrhage; Profile at a tertiary care hospital. Journal of Medical Sciences. 2010 January;18:49-53. PMID: X-2, X-4

1675. Neelam N, Kumar SJ. B-Lynch suture-an experience. Journal of Obstetrics and Gynecology of India. 2010 April;60:128-34. PMID: X-2

1676. Nizam K, Haider G. Role of uterovaginal packing in postpartum hemorrhage. Journal of the Liaquat University of Medical and Health Sciences. 2010 January - April;9:27-9. PMID: X-2

1677. Nojomi M, Haghighi L, Bijari B, et al. Delayed childbearing: Pregnancy and maternal outcomes. Iranian Journal of Reproductive Medicine. 2010;8:80-5. PMID: X-2, X-4

1678. Noor S, Fawwad A, Sultana R, et al. Pregnancy with fibroids and its and its obstetric complication. J Ayub Med Coll Abbottabad. 2010 Oct-Dec;21:37-40. PMID: 21067021; X-2, X-4

1679. Novikova N, Hofmeyr GJ. Tranexamic acid for preventing postpartum haemorrhage. Cochrane Database Syst Rev. 2010:CD007872. PMID: 20614466; X-1

1680. Oboro V, Adewunmi A, Ande A, et al. Morbidity associated with failed vaginal birth after cesarean section. Acta Obstet Gynecol Scand. 2010 Sep;89:1229-32. PMID: 20804350; X-2, X-4

1681. O'Brien D, Babiker E, O'Sullivan O, et al. Prediction of peripartum hysterectomy and end organ dysfunction in major obstetric haemorrhage. Eur J Obstet Gynecol Reprod Biol. 2010 Dec;153:165-9. PMID: 20810201; X-4

1682. Ogelle O, Okafor C, Eke AC, et al. Current trends in hysterectomies at a Nigerian tertiary center. Journal of Gynecologic Surgery. 2010 01 Jan;26:7-13. PMID: X-2, X-3, X-4

1683. Ojengbede OA, Morhason-Bello IO, Galadanci H, et al. Assessing the role of the non-pneumatic anti-shock garment in reducing mortality from postpartum hemorrhage in Nigeria. Gynecol Obstet Invest. 2010;71:66-72. PMID: 21160197; X-2

1684. Olive DL, Pritts EA. Fibroids and reproduction. Semin Reprod Med. 2010 May;28:218-27. PMID: 20414844; X-1

1685. Orbach A, Levy A, Wiznitzer A, et al. Peripartum cesarean hysterectomy: critical analysis of risk factors and trends over the years. J Matern Fetal Neonatal Med. 2010 Mar;24:480-4. PMID: 20636233; X-4

1686. Osmundson SS, Ou-Yang RJ, Grobman WA. Elective induction compared with expectant management in nulliparous women with a favorable cervix. Obstet Gynecol. 2010 Sep;116:601-5. PMID: 20733441; X-4

1687. Ozalp E, Tanir HM, Sener T. Dinoprostone vaginal insert versus intravenous oxytocin to reduce postpartum blood loss following vaginal or cesarean delivery. Clin Exp Obstet Gynecol. 2010;37:53-5. PMID: 20420283; X-4

1688. Palacios-Jaraquemada J, Fiorillo A. Conservative approach in heavy postpartum hemorrhage associated with coagulopathy. Acta Obstet Gynecol Scand. 2010 Sep;89:1222-5. PMID: 20804349; X-2, X-5

1689. Pallasmaa N, Ekblad U, Aitokallio-Tallberg A, et al. Cesarean delivery in Finland: maternal complications and obstetric risk factors. Acta Obstet Gynecol Scand. 2010 Jul;89:896-902. PMID: 20583935; X-4

1690. Panda S, Prashantha DK, Shankar SR, et al. Localized convexity subarachnoid haemorrhage--a sign of early cerebral venous sinus thrombosis. Eur J Neurol. 2010 Oct;17:1249-58. PMID: 20402745; X-3, X-4

1691. Park H, Han JY, Ahn HK, et al. Unintentional uterine hyperactivity and perinatal outcomes following labor induction with intravaginal administration of sustained-release dinoprostone insert. Journal of Clinical Pharmacology and Pharmacoepidemiology. 2010;1:9-14. PMID: X-4

1692. Pattinson RC, Hulsbergen MH, Van Hoorick L. The effect of maternal HIV infection on maternal conditions and perinatal deaths in southwest Tshwane. Facts Views Vis Obgyn. 2010;2:227-31. PMID: 25009711; X-2, X-4

1693. Peng T, Li XT, Zhou SF, et al. Transcutaneous electrical nerve stimulation on acupoints relieves labor pain: a non-randomized controlled study. Chin J Integr Med. 2010 Jun;16:234-8. PMID: 20694778; X-3, X-4

1694. Perez A, Acevedo O, Tamayo Fdel C, et al. Characterization of obstetric patients with multiple organ failure in the intensive care unit of a Havana teaching hospital, 1998 to 2006. MEDICC Rev. 2010 Spring;12:27-32. PMID: 20486411; X-2, X-4

1695. Perez-Munuzuri A, Fernandez-Lorenzo JR, Couce-Pico ML, et al. Serum levels of IGF1 are a useful predictor of retinopathy of prematurity. Acta Paediatr. 2010 Apr;99:519-25. PMID: 20085549; X-3, X-4

1696. Porreco RP, Barkey R. Peripartum intensive care. J Matern Fetal Neonatal Med. 2010 Oct;23:1136-8. PMID: 20540680; X-4

1697. Porreco RP, Stettler RW. Surgical remedies for postpartum hemorrhage. Clin Obstet Gynecol. 2010 Mar;53:182-95. PMID: 20142655; X-1

1698. Prakash J, Niwas SS, Parekh A, et al. Acute kidney injury in late pregnancy in developing countries. Ren Fail. 2010 Jan;32:309-13. PMID: 20370445; X-1, X-4

1699. Prick BW, Steegers EA, Jansen AJ, et al. Well being of obstetric patients on minimal blood transfusions (WOMB trial). BMC Pregnancy Childbirth. 2010;10:83. PMID: 21162725; X-1, X-2, X-4, X-5

1700. Priya N, Ashok V, Suresh V. Maternal mortality: Ten years retrospective study. JK Science. 2010 July-Sep;12:134-6. PMID: X-1, X-4

1701. Purohit R, Sharma J. Cervical clamping following ultrasound-guided uterocervical packing to control postpartum uterine hemorrhage. Int J Gynaecol Obstet. 2010 May;109:160-1. PMID: 20176354; X-2, X-5

1702. Qamarunisa, Memon H, Ali M. Frequency, maternal and fetal outcome of abruptio placenta in a rural medical college hospital, Mirpurkhas Sindh. Pakistan Journal of Medical Sciences. 2010 July - September;26:663-6. PMID: X-2, X-4

1703. Qureshi ZP, Sekadde-Kigondu C, Mutiso SM. Rapid assessment of partograph utilisation in selected maternity units in Kenya. East Afr Med J. 2010 Jun;87:235-41. PMID: 23057265; X-2, X-4

1704. Raba G. Effect of internal iliac artery ligation on ovarian blood supply and ovarian reserve. Climacteric. 2010 Feb;14:54-7. PMID: 20128664; X-4, X-5

1705. Rahim R, Nahar K, Khan IA. Platelet count in 100 cases of pregnancy induced hypertension. Mymensingh Med J. 2010 Jan;19:5-9. PMID: 20046164; X-2, X-4

1706. Rajiv M, Malik S, Mittal A. Methotrexate therapy for placenta accreta- A rare case report. Current Pediatric Research. 2010 Jan-June;14:69-70. PMID: X-1

1707. Rathat G, Do Trinh P, Mercier G, et al. Synechia after uterine compression sutures. Fertil Steril. 2010 Jan;95:405-9. PMID: 20883989; X-4, X-5

1708. Rather SY, Qadir A, Parveen S, et al. Use of condom to control intractable PPH. JK Science. 2010 July-Sep;12:127-9. PMID: X-2

1709. Rizwan N, Abbasi RM, Jatoi N. Retained placenta still a continuing cause of maternal morbidity and mortality. J Pak Med Assoc. 2010 Dec;59:812-4. PMID: 20201169; X-2, X-4

1710. Rizwan N, Abbasi RM, Mughal R. Maternal morbidity and perinatal outcome with twin pregnancy. J Ayub Med Coll Abbottabad. 2010 Apr-Jun;22:105-7. PMID: 21702280; X-2, X-4

1711. Robson SJ, Leader LR, Dear KB, et al. Women's expectations of management in their next pregnancy after an unexplained stillbirth: an Internet-based empirical study. Aust N Z J Obstet Gynaecol. 2010 Dec;49:642-6. PMID: 20070714; X-3, X-4

1712. Roethlisberger M, Womastek I, Posch M, et al. Early postpartum hysterectomy: incidence and risk factors. Acta Obstet Gynecol Scand. 2010 Aug;89:1040-4. PMID: 20602600; X-4, X-5

1713. Rohilla M, Raveendran A, Dhaliwal LK, et al. Severe anaemia in pregnancy: a tertiary hospital experience from northern India. J Obstet Gynaecol. 2010;30:694-6. PMID: 20925612; X-2

1714. Romanyuk V, Raichel L, Sergienko R, et al. Pneumonia during pregnancy: radiological characteristics, predisposing factors and pregnancy outcomes. J Matern Fetal Neonatal Med. 2010 Jan;24:113-7. PMID: 20476873; X-1, X-3, X-4

1715. Rosenberg J. Trade-offs in treating postpartum hemorrhage. International Perspectives on Sexual & Reproductive Health. 2010;36:5-. PMID: X-1, X-4, X-5

1716. Rosenberg T, Pariente G, Sergienko R, et al. Critical analysis of risk factors and outcome of placenta previa. Arch Gynecol Obstet. 2010 Jul;284:47-51. PMID: 20652281; X-4

1717. Rossen J, Okland I, Nilsen OB, et al. Is there an increase of postpartum hemorrhage, and is severe hemorrhage associated with more frequent use of obstetric interventions? Acta Obstet Gynecol Scand. 2010 Oct;89:1248-55. PMID: 20809871; X-4, X-5

1718. Rossi AC, Lee RH, Chmait RH. Emergency postpartum hysterectomy for uncontrolled postpartum bleeding: a systematic review. Obstet Gynecol. 2010 Mar;115:637-44. PMID: 20177297; X-1, X-2, X-4, X-5

1719. Rozen G, Ugoni AM, Sheehan PM. A new perspective on VBAC: a retrospective cohort study. Women Birth. 2010 Mar;24:3-9. PMID: 20447886; X-4

1720. Sanghvi H, Ansari N, Prata NJ, et al. Prevention of postpartum hemorrhage at home birth in Afghanistan. Int J Gynaecol Obstet. 2010 Mar;108:276-81. PMID: 20053399; X-2, X-3, X-4

1721. Schorn MN. Measurement of blood loss: review of the literature. J Midwifery Womens Health. 2010 Jan-Feb;55:20-7. PMID: 20129226; X-1

1722. Scott S, Deihes L. A Collaborative Approach for the Identification and Treatment of Obstetric Hemorrhage. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2010;39:S13-S. PMID: X-1, X-5

1723. Selo-Ojeme D, Rogers C, Mohanty A, et al. Is induced labour in the nullipara associated with more maternal and perinatal morbidity? Arch Gynecol Obstet. 2010 Aug;284:337-41. PMID: 20838800; X-2, X-4, X-5

1724. Sentilhes L, Ambroselli C, Kayem G, et al. Maternal outcome after conservative treatment of placenta accreta. Obstet Gynecol. 2010 Mar;115:526-34. PMID: 20177283; X-2, X-4, X-5

1725. Sentilhes L, Kayem G, Ambroselli C, et al. Fertility and pregnancy outcomes following conservative treatment for placenta accreta. Hum Reprod. 2010 Nov;25:2803-10. PMID: 20833739; X-4

1726. Shaffer BL, Cheng YW, Vargas JE, et al. Manual rotation to reduce caesarean delivery in persistent occiput posterior or transverse position. J Matern Fetal Neonatal Med. 2010 Jan;24:65-72. PMID: 20350240; X-4

1727. Shah N, Rohra DK, Shams H, et al. Home deliveries: reasons and adverse outcomes in women presenting to a tertiary care hospital. J Pak Med Assoc. 2010 Jul;60:555-8. PMID: 20578606; X-2, X-4

1728. Shahid S, Javed N. Gestational choriocarcinoma with metastasis to breast: An unusual presentation. Journal of Postgraduate Medical Institute. 2010 April-June;24:163-4. PMID: X-1

1729. Shaikh F, Memon RAD, Maqsood S. An audit of primary postpartum hemorrhage. Medical Forum Monthly. 2010 February;21:26-30. PMID: X-2, X-4

1730. Shakur H, Elbourne D, Gulmezoglu M, et al. The WOMAN Trial (World Maternal Antifibrinolytic Trial): tranexamic acid for the treatment of postpartum haemorrhage: an international randomised, double blind placebo controlled trial. Trials. 2010;11:40. PMID: 20398351; X-3, X-4

1731. Sharma PP, Kalra A, Mukhopadhyay P, et al. Early re-operations after gynecological and obstetrical surgery -a five years. Journal of Obstetrics and Gynecology of India. 2010 December;60:507-10. PMID: X-2, X-4

1732. Shechter Y, Levy A, Wiznitzer A, et al. Obstetric complications in grand and great grand multiparous women. J Matern Fetal Neonatal Med. 2010 Oct;23:1211-7. PMID: 20402567; X-4

1733. Shrim A, Levin I, Mallozzi A, et al. Does very advanced maternal age, with or without egg donation, really increase obstetric risk in a large tertiary center? J Perinat Med. 2010 Nov;38:645-50. PMID: 20707613; X-4

1734. Sidhu HK, Prasad G, Jain V, et al. Pelvic artery embolization in the management of obstetric hemorrhage. Acta Obstet Gynecol Scand. 2010 Aug;89:1096-9. PMID: 20397757; X-2, X-4, X-5

1735. Simpson KR. Postpartum hemorrhage. MCN Am J Matern Child Nurs. 2010 Mar-Apr;35:124. PMID: 20215958; X-1, X-2, X-4, X-5

1736. Singh T, Ghosh SM, Agarwala R, et al. Anaesthetic implications of a parturient with antiphospholipid antibody syndrome. Southern African Journal of Anaesthesia and Analgesia. 2010;16:24-6. PMID: X-1

1737. Singhania P, Singh S, Banerjee R, et al. Hyponatremia - A rare and emergency presentation of Sheehans syndrome. Pakistan Journal of Medical Sciences. 2010 July - September;26:713-5. PMID: X-1, X-2

1738. Sloan NL, Durocher J, Aldrich T, et al. What measured blood loss tells us about postpartum bleeding: a systematic review. BJOG. 2010 Jun;117:788-800. PMID: 20406227; X-1, X-4

1739. Sobantka S, Pietrzak Z, Wieczorek A, et al. Comparison of blood loss in vaginal birth versus cesarean section. [Polish, English]. Ginekologia i Poloznictwo. 2010;16:15-20. PMID: X-4

1740. Sobantka S, Pietrzak Z, Wieczorek A, et al. Comparison of blood loss in vaginal birth versus cesarean section. 2010;16:15-20. PMID: X-4

1741. Soltan MH, Imam HH, Zahran KA, et al. Assessing changes in flow velocimetry and clinical outcome following use of an external aortic compression device in women with postpartum hemorrhage. Int J Gynaecol Obstet. 2010 Sep;110:257-61. PMID: 20605150; X-2, X-4, X-5

1742. Soltani H, Hutchon DR, Poulose TA. Timing of prophylactic uterotonics for the third stage of labour after vaginal birth. Cochrane Database of Systematic Reviews. 2010PMID: X-1

1743. Sosa CG, Althabe F, Belizan JM, et al. Use of oxytocin during early stages of labor and its effect on active management of third stage of labor. Am J Obstet Gynecol. 2010 Mar;204:238 e1-5. PMID: 21145034; X-2, X-4

1744. Souza JP, Cecatti JG, Pacagnella RC, et al. Development and validation of a questionnaire to identify severe maternal morbidity in epidemiological surveys. Reprod Health. 2010;7:16. PMID: 20663159; X-2, X-4

1745. Soyer P, Morel O, Fargeaudou Y, et al. Value of pelvic embolization in the management of severe postpartum hemorrhage due to placenta accreta, increta or percreta. Eur J Radiol. 2010 Dec;80:729-35. PMID: 20708361; X-5

1746. Stanirowski P, Prochenko E, Fischof I, et al. Pregnancy outcomes and trial of labour in case of foetal macrosomia. [Polish, English]. Ginekologia i Poloznictwo. 2010;16:28-36. PMID: X-4

1747. Stanirowski P, Prochenko E, Fischof I, et al. Pregnancy outcomes and trial of labour in case of foetal macrosomia. 2010;16:28-36. PMID: X-4

1748. Stanojevic D, Stanojevic M, Zamurovic M, et al. Uterine compression suture technique in the management of severe postpartum haemorrhage as an alternative to hysterectomy. Srp Arh Celok Lek. 2010 Nov-Dec;137:638-40. PMID: 20069921; X-1, X-5

1749. Suchocki S, Piec P, Kubiaczyk F. Peripartum hysterectomy - Increasing problem in modern obstetrics. [Polish, English]. Ginekologia i Poloznictwo. 2010;17:16-21. PMID: X-4

1750. Suchocki S, Piec P, Kubiaczyk F. Peripartum hysterectomy - Increasing problem in modern obstetrics. 2010;17:16-21. PMID: X-1, X-4

1751. Sultana N, Begum K, Begum A, et al. A lower dose of magnesium sulphate for control of convulsion in eclamptic women of Bangladesh. Bangladesh Journal of Obstetrics and Gynecology. 2010 September;25:71-6. PMID: X-1, X-2, X-4

1752. Sutherland T, Meyer C, Bishai DM, et al. Community-based distribution of misoprostol for treatment or prevention of postpartum hemorrhage: cost-effectiveness, mortality, and morbidity reduction analysis. Int J Gynaecol Obstet. 2010 Mar;108:289-94. PMID: 20079493; X-1, X-2, X-3

1753. Thapa K, Malla B, Pandey S, et al. Intrauterine condom tamponade in management of post partum haemorrhage. J Nepal Health Res Counc. 2010 Apr;8:19-22. PMID: 21879008; X-2, X-4, X-5

1754. Thompson A, Brown Will SE, Treanor C. From Dazed and Confused to Empowered: A New Graduate's Solution for Managing Postpartum Hemorrhage. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2010;39:S130-1. PMID: 2011218901. Language: English. Entry Date: 20110909. Revision Date: 20140704. Publication Type: journal article; X-1, X-4, X-5

1755. Thompson A, Treanor C. From Dazed and Confused to Empowered: A New Graduate's Solution for Managing Postpartum Hemorrhage. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2010;39:S130-1. PMID: X-1

1756. Thompson JF, Heal LJ, Roberts CL, et al. Women's breastfeeding experiences following a significant primary postpartum haemorrhage: A multicentre cohort study. Int Breastfeed J. 2010;5:5. PMID: 20504372; X-2, X-4, X-5

1757. Toledo P, McCarthy RJ, Burke CA, et al. The effect of live and web-based education on the accuracy of blood-loss estimation in simulated obstetric scenarios. Am J Obstet Gynecol. 2010 Apr;202(4):400.e1-5. PMID: 20035920; X-3, X-4

1758. Tuladhar H, Khanal R, Kayastha S, et al. Complications of home delivery: our experience at Nepal Medical College Teaching Hospital. Nepal Med Coll J. 2010 Sep;11:164-9. PMID: 20334062; X-2, X-4

1759. Turan J, Ojengbede O, Fathalla M, et al. Positive effects of the non-pneumatic anti-shock garment on delays in accessing care for postpartum and postabortion hemorrhage in Egypt and Nigeria. J Womens Health (Larchmt). 2010 Jan;20:91-8. PMID: 21190486; X-2

1760. Turner MJ. Peripartum hysterectomy: an evolving picture. Int J Gynaecol Obstet. 2010 Apr;109:9-11. PMID: 20172521; X-1

1761. van Stralen G, van Stralen-Ruijten LL, Spaargaren CF, et al. Good quality of life after emergency embolisation in postpartum haemorrhage. J Psychosom Obstet Gynaecol. 2010 Dec;31:285-8. PMID: 21067474; X-4, X-5

1762. Varras M, Krivis C, Plis C, et al. Emergency obstetric hysterectomy at two tertiary centers: a clinical analysis of 11 years experience. Clin Exp Obstet Gynecol. 2010;37:117-9. PMID: 21077501; X-4, X-5

1763. Varras M, Vlachakos N, Akrivis C, et al. Malignant gastrointestinal stromal tumor presenting with hemoperitoneum in puerperium: report of a case with review of the literature. World J Surg Oncol. 2010;8:95. PMID: 21054898; X-1, X-3, X-4

1764. Visalyaputra S, Prechapanich J, Suwanvichai S, et al. Intravenous nitroglycerin for controlled cord traction in the management of retained placenta. Int J Gynaecol Obstet. 2010 Feb;112:103-6. PMID: 21144515; X-2, X-4, X-5

1765. Vivio D, Fullerton JT, Forman R, et al. Integration of the practice of active management of the third stage of labor within training and service implementation programming in Zambia. J Midwifery Womens Health. 2010 Sep-Oct;55:447-54. PMID: 20732666; X-2, X-3, X-4

1766. Waheed F, Majeed T, Mahmood Z, et al. Emergency obstetrical hysterectomy: Frequency indications and maternal outcome. Medical Forum Monthly. 2010 December;21:24-8. PMID: X-2, X-4

1767. Wang BS, Zhou LF, Coulter D, et al. Effects of caesarean section on maternal health in low risk nulliparous women: a prospective matched cohort study in Shanghai, China. BMC Pregnancy Childbirth. 2010;10:78. PMID: 21122153; X-2, X-4

1768. Waters N, Chachan S, Morton K, et al. Laparoscopic repair of vaginal vault dehiscence after postpartum hysterectomy. Gynecological Surgery. 2010 September;7:275-7. PMID: X-1

1769. Webster VJ, Stewart R, Stewart P. A survey of interventional radiology for the management of obstetric haemorrhage in the United Kingdom. Int J Obstet Anesth. 2010 Jul;19:278-81. PMID: 20605435; X-3, X-4

1770. Weiniger CF, Ivri S, Ioscovich A, et al. Obstetric anesthesia units in Israel: a national questionnaire-based survey. Int J Obstet Anesth. 2010 Oct;19:410-6. PMID: 20708921; X-3, X-4

1771. Wickham S. Research unwrapped. Practising Midwife. 2010;13:31-2. PMID: X-1

1772. Widmer M, Blum J, Hofmeyr GJ, et al. Misoprostol as an adjunct to standard uterotonics for treatment of post-partum haemorrhage: a multicentre, double-blind randomised trial. Lancet. 2010 May 22;375:1808-13. PMID: 20494730; X-2, X-4, X-5

1773. Wikland M, Hardarson T, Hillensjo T, et al. Obstetric outcomes after transfer of vitrified blastocysts. Hum Reprod. 2010 Jul;25:1699-707. PMID: 20472913; X-3, X-4

1774. Winikoff B, Dabash R, Durocher J, et al. Treatment of post-partum haemorrhage with sublingual misoprostol versus oxytocin in women not exposed to oxytocin during labour: a double-blind, randomised, non-inferiority trial. Lancet. 2010 Jan 16;375:210-6. PMID: 20060161; X-2, X-4, X-5

1775. Woiski MD, Hermens RP, Middeldorp JM, et al. Haemorrhagia post partum; an implementation study on the evidence-based guideline of the Dutch Society of Obstetrics and Gynaecology (NVOG) and the MOET (Managing Obstetric Emergencies and Trauma-course) instructions; the Fluxim study. BMC Pregnancy Childbirth. 2010;10:5. PMID: 20102607; X-4, X-5

1776. Yogev Y, Melamed N, Bardin R, et al. Pregnancy outcome at extremely advanced maternal age. Am J Obstet Gynecol. 2010 Dec;203:558 e1-7. PMID: 20965486; X-4

1777. Yong-Hwa Chae MD, Yun-Young Kim, M.D., Gye-Hyeong An, M.D., Jang-Hwan Woo, M.D., Jin-Hoon Chung, M.D., June-Seek Choi, M.D., Hyun-Mee Ryu, M.D., Moon-Young Kim, M.D., Jae-Hyug Yang, M.D. and Min-Hyoung Kim, M.D. Treatment outcome of uterine compression sutures for massive postpartum hemorrhage. Korean J Obstet Gynecol. 2010;53(9):769-77. PMID: X-6

1778. Zelop CM. Postpartum hemorrhage: becoming more evidence-based. Obstet Gynecol. 2010 Jan;117:3-5. PMID: 21173639; X-1, X-4, X-5

1779. Zhang WH, Deneux-Tharaux C, Brocklehurst P, et al. Effect of a collector bag for measurement of postpartum blood loss after vaginal delivery: cluster randomised trial in 13 European countries. BMJ. 2010;340:c293. PMID: 20123835; X-2, X-4

1780. Zheng J, Xiong X, Ma Q, et al. A new uterine compression suture for postpartum haemorrhage with atony. BJOG. 2010 Feb;118:370-4. PMID: 21176088; X-2, X-5

1781. . MIDIRS update. Essentially MIDIRS. 2011;2:5-16. PMID: X-1, X-4

1782. . Top 30 medicines to save mothers and children. Essentially MIDIRS. 2011;2:24-. PMID: X-1, X-4

1783. Abasiattai AM, Utuk NM, Udoma EJ, et al. Grandmultiparity: outcome of delivery in a tertiary hospital in southern Nigeria. Niger J Med. 2011 Jul-Sep;20:345-8. PMID: 21970216; X-2, X-4

1784. Abha S, Pratibha R. A comparative study of feto-maternal outcome in instrumental vaginal delivery. Journal of Obstetrics and Gynecology of India. 2011 December;61:663-6. PMID: X-2, X-4

1785. Addo VN. Body Mass Index, Weight Gain during Pregnancy and Obstetric Outcomes. Ghana Med J. 2011 Jun;44:64-9. PMID: 21327006; X-2, X-4

1786. Ade-Conde JA, Alabi O, Higgins S, et al. Maternal post natal hospital readmission-trends and association with mode of delivery. Ir Med J. 2011 Jan;104:17-20. PMID: 21387880; X-2, X-4, X-5

1787. Agarwal N, Deinde O, Willmott F, et al. A case series of interventional radiology in postpartum haemorrhage. J Obstet Gynaecol. 2011 Aug;31:499-502. PMID: 21823848; X-4, X-5

1788. Agrawal R, Legge F, Pollard K, et al. Massive secondary postpartum haemorrhage managed with insertion of a bakri balloon catheter after surgical evacuation of the uterus. South African Journal of Obstetrics and Gynaecology. 2011;17:36-7. PMID: X-2, X-4, X-5

1789. Al Riyami N, Hui D, Herer E, et al. Uterine compression sutures as an effective treatment for postpartum hemorrhage: case series. AJP Rep. 2011 Sep;1:47-52. PMID: 23705085; X-2, X-5

1790. Albayrak M, Ozdemir I, Koc O, et al. Post-partum haemorrhage from the lower uterine segment secondary to placenta praevia/accreta: successful conservative management with Foley balloon tamponade. Aust N Z J Obstet Gynaecol. 2011 Aug;51:377-80. PMID: 21806571; X-2, X-4, X-5

1791. Ali A, Ali MA, Ali MU, et al. Hospital outcomes of obstetrical-related acute renal failure in a tertiary care teaching hospital. Ren Fail. 2011;33:285-90. PMID: 21401352; X-2, X-3

1792. Alouini S, Coly S, Megier P, et al. Multiple square sutures for postpartum hemorrhage: results and hysteroscopic assessment. Am J Obstet Gynecol. 2011 Oct;205:335 e1-6. PMID: 21722873; X-4, X-5

1793. Althabe F, Mazzoni A, Cafferata ML, et al. Using Uniject to increase the use of prophylactic oxytocin for management of the third stage of labor in Latin America. Int J Gynaecol Obstet. 2011 Aug;114:184-9. PMID: 21693378; X-2, X-4, X-5

1794. Amaral E, Souza JP, Surita F, et al. A population-based surveillance study on severe acute maternal morbidity (near-miss) and adverse perinatal outcomes in Campinas, Brazil: the Vigimoma Project. BMC Pregnancy Childbirth. 2011;11:9. PMID: 21255453; X-2, X-4

1795. Amat L, Sabria J, Martinez E, et al. Cord blood collection for banking and the risk of maternal hemorrhage. Acta Obstet Gynecol Scand. 2011 Sep;90:1043-5. PMID: 21564030; X-4

1796. Andreatta P, Debpuur D, Danquah A, et al. Using cell phones to collect postpartum hemorrhage outcome data in rural Ghana. Int J Gynaecol Obstet. 2011 May;113:148-51. PMID: 21420086; X-2, X-4

1797. Andreatta P, Gans-Larty F, Debpuur D, et al. Evaluation of simulation-based training on the ability of birth attendants to correctly perform bimanual compression as obstetric first aid. Int J Nurs Stud. 2011 Oct;48:1275-80. PMID: 21450290; X-2

1798. Angulo Y. A Multidisciplinary Approach to a Hysterectomy: A Case Study. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2011;40:S125-6. PMID: X-1, X-2, X-4, X-5

1799. Armstrong S, Fernando R, Ashpole K, et al. Assessment of coagulation in the obstetric population using ROTEM(R) thromboelastometry. Int J Obstet Anesth. 2011 Oct;20:293-8. PMID: 21835606; X-4, X-5

1800. Arrowsmith S, Wray S, Quenby S. Maternal obesity and labour complications following induction of labour in prolonged pregnancy. BJOG. 2011 Apr;118:578-88. PMID: 21265999; X-4

1801. Asghar S, Naz U, Awan F, et al. Obstetric outcome of iron deficiency anemia. 2011;5:303-6. PMID: X-2, X-4

1802. Askar AA, Ismail MT, El-Ezz AA, et al. Carbetocin versus syntometrine in the management of third stage of labor following vaginal delivery. Arch Gynecol Obstet. 2011 Dec;284:1359-65. PMID: 21336835; X-2, X-4

1803. Awan N, Bennett MJ, Walters WA. Emergency peripartum hysterectomy: a 10-year review at the Royal Hospital for Women, Sydney. Aust N Z J Obstet Gynaecol. 2011 Jun;51:210-5. PMID: 21631438; X-4, X-5

1804. Baduni N, Sanwal MK, Jain A. Acute pulmonary edema after intramyometrial prostodin. Journal of Anaesthesiology Clinical Pharmacology. 2011 April-June;27:275-7. PMID: X-1, X-2, X-5

1805. Barroso F, Allard S, Kahan BC, et al. Prevalence of maternal anaemia and its predictors: a multi-centre study. Eur J Obstet Gynecol Reprod Biol. 2011 Nov;159:99-105. PMID: 21890259; X-3

1806. Basak S, Kanungo S, Majhi C. Symphysiotomy: Is it obsolete? J Obstet Gynaecol Res. 2011 Jul;37:770-4. PMID: 21395902; X-3, X-4

1807. Bates K. Emergency room. Practising Midwife. 2011;14:13-6. PMID: X-1, X-3, X-4

1808. Begley C, Devane D, Clarke M, et al. Comparison of midwife-led and consultant-led care of healthy women at low risk of childbirth complications in the Republic of Ireland: a randomised trial. BMC Pregnancy Childbirth. 2011;11:85. PMID: 22035427; X-3, X-4

1809. Begley CM, Gyte GM, Devane D, et al. Active versus expectant management for women in the third stage of labour. Cochrane Database Syst Rev. 2011:CD007412. PMID: 22071837; X-1, X-4

1810. Belghiti J, Kayem G, Dupont C, et al. Oxytocin during labour and risk of severe postpartum haemorrhage: a population-based, cohort-nested case-control study. BMJ Open. 2011;1:e000514. PMID: 22189353; X-4

1811. Beltman J, T VDA, L VANL, et al. Beyond maternal mortality: obstetric hemorrhage in a Malawian district. Acta Obstet Gynecol Scand. 2011 Dec;90:1423-7. PMID: 21682698; X-2, X-4

1812. Bhagat M, Salhan S, Sarda N, et al. Spontaneous pregnancy in a patient with sheehan's syndrome. JK Science. 2011 Jan-Mar;13:33-4. PMID: X-1

1813. Bian C, Wei Q, Liu X. Influence of heart-valve replacement of warfarin anticoagulant therapy on perinatal outcomes. Arch Gynecol Obstet. 2011 Feb;285:347-51. PMID: 21766176; X-2, X-4, X-5

1814. Blanc J, Courbiere B, Desbriere R, et al. Is uterine-sparing surgical management of persistent postpartum hemorrhage truly a fertility-sparing technique? Fertil Steril. 2011 Jun 30;95:2503-6. PMID: 21315337; X-4, X-5

1815. Blanchette H. The rising cesarean delivery rate in America: what are the consequences? Obstet Gynecol. 2011 Sep;118:687-90. PMID: 21860302; X-1

1816. Blomberg M. Maternal obesity and risk of postpartum hemorrhage. Obstet Gynecol. 2011 Sep;118:561-8. PMID: 21860284; X-4

1817. Bombelli FM, Candotti GP, Cardani A, et al. Our first experience of a day-long simulation based team training session for managing postpartum haemorrhage. 2011;23:90-5. PMID: X-1, X-3

1818. Bonnet MP, Deneux-Tharaux C, Bouvier-Colle MH. Critical care and transfusion management in maternal deaths from postpartum haemorrhage. Eur J Obstet Gynecol Reprod Biol. 2011 Oct;158:183-8. PMID: 21632172; X-4, X-5

1819. Bonney EA, Myers JE. Caesarean section: Techniques and complications. Obstetrics, Gynaecology and Reproductive Medicine. 2011 April;21:97-102. PMID: X-1

1820. Borthen I, Eide MG, Daltveit AK, et al. Obstetric outcome in women with epilepsy: a hospital-based, retrospective study. BJOG. 2011 Jul;118:956-65. PMID: 21557799; X-4, X-5

1821. Boyar IH, Boynukalin FK, Boyar N, et al. B-Lynch suture technique to control postpartum hemorrhage in a patient with mullerian anomaly. J Turk Ger Gynecol Assoc. 2011;12:47-9. PMID: 24591957; X-2, X-3, X-4

1822. Bros S, Chabrot P, Kastler A, et al. Recurrent bleeding within 24 hours after uterine artery embolization for severe postpartum hemorrhage: are there predictive factors? Cardiovasc Intervent Radiol. 2011 Jun;35:508-14. PMID: 21614439; X-5

1823. Bulle B, Gellman C, Farrell T, et al. “We need all the blood you have got”: enhancing collaboration among service providers. Women & Birth. 2011;24:S35-6. PMID: X-1, X-4, X-5

1824. Buowari YD. Training workshop for traditional birth attendants at Aliero, Kebbi State, Nigeria; a community development service at Aliero, Kebbi State, Nigeria. Internet Journal of Tropical Medicine. 2011;7PMID: X-1, X-2

1825. Butwick A, Hilton G, Carvalho B. Non-invasive haemoglobin measurement in patients undergoing elective Caesarean section. Br J Anaesth. 2011 Feb;108:271-7. PMID: 22116296; X-4, X-5

1826. Byams VR, Kouides PA, Kulkarni R, et al. Surveillance of female patients with inherited bleeding disorders in United States Haemophilia Treatment Centres. Haemophilia. 2011 Jul;17 Suppl 1:6-13. PMID: 21692922; X-1, X-4

1827. Cabacungan ET, Ngui EM, McGinley EL. Racial/ethnic disparities in maternal morbidities: a statewide study of labor and delivery hospitalizations in Wisconsin. Matern Child Health J. 2011 Oct;16:1455-67. PMID: 22105738; X-4

1828. Cavazza S, Rainaldi MP, Adduci A, et al. Thromboprophylaxis following cesarean delivery: one site prospective pilot study to evaluate the application of a risk score model. Thromb Res. 2011 Jan;129:28-31. PMID: 21840574; X-4, X-5

1829. Chambers J, Tuson A. Scratching can reveal more than just an itch. Practising Midwife. 2011;14:30-3. PMID: X-1

1830. Chang CC, Wang IT, Chen YH, et al. Anesthetic management as a risk factor for postpartum hemorrhage after cesarean deliveries. Am J Obstet Gynecol. 2011 Nov;205:462 e1-7. PMID: 21939956; X-2, X-4

1831. Chantrapitak W, Srijuntuek K, Wattanaluangarun R. The efficacy of lower uterine segment compression for prevention of early postpartum hemorrhage after vaginal delivery. J Med Assoc Thai. 2011 Jun;94:649-56. PMID: 21696071; X-2, X-4

1832. Chaudhuri P, Biswas J, Mandal A. Sublingual misoprostol versus intramuscular oxytocin for prevention of postpartum hemorrhage in low-risk women. Int J Gynaecol Obstet. 2011 Feb;116:138-42. PMID: 22100204; X-2, X-4, X-5

1833. Chelmow D. Postpartum haemorrhage: prevention. Clin Evid (Online). 2011;2011PMID: 21463537; X-1, X-3

1834. Chen JS, Roberts CL, Simpson JM, et al. Use of hospitalisation history (lookback) to determine prevalence of chronic diseases: impact on modelling of risk factors for haemorrhage in pregnancy. BMC Med Res Methodol. 2011;11:68. PMID: 21575257; X-4, X-5

1835. Chibber R, Al-Hijji J, Fouda M, et al. A 26-year review of emergency peripartum hysterectomy in a tertiary teaching hospital in Kuwait - years 1983-2011. Med Princ Pract. 2011;21:217-22. PMID: 22179393; X-2, X-5

1836. Chitra TV, Seetha P. Pseudoaneurysm of uterine artery: A rare cause of secondary postpartum hemorrhage. India: Federation of Obstetric and Gynecologycal Societies of India (Model Residency 605, Bapurao Jagtap Marg, Jacob Circle, Mahalaxmi East, Mumbai 400 011, India); 2011. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed10&NEWS=N&AN=2012385483. Accessed on (Chitra, Seetha) Department of Obstetrics and Gynecology, P.S.G. Institute of Medical Sciences and Research, Peelamedu, Coimbatore 641 004, Tamilnadu, India 61.

1837. Chowdhury S, Hussain MA. Maternal complications in twin pregnancies. Mymensingh Med J. 2011 Jan;20:83-7. PMID: 21240168; X-2, X-4

1838. Christopoulos P, Hassiakos D, Tsitoura A, et al. Obstetric hysterectomy: a review of cases over 16 years. J Obstet Gynaecol. 2011;31:139-41. PMID: 21281029; X-5

1839. Chunilal SD, Chan WS. Critical illness in obstetric patients: Venous thromboembolism in pregnancy. Current Women's Health Reviews. 2011 June;7:189-202. PMID: X-1

1840. Coelius RL, Stenson A, Morris JL, et al. The tibetan uterotonic zhi byed 11: mechanisms of action, efficacy, and historical use for postpartum hemorrhage. Evid Based Complement Alternat Med. 2011;2012:794164. PMID: 21822444; X-2, X-3

1841. Cohen Y, Michaan N, Cohen A, et al. Umbilical cord blood collection carry increased maternal bleeding risk during cesarean section. J Matern Fetal Neonatal Med. 2011 Sep;25:1549-51. PMID: 22010864; X-4

1842. Collins D. Woman alleges postpartum hysterectomy was unnecessary. Contemporary OB/GYN. 2011;56:18-. PMID: X-1, X-4, X-5

1843. Cuckson C, Germain S. Hyperemesis, gastro-intestinal and liver disorders in pregnancy. Obstetrics, Gynaecology and Reproductive Medicine. 2011 March;21:80-5. PMID: X-1

1844. Dasari P, Maurya DK, Mascarenhas M. Uterine artery pseudoaneurysm: a rare cause of secondary postpartum haemorrhage following caesarean section. BMJ Case Reports. 2011PMID: X-2, X-4, X-5

1845. Davis D, Herbison P, Baddock S, et al. Comparing active and physiological management of third stage of labour in a cohort of low risk women in the care of midwives in New Zealand. Women & Birth. 2011;24:S27-S. PMID: X-4, X-5

1846. De Bonis M, Torricelli M, Leoni L, et al. Carbetocin versus oxytocin after caesarean section: similar efficacy but reduced pain perception in women with high risk of postpartum haemorrhage. J Matern Fetal Neonatal Med. 2011 Jun;25:732-5. PMID: 21761999; X-3, X-4

1847. de Lloyd L, Bovington R, Kaye A, et al. Standard haemostatic tests following major obstetric haemorrhage. Int J Obstet Anesth. 2011 Apr;20:135-41. PMID: 21439811; X-4, X-5

1848. de Vogel J, Heydanus R, Mulders AG, et al. Lifesaving intraosseous access in a patient with a massive obstetric hemorrhage. AJP Rep. 2011 Dec;1:119-22. PMID: 23705100; X-4, X-5

1849. De Wee EM, Knol HM, Mauser-Bunschoten EP, et al. Gynaecological and obstetric bleeding in moderate and severe von Willebrand disease. Thromb Haemost. 2011 Nov;106:885-92. PMID: 21947221; X-4

1850. Della Torre M, Kilpatrick SJ, Hibbard JU, et al. Assessing preventability for obstetric hemorrhage. Am J Perinatol. 2011 Dec;28:753-60. PMID: 21698554; X-4, X-5

1851. Demirci O, Tugrul AS, Yilmaz E, et al. Emergency peripartum hysterectomy in a tertiary obstetric center: nine years evaluation. J Obstet Gynaecol Res. 2011 Aug;37:1054-60. PMID: 21481094; X-2

1852. Diadhiou M, Dieng T, Ortiz C, et al. Introduction of misoprostol for prevention of postpartum hemorrhage at the community level in Senegal. Int J Gynaecol Obstet. 2011 Dec;115:251-5. PMID: 21982859; X-2, X-3, X-4

1853. Diemert A, Ortmeyer G, Hollwitz B, et al. The combination of intrauterine balloon tamponade and the B-Lynch procedure for the treatment of severe postpartum hemorrhage. Am J Obstet Gynecol. 2011 Jan;206:65 e1-4. PMID: 22000893; X-5

1854. Dixon L, Tracy SK, Guilliland K, et al. Outcomes of physiological and active third stage labour care amongst women in New Zealand. Midwifery. 2011 Jan;29:67-74. PMID: 22188999; X-4, X-5

1855. Dong Y. Effects of carboprost on prevention of hemorrhage after induced labor with scarred uterus. Journal of Shanghai Jiaotong University (Medical Science). 2011;31:1212-5. PMID: X-2

1856. Dongol AS, Shrestha A, Chawla CD. Post partum haemorrhage: prevalence, morbidity and management pattern in Dhulikhel Hospital. Kathmandu Univ Med J (KUMJ). 2011 Apr-Jun;8:212-5. PMID: 21209538; X-2

1857. Duncan L, Kannon ER, Hart G, et al. TRICKS OF THE TRADE. Midwifery Today. 2011:7-. PMID: X-1, X-4

1858. Easmin S, Nahar K, Jahan MK, et al. Intra-vaginal use of misoprostol for induction of labour in intrauterine death. Mymensingh Med J. 2011 Oct;20:566-9. PMID: 22081171; X-2, X-4

1859. Edanaga M, Azumaguchi R, Ohsuda M, et al. A suspected case of amniotic fluid embolism rescued by ABO-incompatible blood transfusion and operation for a massive obstetric hemorrhage. Anesthesia and Resuscitation. 2011 September;47:73-5. PMID: X-4

1860. Edwards N. Third Stage Reviewed. AIMS Journal. 2011;23:19-21. PMID: X-1, X-4

1861. Ekabua JE, Ekabua KJ, Odusolu P, et al. Awareness of birth preparedness and complication readiness in southeastern Nigeria. ISRN Obstetrics and Gynecology. 2011PMID: X-2, X-3, X-4

1862. El Fekih C, Mourali M, Ouerdiane N, et al. Maternal and fetal outcomes of large fetus delivery: a comparative study. Tunis Med. 2011 Jun;89:553-6. PMID: 21681719; X-2, X-4

1863. Elati A, Elmahaishi MS, Elmahaishi MO, et al. The effect of misoprostol on postpartum contractions: a randomised comparison of three sublingual doses. BJOG. 2011 Mar;118:466-73. PMID: 21199290; X-2, X-3, X-4

1864. Elati A, Weeks A. Misoprostol for management of postpartum haemorrhage. BMJ: British Medical Journal (Overseas & Retired Doctors Edition). 2011;343:330-1. PMID: X-1, X-4, X-5

1865. Elmir R. Reaching for the stars: Implementing a model of care to support women who experience emergency hysterectomy following severe postpartum haemorrhage. Women & Birth. 2011;24:S28-S. PMID: X-1, X-4, X-5

1866. Elmir R, Schmied V, Jackson D, et al. Interviewing people about potentially sensitive topics. Nurse Res. 2011;19:12-6. PMID: 22128582; X-1

1867. Elmir R, Schmied V, Jackson D, et al. Between life and death: women's experiences of coming close to death, and surviving a severe postpartum haemorrhage and emergency hysterectomy. Midwifery. 2011 Apr;28:228-35. PMID: 21251734; X-4, X-5

1868. Elmir R, Schmied V, Wilkes L, et al. Separation, failure and temporary relinquishment: women's experiences of early mothering in the context of emergency hysterectomy. J Clin Nurs. 2011 Apr;21:1119-27. PMID: 22176681; X-5

1869. Elsedeek MS. Puerperal and menstrual bleeding patterns with different types of contraceptive device fitted during elective cesarean delivery. Int J Gynaecol Obstet. 2011 Jan;116:31-4. PMID: 22036512; X-3, X-4

1870. Eskild A, Vatten LJ. Placental weight and excess postpartum haemorrhage: a population study of 308,717 pregnancies. BJOG. 2011 Aug;118:1120-5. PMID: 21585637; X-4

1871. Faksh A, Wax JR, Lucas FL, et al. Preterm premature rupture of membranes >/= 32 weeks' gestation: impact of revised practice guidelines. Am J Obstet Gynecol. 2011 Oct;205:340 e1-5. PMID: 21784402; X-3, X-4

1872. Fatemeh F, Zohreh S, Abbas MG, et al. Maternal haemodynamic effects of oxytocin bolus or infusion in the third stage of labour. Pakistan Journal of Medical Sciences. 2011 April - June;27:656-9. PMID: X-2, X-3, X-4

1873. Fathalla MM, Youssif MM, Meyer C, et al. Nonatonic obstetric haemorrhage: effectiveness of the nonpneumatic antishock garment in egypt. ISRN Obstet Gynecol. 2011;2011:179349. PMID: 21845226; X-2

1874. Fathalla MMF, Youssif MM, Meyer C, et al. Nonatonic obstetric haemorrhage: Effectiveness of the nonpneumatic antishock garment in Egypt. United States: Hindawi Publishing Corporation (410 Park Avenue, 15th Floor, 287 pmb, New York NY 10022, United States); 2011. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed10&NEWS=N&AN=2012187456. Accessed on (Fathalla) Department of Obstetrics and Gynaecology, Faculty of Medicine, Assiut University, P.O. Box 30, Assiut, Egypt.

1875. Fawad A, Naz H, Islam A, et al. Maternal mortality in a tertiary care hospital. J Ayub Med Coll Abbottabad. 2011 Jan-Mar;23:92-5. PMID: 22830157; X-2, X-3, X-4

1876. Fayyaz S, Faiz NR, Rahim R, et al. Frequency of postpartum haemorrhage in maternal mortality in a tertiary care hospital. Journal of Postgraduate Medical Institute. 2011;25:257-62. PMID: X-2, X-4

1877. Ford JB, Algert CS, Kok C, et al. Hospital data reporting on postpartum hemorrhage: under-estimates recurrence and over-estimates the contribution of uterine atony. Matern Child Health J. 2011 Oct;16:1542-8. PMID: 22109815; X-4, X-5

1878. Foroughipour A, Firuzeh F, Ghahiri A, et al. The effect of perineal control with hands-on and hand-poised methods on perineal trauma and delivery outcome. Journal of Research in Medical Sciences. 2011;16PMID: X-2, X-3, X-4

1879. Fox A. Challenges: perineal wound care in the community. World of Irish Nursing & Midwifery. 2011;19:48-50. PMID: X-1

1880. Fung TY, Sahota DS, Lau TK, et al. Placental site in the second trimester of pregnancy and its association with subsequent obstetric outcome. Prenat Diagn. 2011 Jun;31:548-54. PMID: 21413044; X-4

1881. Ge J, Liao H, Duan L, et al. Uterine packing during cesarean section in the management of intractable hemorrhage in central placenta previa. Arch Gynecol Obstet. 2011 Feb;285:285-9. PMID: 21647597; X-2, X-4

1882. Gezginc K, Yazici F, Koyuncu T. Results of hysterosalpingogram in women with previous B-Lynch suture. Int J Gynaecol Obstet. 2011 Oct;115:68-9. PMID: 21767836; X-2, X-4, X-5

1883. Ghaffar N, Rahim M, Chishti AT, et al. Insertion of intrauterine contraceptive device (IUCD) at caesarean section after the delivery of placenta: An experience with 60 cases. Medical Forum Monthly. 2011 June;22:24-6. PMID: X-2, X-3, X-4

1884. Ghazal-Aswad S, Badrinath P, Sidky I, et al. Confidential enquiries into maternal mortality in the United Arab Emirates: a feasibility study. J Obstet Gynaecol Res. 2011 Mar;37:209-14. PMID: 21314803; X-2, X-4

1885. Girija S, Manjunath AP. A randomized controlled trial comparing low dose vaginal misoprostol and dinoprostone gel for labor induction. Journal of Obstetrics and Gynecology of India. 2011 April;61:153-60. PMID: X-2, X-3, X-4

1886. Gungorduk K, Asicioglu O, Yildirim G, et al. Is post-partum oxygen inhalation useful for reducing vaginal blood loss during the third and fourth stages of labour? A randomised controlled study. Aust N Z J Obstet Gynaecol. 2011 Oct;51:441-5. PMID: 21806580; X-4

1887. Gupta S, Naithani U, Doshi V, et al. Obstetric critical care: A prospective analysis of clinical characteristics, predictability, and fetomaternal outcome in a new dedicated obstetric intensive care unit. Indian J Anaesth. 2011 Mar;55:146-53. PMID: 21712871; X-2, X-4, X-5

1888. Harara R, Hanafy S, Zidan MS, et al. Intraumbilical injection of three different uterotonics in the management of retained placenta. J Obstet Gynaecol Res. 2011 Sep;37:1203-7. PMID: 21518127; X-2, X-4

1889. Hashima EN, Nahar S, Al Mamun M, et al. Oral misoprostol for preventing postpartum haemorrhage in home births in rural Bangladesh: how effective is it? Glob Health Action. 2011;4PMID: 21845143; X-2, X-4

1890. Higgins L, Mechery J, Tomlinson AJ. Does carbetocin for prevention of postpartum haemorrhage at caesarean section provide clinical or financial benefit compared with oxytocin? J Obstet Gynaecol. 2011 Nov;31:732-9. PMID: 22085065; X-1, X-4

1891. Hofmeyr GJ. Oral misoprostol reduces the risk of postpartum haemorrhage in home births assisted by trained traditional birth attendants in Pakistan. Evid Based Med. 2011 Dec;16:180-1. PMID: 21555320; X-1, X-2

1892. Honiden S, Abdel-Razeq SS, Siegel MD. The management of the critically ill obstetric patient. J Intensive Care Med. 2011 Mar-Apr;28:93-106. PMID: 21841145; X-1

1893. Horng HC, Hu WM, Tseng HS, et al. Uterine arterial embolization in the management of severe post-partum hemorrhage: a successful rescue method to avoid peripartum hysterectomy. J Chin Med Assoc. 2011 Jun;74:255-8. PMID: 21621168; X-2, X-4, X-5

1894. Hossain N, Shah T, Khan N, et al. Transfusion of blood and blood component therapy for postpartum haemorrhage at a tertiary referral center. J Pak Med Assoc. 2011 Apr;61:343-5. PMID: 21465969; X-2, X-4

1895. Howarth L, Glanville T. Management of a pregnancy complicated by type III spinal muscular atrophy. BMJ Case Reports. 2011PMID: X-1, X-4

1896. Howarth LA, Sherliker S. Massive obstetric haemorrhage following removal of a cervical suture. BMJ Case Reports. 2011PMID: X-1, X-2, X-4, X-5

1897. Huber AW, Raio L, Alberio L, et al. Recombinant human factor VIIa prevents hysterectomy in severe postpartum hemorrhage: single center study. J Perinat Med. 2011 Jan;40:43-9. PMID: 22017328; X-2, X-5

1898. Ishii T, Sawada K, Koyama S, et al. Balloon tamponade during cesarean section is useful for severe post-partum hemorrhage due to placenta previa. J Obstet Gynaecol Res. 2011 Jan;38:102-7. PMID: 21827577; X-4, X-5

1899. Islam A, Ehsan A, Arif S, et al. Evaluating trial of scar in patients with a history of caesarean section. North American Journal of Medical Sciences. 2011 April;3:201-5. PMID: X-2, X-4

1900. Janakiraman V, Lazar J, Joynt KE, et al. Hospital volume, provider volume, and complications after childbirth in U.S. hospitals. Obstet Gynecol. 2011 Sep;118:521-7. PMID: 21826039; X-4, X-5

1901. Javaid S, Yasmeen T, Rafique S, et al. Postpartum and emergency caesarean hysterectomy. 2011;5:239-42. PMID: X-2

1902. Jeong H, Lee S, Jeong C, et al. Inverted takotsubo-like left ventricular dysfunction with pulmonary oedema developed after caesarean delivery complicated by massive haemorrhage in a severe preeclamptic parturient with a prolonged painful labour. Case Rep Anesthesiol. 2011;2011:164720. PMID: 22606381; X-1

1903. Johnson SN, Khalid S, Varadkar S, et al. Quality of care in the management of major obstetric haemorrhage. Ir Med J. 2011 Apr;104:119-21. PMID: 21675096; X-4, X-5

1904. Jung HN, Shin SW, Choi SJ, et al. Uterine artery embolization for emergent management of postpartum hemorrhage associated with placenta accreta. Acta Radiol. 2011 Jul 1;52:638-42. PMID: 21498276; X-4, X-5

1905. Kaingu CK, Oduma JA, Kanui TI. Practices of traditional birth attendants in Machakos District, kenya. J Ethnopharmacol. 2011 Sep 1;137:495-502. PMID: 21679761; X-2, X-4

1906. Kalina M, Tinkoff G, Fulda G. Massive postpartum hemorrhage: recombinant factor VIIa use is safe but not effective. Del Med J. 2011 Apr;83:109-13. PMID: 21675158; X-4, X-5

1907. Kanematsu M, Watanabe H, Kondo H, et al. Postpartum hemorrhage in coagulopathic patients: preliminary experience with uterine arterial embolization with N-butyl cyanoacrylate. J Vasc Interv Radiol. 2011 Dec;22:1773-6. PMID: 22115582; X-5

1908. Kaplan AI. Patient exsanguinates after high-risk delivery. Contemporary OB/GYN. 2011;56:27-31. PMID: X-1, X-4

1909. Kenneth LA. Uterine artery pseudoaneurysm as a cause of secondary postpartum haemorrhage following a caesarean section. Obstetrics and Gynaecology Forum. 2011 October;21:31-4. PMID: X-2, X-5

1910. Keriakos R, Chaudhuri S. Operative interventions in the management of major postpartum haemorrhage. J Obstet Gynaecol. 2011 Jan;32:14-25. PMID: 22185528; X-4, X-5

1911. Keriakos R, Chaudhuri SR. Managing Major Postpartum Haemorrhage following Acute Uterine Inversion with Rusch Balloon Catheter. Case Rep Crit Care. 2011;2011:541479. PMID: 24826322; X-5

1912. Kesmodel US, Jolving LR. Measuring and improving quality in obstetrics--the implementation of national indicators in Denmark. Acta Obstet Gynecol Scand. 2011 Apr;90:295-304. PMID: 21306336; X-1, X-3, X-4

1913. Khalil MI, Al-Dohami H, Aldahish MM. A method to improve the effectiveness of the Bakri balloon for management of postpartum hemorrhage at cesarean. Int J Gynaecol Obstet. 2011 Nov;115:198-200. PMID: 21924420; X-2, X-4, X-5

1914. Khatoon A, Hasnny SF, Ansari J. B-Lynch brace sutures for the treatment of major primary post partum haemorrhage: An experience at Abbasi Shaheed Hospital, Karachi. Medical Channel. 2011;17:36-8. PMID: X-2

1915. Knight KM, Pressman EK, Hackney DN, et al. Perinatal outcomes in type 2 diabetic patients compared with non-diabetic patients matched by body mass index. J Matern Fetal Neonatal Med. 2011 Jun;25:611-5. PMID: 21728737; X-4

1916. Knol HM, Voskuilen MA, Holterman F, et al. Reproductive choices and obstetrical experience in Dutch carriers of haemophilia A and B. Haemophilia. 2011 Mar;17:233-6. PMID: 21332882; X-4

1917. Kobayashi T, Nakabayashi M, Yoshioka A, et al. Recombinant activated factor VII (rFVIIa/NovoSeven(R)) in the management of severe postpartum haemorrhage: initial report of a multicentre case series in Japan. Int J Hematol. 2011 Jan;95:57-63. PMID: 22160834; X-4, X-5

1918. Koyama S, Tomimatsu T, Kanagawa T, et al. The amnioscope strikes back as a useful device for pinhole amniotomy in the management of polyhydramnios. AJP Rep. 2011 Dec;1:99-104. PMID: 23705096; X-1, X-3, X-4

1919. Kramer MS, Dahhou M, Vallerand D, et al. Risk factors for postpartum hemorrhage: can we explain the recent temporal increase? J Obstet Gynaecol Can. 2011 Aug;33:810-9. PMID: 21846436; X-4

1920. Krishna A, Chandraharan E. Management of massive obstetric haemorrhage. Current Women's Health Reviews. 2011 June;7:136-42. PMID: X-1

1921. Krishna H, Chava M, Jasmine N, et al. Patients with postpartum hemorrhage admitted in intensive care unit: Patient condition, interventions, and outcome. J Anaesthesiol Clin Pharmacol. 2011 Apr;27:192-4. PMID: 21772678; X-2, X-5

1922. Lamba J, Gupta S. Role of emergency hysterectomy in modern obstetrics. JK Science. 2011 January-March;14:22-4. PMID: X-4

1923. Lamxay V, de Boer HJ, Bjork L. Traditions and plant use during pregnancy, childbirth and postpartum recovery by the Kry ethnic group in Lao PDR. J Ethnobiol Ethnomed. 2011;7:14. PMID: 21569234; X-2, X-3, X-4

1924. Lapinsky SE. Acute respiratory failure in obstetric patients. Current Women's Health Reviews. 2011 June;7:143-50. PMID: X-1

1925. Larsson C, Saltvedt S, Wiklund I, et al. Planned vaginal delivery versus planned caesarean section: short-term medical outcome analyzed according to intended mode of delivery. J Obstet Gynaecol Can. 2011 Aug;33:796-802. PMID: 21846434; X-4, X-5

1926. Laway BA, Mir SA, Dar MI, et al. Sheehan's syndrome with central diabetes insipidus. Arq Bras Endocrinol Metabol. 2011 Mar;55:171-4. PMID: 21584435; X-1, X-2, X-4, X-5

1927. Laway BA, Mir SA, Gojwari T, et al. Selective preservation of anterior pituitary functions in patients with Sheehan's syndrome. Indian J Endocrinol Metab. 2011 Sep;15 Suppl 3:S238-41. PMID: 22029030; X-3, X-4

1928. Lazarus JH. Screening for thyroid dysfunction in pregnancy: is it worthwhile? J Thyroid Res. 2011;2011:397012. PMID: 21765989; X-1

1929. Le Ray C, Fraser W, Rozenberg P, et al. Duration of passive and active phases of the second stage of labour and risk of severe postpartum haemorrhage in low-risk nulliparous women. Eur J Obstet Gynecol Reprod Biol. 2011 Oct;158:167-72. PMID: 21640464; X-4

1930. Lester F, Stenson A, Meyer C, et al. Impact of the Non-pneumatic Antishock Garment on pelvic blood flow in healthy postpartum women. Am J Obstet Gynecol. 2011 May;204:409 e1-5. PMID: 21439543; X-4, X-5

1931. Lewis EA, Barr C, Thomas K. The mode of delivery in women taken to theatre at full dilatation: does consultant presence make a difference? J Obstet Gynaecol. 2011;31:229-31. PMID: 21417646; X-4

1932. Li WH, Zhang HY, Ling Y, et al. Effect of prolonged second stage of labor on maternal and neonatal outcomes. Asian Pac J Trop Med. 2011 May;4:409-11. PMID: 21771687; X-4

1933. Li X, Zhu J, Dai L, et al. Hospitalized delivery and maternal deaths from obstetric hemorrhage in China from 1996 to 2006. Acta Obstet Gynecol Scand. 2011 Jun;90:586-92. PMID: 21355859; X-2, X-4

1934. Liabsuetrakul T, Peeyananjarassri K. Mechanical dilatation of the cervix at non-labour caesarean section for reducing postoperative morbidity. Cochrane Database of Systematic Reviews. 2011PMID: X-1

1935. Liang J, Dai L, Zhu J, et al. Preventable maternal mortality: geographic/rural-urban differences and associated factors from the population-based Maternal Mortality Surveillance System in China. BMC Public Health. 2011;11:243. PMID: 21501529; X-2, X-4

1936. Lilker SJ, Meyer RA, Downey KN, et al. Anesthetic considerations for placenta accreta. Int J Obstet Anesth. 2011 Oct;20:288-92. PMID: 21840207; X-4, X-5

1937. Liu X, Du J, Wang G, et al. Effect of pre-pregnancy body mass index on adverse pregnancy outcome in north of China. Arch Gynecol Obstet. 2011 Jan;283:65-70. PMID: 21197595; X-2, X-4

1938. Liu XJ, Wang S, Zhao YL, et al. A single-center study of hemorrhagic stroke caused by cerebrovascular disease during pregnancy and puerperium in China. Int J Gynaecol Obstet. 2011 Apr;113:82-3. PMID: 21334622; X-2, X-4, X-5

1939. Livingstone C. A case of postnatal hyponatraemia. CPD Bulletin Clinical Biochemistry. 2011;10:67-8. PMID: X-1

1940. Lutomski JE, Byrne BM, Devane D, et al. Increasing trends in atonic postpartum haemorrhage in Ireland: an 11-year population-based cohort study. BJOG. 2011 Feb;119:306-14. PMID: 22168794; X-4

1941. Lutomski JE, Morrison JJ, Greene RA, et al. Maternal morbidity during hospitalization for delivery. Obstet Gynecol. 2011 Mar;117:596-602. PMID: 21343763; X-4

1942. Ma W, Bai W, Lin C, et al. Effects of Sanyinjiao (SP6) with electroacupuncture on labour pain in women during labour. Complement Ther Med. 2011 Jan;19 Suppl 1:S13-8. PMID: 21195290; X-4

1943. Machado LS. Emergency peripartum hysterectomy: Incidence, indications, risk factors and outcome. N Am J Med Sci. 2011 Aug;3(8):358-61. PMID: 22171242; X-1

1944. Mackenzie IZ, Xu J, Cusick C, et al. Acupuncture for pain relief during induced labour in nulliparae: a randomised controlled study. BJOG. 2011 Mar;118:440-7. PMID: 21244615; X-4

1945. Majeed T, Waheed F, Sattar Y, et al. Impact of uterine fibroids on the obstetric performance of the women; Complications and pregnancy outcome. 2011;5:274-7. PMID: X-2, X-4

1946. Malabarey O, Almog B, Brown R, et al. Postpartum hemorrhage in low risk population. J Perinat Med. 2011 Sep;39:495-8. PMID: 21714767; X-4

1947. Manaktala U, Dubey C, Takkar A, et al. Condom catheter balloon in management of massive nontraumatic postpartum hemorrhage during cesarean section. Journal of Gynecologic Surgery. 2011 01 Jun;27:115-7. PMID: X-2, X-5

1948. Mandal D, Mandal S, Dattaray C, et al. Takayasu arteritis in pregnancy: an analysis from eastern India. Arch Gynecol Obstet. 2011 Mar;285:567-71. PMID: 21786001; X-2, X-4

1949. Marasinghe JP, Condous G, Seneviratne HR, et al. Modi fi ed anchored B-Lynch uterine compression suture for post partum bleeding with uterine atony. Acta Obstet Gynecol Scand. 2011 Mar;90:280-3. PMID: 21306313; X-2

1950. McLean MT. Marion's message. Placenta accreta. Midwifery Today Int Midwife. 2011 Spring:8, 66. PMID: 21523976; X-1, X-2, X-4, X-5

1951. McLintock C, James AH. Obstetric hemorrhage. J Thromb Haemost. 2011 Aug;9:1441-51. PMID: 21668737; X-1

1952. Melhado L. Elective Labor Induction Linked to Elevated Risk of Adverse Outcomes. International Perspectives on Sexual & Reproductive Health. 2011;37:219-. PMID: X-1, X-2, X-4, X-5

1953. Memon SR, Talpur NN, Korejo RK. Outcome of patients presenting with retained placenta. Rawal Medical Journal. 2011;36PMID: X-2, X-4

1954. Milman N. Postpartum anemia II: prevention and treatment. Ann Hematol. 2011 Feb;91:143-54. PMID: 22160256; X-1

1955. Miranda-Wood C. Deadly Deliveries: Working as a Team to Make a Difference in Preventing and/or Treating Obstetrical Hemorrhage. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2011;40:S63-4. PMID: X-1

1956. Moatti Z, Nisner T, Saini A, et al. Delayed postpartum haemorrhage secondary to a ruptured uterine artery pseudo-aneurysm, successfully treated by transarterial embolisation. BMJ Case Reports. 2011PMID: X-2, X-5

1957. Mobusher I. Role of uterine packing in control of PPH. 2011;5:442-4. PMID: X-2

1958. Moertl MG, Friedrich S, Kraschl J, et al. Haemodynamic effects of carbetocin and oxytocin given as intravenous bolus on women undergoing caesarean delivery: a randomised trial. BJOG. 2011 Oct;118:1349-56. PMID: 21668768; X-4

1959. Mohammed AA, Elnour MH, Mohammed EE, et al. Maternal mortality in Kassala State - Eastern Sudan: community-based study using reproductive age mortality survey (RAMOS). BMC Pregnancy Childbirth. 2011;11:102. PMID: 22171988; X-2, X-4

1960. Moodley J, Khedun S. The hellp syndrome: A review. Current Women's Health Reviews. 2011 June;7:125-35. PMID: X-1

1961. Moore C. A care pathway: delayed active management of the third stage of labour. Pract Midwife. 2011 May;14:26-7, 9-30. PMID: 21675475; X-1

1962. Mori R, Tokumasu H, Pledge D, et al. High dose versus low dose oxytocin for augmentation of delayed labour. Cochrane Database of Systematic Reviews. 2011PMID: X-1

1963. Morris JL, Meyer C, Fathalla MMF, et al. Treating uterine atony with the nonpneumatic anti-shock garment in Egypt. African Journal of Midwifery & Women's Health. 2011 2011 Jan-Mar;5:37-42. PMID: X-2

1964. Movafegh A, Eslamian L, Dorabadi A. Effect of intravenous tranexamic acid administration on blood loss during and after cesarean delivery. Int J Gynaecol Obstet. 2011 Dec;115:224-6. PMID: 21872857; X-4

1965. Murphy DJ, Macleod M, Bahl R, et al. A cohort study of maternal and neonatal morbidity in relation to use of sequential instruments at operative vaginal delivery. Eur J Obstet Gynecol Reprod Biol. 2011 May;156:41-5. PMID: 21277670; X-2, X-4

1966. Mustafa Adelaja L, Olufemi Taiwo O. Maternal and fetal outcome of obstetric emergencies in a tertiary health institution in South-Western Nigeria. ISRN Obstet Gynecol. 2011;2011:160932. PMID: 21776397; X-2, X-4

1967. Mutihir JT, Utoo BT. Postpartum maternal morbidity in Jos, North-Central Nigeria. Niger J Clin Pract. 2011 Jan-Mar;14:38-42. PMID: 21493990; X-2, X-4

1968. Nanda S, Singhal SR. Hayman uterine compression stitch for arresting atonic postpartum hemorrhage: 5 years experience. Taiwan J Obstet Gynecol. 2011 Jun;50:179-81. PMID: 21791304; X-2, X-4, X-5

1969. Nanjundan P, Rohilla M, Raveendran A, et al. Pseudoaneurysm of uterine artery: a rare cause of secondary postpartum hemorrhage, managed with uterine artery embolisation. J Clin Imaging Sci. 2011;1:14. PMID: 21977387; X-2, X-5

1970. Nelson-Piercy C, Powrie R, Borg JY, et al. Tinzaparin use in pregnancy: an international, retrospective study of the safety and efficacy profile. Eur J Obstet Gynecol Reprod Biol. 2011 Dec;159:293-9. PMID: 21945573; X-4, X-5

1971. Nezvalova-Henriksen K, Spigset O, Nordeng H. Effects of codeine on pregnancy outcome: results from a large population-based cohort study. Eur J Clin Pharmacol. 2011 Dec;67:1253-61. PMID: 21656212; X-4

1972. Nuzzi FM, Tanini M, Hutson CF, et al. The use of recombinant factor vii (rFVIIa) for the treatment of postpartum hemorrhage: Case report. Italian Journal of Gynaecology and Obstetrics. 2011;23:116-22. PMID: X-1

1973. Ojengbede O, Galadanci H, Morhason-Bello IO, et al. The non-pneumatic anti-shock garment for postpartum haemorrhage in Nigeria. African Journal of Midwifery & Women's Health. 2011;5:135-41. PMID: X-2

1974. Oleszczuk J, Leszczynska-Gorzelak B, Szymula D, et al. Heavy postpartum hemorrhagae after delivery and cesarean section. Ginekologia i Poloznictwo. 2011;21:27-45. PMID: X-1

1975. Omole-Ohonsi A, Ashimi AO. Grand multiparity: obstetric performance in Aminu Kano Teaching Hospital, Kano, Nigeria. Niger J Clin Pract. 2011 Jan-Mar;14:6-9. PMID: 21493983; X-2, X-4

1976. Onwere C, Gurol-Urganci I, Cromwell DA, et al. Maternal morbidity associated with placenta praevia among women who had elective caesarean section. Eur J Obstet Gynecol Reprod Biol. 2011 Nov;159:62-6. PMID: 21835537; X-4

1977. Ordean A, Kahan M. Comprehensive treatment program for pregnant substance users in a family medicine clinic. Can Fam Physician. 2011 Nov;57:e430-5. PMID: 22084472; X-3, X-4

1978. Osmundson S, Ou-Yang RJ, Grobman WA. Elective induction compared with expectant management in nulliparous women with an unfavorable cervix. Obstet Gynecol. 2011 Mar;117:583-7. PMID: 21343761; X-4

1979. Ossola MW, Somigliana E, Mauro M, et al. Risk factors for emergency postpartum hysterectomy: the neglected role of previous surgically induced abortions. Acta Obstet Gynecol Scand. 2011 Dec;90:1450-3. PMID: 21692756; X-4

1980. Overgaard C, Moller AM, Fenger-Gron M, et al. Freestanding midwifery unit versus obstetric unit: a matched cohort study of outcomes in low-risk women. BMJ Open. 2011 Jan 1;1:e000262. PMID: 22021892; X-4

1981. Paglia MJ, Grotegut CA, Johnson LN, et al. Body mass index and severe postpartum hemorrhage. Gynecol Obstet Invest. 2011;73:70-4. PMID: 21921570; X-4

1982. Panuccio E, Volpi E, Ferrero A, et al. Laparoscopic bipolar coagulation of hypogastric artery in postpartum haemorrhage: a case report. Case Rep Obstet Gynecol. 2011;2011:250325. PMID: 22567499; X-5

1983. Park JK, Shin TB, Baek JC, et al. Failure of uterine artery embolization for controlling postpartum hemorrhage. J Obstet Gynaecol Res. 2011 Aug;37:971-8. PMID: 21463422; X-5

1984. Parkar R, Hassan M, Otieno D, et al. Laparoscopic trachelectomy for cervical stump 'Carcinoma in situ'. India: Medknow Publications and Media Pvt. Ltd (B9, Kanara Business Centre, off Link Road, Ghatkopar (E), Mumbai 400 075, India); 2011. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed10&NEWS=N&AN=2011549831. Accessed on (Parkar) Obstetrician and Gynecologist, Hysteroscopy and Laparoscopy, Sarit Center, P.O. Box 520, Nairobi, Kenya 2.

1985. Parkar RB, Hassan MA, Otieno D, et al. Laparoscopic Trachelectomy for Cervical Stump 'Carcinoma in situ'. J Gynecol Endosc Surg. 2011 Jan;2:58-60. PMID: 22442538; X-1, X-4

1986. Patted S, Desai BR, Ruge J, et al. Unsuspected acquired hemophilia in a patient with severe postpartum hemorrhage. International Journal of Infertility and Fetal Medicine. 2011 January-April;2:41-3. PMID: X-1

1987. Peled Y, Melamed N, Chen R, et al. The effect of time of day on outcome of unscheduled cesarean deliveries. J Matern Fetal Neonatal Med. 2011 Aug;24:1051-4. PMID: 21231839; X-4

1988. Perosky J, Richter R, Rybak O, et al. A low-cost simulator for learning to manage postpartum hemorrhage in rural Africa. Simul Healthc. 2011 Feb;6:42-7. PMID: 21330849; X-1, X-2, X-4, X-5

1989. Perveen F, Memon GU, Rabia S. Use of bilateral internal iliac artery ligation for controlling severe obstetric haemorrhage. Pakistan Journal of Medical Sciences. 2011;27:94-7. PMID: X-2

1990. Peyvandi F, Menegatti M, Siboni SM. Post-partum hemorrhage in women with rare bleeding disorders. Thromb Res. 2011 Feb;127 Suppl 3:S116-9. PMID: 21262429; X-1

1991. Phadungkiatwattana P, Tongsakul N. Analyzing the impact of private service on the cesarean section rate in public hospital Thailand. Arch Gynecol Obstet. 2011 Dec;284:1375-9. PMID: 21359844; X-2, X-3, X-4

1992. Poujade O, Grossetti A, Mougel L, et al. Risk of synechiae following uterine compression sutures in the management of major postpartum haemorrhage. BJOG. 2011 Mar;118:433-9. PMID: 21199289; X-3, X-4

1993. Prata N, Hamza S, Bell S, et al. Inability to predict postpartum hemorrhage: insights from Egyptian intervention data. BMC Pregnancy Childbirth. 2011;11:97. PMID: 22123123; X-2, X-4

1994. Prata N, Passano P, Rowen T, et al. Where there are (few) skilled birth attendants. J Health Popul Nutr. 2011 Apr;29:81-91. PMID: 21608417; X-1

1995. Pun KD, Chauhan M. Outcome of adolescent pregnancy at Kathmandu University Hospital, Dhulikhel, Kavre. Kathmandu Univ Med J (KUMJ). 2011 Jan-Mar;9:50-3. PMID: 22610810; X-2, X-4

1996. RÃ©go P, Lyon P, Watson M. The impact of maternity crisis resource management training. British Journal of Midwifery. 2011;19:315. PMID: X-4

1997. Rabiu KA, Adewunmi AA, Akinola OI, et al. Comparison of maternal and neonatal outcomes following caesarean section in second versus first stage of labour in a Tertiary Hospital in Nigeria. Niger Postgrad Med J. 2011 Sep;18:165-71. PMID: 21909144; X-2, X-4

1998. Raouf SA, Ball T, Hughes A, et al. Obstetric and neonatal outcomes for women with reversed and non-reversed type III female genital mutilation. Int J Gynaecol Obstet. 2011 May;113:141-3. PMID: 21306710; X-1, X-4

1999. Raposo L, Ferreira C, Fernandes M, et al. Maternal obesity and pregnancy outcomes. Arquivos de Medicina. 2011 May/June;25:115-23. PMID: X-1, X-4

2000. Rath WH. Postpartum hemorrhage--update on problems of definitions and diagnosis. Acta Obstet Gynecol Scand. 2011 May;90:421-8. PMID: 21332452; X-1

2001. Reidy J, Russell R. CMACE 2006-2008. Int J Obstet Anesth. 2011 Jul;20(3):208-12. PMID: 21641202; X-1, X-4

2002. Reyes OA, Gonzalez GM. Carbetocin versus oxytocin for prevention of postpartum hemorrhage in patients with severe preeclampsia: a double-blind randomized controlled trial. J Obstet Gynaecol Can. 2011 Nov;33:1099-104. PMID: 22082783; X-4

2003. Riyami NA, Al-Harthy A, Zia F. Atypical case of acute Fatty liver of pregnancy. Sultan Qaboos Univ Med J. 2011 Nov;11(4):507-10. PMID: 22087401; X-1, X-3, X-4

2004. Rizwan N, Uddin SF. Obstetrical acute renal failure: a challenging medical complication. J Ayub Med Coll Abbottabad. 2011 Oct-Dec;23:66-8. PMID: 23472417; X-2, X-4

2005. Roberts I, Ker K. Tranexamic acid for postpartum bleeding. Int J Gynaecol Obstet. 2011 Dec;115:220-1. PMID: 21939973; X-1, X-4, X-5

2006. Roeters van Lennep JE, Meijer E, Klumper FJ, et al. Prophylaxis with low-dose low-molecular-weight heparin during pregnancy and postpartum: is it effective? J Thromb Haemost. 2011 Mar;9:473-80. PMID: 21232006; X-3, X-4

2007. Rogers C, Villar R, Pisal P, et al. Effects of Syntocinon use in active management of third stage labour. British Journal of Midwifery. 2011;19:371-8. PMID: X-4

2008. Ronel D, Wiznitzer A, Sergienko R, et al. Trends, risk factors and pregnancy outcome in women with uterine rupture. Arch Gynecol Obstet. 2011 Feb;285:317-21. PMID: 21735183; X-4, X-5

2009. Roshani S, Cohn DM, Stehouwer AC, et al. Incidence of postpartum haemorrhage in women receiving therapeutic doses of low-molecular-weight heparin: results of a retrospective cohort study. BMJ Open. 2011;1(2):e000257. PMID: 22102641; X-4

2010. Roychowdhury J, Bhattacharyya M, Kumar KA, et al. Successful pregnancy outcome in a patient of chronic myeloid leukemia without therapy. Journal of Obstetrics and Gynecology of India. 2011 October;61:565-6. PMID: X-1

2011. Ruth D, Kennedy BB. Acute volume resuscitation following obstetric hemorrhage. J Perinat Neonatal Nurs. 2011 Jul-Sep;25:253-60. PMID: 21825915; X-1

2012. Saeed M, Rana T. Fetomaternal outcome in pregnancies complicated with placental abruption. 2011;5:140-3. PMID: X-2, X-4

2013. Saeidi R, Hamedi A, Robatsangi MG, et al. Comparing effects of beractant and poractant alfa in decreasing mortality rate due to respiratory distress syndrome in premature infants. Tehran University Medical Journal. 2011 January;68:644-8. PMID: X-1, X-2, X-3, X-4

2014. Saereeporncharenkul K. Correlation of BMI to pregnancy outcomes in Thai women delivered in Rajavithi Hospital. J Med Assoc Thai. 2011 Mar;94 Suppl 2:S52-8. PMID: 21717879; X-2, X-4

2015. Saha L, Chowdhury SB. Study on primary cesarean section. Mymensingh Med J. 2011 Apr;20:292-7. PMID: 21522103; X-2, X-4

2016. Saidu R, Bolaji BO, Olatinwo AW, et al. Repeat caesarean delivery as a risk factor for abnormal blood loss, blood transfusion and perinatal mortality. J Obstet Gynaecol. 2011 Nov;31:728-31. PMID: 22085064; X-2, X-4

2017. Saljoughian M. Uterotonic agents: An update. U.S. Pharmacist. 2011;36PMID: X-1

2018. Schantz-Dunn J, M N. The use of blood in obstetrics and gynecology in the developing world. Rev Obstet Gynecol. 2011 Summer;4:86-91. PMID: 22102932; X-1

2019. Schmid BC, Rezniczek GA, Rolf N, et al. Postpartum hemorrhage: use of hemostatic combat gauze. Am J Obstet Gynecol. 2011 Jan;206:e12-3. PMID: 22011588; X-5

2020. Schoenbeck D, Nicolle A, Newbegin K, et al. The use of a scoring system to guide thromboprophylaxis in a high-risk pregnant population. Thrombosis. 2011PMID: X-1, X-4

2021. Shahida SM, Islam MA, Begum S, et al. Maternal outcome of grand multipara. Mymensingh Med J. 2011 Jul;20:381-5. PMID: 21804498; X-2, X-4

2022. Sharma AM, Burbridge BE. Uterine artery pseudoaneurysm in the setting of delayed postpartum hemorrhage: successful treatment with emergency arterial embolization. Case Rep Radiol. 2011;2011:373482. PMID: 22606544; X-2, X-5

2023. Sharma R, Najam R, Misra MK. Efficacy of tranexamic acid in decreasing blood loss during and after cesarean section. Biomedical and Pharmacology Journal. 2011 June;4:231-5. PMID: X-3, X-4

2024. Shavell VI, Thakur M, Sawant A, et al. Adverse obstetric outcomes associated with sonographically identified large uterine fibroids. Fertil Steril. 2011 Jan;97:107-10. PMID: 22100166; X-4

2025. Sheehan SR, Montgomery AA, Carey M, et al. Oxytocin bolus versus oxytocin bolus and infusion for control of blood loss at elective caesarean section: double blind, placebo controlled, randomised trial. BMJ. 2011;343:d4661. PMID: 21807773; X-4

2026. Sheikh L, Najmi N, Khalid U, et al. Evaluation of compliance and outcomes of a management protocol for massive postpartum hemorrhage at a tertiary care hospital in Pakistan. BMC Pregnancy Childbirth. 2011;11:28. PMID: 21489279; X-2

2027. Shirazee HH, Saha SK, Das I, et al. Postpartum haemorrhage: a cause of maternal morbidity. J Indian Med Assoc. 2011 Oct;108:663-6. PMID: 21510550; X-2, X-4

2028. Shivaprasad C. Sheehan's syndrome: Newer advances. Indian J Endocrinol Metab. 2011 Sep;15 Suppl 3:S203-7. PMID: 22029025; X-1, X-2

2029. Shrestha A, Dongol A, Chawla CD, et al. Rectal misoprostol versus intramuscular oxytocin for prevention of post partum hemorrhage. Kathmandu Univ Med J (KUMJ). 2011 Jan-Mar;9:8-12. PMID: 22610801; X-2, X-4

2030. Siddiqui FM, Siddiqui MMR, Hoque MA, et al. Selective extrapontine myelinolysis in osmotic demyelination syndrome in a case of previously undiagnosed sheehan's syndrome with recurrent hyponatraemia - a rare association. Journal of Medicine. 2011;12:77-80. PMID: X-1

2031. Siddiqui SA, Tariq G, Soomro N, et al. Perinatal outcome and near-miss morbidity between placenta previa versus abruptio placentae. J Coll Physicians Surg Pak. 2011 Feb;21:79-83. PMID: 21333237; X-2, X-4

2032. Sillesen M, Hjortdal V, Vejlstrup N, et al. Pregnancy with prosthetic heart valves - 30 years' nationwide experience in Denmark. Eur J Cardiothorac Surg. 2011 Aug;40:448-54. PMID: 21277217; X-4

2033. Simchen MJ, Oz R, Shenkman B, et al. Impaired platelet function and peripartum bleeding in women with Gaucher disease. Thromb Haemost. 2011 Mar;105:509-14. PMID: 21301776; X-4

2034. Singh S, McGlennan A, England A, et al. A validation study of the CEMACH recommended modified early obstetric warning system (MEOWS). Anaesthesia. 2011 Jan;67:12-8. PMID: 22066604; X-4

2035. Skjeldestad FE, Oian P. Blood loss after cesarean delivery: a registry-based study in Norway, 1999-2008. Am J Obstet Gynecol. 2011 Jan;206:76 e1-7. PMID: 21963102; X-4

2036. Soltan MH, Ibrahim EM, Tawfek M, et al. Raised nitric oxide levels may cause atonic postpartum hemorrhage in women with anemia during pregnancy. Int J Gynaecol Obstet. 2011 Feb;116:143-7. PMID: 22114785; X-2, X-3, X-4

2037. Soltan MH, Sadek RR. Experience managing postpartum hemorrhage at Minia University Maternity Hospital, Egypt: no mortality using external aortic compression. J Obstet Gynaecol Res. 2011 Nov;37:1557-63. PMID: 21676082; X-2

2038. Sorbye IK, Vangen S, Oneko O, et al. Caesarean section among referred and self-referred birthing women: a cohort study from a tertiary hospital, northeastern Tanzania. BMC Pregnancy Childbirth. 2011;11:55. PMID: 21798016; X-2, X-4

2039. Sorensen BL, Rasch V, Massawe S, et al. Advanced life support in obstetrics (ALSO) and post-partum hemorrhage: a prospective intervention study in Tanzania. Acta Obstet Gynecol Scand. 2011 Jun;90:609-14. PMID: 21388368; X-2, X-4

2040. Soudani N, Bouaziz H, Sefi M, et al. Toxic effects of chromium (VI) by maternal ingestion on liver function of female rats and their suckling pups. Environ Toxicol. 2011 Jan;28:11-20. PMID: 21374791; X-1, X-3, X-4

2041. Starrs A, Winikoff B. Misoprostol for postpartum hemorrhage: moving from evidence to practice. Int J Gynaecol Obstet. 2011 Jan;116:1-3. PMID: 22078140; X-1

2042. Stitely ML, Cerbone L, Nixon A, et al. Assessment of a simulation training exercise to teach intrauterine tamponade for the treatment of postpartum hemorrhage. J Midwifery Womens Health. 2011 Sep-Oct;56:503-6. PMID: 23181649; X-3, X-4

2043. Stotler B, Padmanabhan A, Devine P, et al. Transfusion requirements in obstetric patients with placenta accreta. Transfusion. 2011 Dec;51:2627-33. PMID: 21658046; X-4

2044. Studelska JV. Velamentous Birth Story. Midwifery Today. 2011:9-11. PMID: X-1

2045. Suknikhom W, Tannirandorn Y. Previous uterine operation and placenta previa. J Med Assoc Thai. 2011 Mar;94:272-7. PMID: 21560833; X-2, X-4

2046. Sullivan JV, Crouch ME, Stocken G, et al. Blood cell salvage during cesarean delivery. Int J Gynaecol Obstet. 2011 Nov;115:161-3. PMID: 21872856; X-4, X-5

2047. Sultana N, Mohyuddin S, Jabbar T. Management and maternal outcome in morbidly adherent placenta. J Ayub Med Coll Abbottabad. 2011 Apr-Jun;23:93-6. PMID: 24800353; X-2

2048. Suri V, Keepanasseril A, Aggarwal N, et al. Mechanical valve prosthesis and anticoagulation regimens in pregnancy: a tertiary centre experience. Eur J Obstet Gynecol Reprod Biol. 2011 Dec;159:320-3. PMID: 21962462; X-4

2049. Suzuki S, Hiraizumi Y, Satomi M, et al. Midwife-led care unit for 'low risk' pregnant women in a Japanese hospital. J Matern Fetal Neonatal Med. 2011 Aug;24:1046-50. PMID: 21231841; X-4

2050. Tasleem H, Tasleem S, Siddique MA, et al. Outcome of pregnancy in placental abruption. Rawal Medical Journal. 2011;36:57-9. PMID: X-2, X-4

2051. Thies-Lagergren L, Kvist LJ, Christensson K, et al. No reduction in instrumental vaginal births and no increased risk for adverse perineal outcome in nulliparous women giving birth on a birth seat: results of a Swedish randomized controlled trial. BMC Pregnancy Childbirth. 2011;11:22. PMID: 21435238; X-4

2052. Tikkanen M, Paavonen J, Loukovaara M, et al. Antenatal diagnosis of placenta accreta leads to reduced blood loss. Acta Obstet Gynecol Scand. 2011 Oct;90:1140-6. PMID: 21488840; X-4, X-5

2053. Unal O, Kars B, Buyukbayrak EE, et al. The effectiveness of bilateral hypogastric artery ligation for obstetric hemorrhage in three different underlying conditions and its impact on future fertility. J Matern Fetal Neonatal Med. 2011 Oct;24:1273-6. PMID: 21557692; X-2, X-5

2054. Unterscheider J, McMenamin M, Cullinane F. Rising rates of caesarean deliveries at full cervical dilatation: a concerning trend. Eur J Obstet Gynecol Reprod Biol. 2011 Aug;157:141-4. PMID: 21470764; X-2, X-4, X-5

2055. Vadnais MA, Dodge LE, Awtrey CS, et al. Assessment of long-term knowledge retention following single-day simulation training for uncommon but critical obstetrical events. J Matern Fetal Neonatal Med. 2011 Sep;25:1640-5. PMID: 22191668; X-3, X-4

2056. van den Akker T, van Rhenen J, Mwagomba B, et al. Reduction of severe acute maternal morbidity and maternal mortality in Thyolo District, Malawi: the impact of obstetric audit. PLoS One. 2011;6:e20776. PMID: 21677788; X-2

2057. Vanes NK, Lazarus JH, Chan SY. Thyroid function in pregnancy: Maternal and fetal outcomes with hypothyroidism and subclinical thyroid dysfunction. Fetal and Maternal Medicine Review. 2011 August;22:169-87. PMID: X-1

2058. Varatharajan L, Chandraharan E, Sutton J, et al. Outcome of the management of massive postpartum hemorrhage using the algorithm "HEMOSTASIS". Int J Gynaecol Obstet. 2011 May;113:152-4. PMID: 21396642; X-4, X-5

2059. Vardo JH, Thornburg LL, Glantz JC. Maternal and neonatal morbidity among nulliparous women undergoing elective induction of labor. J Reprod Med. 2011 Jan-Feb;56:25-30. PMID: 21366123; X-4

2060. Vasquez DN, Estenssoro E. Critical illness in obstetric patients: Introduction and epidemiology. Current Women's Health Reviews. 2011 June;7:102-11. PMID: X-1

2061. Wagner B, Meirowitz N, Shah J, et al. Comprehensive perinatal safety initiative to reduce adverse obstetric events. J Healthc Qual. 2011 Jan-Feb;34:6-15. PMID: 22060764; X-4, X-5

2062. Walker DM, Cohen SR, Estrada F, et al. PRONTO training for obstetric and neonatal emergencies in Mexico. Int J Gynaecol Obstet. 2011 Feb;116:128-33. PMID: 22112786; X-2, X-3, X-4

2063. Wandabwa JN, Doyle P, Longo-Mbenza B, et al. Human immunodeficiency virus and AIDS and other important predictors of maternal mortality in Mulago Hospital Complex Kampala Uganda. BMC Public Health. 2011;11:565. PMID: 21756355; X-2, X-4

2064. Wang S, Teng WP, Li JX, et al. Effects of maternal subclinical hypothyroidism on obstetrical outcomes during early pregnancy. J Endocrinol Invest. 2011 Mar;35:322-5. PMID: 21642766; X-3, X-4

2065. Watanabe T, Matsubara S, Usui R, et al. No increase in hemorrhagic complications with thromboprophylaxis using low-molecular-weight heparin soon after cesarean section. J Obstet Gynaecol Res. 2011 Sep;37:1208-11. PMID: 21518131; X-2, X-4, X-5

2066. Wickham S. Saving mothers' lives: reviewing maternal deaths to make motherhood safer: 2006 -- 08. Essentially MIDIRS. 2011;2:27-32. PMID: X-1

2067. Wong TY. Emergency peripartum hysterectomy: a 10-year review in a tertiary obstetric hospital. N Z Med J. 2011 Nov 4;124:34-9. PMID: 22072164; X-4, X-5

2068. Wright JD, Pri-Paz S, Herzog TJ, et al. Predictors of massive blood loss in women with placenta accreta. Am J Obstet Gynecol. 2011 Jul;205:38 e1-6. PMID: 21419387; X-4

2069. Yoong W, Ridout A, Memtsa M, et al. Application of uterine compression suture in association with intrauterine balloon tamponade ('uterine sandwich') for postpartum hemorrhage. Acta Obstet Gynecol Scand. 2011 Jan;91:147-51. PMID: 21501126; X-5

2070. Youngblood A. Code White Innovative Program Presentation. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2011;40:S38-S. PMID: X-1, X-2, X-4, X-5

2071. Yun SY, Lee DH, Cho KH, et al. Delayed postpartum hemorrhage resulting from uterine artery pseudoaneurysm rupture. J Emerg Med. 2011 Jan;42:e11-4. PMID: 21497477; X-4, X-5

2072. Zakaria R, Coulter I, Enevoldson P, et al. Reversible cerebral vasoconstriction syndrome in a postpartum female complicated by subarachnoid haemorrhage. BMJ Case Reports. 2011PMID: X-1, X-3, X-4

2073. Zanconato G, Cavaliere E, Iacovella C, et al. Severe maternal morbidity in a tertiary care centre of northern Italy: a 5-year review. J Matern Fetal Neonatal Med. 2011 Jul;25:1025-8. PMID: 21854133; X-2, X-5

2074. . $4.6 million verdict for ailure to have adequate blood supply. Hospital Laws Regan Report. 2012;53:2-. PMID: X-1, X-2, X-4, X-5

2075. . Clinical digest. Women undergoing planned caesarean section less likely to require a blood transfusion. Nursing Standard. 2012;26:15-. PMID: X-1, X-4, X-5

2076. . MIDIRS update. Essentially MIDIRS. 2012;3:5-16. PMID: X-1, X-4

2077. . No evidence for use of misoprostol to prevent life-threatening bleeding during labour. British Journal of Hospital Medicine (17508460). 2012;73:489-. PMID: X-1, X-4

2078. WHO Guidelines Approved by the Guidelines Review Committee. WHO Recommendations for the Prevention and Treatment of Postpartum Haemorrhage. Geneva: World Health Organization World Health Organization.; 2012.

2079. . Higher Risk of Maternal Complications/Preterm Deliveries for Women Undergoing Multiple Cesarean Surgeries. Inside Childbirth Education. 2012:4-. PMID: X-1, X-4

2080. . Labour complications. Midwives. 2012;15:10-. PMID: X-1, X-4, X-5

2081. . Public health round-up. Bulletin of the World Health Organization. 2012;90:248-9. PMID: X-1, X-4, X-5

2082. Acharya R, Sharma A, Choudhary P, et al. Intrahepatic cholestasis of pregnancy: A serious but underestimated problem. Journal of SAFOG. 2012;4:118-9. PMID: X-1, X-2, X-4, X-5

2083. Adanikin AI, Orji EO, Fasubaa OB, et al. The effect of post-cesarean rectal misoprostol on intestinal motility. Int J Gynaecol Obstet. 2012 Nov;119:159-62. PMID: 22925817; X-2, X-4

2084. Agha M, Selmi G, Ezzat M. Transcranial US of preterm neonates: High risk gestational age and birth weight for perinatal asphyxia. Egyptian Journal of Radiology and Nuclear Medicine. 2012 June;43:265-74. PMID: X-2, X-3, X-4

2085. Aibar L, Aguilar MT, Puertas A, et al. Bakri balloon for the management of postpartum hemorrhage. Acta Obstet Gynecol Scand. 2012 Apr;92:465-7. PMID: 22762694; X-5

2086. Akbayir O, Corbacioglu Esmer A, Cilesiz Goksedef P, et al. Single square hemostatic suture for postpartum hemorrhage secondary to uterine atony. Arch Gynecol Obstet. 2012 Jan;287:25-9. PMID: 22893103; X-2, X-5

2087. Al JF. Grandmultiparity: a potential risk factor for adverse pregnancy outcomes. J Reprod Med. 2012 Jan-Feb;57:53-7. PMID: 22324269; X-2, X-4

2088. Al-Othebi KHA, Al-Shwirikh AH, Aslam S. Unforgettable lesson: Emergency in emergency room. Research Journal of Obstetrics and Gynecology. 2012;5:8-12. PMID: X-1

2089. Alsammani MA, Ahmed SR. Fetal and maternal outcomes in pregnancies complicated with fetal macrosomia. N Am J Med Sci. 2012 Jun;4:283-6. PMID: 22754881; X-2, X-4

2090. Anand AK, Mir S. A randomized comparison between intravaginal misoprostol and intracervical dinoprostone for cervical ripening and labour induction in participants with unfavourable cervices. JK Science. 2012 July-September;14:115-9. PMID: X-3, X-4

2091. Ande A, Olagbuji B, Ezeanochie M. An audit of maternal deaths from a referral university teaching hospital in Nigeria: the emergence of HIV/AIDS as a leading cause. Niger Postgrad Med J. 2012 Jun;19:83-7. PMID: 22728972; X-2, X-4

2092. Andersson O, Hellstrom-Westas L, Andersson D, et al. Effects of delayed compared with early umbilical cord clamping on maternal postpartum hemorrhage and cord blood gas sampling: a randomized trial. Acta Obstet Gynecol Scand. 2012 May;92:567-74. PMID: 22913332; X-4

2093. Andreatta P, Perosky J, Johnson TR. Two-provider technique for bimanual uterine compression to control postpartum hemorrhage. J Midwifery Womens Health. 2012 Jul-Aug;57:371-5. PMID: 22758359; X-2, X-3

2094. Andrighetti TP, Knestrick JM, Marowitz A, et al. Shoulder dystocia and postpartum hemorrhage simulations: student confidence in managing these complications. J Midwifery Womens Health. 2012 Jan-Feb;57:55-60. PMID: 22251913; X-3, X-4

2095. Anvaripour A, Shahryari H, Ahmadi S, et al. Comparison the effects of oxytocin and methylergonovine in elective caesarean section under spinal anesthesia. Arch Gynecol Obstet. 2012 May;287:979-83. PMID: 23250341; X-3, X-4

2096. Ara S, Tahir S, Rehman A. Maternal mortality in Faisalabad and millennium developmental goals. Pakistan Journal of Medical Sciences. 2012;28:371-5. PMID: X-2, X-4

2097. Ãurleigh A. Delaying the clampers. AIMS Journal. 2012;24(4):13-4. PMID: 2011806015. Language: English. Entry Date: 20130118. Revision Date: 20130524. Publication Type: journal article. Journal Subset: Editorial Board Reviewed; X-1

2098. Ayaz A, Farooq MU. Risk of adverse maternal and peri-natal outcome in subjects with placenta previa with previous cesarean section. Kurume Med J. 2012;59:1-4. PMID: 23257632; X-2, X-3, X-4

2099. Badejoko OO, Ijarotimi AO, Awowole IO, et al. Adjunctive rectal misoprostol versus oxytocin infusion for prevention of postpartum hemorrhage in women at risk: a randomized controlled trial. J Obstet Gynaecol Res. 2012 Nov;38:1294-301. PMID: 22612662; X-2, X-4

2100. Bajwa SK, Bajwa SJ. Delivering obstetrical critical care in developing nations. Int J Crit Illn Inj Sci. 2012 Jan;2(1):32-9. PMID: 22624100; X-1

2101. Balki M, Kanwal N, Erik-Soussi M, et al. Contractile efficacy of various prostaglandins in pregnant rat myometrium pretreated with oxytocin. Reprod Sci. 2012 Sep;19:968-75. PMID: 22539357; X-3

2102. Bamberg C, Fotopoulou C, Neissner P, et al. Maternal characteristics and twin gestation outcomes over 10 years: impact of conception methods. Fertil Steril. 2012 Jul;98:95-101. PMID: 22608318; X-3, X-4

2103. Basude S, Hein C, Curtis SL, et al. Low-molecular-weight heparin or warfarin for anticoagulation in pregnant women with mechanical heart valves: what are the risks? A retrospective observational study. BJOG. 2012 Jul;119:1008-13; discussion 12-3. PMID: 22568528; X-3, X-4

2104. Bedoya-Ronga A, Currie I. Which patients should be offered caesarean section? Practitioner. 2012 Mar;256:16-8, 2-3. PMID: 22662515; X-1

2105. Bellad MB, Tara D, Ganachari MS, et al. Prevention of postpartum haemorrhage with sublingual misoprostol or oxytocin: a double-blind randomised controlled trial. BJOG. 2012 Jul;119:975-82; discussion 82-6. PMID: 22703421; X-2, X-4

2106. Benson MD, Cheema N, Kaufman MW, et al. Uterine intravascular fetal material and coagulopathy at peripartum hysterectomy. Gynecol Obstet Invest. 2012;73:158-61. PMID: 22261240; X-4

2107. Bezircioglu I, Baloglu A, Cetinkaya B, et al. Do clinical and laboratory parameters effect maternal and fetal outcomes in pregnancies complicated with hemolysis, elevated liver enzymes, and low platelet count syndrome? Journal of the Turkish German Gynecology Association. 2012;13:1-7. PMID: X-2, X-4, X-5

2108. Bhatti S, Penna L. Maternal collapse. Obstetrics, Gynaecology and Reproductive Medicine. 2012 July;22:191-8. PMID: X-1

2109. Bhutta ZA, Cabral S, Chan CW, et al. Reducing maternal, newborn, and infant mortality globally: an integrated action agenda. Int J Gynaecol Obstet. 2012 Oct;119 Suppl 1:S13-7. PMID: 22883919; X-1

2110. Bibi S, Ghaffar S, Memon S. Severe acute maternal morbidity (SAMM) in postpartum period requiring tertiary hospital care. Iranian Journal of Reproductive Medicine. 2012 March/April;10:87-92. PMID: X-2, X-4

2111. Bieri RA, Adriaens L, Sporri S, et al. Gingival fluid cytokine expression and subgingival bacterial counts during pregnancy and postpartum: a case series. Clin Oral Investig. 2012 Jan;17:19-28. PMID: 22249562; X-1, X-3, X-4

2112. Bingham D. Applying the generic errors modeling system to obstetric hemorrhage quality improvement efforts. J Obstet Gynecol Neonatal Nurs. 2012 Jul-Aug;41:540-8; quiz 9-50. PMID: 22548710; X-1, X-4, X-5

2113. Bingham D, Jones R. Maternal death from obstetric hemorrhage. J Obstet Gynecol Neonatal Nurs. 2012 Jul-Aug;41:531-9. PMID: 22548689; X-1

2114. Blix E, Huitfeldt AS, Oian P, et al. Outcomes of planned home births and planned hospital births in low-risk women in Norway between 1990 and 2007: a retrospective cohort study. Sex Reprod Healthc. 2012 Dec;3:147-53. PMID: 23182447; X-4

2115. Borchert M, Goufodji S, Alihonou E, et al. Can hospital audit teams identify case management problems, analyse their causes, identify and implement improvements? A cross-sectional process evaluation of obstetric near-miss case reviews in Benin. BMC Pregnancy Childbirth. 2012;12:109. PMID: 23057707; X-2, X-4

2116. Bouvier A, Sentilhes L, Thouveny F, et al. Planned caesarean in the interventional radiology cath lab to enable immediate uterine artery embolization for the conservative treatment of placenta accreta. Clin Radiol. 2012 Nov;67:1089-94. PMID: 22622352; X-2, X-5

2117. Bouvier-Colle MH, Mohangoo AD, Gissler M, et al. What about the mothers? An analysis of maternal mortality and morbidity in perinatal health surveillance systems in Europe. BJOG. 2012 Jun;119:880-9; discussion 90. PMID: 22571748; X-2, X-3, X-4

2118. Bowman Z, Branch DW. Thromboprophylaxis in pregnancy. Contemporary OB/GYN. 2012;57:46-58. PMID: X-1, X-5

2119. Boztosun A, Sumer D, Cetin M, et al. Idiopathic spontaneous hemoperitoneum during early postpartum period: Case report. Turkiye Klinikleri Journal of Medical Sciences. 2012;32:1718-20. PMID: X-1, X-2

2120. Brearton C, Bhalla A, Mallaiah S, et al. The economic benefits of cell salvage in obstetric haemorrhage. Int J Obstet Anesth. 2012 Oct;21:329-33. PMID: 22858041; X-2, X-4, X-5

2121. Breen M. Temporary treatment of severe postpartum hemorrhage. Int J Gynaecol Obstet. 2012 Sep;118:253-4. PMID: 22795757; X-1, X-2, X-4, X-5

2122. Brown A, Jordan S. Impact of birth complications on breastfeeding duration: an internet survey. J Adv Nurs. 2012 Apr;69:828-39. PMID: 22765355; X-4, X-5

2123. Brown H, Small M. The role of the maternal-fetal medicine subspecialist in review and prevention of maternal deaths. Semin Perinatol. 2012 Feb;36:27-30. PMID: 22280862; X-1

2124. Bryant A, Mhyre JM, Leffert LR, et al. The association of maternal race and ethnicity and the risk of postpartum hemorrhage. Anesth Analg. 2012 Nov;115:1127-36. PMID: 22886840; X-4

2125. Burke N, Field K, Mujahid F, et al. Use and safety of Kielland's forceps in current obstetric practice. Obstet Gynecol. 2012 Oct;120:766-70. PMID: 22996093; X-4

2126. Burleigh A. Delaying the clampers. AIMS Journal. 2012;24:13-4. PMID: X-1, X-2, X-4, X-5

2127. Calvert C, Thomas SL, Ronsmans C, et al. Identifying regional variation in the prevalence of postpartum haemorrhage: a systematic review and meta-analysis. PLoS One. 2012;7:e41114. PMID: 22844432; X-1, X-4

2128. Campbell J, Holland C, Richens D, et al. Impact of cell salvage during cardiac surgery on the thrombelastomeric coagulation profile: A pilot study. Perfusion. 2012 May;27:221-4. PMID: X-1, X-3

2129. Cengiz H, Yasar L, Ekin M, et al. Management of intractable postpartum haemorrhage in a tertiary center: A 5-year experience. Niger Med J. 2012 Apr;53:85-8. PMID: 23271852; X-2, X-5

2130. Chandraharan E, Rao S, Belli AM, et al. The Triple-P procedure as a conservative surgical alternative to peripartum hysterectomy for placenta percreta. Int J Gynaecol Obstet. 2012 May;117:191-4. PMID: 22326782; X-1, X-4, X-5

2131. Chapman E, Reveiz L, Chambliss A, et al. Cochrane systematic reviews are useful to map research gaps for decreasing maternal mortality. J Clin Epidemiol. 2012 Jan;66:105-12. PMID: 23177899; X-1

2132. Chee YL, Townend J, Crowther M, et al. Assessment of von Willebrand disease as a risk factor for primary postpartum haemorrhage. Haemophilia. 2012 Jul;18:593-7. PMID: 22335463; X-1, X-4

2133. Cheerranichanunth P, Poolnoi P. Using blood loss pictogram for visual blood loss estimation in cesarean section. J Med Assoc Thai. 2012 Apr;95:550-6. PMID: 22612010; X-3, X-4

2134. Chen KH, Chen LR, Lee YH. The role of preterm placental calcification in high-risk pregnancy as a predictor of poor uteroplacental blood flow and adverse pregnancy outcome. Ultrasound Med Biol. 2012 Jun;38:1011-8. PMID: 22475694; X-4

2135. Chen Z, Liang MY, Wang JL. [Etiology and clinical characteristics of pregnancy-emerged thrombocytopenia]. Zhonghua Fu Chan Ke Za Zhi. 2012 Nov;46:834-9. PMID: 22333233; X-2, X-4

2136. Chijioke A, Makusidi AM, Rafiu MO. Factors influencing hemodialysis and outcome in severe acute renal failure from Ilorin, Nigeria. Saudi J Kidney Dis Transpl. 2012 Mar;23:391-6. PMID: 22382247; X-2, X-3, X-4

2137. Chitra TV, Panicker S. Pseudoaneurysm of uterine artery: a rare cause of secondary postpartum hemorrhage. J Obstet Gynaecol India. 2012 Dec;61:641-4. PMID: 23204681; X-2, X-5

2138. Christie A, Robertson I, Moss J. Interventional radiology emergency service provision for a large UK urban population: initial 3.5 years of experience. Clin Radiol. 2012 Aug;68:e440-6. PMID: 22964368; X-4, X-5

2139. Chu CS, Brhlikova P, Pollock AM. Rethinking WHO guidance: review of evidence for misoprostol use in the prevention of postpartum haemorrhage. J R Soc Med. 2012 Aug;105:336-47. PMID: 22907551; X-1, X-3

2140. Chweneyagae D, Delis-Jarrosay N, Farina Z, et al. The impact of HIV infection on maternal deaths in South Africa. South African Journal of Obstetrics and Gynaecology. 2012;18:70-6. PMID: X-2, X-4

2141. Clark SL. Strategies for reducing maternal mortality. Semin Perinatol. 2012 Feb;36:42-7. PMID: 22280865; X-1

2142. Clark SL, Hankins GD. Preventing maternal death: 10 clinical diamonds. Obstet Gynecol. 2012 Feb;119:360-4. PMID: 22270288; X-1

2143. Cohain JS. A Novel Way to Prevent Postpartum Haemorrhage? Midwifery Matters. 2012:21-2. PMID: X-1, X-4

2144. Cook JR, Jarvis S, Knight M, et al. Multiple repeat caesarean section in the UK: incidence and consequences to mother and child. A national, prospective, cohort study. BJOG. 2012 Jan;120:85-91. PMID: 23095012; X-4

2145. Cordovani D, Balki M, Farine D, et al. Carbetocin at elective Cesarean delivery: a randomized controlled trial to determine the effective dose. Can J Anaesth. 2012 Aug;59:751-7. PMID: 22717890; X-3, X-4

2146. Cortet M, Deneux-Tharaux C, Dupont C, et al. Association between fibrinogen level and severity of postpartum haemorrhage: secondary analysis of a prospective trial. Br J Anaesth. 2012 Jun;108:984-9. PMID: 22490316; X-4

2147. Cromi A, Ghezzi F, Uccella S, et al. A randomized trial of preinduction cervical ripening: dinoprostone vaginal insert versus double-balloon catheter. Am J Obstet Gynecol. 2012 Aug;207:125 e1-7. PMID: 22704766; X-3, X-4

2148. Curry RA, Fletcher C, Gelson E, et al. Pulmonary hypertension and pregnancy--a review of 12 pregnancies in nine women. BJOG. 2012 May;119:752-61. PMID: 22390684; X-4

2149. Dabash R, Blum J, Raghavan S, et al. Misoprostol for the management of postpartum bleeding: a new approach. Int J Gynaecol Obstet. 2012 Dec;119:210-2. PMID: 22980431; X-1

2150. Dahlen HG, Dowling H, Tracy M, et al. Maternal and perinatal outcomes amongst low risk women giving birth in water compared to six birth positions on land. A descriptive cross sectional study in a birth centre over 12 years. Midwifery. 2012 Jul;29:759-64. PMID: 22884894; X-4

2151. Dasari P, Sagili H, Udupi G. Unusual complication of vaginal delivery: Is misoprostal the cause? BMJ Case Reports. 2012PMID: X-1, X-4

2152. Deans R, Banks F, Liao LM, et al. Reproductive outcomes in women with classic bladder exstrophy: an observational cross-sectional study. Am J Obstet Gynecol. 2012 Jun;206:496 e1-6. PMID: 22537419; X-4

2153. Demetz J, Clouqueur E, D'Haveloose A, et al. Systematic use of carbetocin during cesarean delivery of multiple pregnancies: a before-and-after study. Arch Gynecol Obstet. 2012 May;287:875-80. PMID: 23233289; X-4

2154. Dennedy MC, Avalos G, O'Reilly MW, et al. The impact of maternal obesity on gestational outcomes. Ir Med J. 2012 May;105:23-5. PMID: 22838105; X-4

2155. Dennedy MC, Avalos G, O'Reilly MW, et al. ATLANTIC-DIP: raised maternal body mass index (BMI) adversely affects maternal and fetal outcomes in glucose-tolerant women according to International Association of Diabetes and Pregnancy Study Groups (IADPSG) criteria. J Clin Endocrinol Metab. 2012 Apr;97:E608-12. PMID: 22319044; X-4

2156. Divakar H. Iron-deficiency anemia in pregnant women: What preventing practitioners from using IV iron sucrose. International Journal of Infertility and Fetal Medicine. 2012 January-April;3:1-7. PMID: X-2, X-3, X-4

2157. Donati S, Senatore S, Ronconi A. Obstetric near-miss cases among women admitted to intensive care units in Italy. Acta Obstet Gynecol Scand. 2012 Apr;91:452-7. PMID: 22229438; X-4

2158. D'Souza K, Monteiro FNP, Jayaprakash K, et al. Spectrum of grand multiparity. Journal of Clinical and Diagnostic Research. 2012;5:1247-50. PMID: X-2, X-4

2159. Dudas L, Pedaline SH. Stop the Bleeding: A Postpartum Hemorrhage Protocol. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2012;41:S11-S. PMID: X-1, X-4, X-5

2160. Duzyj CM, Paidas MJ. New thoughts on an old problem. Contemporary OB/GYN. 2012;57:32-. PMID: X-1, X-4, X-5

2161. Ehrenthal DB, Chichester ML, Cole OS, et al. Maternal risk factors for peripartum transfusion. J Womens Health (Larchmt). 2012 Jul;21:792-7. PMID: 22500552; X-4

2162. Ekin M, Islim F, Cengiz H, et al. Late postpartum hemorrhage due to uterine arteriovenous malformations. Gineco.ro. 2012;8:184-6. PMID: X-1, X-2, X-4

2163. Elati A, Weeks A. Risk of fever after misoprostol for the prevention of postpartum hemorrhage: a meta-analysis. Obstet Gynecol. 2012 Nov;120:1140-8. PMID: 23090533; X-1, X-3

2164. Elsedeek MS. Impact of preoperative rectal misoprostol on blood loss during and after elective cesarean delivery. Int J Gynaecol Obstet. 2012 Aug;118:149-52. PMID: 22698700; X-2, X-4, X-5

2165. Endler M, Grunewald C, Saltvedt S. Epidemiology of retained placenta: oxytocin as an independent risk factor. Obstet Gynecol. 2012 Apr;119:801-9. PMID: 22433344; X-4

2166. Fasih A, Aamir F. Assessment of potential predictors of caesarean delivery wound morbidity. Medical Channel. 2012;19:64-7. PMID: X-2, X-3, X-4

2167. Fawzy AEMA, Swelem M, Abdelrehim AI, et al. Active management of third stage of labor by intravenous ergometrine and rectal versus sublingual misoprostol (a double-center study). Alexandria Journal of Medicine. 2012 December;48:381-5. PMID: X-2, X-4

2168. Fernando D, Halliday JL, Breheny S, et al. Outcomes of singleton births after blastocyst versus nonblastocyst transfer in assisted reproductive technology. Fertil Steril. 2012 Mar;97:579-84. PMID: 22281036; X-3, X-4

2169. Fodstad K, Laine K, Staff AC. Different episiotomy techniques, postpartum perineal pain, and blood loss: an observational study. Int Urogynecol J. 2012 May;24:865-72. PMID: 23108732; X-4

2170. Ford JB, Algert CS, Morris JM, et al. Decreasing length of maternal hospital stay is not associated with increased readmission rates. Aust N Z J Public Health. 2012 Oct;36:430-4. PMID: 23025363; X-4

2171. Ford JB, Shand AW, Roberts CL. Characteristics, causes and treatment of postpartum haemorrhage in first and second pregnancies. Aust N Z J Obstet Gynaecol. 2012 Feb;53:90-3. PMID: 23206163; X-4, X-5

2172. Fugate JE, Ameriso SF, Ortiz G, et al. Variable presentations of postpartum angiopathy. Stroke. 2012 Mar;43:670-6. PMID: 22223244; X-3, X-4

2173. Fugate JE, Wijdicks EF, Parisi JE, et al. Fulminant postpartum cerebral vasoconstriction syndrome. Arch Neurol. 2012 Jan;69:111-7. PMID: 22232351; X-3, X-4

2174. Fuglsang K, Dueholm M, Staehr-Hansen E, et al. Uterine healing after therapeutic intrauterine administration of TachoSil (hemostatic fleece) in cesarean section with postpartum hemorrhage caused by placenta previa. J Pregnancy. 2012;2012:635683. PMID: 22619722; X-4, X-5

2175. Fukushima K, Yumoto Y, Kondo Y, et al. A retrospective chart review of the perinatal period in 22 pregnancies of 16 women with Moyamoya disease. J Clin Neurosci. 2012 Oct;19:1358-62. PMID: 22917762; X-3, X-4

2176. Fyfe EM, Thompson JM, Anderson NH, et al. Maternal obesity and postpartum haemorrhage after vaginal and caesarean delivery among nulliparous women at term: a retrospective cohort study. BMC Pregnancy Childbirth. 2012;12:112. PMID: 23078042; X-4

2177. Gao H, Yang BJ, Jin LP, et al. Predisposing factors, diagnosis, treatment and prognosis of cerebral venous thrombosis during pregnancy and postpartum: a case-control study. Chin Med J (Engl). 2012 Dec;124:4198-204. PMID: 22340387; X-3, X-4

2178. Garba M, Nayama M, Alio AP, et al. Maternal mortality in Niger: a retrospective study in a high risk maternity. Afr J Med Med Sci. 2012 Dec;40:393-7. PMID: 22783691; X-2, X-4

2179. Garcia K, Morrison B, Kilanowski J. Focus Group with Guatemalan Traditional Midwives about Postpartum Hemorrhage. Online Journal of Cultural Competence in Nursing & Healthcare. 2012;2:1-10. PMID: X-2, X-3, X-4

2180. Geetha P. Induction of labour with prostaglandin E2 vaginal gel in women with one previous caesarean section. Middle East Fertility Society Journal. 2012 September;17:170-5. PMID: X-2, X-4

2181. Gezginc K, Yazici F, Koyuncu T, et al. Bilateral uterine and ovarian artery ligation in addition to B-lynch suture may be an alternative to hysterectomy for uterine atonic hemorrhage. Clin Exp Obstet Gynecol. 2012;39:168-70. PMID: 22905456; X-2, X-5

2182. Giannella L, Mfuta K, Pedroni D, et al. Delays in the delivery room of a primary maternity unit: a retrospective analysis of obstetric outcomes. J Matern Fetal Neonatal Med. 2012 Apr;26:593-7. PMID: 23126633; X-4

2183. Gohil JT, Tripathi B. A Study to Compare the Efficacy of Misoprostol, Oxytocin, Methyl-ergometrine and Ergometrine-Oxytocin in Reducing Blood Loss in Active Management of 3rd Stage of Labor. J Obstet Gynaecol India. 2012 Aug;61:408-12. PMID: 22851822; X-2, X-4

2184. Gong YH, Jia J, Lu DH, et al. Outcome and risk factors of early onset severe preeclampsia. Chin Med J (Engl). 2012 Jul;125:2623-7. PMID: 22882950; X-2, X-3, X-4

2185. Gonzales GF, Tapia V, Fort AL. Maternal and Perinatal outcomes in second hemoglobin measurement in nonanemic women at first booking: Effect of altitude of residence in Peru. ISRN Obstetrics and Gynecology. 2012PMID: X-2, X-3, X-4

2186. Gonzales GF, Tapia V, Gasco M, et al. Association of hemoglobin values at booking with adverse maternal outcomes among Peruvian populations living at different altitudes. Int J Gynaecol Obstet. 2012 May;117:134-9. PMID: 22356761; X-2, X-3, X-4

2187. Griffin D, Brown L, Feinn R, et al. Impact of an educational intervention and insurance coverage on patients' preferences to transfer multiple embryos. Reprod Biomed Online. 2012 Aug;25:204-8. PMID: 22683149; X-3, X-4

2188. Gulmezoglu AM, Lumbiganon P, Landoulsi S, et al. Active management of the third stage of labour with and without controlled cord traction: a randomised, controlled, non-inferiority trial. Lancet. 2012 May 5;379:1721-7. PMID: 22398174; X-2, X-4

2189. Gungorduk K, Asicioglu O, Yildirim G, et al. Can intravenous injection of tranexamic acid be used in routine practice with active management of the third stage of labor in vaginal delivery? A randomized controlled study. Am J Perinatol. 2012 May;30:407-13. PMID: 23023559; X-2, X-4, X-5

2190. Gutierrez MC, Goodnough LT, Druzin M, et al. Postpartum hemorrhage treated with a massive transfusion protocol at a tertiary obstetric center: a retrospective study. Int J Obstet Anesth. 2012 Jul;21:230-5. PMID: 22647592; X-2, X-4, X-5

2191. Haas J, Barzilay E, Chayen B, et al. Safety of labor induction with prostaglandin E2 in grandmultiparous women. J Matern Fetal Neonatal Med. 2012 Jan;26:49-51. PMID: 22928497; X-4

2192. Haeri S, Dildy GA, 3rd. Maternal mortality from hemorrhage. Semin Perinatol. 2012 Feb;36:48-55. PMID: 22280866; X-1

2193. Halloran DR, Marshall NE, Kunovich RM, et al. Obesity trends and perinatal outcomes in black and white teenagers. Am J Obstet Gynecol. 2012 Dec;207:492 e1-7. PMID: 23174388; X-4

2194. Hansen SS, Arafeh J. Implementing and sustaining in situ drills to improve multidisciplinary health care training. J Obstet Gynecol Neonatal Nurs. 2012 Jul-Aug;41:559-70; quiz 70-1. PMID: 22548312; X-1

2195. Hao J, Liu M, Mo Z. The Symptoms Get Worse after Pregnancy in Sheehan's Syndrome: A Case Report. Case Rep Med. 2012;2012:271345. PMID: 23049563; X-1, X-3, X-4

2196. Harding K. Risk management in obstetrics. Obstetrics, Gynaecology and Reproductive Medicine. 2012 January;22:1-5. PMID: X-1, X-3, X-4

2197. Haspel R, Stanworth S, Callum J. Journal Club. Transfusion Medicine Reviews. 2012;26:190-7. PMID: X-1, X-2

2198. Hawkins JL. The anesthesiologist's role during attempted VBAC. Clin Obstet Gynecol. 2012 Dec;55:1005-13. PMID: 23090470; X-1

2199. Hendriks J, Zwart JJ, Briet E, et al. The clinical benefit of blood transfusion: a hypothetical experiment based on a nationwide survey of severe maternal morbidity. Vox Sang. 2012 Apr;104:234-9. PMID: 23061811; X-4, X-5

2200. Hermida J, Salas B, Sloan NL. Sustainable scale-up of active management of the third stage of labor for prevention of postpartum hemorrhage in Ecuador. Int J Gynaecol Obstet. 2012 Jun;117:278-82. PMID: 22483573; X-2, X-4

2201. Hernandez B, Ortiz-Panozo E, Perez-Cuevas R. Facility-based care for delivery and management of complications related to pregnancy and childbirth in Mexico. Salud Publica Mex. 2012 Oct;54:496-505. PMID: 23011501; X-2, X-4

2202. Hernandez JS, Alexander JM, Sarode R, et al. Calculated blood loss in severe obstetric hemorrhage and its relation to body mass index. Am J Perinatol. 2012 Aug;29:557-60. PMID: 22495893; X-4

2203. Hernandez JS, Wendel GD, Jr., Sheffield JS. Trends in emergency peripartum hysterectomy at a single institution: 1988-2009. Am J Perinatol. 2012 May;30:365-70. PMID: 22918679; X-4

2204. Hill JS, Devenie G, Powell M. Point-of-care testing of coagulation and fibrinolytic status during postpartum haemorrhage: developing a thrombelastography(R)-guided transfusion algorithm. Anaesth Intensive Care. 2012 Nov;40:1007-15. PMID: 23194210; X-1, X-3

2205. Hill S, Yang A, Bero L. Priority medicines for maternal and child health: a global survey of national essential medicines lists. PLoS One. 2012;7:e38055. PMID: 22675435; X-1, X-3

2206. Holm C, Langhoff-Roos J, Petersen KB, et al. Severe postpartum haemorrhage and mode of delivery: a retrospective cohort study. BJOG. 2012 Apr;119:596-604. PMID: 22313728; X-2, X-4, X-5

2207. Holt R, Santiago-Munoz P, Nelson DB, et al. Sonographic findings in two cases of complicated pregnancy in women previously treated with endometrial ablation. J Clin Ultrasound. 2012 Nov-Dec;41:566-9. PMID: 22855420; X-1, X-4

2208. Honey M, Connor K, Veltman M, et al. Teaching with Second Life®: Hemorrhage Management as an Example of a Process for Developing Simulations for Multiuser Virtual Environments. Clinical Simulation in Nursing. 2012;8:e79-85. PMID: X-1, X-3, X-4

2209. Huang YY, Zhuang JY, Bao YR, et al. Use of early transverse annular compression sutures for complete placenta previa during cesarean delivery. Int J Gynaecol Obstet. 2012 Dec;119:221-3. PMID: 22925820; X-2, X-5

2210. Huissoud C, Cortet M, Dubernard G, et al. A stitch in time: Layers of circular sutures can staunch postpartum hemorrhage. Am J Obstet Gynecol. 2012 Feb;206:177 e1-2. PMID: 22284157; X-4, X-5

2211. Hundley VA, Avan BI, Sullivan CJ, et al. Should oral misoprostol be used to prevent postpartum haemorrhage in home-birth settings in low-resource countries? A systematic review of the evidence. BJOG. 2012 Feb;120:277-85; discussion 86-7. PMID: 23190345; X-1, X-2, X-4

2212. Iacobelli S, Robillard PY, Gouyon JB, et al. Obstetric and neonatal outcomes of adolescent primiparous singleton pregnancies: a cohort study in the South of Reunion Island, Indian Ocean. J Matern Fetal Neonatal Med. 2012 Dec;25:2591-6. PMID: 22889253; X-2, X-4

2213. Iau P, Ong V, Tan WT, et al. Use of activated recombinant factor VII in severe bleeding - Evidence for efficacy and safety in trauma, postpartum hemorrhage, cardiac surgery, and gastrointestinal bleeding. Switzerland: S. Karger AG (Allschwilerstrasse 10, P.O. Box, Basel CH-4009, Switzerland); 2012. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed10&NEWS=N&AN=2012224489. Accessed on (Iau, Ong, Tan, Koh, Hartman) Department of Surgery, National University Hospital, NUHS Tower, 1E Kent Ridge Road, Block, 119228 Singapore, Singapore 39.

2214. Ibrahim MI, Raafat TA, Ellaithy MI, et al. Risk of postpartum uterine synechiae following uterine compression suturing during postpartum haemorrhage. Aust N Z J Obstet Gynaecol. 2012 Feb;53:37-45. PMID: 23163583; X-2, X-5

2215. James AH, McLintock C, Lockhart E. Postpartum hemorrhage: when uterotonics and sutures fail. Am J Hematol. 2012 May;87 Suppl 1:S16-22. PMID: 22430921; X-1

2216. James AH, Nazzaro A-M. Bleeding disorders: Impact on reproduction. Contemporary OB/GYN. 2012;57:32-9. PMID: X-1, X-4

2217. Jillani K, Wagan F, Shaikh F, et al. B-Lynch suture for the management of postpartum Haemorrhage: An experience at Peoples Medical College Hospital Nawabshah. Medical Forum Monthly. 2012 January;23:23-5. PMID: X-2

2218. Johnston RG, Brown AE. Maternal trait personality and childbirth: the role of extraversion and neuroticism. Midwifery. 2012 Nov;29:1244-50. PMID: 23039942; X-3, X-4

2219. Kalburgi EB, Nagathan V, Kuntoji N. Emergency bilateral internal iliac artery ligation - A hospital based, cross sectional study. 2012;6:1223-5. PMID: X-2, X-5

2220. Kaluwa Kaingu C, Oduma JA, Kanui T. Preliminary investigation of contractile activity of Ricinus communis and Euclea divinorum extracts on isolated rabbit uterine strips. J Ethnopharmacol. 2012 Jul 13;142:496-502. PMID: 22652367; X-2, X-3, X-4

2221. Kapungu CT, Mensah-Homiah J, Akosah E, et al. A community-based continuum of care model for the prevention of postpartum hemorrhage in rural Ghana. Int J Gynaecol Obstet. 2012 Feb;120:156-9. PMID: 23199804; X-2, X-4

2222. Karateke A, Kucukbas M, Sozen H, et al. Fertility sparing surgery on placenta invasion anomalies and placenta previa. Iranian Journal of Reproductive Medicine. 2012 May;10:271-4. PMID: X-2, X-4, X-5

2223. Karlsson O, Sporrong T, Hillarp A, et al. Prospective longitudinal study of thromboelastography and standard hemostatic laboratory tests in healthy women during normal pregnancy. Anesth Analg. 2012 Oct;115:890-8. PMID: 22822194; X-3, X-4

2224. Kausar F, Morris JL, Fathalla M, et al. Nurses in low resource settings save mothers' lives with non-pneumatic anti-shock garment. MCN Am J Matern Child Nurs. 2012 Sep;37:308-16. PMID: 22895203; X-2, X-5

2225. Kawamura A, Kondoh E, Hamanishi J, et al. Cervical clamp with ring forceps to prevent prolapse of an intrauterine balloon in the management of postpartum hemorrhage. J Obstet Gynaecol Res. 2012 Mar;39:733-7. PMID: 23106866; X-1, X-2, X-5

2226. Kessous R, Danor D, Weintraub YA, et al. Risk factors for relaparotomy after cesarean section. J Matern Fetal Neonatal Med. 2012 Nov;25:2167-70. PMID: 22394271; X-4, X-5

2227. Khan SA, Boko E, Khookhar HA, et al. Acute gastric dilatation resulting in gastric emphysema following postpartum hemorrhage. Case Rep Surg. 2012;2012:230629. PMID: 22779022; X-1, X-4, X-5

2228. Khanal L, Dawson P, Silwal RC, et al. Exploration and innovation in addressing maternal, infant and neonatal mortality. J Nepal Health Res Counc. 2012 May;10:88-94. PMID: 23034368; X-1

2229. Khaskheli M, Baloch S, Baloch AS. Obstetrical trauma to the genital tract following vaginal delivery. J Coll Physicians Surg Pak. 2012 Feb;22:95-7. PMID: 22313645; X-2, X-4

2230. Khatun F, Rasheed S, Moran AC, et al. Causes of neonatal and maternal deaths in Dhaka slums: implications for service delivery. BMC Public Health. 2012;12:84. PMID: 22280444; X-2, X-4

2231. Kiesewetter B, Lehner R. Maternal outcome monitoring: induction of labor versus spontaneous onset of labor-a retrospective data analysis. Arch Gynecol Obstet. 2012 Jul;286:37-41. PMID: 22298204; X-4

2232. Kilpatrick SJ, Prentice P, Jones RL, et al. Reducing maternal deaths through state maternal mortality review. J Womens Health (Larchmt). 2012 Sep;21:905-9. PMID: 22621323; X-1

2233. King JR, Korst LM, Miller DA, et al. Increased composite maternal and neonatal morbidity associated with ultrasonographically suspected fetal macrosomia. J Matern Fetal Neonatal Med. 2012 Oct;25:1953-9. PMID: 22439605; X-4

2234. Kitson SJ, Macphail S, Bulmer J. Is pregnancy safe after uterine artery embolisation? BJOG. 2012 Apr;119:519-21. PMID: 22329577; X-1, X-4, X-5

2235. Knight KM, Thornburg LL, Pressman EK. Pregnancy outcomes in type 2 diabetic patients as compared with type 1 diabetic patients and nondiabetic controls. J Reprod Med. 2012 Sep-Oct;57:397-404. PMID: 23091986; X-4

2236. Knol HM, Schultinge L, Veeger NJ, et al. The risk of postpartum hemorrhage in women using high dose of low-molecular-weight heparins during pregnancy. Thromb Res. 2012 Sep;130:334-8. PMID: 22475315; X-4, X-5

2237. Kocaoglu N, Gunusen I, Karaman S, et al. Management of anesthesia for cesarean section in parturients with placenta previa with/without placenta accreta: a retrospective study. Ginekol Pol. 2012 Feb;83:99-103. PMID: 22568353; X-4

2238. Kontoyannis M, Katsetos C, Panagopoulos P. Sexual intercourse during pregnancy. Health Science Journal. 2012 2012 Jan-Mar;6:82-7. PMID: X-1

2239. Kubio C, Tierney G, Quaye T, et al. Blood transfusion practice in a rural hospital in Northern Ghana, Damongo, West Gonja District. Transfusion. 2012 Oct;52:2161-6. PMID: 22612858; X-2, X-3, X-4

2240. Kumar R. Misoprostol and the politics of abortion in Sri Lanka. Reprod Health Matters. 2012 Dec;20:166-74. PMID: 23245422; X-1

2241. Labardee RM, Mitch R. Improving Care during a Postpartum Hemorrhage: A Patient Safety Initiative. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2012;41:S82-3. PMID: X-1, X-4, X-5

2242. LaBossiere M. Operation Red Flag: Igniting a Passion and Commitment to Improving Patient Outcomes: An Interdisciplinary Approach to Prevention and Management of Postpartum Hemorrhage. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2012;41:S27-S. PMID: X-1, X-4, X-5

2243. Lalonde A. Prevention and treatment of postpartum hemorrhage in low-resource settings. Int J Gynaecol Obstet. 2012 May;117:108-18. PMID: 22502595; X-2

2244. Lankford DN, Akins S. Expecting the Unexpected: Proactive Planning for Massive Obstetric Hemorrhage. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2012;41:S186-S. PMID: X-1

2245. Lau P, Ong V, Tan WT, et al. Use of Activated Recombinant Factor VII in Severe Bleeding - Evidence for Efficacy and Safety in Trauma, Postpartum Hemorrhage, Cardiac Surgery, and Gastrointestinal Bleeding. Transfus Med Hemother. 2012 Apr;39:139-50. PMID: 22670132; X-1

2246. Le Ray C, Scherier S, Anselem O, et al. Association between oocyte donation and maternal and perinatal outcomes in women aged 43 years or older. Hum Reprod. 2012 Mar;27:896-901. PMID: 22252087; X-4

2247. Leon W, Durocher J, Barrera G, et al. Dose and side effects of sublingual misoprostol for treatment of postpartum hemorrhage: what difference do they make? BMC Pregnancy Childbirth. 2012;12:65. PMID: 22769055; X-2

2248. Levin I, Rapaport AS, Salzer L, et al. Risk factors for relaparotomy after cesarean delivery. Int J Gynaecol Obstet. 2012 Nov;119(2):163-5. PMID: 22921276; X-4

2249. Levin I, Rapaport AS, Satzer L, et al. Risk factors for relaparotomy after cesarean delivery. Int J Gynaecol Obstet. 2012 Nov;119:163-5. PMID: 22921276; X-4, X-5

2250. Li X, Wang B, Li Y, et al. The Th1/Th2/Th17/Treg paradigm induced by stachydrine hydrochloride reduces uterine bleeding in RU486-induced abortion mice. J Ethnopharmacol. 2012 Jan 9;145:241-53. PMID: 23178269; X-3, X-4

2251. Li X, Wang Z, Chen J, et al. Uterine artery embolization for the management of secondary postpartum haemorrhage associated with placenta accreta. Clin Radiol. 2012 Dec;67:e71-6. PMID: 22974568; X-2

2252. Liang J, Li X, Dai L, et al. The changes in maternal mortality in 1000 counties in mid-Western China by a government-initiated intervention. PLoS One. 2012;7:e37458. PMID: 22629398; X-2, X-4

2253. Liang-Kun M, Na N, Jian-Qiu Y, et al. Clinical analysis of placenta previa complicated with previous caesarean section. Chin Med Sci J. 2012 Sep;27:129-33. PMID: 23062633; X-2, X-4

2254. Liu AL, Yung WK, Yeung HN, et al. Factors influencing the mode of delivery and associated pregnancy outcomes for twins: a retrospective cohort study in a public hospital. Hong Kong Med J. 2012 Apr;18:99-107. PMID: 22477732; X-4, X-5

2255. Lotufo FA, Parpinelli MA, Haddad SM, et al. Applying the new concept of maternal near-miss in an intensive care unit. Clinics (Sao Paulo). 2012;67:225-30. PMID: 22473402; X-2, X-4, X-5

2256. Low LK, Bailey JM, Sacks E, et al. Reduced postpartum hemorrhage after implementation of active management of the third stage of labor in rural Honduras. Int J Gynaecol Obstet. 2012 Dec;119:217-20. PMID: 22980430; X-2, X-4

2257. Lusis EA, Scheithauer BW, Yachnis AT, et al. Meningiomas in pregnancy: a clinicopathologic study of 17 cases. Neurosurgery. 2012 Nov;71:951-61. PMID: 22843130; X-3, X-4

2258. Lyndon A, Lee HC, Gilbert WM, et al. Maternal morbidity during childbirth hospitalization in California. J Matern Fetal Neonatal Med. 2012 Dec;25:2529-35. PMID: 22779781; X-4

2259. Ma J, Shao H, Lu X, et al. Safety and efficacy of airbag midwifery in promoting normal vaginal delivery and reducing caesarean section. Iranian Journal of Reproductive Medicine. 2012 November/December;10:595-600. PMID: X-2, X-3, X-4

2260. Magon N, Babu K. Recombinant Factor VIIa in Post-partum Hemorrhage: A New Weapon in Obstetrician's Armamentarium. N Am J Med Sci. 2012 Apr;4:157-62. PMID: 22536557; X-2, X-5

2261. Makino S, Tanaka T, Yorifuji T, et al. Double vertical compression sutures: A novel conservative approach to managing post-partum haemorrhage due to placenta praevia and atonic bleeding. Aust N Z J Obstet Gynaecol. 2012 Jun;52:290-2. PMID: 22413844; X-5

2262. Malhotra V, Nanda S, Chauhan MB, et al. Inner myometrial laceration: A newer entity causing postpartum hemorrhage. Journal of Gynecologic Surgery. 2012 01 Dec;28:439-40. PMID: X-2, X-4, X-5

2263. Mandal D, Dattaray C, Sarkar R, et al. Is pregnancy safe with extrahepatic portal vein obstruction? An analysis. Singapore Med J. 2012 Oct;53:676-80. PMID: 23112020; X-2, X-4

2264. Mangla D, Goel JK, Goel R. Prophylactic intramyometrial oxytocin before placenta delivery during cesarean section prevents postpartum hemorrhage: A prospective randomized study of 150 women. Journal of SAFOG. 2012;4:93-6. PMID: X-2, X-4

2265. Manrique Munoz S, Munar Bauza F, Frances Gonzalez S, et al. [Update on the use of uterotonic agents]. Rev Esp Anestesiol Reanim. 2012 Feb;59:91-7. PMID: 22480555; X-1, X-4

2266. Mansueto G, Contro A, Carbognin G, et al. Endovascular treatment in postpartum haemorrhage. Radiol Med. 2012 Mar;118:215-28. PMID: 22580802; X-5

2267. Manzoor T, Baig MI, Ambreen A, et al. Morbidity associated with obesity in pregnancy. Medical Forum Monthly. 2012 July;23:23-6. PMID: X-2, X-4

2268. Matsubara S. Available hemostatic measures for postpartum hemorrhage in rural settings. Rural & Remote Health. 2012;12:1-4. PMID: X-1, X-4, X-5

2269. Matsunaga S, Seki H, Ono Y, et al. A retrospective analysis of transfusion management for obstetric hemorrhage in a Japanese obstetric center. ISRN Obstet Gynecol. 2012;2012:854064. PMID: 22462007; X-4, X-5

2270. Matthews LE, Rosenblatt L. Severe preeclampsia causes massive stroke. Healthcare Risk Management. 2012:2-4. PMID: X-1

2271. Mehrabadi A, Hutcheon JA, Lee L, et al. Trends in postpartum hemorrhage from 2000 to 2009: a population-based study. BMC Pregnancy Childbirth. 2012;12:108. PMID: 23057683; X-4

2272. Melhado L. Traditional Birth Attendants Can Be Trained To Manage Hemorrhage. International Perspectives on Sexual & Reproductive Health. 2012;38:224-5. PMID: X-1, X-4, X-5

2273. Meyer NP, Ward GH, Chandraharan E. Conservative approach to the management of morbidly adherent placentae. Ceylon Med J. 2012 Mar;57:36-9. PMID: 22453709; X-2, X-5

2274. Mir AM, Wajid A, Gull S. Helping rural women in Pakistan to prevent postpartum hemorrhage: a quasi experimental study. BMC Pregnancy Childbirth. 2012;12:120. PMID: 23110458; X-2, X-4

2275. Mirzayi F, Akbarzadeh M, Mirzayi M. Evaluation of maternal, fetal and neonatal complications according to body mass index in women referred to Shiraz health choice centers, 2009. Iranian Journal of Obstetrics, Gynecology and Infertility. 2012;14PMID: X-2, X-4

2276. Moazzeni MS. Maternal mortality in the Islamic Republic of Iran: on track and in transition. Matern Child Health J. 2012 May;17:577-80. PMID: 22618490; X-1, X-2

2277. Monnin-Bares V, Vincens C, Micheau A, et al. Postpartum hemorrhage: Role of arterial embolization. Sang Thrombose Vaisseaux. 2012;24:125-31. PMID: X-1

2278. Mori R, Nardin JM, Yamamoto N, et al. Umbilical vein injection for the routine management of third stage of labour. Cochrane Database of Systematic Reviews. 2012PMID: X-1

2279. Mostfa AA, Zaitoun MM. Safety pin suture for management of atonic postpartum hemorrhage. ISRN Obstet Gynecol. 2012;2012:405795. PMID: 22548184; X-2, X-5

2280. Mostfa AAM, Zaitoun MM. Safety pin suture for management of atonic postpartum hemorrhage. United States: Hindawi Publishing Corporation (410 Park Avenue, 15th Floor, 287 pmb, New York NY 10022, United States); 2012. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed10&NEWS=N&AN=2012280137. Accessed on (Mostfa, Zaitoun) Department of Obstetrics and Gynecology, Faculty of Medicine, Zagazig Universiy, P.O. Box 44519, Sharqia, Egypt.

2281. Mulic-Lutvica A. Postpartum Ultrasound. Donald School Journal of Ultrasound in Obstetrics and Gynecology. 2012 January-March;6:76-92. PMID: X-1, X-4

2282. Munireddy RA, Annabelle B. Cervical stenosis following a laser cone biopsy - An uncommon presentation in labour. 2012;6:1306-7. PMID: X-3, X-4

2283. Mustafa R, Hashmi H. Obstetrical referrals by traditional birth attendants. J Ayub Med Coll Abbottabad. 2012 Jul-Dec;24:190-2. PMID: 24669651; X-2, X-4

2284. Navid S, Arshad S, Qurat ul A, et al. Impact of leiomyoma in pregnancy. J Ayub Med Coll Abbottabad. 2012 Jan-Mar;24:90-2. PMID: 23855105; X-2, X-4

2285. Nielsen BR, Schwarz P, Friis S, et al. Elevated liver enzymes, anaemia and osteopaenia in a young woman. BMJ Case Reports. 2012PMID: X-1

2286. Nishino K, Hayashi K, Chaya J, et al. Effective salvage of acute massive uterine bleeding using intrauterine balloon tamponade in a uterine adenomyosis patient on dienogest. J Obstet Gynaecol Res. 2012 Mar;39:738-41. PMID: 23003209; X-1, X-2, X-4, X-5

2287. Nove A, Berrington A, Matthews Z. Comparing the odds of postpartum haemorrhage in planned home birth against planned hospital birth: results of an observational study of over 500,000 maternities in the UK. BMC Pregnancy Childbirth. 2012;12:130. PMID: 23157856; X-4

2288. Obiechina NJ, Eleje GU, Ezebialu IU, et al. Emergency peripartum hysterectomy in Nnewi, Nigeria: a 10-year review. Niger J Clin Pract. 2012 Apr-Jun;15:168-71. PMID: 22718166; X-2

2289. Okafor UV, Efetie ER, Amucheazi A. Risk factors for maternal deaths in unplanned obstetric admissions to the intensive care unit-lessons for sub-Saharan Africa. Afr J Reprod Health. 2012 Dec;15:51-4. PMID: 22571105; X-2, X-4

2290. Okunola OO, Ayodele OE, Adekanle AD. Acute kidney injury requiring hemodialysis in the tropics. Saudi J Kidney Dis Transpl. 2012 Nov;23:1315-9. PMID: 23168876; X-1, X-2, X-4

2291. Oladapo OT. Misoprostol for preventing and treating postpartum hemorrhage in the community: a closer look at the evidence. Int J Gynaecol Obstet. 2012 Nov;119:105-10. PMID: 22968139; X-1

2292. Oladapo OT, Fawole B, Blum J, et al. Advance misoprostol distribution for preventing and treating postpartum haemorrhage. Cochrane Database Syst Rev. 2012;2:CD009336. PMID: 22336866; X-1

2293. Oladapo OT, Okusanya BO, Abalos E. Intramuscular versus intravenous prophylactic oxytocin for the third stage of labour. Cochrane Database Syst Rev. 2012;2:CD009332. PMID: 22336865; X-1

2294. Omole-Ohonsi A, Olayinka HT. Emergency peripartum hysterectomy in a developing country. J Obstet Gynaecol Can. 2012 Oct;34:954-60. PMID: 23067951; X-2, X-4

2295. Onwuemene O, Green D, Keith L. Postpartum hemorrhage management in 2012: predicting the future. Int J Gynaecol Obstet. 2012 Oct;119:3-5. PMID: 22867727; X-1

2296. Oprea TI, Bauman JE, Bologa CG, et al. Drug repurposing from an academic perspective. Drug Discovery Today: Therapeutic Strategies. 2012 Winter;8:61-9. PMID: X-1

2297. Orsini J, Butala A, Diaz L, et al. Clinical Profile of Obstetric Patients Admitted to the Medical-Surgical Intensive Care Unit (MSICU) of an Inner-City Hospital in New York. J Clin Med Res. 2012 Oct;4:314-7. PMID: 23024733; X-4

2298. Pacheco LD, Saade G, Tyner J, et al. Obstetric hemorrhage New insights. Contemporary OB/GYN. 2012;57:30-8. PMID: X-1

2299. Pacheco LD, Saade G, Tyner J, et al. Obstetric hemorrhage New insights. Contemporary OB/GYN. 2012;57(6):30-8. PMID: 2011581650. Language: English. Entry Date: 20120622. Revision Date: 20140704. Publication Type: journal article; X-1

2300. Pardo MI, Trujillo MV, Campos S, et al. Successful uterine artery embolization for intractable postpartum hemorrhage using a novel embolic agent: ONYX. Journal of Gynecologic Surgery. 2012 01 Aug;28:309-11. PMID: X-5

2301. Pasquier P, Gayat E, Rackelboom T, et al. An observational study of the fresh frozen plasma: red blood cell ratio in postpartum hemorrhage. Anesth Analg. 2012 Jan;116:155-61. PMID: 23223094; X-4, X-5

2302. Pasupathy D, McCowan LM, Poston L, et al. Perinatal outcomes in large infants using customised birthweight centiles and conventional measures of high birthweight. Paediatr Perinat Epidemiol. 2012 Nov;26:543-52. PMID: 23061690; X-4

2303. Pellerin O, Bats AS, Di Primio M, et al. Postpartum hemorrhage treated with gelfoam slurry embolization using the superselective technique: immediate results and 1-month MRI follow-up. Cardiovasc Intervent Radiol. 2012 Feb;36:98-104. PMID: 22327604; X-5

2304. Penotti M, Vercellini P, Bolis G, et al. Compressive suture of the lower uterine segment for the treatment of postpartum hemorrhage due to complete placenta previa: a preliminary study. Gynecol Obstet Invest. 2012;73:314-20. PMID: 22440887; X-5

2305. Petrie J, Lockie C, Paolineli A, et al. Undiagnosed phaeochromocytoma masquerading as eclampsia. BMJ Case Reports. 2012PMID: X-1

2306. Poblacion Garcia G, Solera Ruiz I, Gredilla E, et al. [Analysis of the causes for increases in the length of stay in the Recovery Unit of La Paz Maternity Hospital in 2008]. Rev Esp Anestesiol Reanim. 2012 Feb;59:77-82. PMID: 22480553; X-2, X-4

2307. Potts M, Henderson CE. Global warming and reproductive health. Int J Gynaecol Obstet. 2012 Oct;119 Suppl 1:S64-7. PMID: 22883918; X-1

2308. Prata N, Ejembi C, Fraser A, et al. Community mobilization to reduce postpartum hemorrhage in home births in northern Nigeria. Soc Sci Med. 2012 Apr;74:1288-96. PMID: 22377106; X-2, X-4

2309. Prata N, Passano P, Bell S, et al. New hope: community-based misoprostol use to prevent postpartum haemorrhage. Health Policy Plan. 2012 Jul;28:339-46. PMID: 22879523; X-1

2310. Prata N, Quaiyum MA, Passano P, et al. Training traditional birth attendants to use misoprostol and an absorbent delivery mat in home births. Soc Sci Med. 2012 Dec;75:2021-7. PMID: 22921713; X-2

2311. Puri M, Taneja P, Gami N, et al. Effects of different doses of intraumbilical oxytocin on the third stage of labor. Int J Gynaecol Obstet. 2012 Sep;118:210-2. PMID: 22727052; X-4

2312. Pursche T, Diedrich K, Banz-Jansen C. Blood loss after caesarean section: depending on the management of oxytocin application? Arch Gynecol Obstet. 2012 Sep;286:633-6. PMID: 22569708; X-4

2313. Quantin C, Benzenine E, Ferdynus C, et al. Advantages and limitations of using national administrative data on obstetric blood transfusions to estimate the frequency of obstetric hemorrhages. J Public Health (Oxf). 2012 Mar;35:147-56. PMID: 22829662; X-4

2314. Quinn KH, Mackey A, Cohen J, et al. A curriculum to teach and evaluate resident skills in the management of postpartum hemorrhage. J Perinat Med. 2012 Aug 18PMID: 23095195; X-1, X-2, X-5

2315. Radha P, Tagore S, Rahman MF, et al. Maternal and perinatal morbidity after Caesarean delivery at full cervical dilatation. Singapore Med J. 2012 Oct;53:655-8. PMID: 23112016; X-4

2316. Raghavan S, Abbas D, Winikoff B. Misoprostol for prevention and treatment of postpartum hemorrhage: what do we know? What is next? Int J Gynaecol Obstet. 2012 Oct;119 Suppl 1:S35-8. PMID: 22883912; X-1

2317. Rath W, Hackethal A, Bohlmann MK. Second-line treatment of postpartum haemorrhage (PPH). Arch Gynecol Obstet. 2012 Sep;286:549-61. PMID: 22552376; X-1

2318. Rathore AM, Gupta S, Manaktala U, et al. Uterine tamponade using condom catheter balloon in the management of non-traumatic postpartum hemorrhage. J Obstet Gynaecol Res. 2012 Sep;38:1162-7. PMID: 22540529; X-2, X-5

2319. Rattray DD, O'Connell CM, Baskett TF. Acute disseminated intravascular coagulation in obstetrics: a tertiary centre population review (1980 to 2009). J Obstet Gynaecol Can. 2012 Apr;34:341-7. PMID: 22472333; X-5

2320. Riiskjaer M, Petersen OB, Uldbjerg N, et al. Feasibility and clinical effects of laparoscopic abdominal cerclage: an observational study. Acta Obstet Gynecol Scand. 2012 Nov;91:1314-8. PMID: 22974182; X-4, X-5

2321. Rios FG, Risso-Vazquez A, Alvarez J, et al. Clinical characteristics and outcomes of obstetric patients admitted to the intensive care unit. Int J Gynaecol Obstet. 2012 Nov;119:136-40. PMID: 22902192; X-2, X-4, X-5

2322. Roach MK, Abramovici A, Tita AT. Dose and duration of oxytocin to prevent postpartum hemorrhage: a review. Am J Perinatol. 2012 Aug;30:523-8. PMID: 23208766; X-1, X-4, X-5

2323. Robalo R, Pedroso C, Agapito A, et al. Acute Sheehan's syndrome presenting as central diabetes insipidus. BMJ Case Rep. 2012;2012PMID: 23131607; X-1, X-4

2324. Robertson JE, Silversides CK, Mah ML, et al. A contemporary approach to the obstetric management of women with heart disease. J Obstet Gynaecol Can. 2012 Sep;34:812-9. PMID: 22971448; X-4

2325. Robinson AJ, Muller PR, Allan R, et al. Precise mid-trimester placenta localisation: does it predict adverse outcomes? Aust N Z J Obstet Gynaecol. 2012 Apr;52:156-60. PMID: 22369139; X-4

2326. Rodgers C. Low-tech first aid for obstetric hemorrhage. Midwifery Today Int Midwife. 2012 Autumn:56-7. PMID: 23061157; X-1, X-4, X-5

2327. Rodgers C. Life Wraps: Low-tech First Aid for Obstetric Hemorrhage. Midwifery Today. 2012:56-7. PMID: X-1, X-4, X-5

2328. Rogers C, Harman J, Selo-Ojeme D. The management of the third stage of labour--A national survey of current practice. British Journal of Midwifery. 2012;20:850-7. PMID: X-3, X-4

2329. Sagot P, Mourtialon P, Benzenine E, et al. Accuracy of blood transfusion in postpartum hemorrhage to assess maternal morbidity. Eur J Obstet Gynecol Reprod Biol. 2012 Jun;162:160-4. PMID: 22429477; X-4, X-5

2330. Saleh Gargari S, Fallahian M, Haghighi L, et al. Maternal and neonatal complications of substance abuse in Iranian pregnant women. Acta Med Iran. 2012;50:411-6. PMID: 22837120; X-2, X-3, X-4

2331. Sarwar I, Habib S, Bibi A, et al. Clinical audit of foetomaternal outcome in pregnancies with fibroid uterus. J Ayub Med Coll Abbottabad. 2012 Jan-Mar;24:79-82. PMID: 23855102; X-2, X-3, X-4

2332. Scholes J, Endacott R, Biro M, et al. Clinical decision-making: midwifery students' recognition of, and response to, post partum haemorrhage in the simulation environment. BMC Pregnancy Childbirth. 2012;12:19. PMID: 22443712; X-4, X-5

2333. Sengupta Dhar R, Misra R. Postpartum Uterine Wound Dehiscence Leading to Secondary PPH: Unusual Sequelae. Case Rep Obstet Gynecol. 2012;2012:154685. PMID: 22720176; X-2, X-5

2334. Senturk MB, Cakmak Y, Yildiz G, et al. Tranexamic acid for cesarean section: a double-blind, placebo-controlled, randomized clinical trial. Arch Gynecol Obstet. 2012 Apr;287:641-5. PMID: 23143410; X-2, X-4, X-5

2335. Shafaei FS, Kazemzadeh R, Heshmat R, et al. Effect of acupressure at Sanyinjiao (SP6)-hugo (LI4) points on delivery length in nulliparous women: A randomized controlled trial. Iranian Journal of Obstetrics, Gynecology and Infertility. 2012 15 Nov;15:21-8. PMID: X-1, X-2, X-4

2336. Shahbazi S, Moghaddam-Banaem L, Ekhtesari F, et al. Impact of inherited bleeding disorders on pregnancy and postpartum hemorrhage. Blood Coagul Fibrinolysis. 2012 Oct;23:603-7. PMID: 22821002; X-4

2337. Sheng C, Yu YH, Zhao KS, et al. Acute lung inflammatory response and injury after hemorrhagic shock are more severe in postpartum rabbits. Crit Care Med. 2012 May;40:1570-7. PMID: 22430240; X-1, X-3, X-4

2338. Sheriff FG, Howlett WP, Kilonzo KG. Post-partum pituitary insufficiency and livedo reticularis presenting a diagnostic challenge in a resource limited setting in Tanzania: A case report, clinical discussion and brief review of existing literature. BMC Endocrine Disorders. 2012 14 May;12PMID: X-1, X-2

2339. Shoaib M, Afridi U, Huma ZE, et al. Maternal and fetal complications associated with full term breech delivery in sandeman provincial hospital, Quetta. 2012;6:620-2. PMID: X-2, X-4

2340. Shukla M, Qureshi S. Post-placental intrauterine device insertion--a five year experience at a tertiary care centre in north India. Indian J Med Res. 2012 Sep;136:432-5. PMID: 23041736; X-2, X-3, X-4

2341. Shukla M, Qureshi S, Chandrawati. Post-placental intrauterine device insertion - A five year experience at a tertiary care centre in north India. Indian Journal of Medical Research, Supplement. 2012;136:432-5. PMID: X-2, X-3, X-4

2342. Sierra A, Burrel M, Sebastia C, et al. Utility of multidetector CT in severe postpartum hemorrhage. Radiographics. 2012 Sep-Oct;32:1463-81. PMID: 22977030; X-1, X-4

2343. Sikirica V, Broder MS, Chang E, et al. Clinical and economic impact of adhesiolysis during repeat cesarean delivery. Acta Obstet Gynecol Scand. 2012 Jun;91:719-25. PMID: 22404156; X-3, X-4

2344. Simsek Y, Celen S, Danisman N, et al. Removal of uterine fibroids during cesarean section: a difficult therapeutic decision. Clin Exp Obstet Gynecol. 2012;39:76-8. PMID: 22675961; X-3, X-4

2345. Snowdon C, Elbourne D, Forsey M, et al. Information-hungry and disempowered: a qualitative study of women and their partners' experiences of severe postpartum haemorrhage. Midwifery. 2012 Dec;28:791-9. PMID: 22365835; X-4, X-5

2346. Solomon C, Collis RE, Collins PW. Haemostatic monitoring during postpartum haemorrhage and implications for management. Br J Anaesth. 2012 Dec;109:851-63. PMID: 23075633; X-1

2347. Somalwar SA, Joshi SA, Bhalerao AV, et al. Total uterine necrosis: A complication of b-lynch suture. Journal of SAFOG. 2012;4:61-3. PMID: X-1, X-2

2348. Sovik E, Stokkeland P, Storm BS, et al. The use of aortic occlusion balloon catheter without fluoroscopy for life-threatening post-partum haemorrhage. Acta Anaesthesiol Scand. 2012 Mar;56:388-93. PMID: 22260088; X-4, X-5

2349. Soyer P, Sirol M, Fargeaudou Y, et al. Placental vascularity and resorption delay after conservative management of invasive placenta: MR imaging evaluation. Eur Radiol. 2012 Jan;23:262-71. PMID: 22760345; X-4

2350. Spatling L. "Quilting" sutures to prevent hysterectomy in patients with postpartum hemorrhage. Int J Gynaecol Obstet. 2012 Jun;117:291. PMID: 22424662; X-5

2351. Stanton C, Koski A, Cofie P, et al. Uterotonic drug quality: an assessment of the potency of injectable uterotonic drugs purchased by simulated clients in three districts in Ghana. BMJ Open. 2012;2PMID: 22556159; X-2, X-3, X-4

2352. Stanton CK, Newton S, Mullany LC, et al. Impact on postpartum hemorrhage of prophylactic administration of oxytocin 10 IU via Uniject by peripheral health care providers at home births: design of a community-based cluster-randomized trial. BMC Pregnancy Childbirth. 2012;12:42. PMID: 22676921; X-2, X-3, X-4

2353. Stefanovic V, Paavonen J, Loukovaara M, et al. Intravenous sulprostone infusion in the treatment of retained placenta. Acta Obstet Gynecol Scand. 2012 Apr;92:426-32. PMID: 22862433; X-4, X-5

2354. Stock SJ, Ferguson E, Duffy A, et al. Outcomes of elective induction of labour compared with expectant management: population based study. BMJ. 2012;344:e2838. PMID: 22577197; X-4

2355. Stolk KH, Zwart JJ, Schutte J, et al. Severe maternal morbidity and mortality from amniotic fluid embolism in the Netherlands. Acta Obstet Gynecol Scand. 2012 Aug;91:991-5. PMID: 22568783; X-4

2356. Sutton L. Update on postpartum haemorrgahe. Midwives. 2012;15:52-3. PMID: X-1

2357. Sutton L. Update on postpartum haemorrhage. Midwives. 2012;15:52-3. PMID: 24868694; X-1, X-4, X-5

2358. Suzuki S, Hiraizumi Y, Miyake H. Risk factors for postpartum hemorrhage requiring transfusion in cesarean deliveries for Japanese twins: comparison with those for singletons. Arch Gynecol Obstet. 2012 Dec;286:1363-7. PMID: 22810621; X-4

2359. Taebi M, Kalahroudi MA, Sadat Z, et al. The duration of the third stage of labor and related factors. Iran J Nurs Midwifery Res. 2012 Feb;17(2 Suppl 1):S76-9. PMID: 23833605; X-2, X-4

2360. Talungchit P, Liabsuetrakul T. Clinical audit of postpartum hemorrhage at district-level and referral-level hospitals in southern Thailand. J Med Assoc Thai. 2012 Oct;95:1244-51. PMID: 23193735; X-2, X-4

2361. Tammello DA. Pregnancy after tubes tied; Fishie clip found floating around (Medical Law Case on Point. Medical Law's Regan Report. 2012;45:1p. PMID: X-1

2362. Tathem K, Harris LJ, O'Rourke P, et al. Dinoprostone vaginal pessary for induction of labour: safety of use for up to 24 h. Aust N Z J Obstet Gynaecol. 2012 Dec;52:582-7. PMID: 23004009; X-4

2363. Tavasoli F, Saghafi N, Ghomian N, et al. Comparison of effects of labetalol and hydralazine in treatment of hypertension in patients with severe preeclampsia. Iranian Journal of Obstetrics, Gynecology and Infertility. 2012 September;15:1-7. PMID: X-1, X-2, X-4

2364. Thabet A, Kalva SP, Liu B, et al. Interventional radiology in pregnancy complications: indications, technique, and methods for minimizing radiation exposure. Radiographics. 2012 Jan-Feb;32:255-74. PMID: 22236906; X-1

2365. Thies-Lagergren L, Kvist LJ, Christensson K, et al. Striving for scientific stringency: a re-analysis of a randomised controlled trial considering first-time mothers' obstetric outcomes in relation to birth position. BMC Pregnancy Childbirth. 2012;12:135. PMID: 23173988; X-4

2366. Tindell K, Garfinkel R, Abu-Haydar E, et al. Uterine balloon tamponade for the treatment of postpartum haemorrhage in resource-poor settings: a systematic review. BJOG. 2012 Jan;120:5-14. PMID: 22882240; X-1

2367. Tita AT, Szychowski JM, Rouse DJ, et al. Higher-dose oxytocin and hemorrhage after vaginal delivery: a randomized controlled trial. Obstet Gynecol. 2012 Feb;119:293-300. PMID: 22227638; X-4

2368. Toledo P, Eosakul ST, Goetz K, et al. Decay in blood loss estimation skills after web-based didactic training. Simul Healthc. 2012 Feb;7:18-21. PMID: 22228284; X-1, X-3, X-4

2369. Tuncalp O, Hofmeyr GJ, Gulmezoglu AM. Prostaglandins for preventing postpartum haemorrhage. Cochrane Database Syst Rev. 2012;8:CD000494. PMID: 22895917; X-1, X-4

2370. Urundady V, Shetty V. Uterine artery embolisation for management of refractory postpartal haemmorhage. Journal of Clinical and Diagnostic Research. 2012 15 Dec;6:1753-5. PMID: X-2, X-5

2371. Uzoechina NS, Jr., Abiola AO, Akodu BA, et al. Pattern and outcome of cases seen at the Adult Accident and Emergency Department of the Lagos University Teaching Hospital, Idi-Araba, Lagos. Nig Q J Hosp Med. 2012 Jul-Sep;22:209-15. PMID: 24564099; X-2, X-3, X-4

2372. Vahdat M, Mehdizadeh A, Sariri E, et al. Placenta percreta invading broad ligament and parametrium in a woman with two previous cesarean sections: a case report. Case Rep Obstet Gynecol. 2012;2012:251381. PMID: 23097727; X-2, X-4, X-5

2373. van Stralen G, Veenhof M, Holleboom C, et al. No reduction of manual removal after misoprostol for retained placenta: a double-blind, randomized trial. Acta Obstet Gynecol Scand. 2012 Apr;92:398-403. PMID: 23231499; X-3, X-4

2374. von Kohler C. Implementation of an Obstetric Hemorrhage Protocol Outside the Obstetric Department. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2012;41:S182-S. PMID: X-1, X-4, X-5

2375. Vrachnis N, Iavazzo C, Salakos N, et al. Uterine tamponade balloon for the management of massive hemorrhage during cesarean section due to placenta previa/increta. Clin Exp Obstet Gynecol. 2012;39:255-7. PMID: 22905480; X-4, X-5

2376. Wagner V, Osepchook C, Harney E, et al. Remote Midwifery in Nunavik, Québec, Canada: Outcomes of Perinatal Care for the Inuulitsivik Health Centre, 2000-2007. Birth: Issues in Perinatal Care. 2012;39:230-7. PMID: X-4

2377. Weissmann-Brenner A, Simchen MJ, Zilberberg E, et al. Maternal and neonatal outcomes of large for gestational age pregnancies. Acta Obstet Gynecol Scand. 2012 Jul;91:844-9. PMID: 22471810; X-4

2378. Wikkelsoe AJ, Afshari A, Stensballe J, et al. The FIB-PPH trial: fibrinogen concentrate as initial treatment for postpartum haemorrhage: study protocol for a randomised controlled trial. Trials. 2012;13:110. PMID: 22805300; X-1, X-2, X-4, X-5

2379. Winikoff B, Durocher J. Postpartum bleeding is reduced with sublingual powdered misoprostol when compared with oxytocin injection, but a new formulation of misoprostol is unlikely to revolutionise postpartum haemorrhage care. Evid Based Med. 2012 Aug;18:143-4. PMID: 23125238; X-1, X-2, X-4, X-5

2380. Witiw CD, Abou-Hamden A, Kulkarni AV, et al. Cerebral cavernous malformations and pregnancy: hemorrhage risk and influence on obstetrical management. Neurosurgery. 2012 Sep;71:626-30; discussion 31. PMID: 22710379; X-3, X-4

2381. Xu J, Gao W, Ju Y. Tranexamic acid for the prevention of postpartum hemorrhage after cesarean section: a double-blind randomization trial. Arch Gynecol Obstet. 2012 Mar;287:463-8. PMID: 23064441; X-4

2382. Yaeko K, Hiromi ETO, Mariko I, et al. Japan Academy of Midwifery: 2012 evidence-based guidelines for midwifery care during childbirth. Journal of Japan Academy of Midwifery. 2012;26:275-83. PMID: X-1

2383. Yang HJ, Shen RG, Li H, et al. [Study on maternal deaths in Beijing, from 1996 to 2010]. Zhonghua Liu Xing Bing Xue Za Zhi. 2012 Nov;32:1131-4. PMID: 22336550; X-2, X-4

2384. Yassaee F, Eskandari R, Amiri Z. Pregnancy outcomes in women with idiopathic thrombocytopenic purpura. Iranian Journal of Reproductive Medicine. 2012 September;10:489-92. PMID: X-1, X-2, X-4

2385. Yazdani S, Yosofniyapasha Y, Nasab BH, et al. Effect of maternal body mass index on pregnancy outcome and newborn weight. BMC Res Notes. 2012;5:34. PMID: 22251801; X-4

2386. Yi SW, Lee JH. Uterine pseudoaneurysm leakage may cause delayed postpartum haemorrhage: multidetector CT with angiography and transcatheter uterine arterial embolisation. J Obstet Gynaecol. 2012 Aug;32:552-5. PMID: 22779960; X-2, X-5

2387. You F, Huo K, Wang R, et al. Maternal mortality in Henan Province, China: changes between 1996 and 2009. PLoS One. 2012;7:e47153. PMID: 23071740; X-2, X-4

2388. . 2013PMID: 23844453; X-1, X-2, X-5

2389. . 2013PMID: 23586122; X-1

2390. . Hemorrhage. Midwifery Today. 2013:7-. PMID: X-1, X-4

2391. . Over $4.6 million award for failure to maintain adequate blood supply resulting in death of mother. Healthcare Risk Management. 2013;35:3-4. PMID: X-1, X-4

2392. . Postpartum hemorrhage in the developed world: wither misoprostol? Essentially MIDIRS. 2013;4:10-. PMID: X-1, X-4, X-5

2393. . Should we be using misoprostol to prevent postpartum haemorrhage?... PIC. Practising Midwife. 2013;16:9-. PMID: X-1, X-4, X-5

2394. . Postpartum hemorrhage shows higher incidence in antidepressant users. Brown University Psychopharmacology Update. 2013;24:4-. PMID: X-1, X-4

2395. . Study finds that postpartum haemorrhage during a first pregnancy does not affect future pregnancies. MIDIRS Midwifery Digest. 2013;23(2):265-. PMID: 2012452581. Language: English. Entry Date: 20140214. Revision Date: 20140926. Publication Type: journal article; X-1

2396. Abasiattai AM, Umoiyoho AJ, Utuk NM, et al. Emergency peripartum hysterectomy in a tertiary hospital in southern Nigeria. Pan Afr Med J. 2013;15:60. PMID: 24147186; X-2

2397. Abbasi N, Balayla J, Laporta DP, et al. Trends, risk factors and mortality among women with venous thromboembolism during labour and delivery: a population-based study of 8 million births. Arch Gynecol Obstet. 2013 Feb;289:275-84. PMID: 23864199; X-4

2398. Adu-Bonsaffoh K, Oppong SA, Binlinla G, et al. Maternal deaths attributable to hypertensive disorders in a tertiary hospital in Ghana. Int J Gynaecol Obstet. 2013 Nov;123(2):110-3. PMID: 23969337; X-2, X-4

2399. Adu-Bonsaffoh K, Samuel OA, Binlinla G. Maternal deaths attributable to hypertensive disorders in a tertiary hospital in Ghana. Int J Gynaecol Obstet. 2013 Nov;123:110-3. PMID: 23969337; X-2, X-4

2400. Aengst J. Silences and Moral Narratives: Infanticide as Reproductive Disruption. Med Anthropol. 2013 Dec 9PMID: 24321033; X-1

2401. Afshari P, Medforth J, Aarabi M, et al. Management of third stage labour following vaginal birth in Iran: A survey of current policies. Midwifery. 2013 Jan;30:65-71. PMID: 23522664; X-2, X-4

2402. Aj J. Overview of postpartum hemorrhage. UpToDate. 2013PMID: X-1, X-4, X-5

2403. Ajayi OA, Sant M, Ikhena S, et al. Uterine rupture complicating sequential curettage and Bakri balloon tamponade to control secondary PPH. BMJ Case Reports. 2013PMID: X-4

2404. Al-Azemi N, Diejomaoh MF, Angelaki E, et al. Clinical presentation and management of diabetes mellitus in pregnancy. International Journal of Women's Health. 2013;6PMID: X-2, X-3, X-4

2405. Al-Farsi SH, Al-Riyami NM, Al-Khabori MK, et al. Maternal complications and the association with baseline variables in pregnant women with sickle cell disease. Hemoglobin. 2013;37:219-26. PMID: 23590330; X-4

2406. Alfirevic Z, Milan SJ, Livio S. Caesarean section versus vaginal delivery for preterm birth in singletons. Cochrane Database Syst Rev. 2013;9:CD000078. PMID: 24030708; X-1

2407. Ali MK, Badee AY, Abbas AM, et al. A novel technique for modified B-Lynch suture for the control of atonic postpartum haemorrhage. Aust N Z J Obstet Gynaecol. 2013 Feb;53:94-7. PMID: 23405999; X-2, X-4, X-5

2408. Ali MK, Badee AYA, Abbas AM, et al. A novel technique for modified B- Lynch suture for the control of atonic postpartum haemorrhage. Australian & New Zealand Journal of Obstetrics & Gynaecology. 2013;53(1):94-7. PMID: 2011934827. Language: English. Entry Date: 20130301. Revision Date: 20140214. Publication Type: journal article; X-2, X-5

2409. Al-Sawaf A, El-Mazny A, Shohayeb A. A randomised controlled trial of sublingual misoprostol and intramuscular oxytocin for prevention of postpartum haemorrhage. J Obstet Gynaecol. 2013 Apr;33:277-9. PMID: 23550857; X-2, X-4, X-5

2410. Anandakrishnan S, Balki M, Farine D, et al. Carbetocin at elective Cesarean delivery: a randomized controlled trial to determine the effective dose, part 2. Can J Anaesth. 2013 Nov;60:1054-60. PMID: 24158878; X-4

2411. Anjum S, Sarfraz N, Masood MS. Pharmacological management of postpartum hemorrhage by giving P/R misoprostol after failure of syntocinon. 2013;7:948-50. PMID: X-2

2412. Antony KM, Dildy GA, 3rd. Postpartum hemorrhage: the role of the Maternal-Fetal Medicine specialist in enhancing quality and patient safety. Semin Perinatol. 2013 Aug;37:246-56. PMID: 23916023; X-1

2413. Antony KM, Dildy GA. Postpartum hemorrhage: The role of the Maternal–Fetal Medicine specialist in enhancing quality and patient safety. Seminars in Perinatology. 2013;37:246-56. PMID: X-1

2414. Artymuk N, Surina M, Marochko T. Active management of the third stage of labor with and without controlled cord traction. Int J Gynaecol Obstet. 2013 Jan;124:84-5. PMID: 24156986; X-4

2415. Arumugham S, Mathew M, Deoskar S, et al. Uterine torsion mimicking supine hypotension syndrome after regional anaesthesia. BMJ Case Reports. 2013;31PMID: X-1, X-3, X-4

2416. Austin DM, Sadler L, McLintok C, et al. Early detection of severe maternal morbidity: A retrospective assessment of the role of an Early Warning Score System. Aust N Z J Obstet Gynaecol. 2013 Dec 23PMID: 24359235; X-2, X-4

2417. Aviram A, Raban O, Melamed N, et al. The association between young maternal age and pregnancy outcome. J Matern Fetal Neonatal Med. 2013 Oct;26:1554-8. PMID: 23570233; X-1, X-4

2418. Ayaz H, Black M, Madhuvrata P, et al. Maternal and neonatal outcomes following additional doses of vaginal prostaglandin E2 for induction of labour: a retrospective cohort study. Eur J Obstet Gynecol Reprod Biol. 2013 Oct;170:364-7. PMID: 23932182; X-4

2419. Aziz S, Soomro N. Twin births and their complications in women of low socioeconomic profile. J Pak Med Assoc. 2013 Nov;62:1204-8. PMID: 23866412; X-2, X-4

2420. Baghirzada L, Downey KN, Macarthur AJ. Assessment of quality of life indicators in the postpartum period. Int J Obstet Anesth. 2013 Jul;22:209-16. PMID: 23707037; X-4, X-5

2421. Bahl R, Van de Venne M, Macleod M, et al. Maternal and neonatal morbidity in relation to the instrument used for mid-cavity rotational operative vaginal delivery: a prospective cohort study. BJOG. 2013 Nov;120:1526-32. PMID: 23924292; X-4

2422. Bai J, Sun Q, Zhai H. A comparison of oxytocin and carboprost tromethamine in the prevention of postpartum hemorrhage in high-risk patients undergoing cesarean delivery. Exp Ther Med. 2013 Jan;7:46-50. PMID: 24348762; X-4

2423. Bailit JL, Grobman WA, Rice MM, et al. Risk-adjusted models for adverse obstetric outcomes and variation in risk-adjusted outcomes across hospitals. Am J Obstet Gynecol. 2013 Nov;209:446 e1- e30. PMID: 23891630; X-4

2424. Bangal Vidyadhar B, Giri Purushottam A, Gavhane Satyajit P, et al. Grim face of maternal mortality at tertiary care hospital of rural India: A 16 years study. 2013;4:197-201. PMID: X-1, X-2, X-4

2425. Baser E, Seckin KD, Erkilinc S, et al. The impact of parity on perinatal outcomes in pregnancies complicated by advanced maternal age. Journal of the Turkish German Gynecology Association. 2013 December;14:205-9. PMID: X-2, X-4, X-5

2426. Bateman B, Hernandez-Diaz S, Huybrechts K, et al. Outpatient calcium-channel blockers and the risk of postpartum haemorrhage: a cohort study. BJOG. 2013 Sep 11PMID: 24020971; X-4

2427. Bateman BT, Hernandez-Diaz S, Huybrechts KF, et al. Outpatient calcium-channel blockers and the risk of postpartum haemorrhage: a cohort study. BJOG. 2013 Dec;120(13):1668-76; dicussion 76-7. PMID: 24020971; X-4

2428. Baud D, Rouiller S, Hohlfeld P, et al. Adverse obstetrical and neonatal outcomes in elective and medically indicated inductions of labor at term. J Matern Fetal Neonatal Med. 2013 Nov;26:1595-601. PMID: 23581489; X-4

2429. Baumann Kreuziger LM, Morton CT, Reding MT. Is prophylaxis required for delivery in women with factor VII deficiency? Haemophilia. 2013 Nov;19:827-32. PMID: 23607277; X-1

2430. Bazant E, Rakotovao JP, Rasolofomanana JR, et al. [Quality of care to prevent and treat postpartum hemorrhage and pre-eclampsia/eclampsia : an observational assessment in Madagascar's hospitals]. Med Sante Trop. 2013 May 1;23:168-75. PMID: 23694783; X-2, X-4

2431. Beltman JJ, van den Akker T, Bwirire D, et al. Local health workers' perceptions of substandard care in the management of obstetric hemorrhage in rural Malawi. BMC Pregnancy Childbirth. 2013;13:39. PMID: 23414077; X-2, X-3

2432. Berg RC, Underland V. The obstetric consequences of female genital mutilation/cutting: a systematic review and meta-analysis. Obstet Gynecol Int. 2013;2013:496564. PMID: 23878544; X-1, X-4

2433. Berlit S, Nickol J, Weiss C, et al. Cervical dilatation and curettage in elective caesarean section. A retrospective analysis. In Vivo. 2013 Sep-Oct;27:661-5. PMID: 23988903; X-4

2434. Bernitz S, Oian P, Rolland R, et al. Oxytocin and dystocia as risk factors for adverse birth outcomes: A cohort of low-risk nulliparous women. Midwifery. 2013 May 16PMID: 23684697; X-4

2435. Bhandari S, Raja EA, Shetty A, et al. Maternal and perinatal consequences of antepartum haemorrhage of unknown origin. BJOG. 2013 Jan;121:44-50; discussion -2. PMID: 24125550; X-4, X-5

2436. Bharti A, Puri S, Mohan B, et al. Maternal heart disease and pregnancy outcomes. JK Science. 2013 January - March;15:7-10. PMID: X-2, X-4

2437. Bhatti K, Lashari AA, Shaikh F, et al. Eclapsia: Still a major cause for adverse maternal and perinatal outcome. Medical Forum Monthly. 2013 March;24:15-7. PMID: X-2, X-4

2438. Bildircin FD, Kurtoglu E, Kokcu A, et al. Comparison of perinatal outcome between adolescent and adult pregnancies. J Matern Fetal Neonatal Med. 2013 Sep 5PMID: 23899128; X-2, X-3, X-4

2439. Bohlmann MK, Rath W. Medical prevention and treatment of postpartum hemorrhage: a comparison of different guidelines. Arch Gynecol Obstet. 2013 Mar;289:555-67. PMID: 24006033; X-1

2440. Boisrame T, Sananes N, Fritz G, et al. [Abruptio placentae. Diagnosis, management and maternal-fetal prognosis: A retrospective study of 100 cases.]. Gynecol Obstet Fertil. 2013 Dec 2PMID: 24309032; X-4

2441. Bonnet MP, Basso O, Bouvier-Colle MH, et al. Postpartum haemorrhage in Canada and France: a population-based comparison. PLoS One. 2013;8:e66882. PMID: 23826165; X-4, X-5

2442. Bouaziz M, Chaari A, Turki O, et al. Acute renal failure and pregnancy: a seventeen-year experience of a Tunisian intensive care unit. Ren Fail. 2013 Oct;35:1210-5. PMID: 24021030; X-2, X-4

2443. Boulet SL, Okoroh EM, Azonobi I, et al. Sickle cell disease in pregnancy: maternal complications in a Medicaid-enrolled population. Matern Child Health J. 2013 Feb;17:200-7. PMID: 23315242; X-4

2444. Boynukalin FK, Boyar H, Gormus H, et al. Bilateral hypogastric artery ligation in emergency setting for intractable postpartum hemorrhage: a secondary care center experience. Clin Exp Obstet Gynecol. 2013;40:85-8. PMID: 23724515; X-2, X-4, X-5

2445. Breborowicz GH, Markwitz W, Gaca M, et al. Conservative management of placenta previa complicated by abnormal placentation. J Matern Fetal Neonatal Med. 2013 Jul;26:1012-5. PMID: 23350544; X-1, X-4

2446. Brookfield KF, Goodnough LT, Lyell DJ, et al. Perioperative and transfusion outcomes in women undergoing cesarean hysterectomy for abnormal placentation. Transfusion. 2013 Nov 4PMID: 24188691; X-2, X-4, X-5

2447. Broughton EI, Ikram AN, Sahak I. How accurate are medical record data in Afghanistan's maternal health facilities? An observational validity study. BMJ Open. 2013;3PMID: X-2, X-4

2448. Brown G, Allen L, Torkelson A. Direct patient interventions that can reduce maternal mortality in developing countries: a systematic review. Fam Med. 2013 Sep;45:550-7. PMID: 24129867; X-1, X-3

2449. Burke C, Grobman W, Miller D. Interdisciplinary collaboration to maintain a culture of safety in a labor and delivery setting. J Perinat Neonatal Nurs. 2013 Apr-Jun;27:113-23; quiz 24-5. PMID: 23618932; X-1, X-2, X-4, X-5

2450. Butcher C, Plyman C, Hughes M, et al. Clubbing, cyanosis and a new diagnosis of atrial septal defect in a parturient: a straightforward diagnosis of Eisenmenger syndrome? BMJ Case Reports. 2013PMID: X-1, X-3, X-4

2451. Caliskan E, Cakiroglu Y, Aynioglu O, et al. Menstrual pattern and intrauterine adhesions after transuterine suture for postpartum hemorrhage. J Reprod Med. 2013 May-Jun;58:212-8. PMID: 23763005; X-2

2452. Calvert C, Ronsmans C. HIV and the risk of direct obstetric complications: a systematic review and meta-analysis. PLoS One. 2013;8:e74848. PMID: 24124458; X-2, X-4

2453. Calvert KL, McGurgan PM, Debenham EM, et al. Emergency obstetric simulation training: How do we know where we are going, if we don't know where we have been? Aust N Z J Obstet Gynaecol. 2013 Dec;53:509-16. PMID: 24033002; X-1

2454. Canonico S, Arduini M, Epicoco G, et al. Placenta Previa Percreta: A Case Report of Successful Management via Conservative Surgery. Case Rep Obstet Gynecol. 2013;2013:702067. PMID: 23401816; X-2, X-5

2455. Carbone JF, Tuuli MG, Fogertey PJ, et al. Combination of Foley bulb and vaginal misoprostol compared with vaginal misoprostol alone for cervical ripening and labor induction: a randomized controlled trial. Obstet Gynecol. 2013 Feb;121:247-52. PMID: 23303106; X-3, X-4

2456. Catling-Paull C, Coddington RL, Foureur MJ, et al. Publicly funded homebirth in Australia: a review of maternal and neonatal outcomes over 6 years. Med J Aust. 2013 Jun 17;198:616-20. PMID: 23919710; X-4

2457. Cenksoy PO, Ficicioglu C, Yesiladali M, et al. The Diagnosis and Management of Asherman's Syndrome Developed after Cesarean Section and Reproductive Outcome. Case Rep Obstet Gynecol. 2013;2013:450658. PMID: 23840987; X-1, X-3

2458. Chaabane K, Trigui K, Kebaili S, et al. Antepartum detection of macrosomic fetus: the effect of misdiagnosis. Tunis Med. 2013 Apr;91:240-2. PMID: 23673701; X-4

2459. Chai VY, To WW. Uterine compression sutures for management of severe postpartum haemorrhage: a 5-year audit. Hong Kong Med J. 2013 Oct 21PMID: 24141858; X-2, X-5

2460. Chamilos C, Sgouros S. Intrauterine grade IV intraventricular hemorrhage in a full-term infant leading to hydrocephalus. Childs Nerv Syst. 2013 May;29:861-5. PMID: 23319105; X-1

2461. Chantraine F, Braun T, Gonser M, et al. Prenatal diagnosis of abnormally invasive placenta reduces maternal peripartum hemorrhage and morbidity. Acta Obstet Gynecol Scand. 2013 Apr;92:439-44. PMID: 23331024; X-4, X-5

2462. Chen JS, Ford JB, Roberts CL, et al. Pregnancy outcomes in women with juvenile idiopathic arthritis: a population-based study. Rheumatology (Oxford). 2013 Jun;52:1119-25. PMID: 23382363; X-4

2463. Chen M, Chang Q, Duan T, et al. Uterine massage to reduce blood loss after vaginal delivery: a randomized controlled trial. Obstet Gynecol. 2013 Aug;122:290-5. PMID: 23969797; X-2, X-4

2464. Cheng N, Xiang T, Wu X, et al. Acute fatty liver of pregnancy: a retrospective study of 32 cases in South China. J Matern Fetal Neonatal Med. 2013 Dec 4PMID: 24304174; X-2, X-4

2465. Chibber R, Fouda M, Shishtawy W, et al. Maternal and neonatal outcome in triplet, quadruplet and quintuplet gestations following ART: a 11-year study. Arch Gynecol Obstet. 2013 Oct;288:759-67. PMID: 23543239; X-4

2466. Choulagai B, Onta S, Subedi N, et al. Barriers to using skilled birth attendants' services in mid- and far-western Nepal: a cross-sectional study. BMC Int Health Hum Rights. 2013;13:49. PMID: 24365039; X-2, X-3, X-4

2467. Chung MY, Cheng YK, Yu SC, et al. Nonremoval of an abnormally invasive placenta at cesarean section with postoperative uterine artery embolization. Acta Obstet Gynecol Scand. 2013 Nov;92:1250-5. PMID: 23937444; X-4, X-5

2468. Cilingir IU, Atalay V, Karahasanoglu A, et al. A life-threatening uterine inversion and massive post partum hemorrhage caused by uterine atony in a Primigravida uterine inversion. Haseki Tip Bulteni. 2013;51:139-40. PMID: X-1, X-2, X-4, X-5

2469. Coombe JE, Pyman MF, Mansell PD, et al. The effects on claw health of supplement feeding grazing dairy cows on feed pads. Vet J. 2013 Dec;198:672-7. PMID: 24206633; X-1, X-3, X-4

2470. Costley PL, East CE. Oxytocin augmentation of labour in women with epidural analgesia for reducing operative deliveries. Cochrane Database Syst Rev. 2013;7:CD009241. PMID: 23846738; X-1

2471. Cox KJ, Schlegel R, Payne P, et al. Outcomes of planned home births attended by certified nurse-midwives in southeastern Pennsylvania, 1983-2008. J Midwifery Womens Health. 2013 Mar-Apr;58:145-9. PMID: 23437812; X-4

2472. Crane JM, Murphy P, Burrage L, et al. Maternal and perinatal outcomes of extreme obesity in pregnancy. J Obstet Gynaecol Can. 2013 Jul;35:606-11. PMID: 23876637; X-4

2473. Dagraca J, Malladi V, Nunes K, et al. Outcomes after institution of a new oxytocin infusion protocol during the third stage of labor and immediate postpartum period. Int J Obstet Anesth. 2013 Jul;22:194-9. PMID: 23692707; X-4, X-5

2474. Dars S, Sultana F, Akhter N. Abruptio placentae: Risk factors and maternal outcomes at a tertiary care hospital. 2013;12:198-202. PMID: X-2

2475. Dave A, Maru L, Daksha S, et al. Weight does matter! A study of effect of obesity on pregnancy and its outcome. 2013;5:107-10. PMID: X-2, X-4

2476. Davis D, Baddock S, Pairman S, et al. Risk of severe postpartum hemorrhage in low-risk childbearing women in new zealand: exploring the effect of place of birth and comparing third stage management of labor. Birth. 2013 Jun;39:98-105. PMID: 23281857; X-4

2477. de Castro Parreira MV, Gomes NC. Preventing postpartum haemorrhage: active management of the third stage of labour. J Clin Nurs. 2013 Jul 22PMID: 23875752; X-1

2478. de Jonge A, Mesman JA, Mannien J, et al. Severe adverse maternal outcomes among low risk women with planned home versus hospital births in the Netherlands: nationwide cohort study. BMJ. 2013;346:f3263. PMID: 23766482; X-4

2479. de la Cruz CZ, Coulter ML, O'Rourke K, et al. Women's experiences, emotional responses, and perceptions of care after emergency peripartum hysterectomy: a qualitative survey of women from 6 months to 3 years postpartum. Birth. 2013 Dec;40:256-63. PMID: 24344706; X-2, X-4, X-5

2480. de Souza Mde L, Laurenti R, Knobel R, et al. Maternal mortality due to hemorrhage in Brazil. Rev Lat Am Enfermagem. 2013 May-Jun;21:711-8. PMID: 23918016; X-2, X-4

2481. Deepak NN, Mirzabagi E, Koski A, et al. Knowledge, attitudes, and practices related to uterotonic drugs during childbirth in Karnataka, India: a qualitative research study. PLoS One. 2013;8:e62801. PMID: 23638148; X-2, X-4

2482. Dempsey A. Massive Transfusion Protocol: Saving Our Patients Lives. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2013;42:S97-S. PMID: X-1, X-4, X-5

2483. Deneux-Tharaux C, Sentilhers L, Maillard F, et al. Effect of routine controlled cord traction as part of the active management of the third stage of labour on postpartum haemorrhage: multicentre randomized controlled trial (TRACOR). MIDIRS Midwifery Digest. 2013;23:351-2. PMID: X-4, X-5

2484. Deneux-Tharaux C, Sentilhes L, Maillard F, et al. Effect of routine controlled cord traction as part of the active management of the third stage of labour on postpartum haemorrhage: multicentre randomised controlled trial (TRACOR). BMJ. 2013;346:f1541. PMID: 23538918; X-4

2485. Deng L, Chang Q, Wang Y, et al. Tourniquet device for hemorrhage control during cesarean section of complete placenta previa pregnancies. J Obstet Gynaecol Res. 2013 Oct 22PMID: 24147797; X-2, X-5

2486. Desai M, Phillips-Howard PA, Odhiambo FO, et al. An analysis of pregnancy-related mortality in the KEMRI/CDC health and demographic surveillance system in western Kenya. PLoS One. 2013;8:e68733. PMID: 23874741; X-2, X-4

2487. Desille H, Ouldamer L, Bleuzen A, et al. Novel use of contrast-enhanced sonography in the diagnosis of central uterine necrosis following embolization for postpartum hemorrhage. J Ultrasound Med. 2013 Oct;32:1869-76. PMID: 24065269; X-5

2488. Dibble S, Andersen A, Lassen MR, et al. Inflammatory and procoagulant cytokine levels during pregnancy as predictors of adverse obstetrical complications. Clin Appl Thromb Hemost. 2013 Mar;20:152-8. PMID: 23869055; X-4

2489. Dikman D, Elstein D, Levi GS, et al. Effect of thrombocytopenia on mode of analgesia/anesthesia and maternal and neonatal outcomes. J Matern Fetal Neonatal Med. 2013 Oct 11PMID: 23962227; X-4

2490. Dohan A, Pelage JP, Soyer P. How to avoid uterine necrosis after arterial embolization for post-partum hemorrhage: a proposal based on a single center experience of 600 cases. Eur J Obstet Gynecol Reprod Biol. 2013 Dec;171:392-3. PMID: 24139543; X-1, X-4, X-5

2491. Dohan A, Soyer P, Subhani A, et al. Postpartum hemorrhage resulting from pelvic pseudoaneurysm: a retrospective analysis of 588 consecutive cases treated by arterial embolization. Cardiovasc Intervent Radiol. 2013 Oct;36:1247-55. PMID: 23756881; X-4, X-5

2492. Domingo S, Perales-Puchalt A, Soler I, et al. Clinical outcome, fertility and uterine artery Doppler scans in women with obstetric bilateral internal iliac artery ligation or embolisation. J Obstet Gynaecol. 2013 Oct;33:701-4. PMID: 24127959; X-5

2493. Doumouchtsis S, Nikolopoulos K, Talaulikar V, et al. Menstrual and fertility outcomes following the surgical management of postpartum haemorrhage: a systematic review. Bjog. 2013 Dec 9PMID: 24321038; X-1

2494. Duley L, Meher S, Jones L. Drugs for treatment of very high blood pressure during pregnancy. Cochrane Database Syst Rev. 2013;7:CD001449. PMID: 23900968; X-1, X-4

2495. Dupont C, Rudigoz RC, Cortet M, et al. [Frequency, causes and risk factors of postpartum haemorrhage: A population-based study in 106 French maternity units.]. J Gynecol Obstet Biol Reprod (Paris). 2013 Jun 19PMID: 23790963; X-4

2496. Edhi MM, Aslam HM, Naqvi Z, et al. "Post partum hemorrhage: causes and management". BMC Res Notes. 2013 Jun 18;6:236. PMID: 23773785; X-2

2497. Eftekhar-Vaghefi R, Foroodnia S, Nakhaee N. Gaining insight into the prevention of maternal death using narrative analysis: an experience from kerman, iran. Int J Health Policy Manag. 2013 Nov;1(4):255-9. PMID: 24596882; X-2, X-4

2498. Ejembi CL, Norick P, Starrs A, et al. New global guidance supports community and lay health workers in postpartum hemorrhage prevention. Int J Gynaecol Obstet. 2013 Sep;122:187-9. PMID: 23796260; X-1

2499. El Ayadi A, Raifman S, Jega F, et al. Comorbidities and lack of blood transfusion may negatively affect maternal outcomes of women with obstetric hemorrhage treated with NASG. PLoS One. 2013;8:e70446. PMID: 23950937; X-2, X-4

2500. El Ayadi AM, Butrick E, Geissler J, et al. Combined analysis of the non-pneumatic anti-shock garment on mortality from hypovolemic shock secondary to obstetric hemorrhage. BMC Pregnancy Childbirth. 2013 Nov 15;13:208. PMID: 24237656; X-2, X-4, X-5

2501. Elgafor El Sharkwy IA. Carbetocin versus sublingual misoprostol plus oxytocin infusion for prevention of postpartum hemorrhage at cesarean section in patients with risk factors: a randomized, open trail study. Arch Gynecol Obstet. 2013 Dec;288:1231-6. PMID: 23689739; X-4

2502. Elhanafy MM, French DD, Braun U. Understanding jejunal hemorrhage syndrome. J Am Vet Med Assoc. 2013 Aug 1;243:352-8. PMID: 23865877; X-1

2503. Elkins D, Taylor JS. Evidence-based strategies for managing gestational diabetes in women with obesity. Nurs Womens Health. 2013 Oct;17:420-9; quiz 30. PMID: 24138661; X-1

2504. El-Refaeey AA, Gibreel A, Fawzy M. Novel modification of B-Lynch uterine compression sutures for management of atonic postpartum hemorrhage: VV uterine compression sutures. J Obstet Gynaecol Res. 2013 Feb;40:387-91. PMID: 24118407; X-2, X-5

2505. Erhabor O, Isaac I, Muhammad A, et al. Some hemostatic parameters in women with obstetric hemorrhage in Sokoto, Nigeria. Int J Womens Health. 2013;5:285-91. PMID: 23807863; X-2, X-4

2506. Erhabor O, Isaac IZ, Muhammad AM, et al. Some hemostatic parameters in women with obstetric hemorrhage in Sokoto, Nigeria. New Zealand: Dove Medical Press Ltd (PO Box 300-008, Albany, 44 Corinthian Drive, Albany,Auckland 0752, New Zealand); 2013. http://www.dovepress.com/getfile.php?fileID=16403http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed11&NEWS=N&AN=2013386582. Accessed on (Erhabor, Isaac, Muhammad, Abdulrahaman) Department of Haematology and Transfusion Medicine, Usmanu Danfodio University, Sokoto, Nigeria 5.

2507. Evans H, Lewis E. UK survey of the availability of cell salvage and interventional radiological services for the management of obstetric haemorrhage. Int J Obstet Anesth. 2013 Nov;22:355-6. PMID: 23958276; X-1, X-4, X-5

2508. Evsen MS, Sak ME, Soydine HE, et al. Internal iliac artery ligation for severe postpartum hemorrhage. Ginekol Pol. 2013 Sep;83:665-8. PMID: 23342894; X-2

2509. Ezeama CO, Eleje GU, Ezeama NN, et al. A comparison of prophylactic intramuscular ergometrine and oxytocin for women in the third stage of labor. Int J Gynaecol Obstet. 2013 Jan;124:67-71. PMID: 24365208; X-2, X-4

2510. Ezugwu EC, Agu PU, Nwoke MO, et al. Reducing maternal deaths in a low resource setting in Nigeria. Niger J Clin Pract. 2013 Jan-Feb;17:62-6. PMID: 24326810; X-2, X-4

2511. Fakour F, Mirzayi M, Reza Naghipour M, et al. Comparison between sublingual misoprostol and intravenous oxytocin in management of third stage of labor. Iranian Journal of Obstetrics, Gynecology and Infertility. 2013 January;15:7-14. PMID: X-2, X-4

2512. Fallahian M, Foroughi F, Vasei M, et al. Outcome of subsequent pregnancies in familial molar pregnancy. International Journal of Fertility and Sterility. 2013 April-June;7:63-6. PMID: X-1, X-3, X-4

2513. Farber MK, Sadana N, Kaufman RM, et al. Transfusion Ratios for Postpartum Hemodilutional Coagulopathy: an In Vitro Thromboelastographic Model. Am J Obstet Gynecol. 2013 Nov 19PMID: 24269787; X-3, X-4

2514. Faulkner B. Applying lean management principles to the creation of a postpartum hemorrhage care bundle. Nurs Womens Health. 2013 Oct;17:400-11. PMID: 24138659; X-1, X-4, X-5

2515. Fazel MR, Mansoure S, Esmaeil F. A comparison of rectal misoprostol and intravenous oxytocin on hemorrhage and homeostatic changes during cesarean section. Middle East J Anesthesiol. 2013 Feb;22:41-6. PMID: 23833849; X-2, X-4, X-5

2516. Feng BB, Wang L, Zhai JJ. Investigation on delivery analgesia effect of combined spinal epidural anesthesia plus Doula and safety of mother and baby. Clin Exp Obstet Gynecol. 2013;40:574-8. PMID: 24597260; X-3, X-4

2517. Firouzbakht M, Kiapour A, Omidvar S. Prevention of post-partum hemorrhage by rectal Misoprostol: A randomized clinical trial. J Nat Sci Biol Med. 2013 Jan;4:134-7. PMID: 23633849; X-2, X-4, X-5

2518. Fittro K, Nichols W. Acute dyspnea in a postpartum patient. JAAPA. 2013 Jan;27:29-31. PMID: 24361652; X-1, X-3, X-4

2519. Fitzpatrick KE, Sellers S, Spark P, et al. The management and outcomes of placenta accreta, increta, and percreta in the UK: a population-based descriptive study. BJOG. 2013 Jan;121:62-70; discussion -1. PMID: 23924326; X-2, X-4, X-5

2520. Flohr-Rincon S, Tucker L, Balestrieri-Martinez B. 'It Is a Bloody Good Job!' Utilizing OB Hemorrhage Drills and Standardized Electronic Order Sets to Champion Excellence and Collaboration during Postpartum Hemorrhage. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2013;42:S26-S. PMID: X-1, X-4, X-5

2521. Fong F, Rogozinska E, Allotey J, et al. Development of maternal and neonatal composite outcomes for trials evaluating management of late-onset pre-eclampsia. Hypertens Pregnancy. 2013 Dec 4PMID: 24303960; X-1, X-3, X-4

2522. Foo L, Bewley S, Rudd A. Maternal death from stroke: a thirty year national retrospective review. Eur J Obstet Gynecol Reprod Biol. 2013 Sep 29PMID: 24128926; X-3, X-4

2523. Fuchs F, Bouyer J, Rozenberg P, et al. Adverse maternal outcomes associated with fetal macrosomia: what are the risk factors beyond birthweight? BMC Pregnancy Childbirth. 2013;13:90. PMID: 23565692; X-4

2524. Fukuda M, Tanaka T, Kamada M, et al. Comparison of the perinatal outcomes after laparoscopic myomectomy versus abdominal myomectomy. Gynecol Obstet Invest. 2013;76:203-8. PMID: 24107786; X-1, X-4

2525. Fullerton G, Danielian PJ, Bhattacharya S. Outcomes of pregnancy following postpartum haemorrhage. BJOG. 2013 Apr;120:621-7. PMID: 23339709; X-2, X-4, X-5

2526. Furuta M, Sandall J, Bick D. Women's perceptions and experiences of severe maternal morbidity - A synthesis of qualitative studies using a meta-ethnographic approach. Midwifery. 2013 Sep 25PMID: 24144992; X-1

2527. Gani N, Ali TS. Prevalence and factors associated with maternal postpartum haemorrhage in Khyber Agency, Pakistan. J Ayub Med Coll Abbottabad. 2013 Jan-Jun;25:81-5. PMID: 25098062; X-2, X-4

2528. Gawron LM, Kiley JW. Labor induction outcomes in third-trimester stillbirths. Int J Gynaecol Obstet. 2013 Dec;123:203-6. PMID: 24059984; X-2, X-4, X-5

2529. Geller S, Carnahan L, Akosah E, et al. Community-based distribution of misoprostol to prevent postpartum haemorrhage at home births: results from operations research in rural Ghana. BJOG. 2013 Feb;121:319-26. PMID: 24283350; X-2, X-4

2530. Gerli S, Favilli A, Affronti G, et al. Prophylactic arterial catheterization in the management of high risk patients for obstetric haemorrhage. Eur Rev Med Pharmacol Sci. 2013 Oct;17:2822-6. PMID: 24174367; X-3, X-4

2531. Ghasemi M, Tara F, Ashraf H. Maternal-fetal and neonatal complications of water-birth compared with conventional delivery. Iranian Journal of Obstetrics, Gynecology and Infertility. 2013;16:9-15. PMID: X-2, X-3, X-4

2532. Gipson MG, Smith MT. Endovascular therapies for primary postpartum hemorrhage: techniques and outcomes. Semin Intervent Radiol. 2013 Dec;30(4):333-9. PMID: 24436559; X-1

2533. Girard T, Brugger S, Hosli I. [New aspects of obstetric anesthesia]. Anaesthesist. 2013 Dec;62:963-72. PMID: 23999765; X-1, X-2, X-4, X-5

2534. Gitz L, Picone O, Mas AE, et al. [Postpartum hemorrhage by vaginal laseration: New case and improved management.]. J Gynecol Obstet Biol Reprod (Paris). 2013 May 21PMID: 23706157; X-1, X-4

2535. Gizzo S, Noventa M, Anis O, et al. Pharmacological anti-thrombotic prophylaxis after elective caesarean delivery in thrombophilia unscreened women: should maternal age have a role in decision making? J Perinat Med. 2013 Nov 16:1-9. PMID: 24246285; X-3, X-4

2536. Gizzo S, Patrelli TS, Gangi SD, et al. Which uterotonic is better to prevent the postpartum hemorrhage? Latest news in terms of clinical efficacy, side effects, and contraindications: a systematic review. Reprod Sci. 2013 Sep;20:1011-9. PMID: 23296037; X-1

2537. Gizzo S, Saccardi C, Patrelli TS, et al. Fertility rate and subsequent pregnancy outcomes after conservative surgical techniques in postpartum hemorrhage: 15 years of literature. Fertil Steril. 2013 Jun;99:2097-107. PMID: 23498891; X-1, X-2, X-4, X-5

2538. Goel A, Nair SC, Viswabandya A, et al. Preliminary experience with use of recombinant activated factor VII to control postpartum hemorrhage in acute fatty liver of pregnancy and other pregnancy-related liver disorders. Indian J Gastroenterol. 2013 Jul;32:268-71. PMID: 23475547; X-2, X-4, X-5

2539. Goswami U, Sarangi S, Gupta S, et al. Comparative evaluation of two doses of tranexamic acid used prophylactically in anemic parturients for lower segment cesarean section: A double-blind randomized case control prospective trial. Saudi J Anaesth. 2013 Oct;7:427-31. PMID: 24348295; X-2, X-4

2540. Grace Tan SE, Jobling TW, Wallace EM, et al. Surgical management of placenta accreta: a 10-year experience. Acta Obstet Gynecol Scand. 2013 Apr;92:445-50. PMID: 23311505; X-4, X-5

2541. Gregory KD, Korst LM, Lu MC, et al. AHRQ patient safety indicators: time to hemorrhage and infection during childbirth. Jt Comm J Qual Patient Saf. 2013 Mar;39:114-22. PMID: 23516761; X-4

2542. Guerci P, Novy E, Vial F, et al. Sulprostone for postpartum hemorrhage in a parturient with a history of Tako-tsubo cardiomyopathy. J Clin Anesth. 2013 Jun;25:327-30. PMID: 23830846; X-4, X-5

2543. Guillaume A, Sananes N, Akladios CY, et al. Amniotic fluid embolism: 10-year retrospective study in a level III maternity hospital. Eur J Obstet Gynecol Reprod Biol. 2013 Jul;169:189-92. PMID: 23522720; X-3, X-4

2544. Guler A, Kosus N, Turan A, et al. Antenatal diagnosis of placenta increta and its successful conservative management with methotrexate. Eastern Journal of Medicine. 2013;18:48-51. PMID: X-1

2545. Guleria K, Gupta B, Agarwal S, et al. Abnormally invasive placenta: changing trends in diagnosis and management. Acta Obstet Gynecol Scand. 2013 Apr;92:461-4. PMID: 23517217; X-2, X-4, X-5

2546. Gun I, Ozdamar O, Ertugrul S, et al. The effect of placental removal method on perioperative hemorrhage at cesarean delivery; a randomized clinical trial. Arch Gynecol Obstet. 2013 Sep;288:563-7. PMID: 23455538; X-4

2547. Gupta A. A comparative study of methylergonovine and 15-methyl prostaglandin F2alpha in active management of third stage of labor. Obstet Gynecol Sci. 2013 Sep;56:301-6. PMID: 24328019; X-4

2548. Haas J, Barzilay E, Chayen B, et al. Safety of low-dose prostaglandin E2 induction in grandmultiparous women with previous cesarean delivery. J Matern Fetal Neonatal Med. 2013 Mar;27:445-8. PMID: 23841832; X-4

2549. Habib S, Riaz S, Abbasi N, et al. Vaginal breech delivery: still a safe option. J Ayub Med Coll Abbottabad. 2013 Jul-Dec;25(3-4):38-40. PMID: 25226736; X-2, X-4

2550. Haeri S, Baker AM. Estimating risk factors and causes for postpartum febrile morbidity in teenage mothers. J Obstet Gynaecol. 2013 Feb;33:149-51. PMID: 23445136; X-4

2551. Hafeez R, Memon SR, Bhatti K. Frequency, risk factors and complications in pregnancies associated with placenta praevia. Medical Forum Monthly. 2013 January;24:21-5. PMID: X-2, X-4

2552. Haggar F, Pereira G, Preen D, et al. Maternal and neonatal outcomes in pregnancies following colorectal cancer. Surg Endosc. 2013 Jul;27:2327-36. PMID: 23371020; X-4

2553. Haldar R, Samanta S. Post-partum sequential occurrence of two diverse transfusion reactions (transfusion associated circulatory overload and transfusion related acute lung injury). J Emerg Trauma Shock. 2013 Oct;6:283-6. PMID: 24339663; X-1, X-2, X-4, X-5

2554. Hammah J, Donkor ES. ASSESSMENT OF PRACTISING MIDWIVES ON THE MANAGEMENT OF THE THIRD STAGE OF LABOUR. African Journal of Midwifery & Women's Health. 2013;7:59-64. PMID: X-1, X-4

2555. Hamza A, Herr D, Solomayer EF, et al. Polyhydramnios: Causes, Diagnosis and Therapy. Geburtshilfe Frauenheilkd. 2013 Dec;73(12):1241-6. PMID: 24771905; X-1

2556. Hanf M, Friedman E, Basurko C, et al. Dengue epidemics and adverse obstetrical outcomes in French Guiana: a semi-ecological study. Trop Med Int Health. 2013 Feb;19:153-8. PMID: 24341915; X-2, X-4

2557. Hanprasertpong T, Kor-anantakul O, Leetanaporn R, et al. Pregnancy outcomes amongst thalassemia traits. Arch Gynecol Obstet. 2013 Nov;288:1051-4. PMID: 23681496; X-2, X-4

2558. Hanson C, Ronsmans C, Penfold S, et al. Health system support for childbirth care in Southern Tanzania: results from a health facility census. BMC Res Notes. 2013 Oct 30;6:435. PMID: 24171904; X-1, X-3, X-4

2559. Harper LM, Caughey AB, Roehl KA, et al. Defining an abnormal first stage of labor based on maternal and neonatal outcomes. Am J Obstet Gynecol. 2013 Dec 19PMID: 24361789; X-2, X-4, X-5

2560. Hashim H, Nawawi O. Uterine arteriovenous malformation. Malaysian Journal of Medical Sciences. 2013;20:77-81. PMID: X-1

2561. Hashim N, Naqvi S, Khanam M, et al. Primiparity as an intrapartum obstetric risk factor. J Pak Med Assoc. 2013 Jul;62:694-8. PMID: 23866518; X-2, X-4

2562. Hastings-Tolsma M, Bernard R, Brody MG, et al. Chorioamnionitis: prevention and management. MCN Am J Matern Child Nurs. 2013 Jul-Aug;38:206-12; quiz 13-4. PMID: 23579417; X-1

2563. He Y, Wu YM, Wang T, et al. Perinatal outcomes of pregnant women with cervical intraepithelial neoplasia. Arch Gynecol Obstet. 2013 Dec;288:1237-42. PMID: 23695508; X-2, X-3, X-4

2564. Heesen M, Hofmann T, Klohr S, et al. Is general anaesthesia for caesarean section associated with postpartum haemorrhage? Systematic review and meta-analysis. Acta Anaesthesiol Scand. 2013 Oct;57:1092-102. PMID: 24003971; X-1, X-4

2565. Hehir MP, Walsh JM, Higgins S, et al. Maternal and neonatal morbidity during off peak hours in a busy obstetric unit. Are deliveries after midnight more complicated? Acta Obstet Gynecol Scand. 2013 Feb;93:189-93. PMID: 24266619; X-3, X-4

2566. Henry L, Britz SP. Loss of Blood = Loss of Breast Milk? The Effect of Postpartum Hemorrhage on Breastfeeding Success. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2013;42:S100-S. PMID: X-1, X-2, X-4, X-5

2567. Hiraizumi Y, Suzuki S. Perinatal outcomes of low-risk planned home and hospital births under midwife-led care in Japan. J Obstet Gynaecol Res. 2013 Nov;39:1500-4. PMID: 23855717; X-4

2568. Hofmeyr GJ, Abdel-Aleem H, Abdel-Aleem MA. Uterine massage for preventing postpartum haemorrhage. Cochrane Database Syst Rev. 2013;7:CD006431. PMID: 23818022; X-1

2569. Hofmeyr GJ, Gulmezoglu AM, Novikova N, et al. Postpartum misoprostol for preventing maternal mortality and morbidity. Cochrane Database Syst Rev. 2013;7:CD008982. PMID: 23857523; X-1

2570. Hofmeyr GJ, Gülmezoglu AM, Novikova N, et al. Postpartum misoprostol for preventing maternal mortality and morbidity. Cochrane Database of Systematic Reviews. 2013(7)PMID: 2012599808. Language: English. Entry Date: 20140606. Publication Type: journal article; X-1

2571. Huchon C, Dumont A, Traore M, et al. A prediction score for maternal mortality in Senegal and Mali. Obstet Gynecol. 2013 May;121:1049-56. PMID: 23635742; X-2, X-3, X-4

2572. Huijgen QC, Gijsen AF, Hink E, et al. Cervical tourniquet in case of uncontrollable haemorrhage during caesarean section owing to a placenta accreta. BMJ Case Rep. 2013;2013PMID: 23608864; X-1

2573. Hwang SM, Jeon GS, Kim MD, et al. Transcatheter arterial embolisation for the management of obstetric haemorrhage associated with placental abnormality in 40 cases. Eur Radiol. 2013 Mar;23:766-73. PMID: 23300034; X-2, X-5

2574. Hyginus E, Eric NI, Lawrence I, et al. Morbidity and mortality following high order caesarean section in a developing country. J Pak Med Assoc. 2013 Oct;62:1016-9. PMID: 23866437; X-2, X-4

2575. Jabir M, Abdul-Salam I, Suheil DM, et al. Maternal near miss and quality of maternal health care in Baghdad, Iraq. BMC Pregnancy Childbirth. 2013;13:11. PMID: 23324222; X-2, X-3, X-4

2576. Jain D. A ray of hope for a woman with Sheehan's syndrome. BMJ Case Reports. 2013PMID: X-3, X-4

2577. Jayaraman M, Verma A, Harikumar KV, et al. Pregnancy outcomes with thyroxine replacement for subclinical hypothyroidism: Role of thyroid autoimmunity. Indian J Endocrinol Metab. 2013 Mar;17:294-7. PMID: 23776906; X-3, X-4

2578. Jia LY, Meng WY, Ma HH, et al. [Clinical analysis of uterine rupture during pregnancy]. Zhonghua Yi Xue Za Zhi. 2013 Sep 3;93:2674-6. PMID: 24360052; X-2, X-3, X-4

2579. Jiang HX, Han GR, Wang CM, et al. [Maternal-fetal outcomes of lamivudine treatment administered during late pregnancy to highly viremic mothers with HBeAg+ chronic hepatitis B]. Zhonghua Gan Zang Bing Za Zhi. 2013 Dec;20:888-91. PMID: 23522247; X-2, X-4

2580. Johnsdottir A. Superfoods for Postpartum Hemorrhage Recovery. Midwifery Today. 2013:46-7. PMID: X-1, X-5

2581. Jones B, Zhang E, Alzouebi A, et al. Maternal and perinatal outcomes following peripartum hysterectomy from a single tertiary centre. Aust N Z J Obstet Gynaecol. 2013 Dec;53:561-5. PMID: 24138323; X-5

2582. Jozwiak M, Van de Lest HA, Burger NB, et al. Cervical ripening with Foley catheter for induction of labor after cesarean section: a cohort study. Acta Obstet Gynecol Scand. 2013 Dec 16PMID: 24354335; X-4

2583. Kadir RA, Davies J. Hemostatic disorders in women. J Thromb Haemost. 2013 Jun;11 Suppl 1:170-9. PMID: 23809121; X-1

2584. Kadir RA, Davies J, Winikoff R, et al. Pregnancy complications and obstetric care in women with inherited bleeding disorders. Haemophilia. 2013 Nov;19 Suppl 4:1-10. PMID: 24102860; X-1

2585. Kakiuchi H, Kawarai-Shimamura A, Kuwagata M, et al. Tranexamic acid induces kaolin intake stimulating a pathway involving tachykinin neurokinin 1 receptors in rats. Eur J Pharmacol. 2013 Jan 15;723:1-6. PMID: 24333477; X-3, X-4

2586. Kanter G, Packard L, Sit AS. Placenta accreta in a patient with a history of uterine artery embolization for postpartum hemorrhage. J Perinatol. 2013 Jun;33:482-3. PMID: 23719249; X-1, X-5

2587. Kaplanoglu M. The uterine sandwich method for placenta previa accreta in mullerian anomaly: combining the B-lynch compression suture and an intrauterine gauze tampon. Case Rep Obstet Gynecol. 2013;2013:236069. PMID: 23607012; X-1, X-2, X-5

2588. Karanj J, Muganyizi P, Rwamushaija E, et al. Confronting maternal mortality due to postpartum hemorrhage and unsafe abortion: a call for commitment. Afr J Reprod Health. 2013 Jun;17:18-22. PMID: 24069748; X-1, X-4, X-5

2589. Karanth L, Barua A, Kanagasabai S, et al. Desmopressin acetate (DDAVP) for preventing and treating acute bleeds during pregnancy in women with congenital bleeding disorders. Cochrane Database of Systematic Reviews. 2013PMID: X-1

2590. Kariya N, Kimura K, Iwasaki R, et al. Intraoperative awake tracheal intubation using the Airway Scope in caesarean section. Anaesth Intensive Care. 2013 May;41:390-2. PMID: 23659404; X-4

2591. Karlsson O, Jeppsson A, Hellgren M. Major obstetric haemorrhage: monitoring with thromboelastography, laboratory analyses or both? Int J Obstet Anesth. 2013 Feb;23:10-7. PMID: 24342222; X-4, X-5

2592. Karlstrom A, Lindgren H, Hildingsson I. Maternal and infant outcome after caesarean section without recorded medical indication: findings from a Swedish case-control study. BJOG. 2013 Mar;120:479-86; discussion 86. PMID: 23316937; X-4

2593. Karolinski A, Mercer R, Micone P, et al. The epidemiology of life-threatening complications associated with reproductive process in public hospitals in Argentina. BJOG. 2013 Aug 13PMID: 23937774; X-4

2594. Karolinski A, Mercer R, Micone P, et al. The epidemiology of life-threatening complications associated with reproductive process in public hospitals in Argentina. BJOG. 2013 Dec;120(13):1685-94; discussion 944-5. PMID: 23937774; X-4

2595. Kavak SB, Atilgan R, Demirel I, et al. Endouterine hemostatic square suture vs. Bakri balloon tamponade for intractable hemorrhage due to complete placenta previa. J Perinat Med. 2013 Nov;41:705-9. PMID: 23828423; X-2

2596. Kawamura Y, Kondoh E, Hamanishi J, et al. Treatment decision-making for post-partum hemorrhage using dynamic contrast-enhanced computed tomography. J Obstet Gynaecol Res. 2013 Jan;40:67-74. PMID: 23937115; X-4

2597. Kayem G, Deneux-Tharaux C, Sentilhes L. PACCRETA: clinical situations at high risk of placenta ACCRETA/percreta: impact of diagnostic methods and management on maternal morbidity. Acta Obstet Gynecol Scand. 2013 Apr;92:476-82. PMID: 23360123; X-1

2598. Kenyon S, Tokumasu H, Dowswell T, et al. High-dose versus low-dose oxytocin for augmentation of delayed labour. Cochrane Database Syst Rev. 2013;7:CD007201. PMID: 23853046; X-1, X-3

2599. Kessous R, Tirosh D, Weintraub AY, et al. Second stage disorders in patients following a previous cesarean section: vacuum versus repeated cesarean section. Arch Gynecol Obstet. 2013 Jun;287:1075-9. PMID: 23274791; X-4

2600. Khalifeh A, Grantham J, Byrne J, et al. Tinzaparin safety and efficacy in pregnancy. Ir J Med Sci. 2013 Aug 11PMID: 23934436; X-4

2601. Khireddine I, Le Ray C, Dupont C, et al. Induction of labor and risk of postpartum hemorrhage in low risk parturients. PLoS One. 2013;8:e54858. PMID: 23382990; X-4

2602. Kikuchi M, Itakura A, Miki A, et al. Fibrinogen concentrate substitution therapy for obstetric hemorrhage complicated by coagulopathy. J Obstet Gynaecol Res. 2013 Apr;39:770-6. PMID: 23278972; X-4, X-5

2603. Kim GM, Yoon CJ, Seong NJ, et al. Postpartum haemorrhage from ruptured pseudoaneurysm: efficacy of transcatheter arterial embolisation using N-butyl-2-cyanoacrylate. Eur Radiol. 2013 Aug;23:2344-9. PMID: 23559143; X-5

2604. Kim TH, Lee HH. Methods of holding the cervix and applying compression based on uterine bleeding: caudal or cephalad to the uterus? Acta Obstet Gynecol Scand. 2013 Dec 3PMID: 24299294; X-1

2605. Kim TH, Lee HH, Kim JM, et al. Hysterectomy prevention using the uterine hollow obliterations (HYUNHO) method for placenta previa. Clin Exp Obstet Gynecol. 2013;39:462-5. PMID: 23444744; X-4, X-5

2606. Kiran S, Anand A, Singh T, et al. To estimate the minimum effective dose of oxytocin required to produce adequate uterine tone in women undergoing elective caesarean delivery. Egyptian Journal of Anaesthesia. 2013 April;29:161-5. PMID: X-2, X-4

2607. Kjaer MM, Lauenborg J, Breum BM, et al. The risk of adverse pregnancy outcome after bariatric surgery: a nationwide register-based matched cohort study. Am J Obstet Gynecol. 2013 Jun;208:464 e1-5. PMID: 23467053; X-4

2608. Kjaer MM, Nilas L. Timing of pregnancy after gastric bypass-a national register-based cohort study. Obes Surg. 2013 Aug;23:1281-5. PMID: 23462860; X-4

2609. Km U, Mn D, R S, et al. Effect of a primary postpartum haemorrhage on the "near-miss" morbidity and mortality at a tertiary care hospital in rural bangalore, India. J Clin Diagn Res. 2013 Jun;7:1114-9. PMID: 23905116; X-2, X-4

2610. Knuttinen MG, Jani A, Gaba RC, et al. Balloon occlusion of the hypogastric arteries in the management of placenta accreta: a case report and review of the literature. Semin Intervent Radiol. 2013 Sep;29:161-8. PMID: 23997407; X-1

2611. Kominiarek MA, Seligman NS, Dolin C, et al. Gestational weight gain and obesity: is 20 pounds too much? Am J Obstet Gynecol. 2013 Sep;209:214 e1-11. PMID: 23635421; X-4

2612. Kong MC, To WW. Balloon tamponade for postpartum haemorrhage: case series and literature review. Hong Kong Med J. 2013 May 6PMID: 23650196; X-5

2613. Korejo R, Nasir A, Yasmin H, et al. Emergency obstetric hysterectomy. J Pak Med Assoc. 2013 Dec;62:1322-5. PMID: 23866483; X-2, X-4

2614. Kramer MS, Berg C, Abenhaim H, et al. Incidence, risk factors, and temporal trends in severe postpartum hemorrhage. Am J Obstet Gynecol. 2013 Nov;209:449 e1-7. PMID: 23871950; X-4

2615. Krutman M, Galastri FL, Afonso BB, et al. Review of the cases of 15 patients at high risk of obstetric hemorrhage who underwent temporary bilateral occlusion of internal iliac arteries. Jornal Vascular Brasileiro. 2013;12:202-6. PMID: X-2, X-4

2616. Kumar K, Al Arebi A, Singh I. Accidental intravenous infusion of a large dose of magnesium sulphate during labor: A case report. Journal of Anaesthesiology Clinical Pharmacology. 2013 July-September;29:377-9. PMID: X-1, X-4

2617. Kumar R. Abortion in Sri Lanka: the double standard. Am J Public Health. 2013 Mar;103:400-4. PMID: 23327236; X-1

2618. Kumru P, Demirci O, Erdogdu E, et al. The Bakri balloon for the management of postpartum hemorrhage in cases with placenta previa. Eur J Obstet Gynecol Reprod Biol. 2013 Apr;167:167-70. PMID: 23298893; X-2, X-5

2619. Kwon HS, Cho YK, Sohn IS, et al. Rupture of a pseudoaneurysm as a rare cause of severe postpartum hemorrhage: analysis of 11 cases and a review of the literature. Eur J Obstet Gynecol Reprod Biol. 2013 Sep;170:56-61. PMID: 23746797; X-5

2620. Lambert V, Pouget K, Basurko C, et al. [Geophagy and pregnancy: Current knowledge and management. Clinical experiences of an obstetrical department in French Guiana.]. J Gynecol Obstet Biol Reprod (Paris). 2013 Jul 17PMID: 23871612; X-1, X-2, X-3, X-4

2621. Lannon SM, Guthrie KA, Reed SD, et al. Mode of delivery at periviable gestational ages: impact on subsequent reproductive outcomes. J Perinat Med. 2013 Nov;41:691-7. PMID: 23924520; X-4

2622. Lao TT, Sahota DS, Cheng YK, et al. Advanced maternal age and postpartum hemorrhage - risk factor or red herring? J Matern Fetal Neonatal Med. 2013 Feb;27:243-6. PMID: 23713943; X-4

2623. Larciprete G, Montagnoli C, Frigo M, et al. Carbetocin versus oxytocin in caesarean section with high risk of post-partum haemorrhage. J Prenat Med. 2013 Jan;7:12-8. PMID: 23741542; X-4

2624. Latif T, Ali MA, Majeed A, et al. Labor outcome of primigravidae in Mymensingh Medical College Hospital. Mymensingh Med J. 2013 Jul;22:432-7. PMID: 23982529; X-2, X-4

2625. Lawani OL, Iyoke CA, Onyebuchi AK. Blood transfusion trends in obstetrics at the Federal Teaching Hospital in Abakaliki, South-East Nigeria. Int J Womens Health. 2013;5:407-12. PMID: 23874125; X-2

2626. Lee AI, Wong CA, Healy L, et al. Impact of a third stage of labor oxytocin protocol on cesarean delivery outcomes. Int J Obstet Anesth. 2013 Feb;23:18-22. PMID: 24332518; X-4

2627. Levy JH, Welsby I, Goodnough LT. Fibrinogen as a therapeutic target for bleeding: a review of critical levels and replacement therapy. Transfusion. 2013 Oct 9PMID: 24117955; X-1

2628. Li J, Yu YX, Zheng LY, et al. [Clinical research on bilateral arcuate artery suture hemostasis of corpus uteri for postpartum hemorrhage due to uterine inertia during caesarean section]. Zhonghua Fu Chan Ke Za Zhi. 2013 Mar;48:165-70. PMID: 23849936; X-2

2629. Lim HJ, Kim JY, Kim YD, et al. Intraoperative uterine artery embolization without fetal radiation exposure in patients with placenta previa totalis: Two case reports. Obstet Gynecol Sci. 2013 Jan;56:45-9. PMID: 24327980; X-1, X-4

2630. Lim R. Postpartum Hemorrhage in Bali: A Day at Bumi Sehat. Midwifery Today. 2013:9-15. PMID: X-1, X-2

2631. Limmer JS, Grotegut CA, Thames E, et al. Postpartum wound and bleeding complications in women who received peripartum anticoagulation. Thromb Res. 2013 Jul;132:e19-23. PMID: 23735589; X-4

2632. Liu S, Joseph KS, Hutcheon JA, et al. Gestational age-specific severe maternal morbidity associated with labor induction. Am J Obstet Gynecol. 2013 Sep;209:209 e1-8. PMID: 23702296; X-4

2633. Lo TK, Yung WK, Lau WL, et al. Planned conservative management of placenta accreta - experience of a regional general hospital. J Matern Fetal Neonatal Med. 2013 Feb;27:291-6. PMID: 23796273; X-4, X-5

2634. Lopera J, Suri R, Kroma GM, et al. Role of interventional procedures in obstetrics/gynecology. Radiol Clin North Am. 2013 Nov;51:1049-66. PMID: 24210444; X-1

2635. Lotfalizadeh M, Mansouri A, Mansouri M, et al. Evaluation of causes and therapeutic methods of controlling of postpartum hemorrhage in two governmental hospital of Mashhad, Iran. Iranian Journal of Obstetrics, Gynecology and Infertility. 2013;16:1-5. PMID: X-2, X-4

2636. Lupattelli A, Spigset O, Koren G, et al. Risk of vaginal bleeding and postpartum hemorrhage after use of antidepressants in pregnancy: a study from the Norwegian Mother and Child Cohort Study. J Clin Psychopharmacol. 2013 Feb;34:143-8. PMID: 24135843; X-4

2637. Madima NR. Obstetrics drugs. South African Family Practice. 2013 May - June;55:S8-S12. PMID: X-1

2638. Magann EF, Doherty DA, Sandlin AT, et al. The effects of an increasing gradient of maternal obesity on pregnancy outcomes. Aust N Z J Obstet Gynaecol. 2013 Jun;53:250-7. PMID: 23432797; X-4

2639. Magee SR, Shields R, Nothnagle M. Low cost, high yield: simulation of obstetric emergencies for family medicine training. Teach Learn Med. 2013;25:207-10. PMID: 23848326; X-3, X-4

2640. Mahadik KV, Swami MB, Pandey N, et al. Exsanguinated uterus after massive atonic postpartum haemorrhage. BMJ Case Rep. 2013;2013PMID: 23853190; X-4

2641. Mahajan D, Kang M, Sandhu M, et al. Rare complications of cesarean scar. India: Medknow Publications and Media Pvt. Ltd (B9, Kanara Business Centre, off Link Road, Ghatkopar (E), Mumbai 400 075, India); 2013. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed11&NEWS=N&AN=2013780884. Accessed on (Mahajan, Kang, Sandhu, Kalra, Khandelwal) Departments of Radiodiagnosis, Postgraduate Institute of Medical Education and Research, Sector-12, Chandigarh, India 23.

2642. Mahajan D, Kang M, Sandhu MS, et al. Rare complications of cesarean scar. Indian J Radiol Imaging. 2013 Jul;23:258-61. PMID: 24347858; X-1

2643. Mahey R, Kaur SD, Chumber S, et al. Splenectomy during pregnancy: Treatment of refractory immune thrombocytopenic purpura. BMJ Case Reports. 2013;20PMID: X-1

2644. Makvandi S, Shoushtari SZ, Hosseini VZ. Management of third stage of labor: A comparison of intraumbilical oxytocin and placental cord drainage. Shiraz E Medical Journal. 2013;14PMID: X-2, X-3, X-4

2645. Malhotra V, Bhuria V, Nanda S, et al. Decidual cast following B-Lynch suture: The surgeon's nightmare. Journal of Gynecologic Surgery. 2013 01 Aug;29:213-5. PMID: X-2, X-5

2646. Marahatta R. Retained placenta--a major cause of maternal morbidity. Nepal Med Coll J. 2013 Mar;14:41-5. PMID: 23441493; X-2, X-4, X-5

2647. Martin-Hirsch P, Khan K. BJOG Editors' Choice. BJOG. 2013 Feb;120:i-ii. PMID: 23316910; X-1

2648. Martins HE, Souza Mde L, Arzuaga-Salazar MA. Maternal mortality from hemorrhage in the State of Santa Catarina, Brazil. Rev Esc Enferm USP. 2013 Oct;47:1025-30. PMID: 24346439; X-2, X-4

2649. Martyn P, Loewenau-Samusionek K, Wasniewski T, et al. Subsequent pregnancy following B-Lynchsuture, bilateral ligationofuterinearteries,utero-ovarian arteries andinternaliliacarteriesduetouterine atony - A casereport. 2013;20:124-7. PMID: X-3

2650. Matsubara S. Combination of an intrauterine balloon and the "holding the cervix" technique for hemostasis of postpartum hemorrhage and for prophylaxis of acute recurrent uterine inversion. Acta Obstet Gynecol Scand. 2013 Oct 15PMID: 24127992; X-1, X-4, X-5

2651. Matsubara S, Kuwata T, Usui R, et al. 'Holding the cervix' technique for post-partum hemorrhage for achieving hemostasis as well as preventing prolapse of an intrauterine balloon. J Obstet Gynaecol Res. 2013 May;39:1116-7. PMID: 23509951; X-1, X-4, X-5

2652. Matsubara S, Nakata M, Baba Y, et al. Uterine artery pseudoaneurysm hidden behind septic abortion: Pseudoaneurysm without preceding procedure. J Obstet Gynaecol Res. 2013 Feb;40:586-9. PMID: 24118644; X-2, X-4, X-5

2653. Matsubara S, Usui R, Sato T, et al. Adenomyomectomy, curettage, and then uterine artery pseudoaneurysm occupying the entire uterine cavity. J Obstet Gynaecol Res. 2013 May;39:1103-6. PMID: 23551573; X-1, X-3, X-4

2654. Matsuwaki T, Khan KN, Inoue T, et al. Evaluation of obstetrical factors related to Sheehan syndrome. J Obstet Gynaecol Res. 2013 Jan;40:46-52. PMID: 23945005; X-5

2655. McClure EM, Rouse DJ, Macguire ER, et al. The MANDATE model for evaluating interventions to reduce postpartum hemorrhage. Int J Gynaecol Obstet. 2013 Apr;121:5-9. PMID: 23313144; X-2, X-3, X-4

2656. McDonald SJ, Middleton P, Dowswell T, et al. Effect of timing of umbilical cord clamping of term infants on maternal and neonatal outcomes. Cochrane Database Syst Rev. 2013;7:CD004074. PMID: 23843134; X-1

2657. McLean MT. Hemorrhage in Childbearing. Midwifery Today. 2013:8-. PMID: X-1

2658. Mehrabadi A, Hutcheon J, Lee L, et al. Epidemiological investigation of a temporal increase in atonic postpartum haemorrhage: a population-based retrospective cohort study. BJOG. 2013 Jun;120:853-62. PMID: 23464351; X-4

2659. Mehrabadi A, Hutcheon JA, Lee L, et al. Epidemiological investigation of a temporal increase in atonic postpartum haemorrhage: a population-based retrospective cohort study. BJOG. 2013 Jun;120(7):853-62. PMID: 23464351; X-4

2660. Melamed N, Segev M, Hadar E, et al. Outcome of trial of labor after cesarean section in women with past failed operative vaginal delivery. Am J Obstet Gynecol. 2013 Jul;209:49 e1-7. PMID: 23507547; X-4

2661. Merrick K, Jibodu OA, Rajesh U. The difficult PPH: experience of combined use of B-Lynch brace suture and intrauterine Bakri balloon in York hospital, UK. J Obstet Gynaecol. 2013 Apr;33:314-5. PMID: 23550872; X-5

2662. Mesbah Y, Fialla E, Barakat R, et al. Emergency peripartum hysterectomy: The experience of a tertiary referral hospital. Middle East Fertility Society Journal. 2013 June;18:89-93. PMID: X-2, X-4

2663. Mhyre JM, Shilkrut A, Kuklina EV, et al. Massive blood transfusion during hospitalization for delivery in new york state, 1998-2007. Obstet Gynecol. 2013 Dec;122:1288-94. PMID: 24201690; X-4, X-5

2664. Mibi Kakisingi J, Zacche MM, Zacche G. The impact of traditional medicinal plants use in prenatal period in a Congolese community. Italian Journal of Gynaecology and Obstetrics. 2013;25:33-40. PMID: X-2, X-4

2665. Miller S, Bergel EF, El Ayadi AM, et al. Non-Pneumatic Anti-Shock Garment (NASG), a First-Aid Device to Decrease Maternal Mortality from Obstetric Hemorrhage: A Cluster Randomized Trial. PLoS One. 2013;8:e76477. PMID: 24194839; X-2

2666. Miller S, Skinner J. Are first-time mothers who plan home birth more likely to receive evidence-based care? A comparative study of home and hospital care provided by the same midwives. Birth. 2013 Jun;39:135-44. PMID: 23281862; X-2, X-4

2667. Mir SA, Masoodi SR, Wani AI, et al. Deep vein thrombosis in a patient of Sheehan's syndrome: Autoimmunity or hypercoagulabilty. Indian J Endocrinol Metab. 2013 Oct;17:S105-6. PMID: 24251124; X-1, X-2, X-4

2668. Mirteimouri M, Tara F, Teimouri B, et al. Efficacy of rectal misoprostol for prevention of postpartum hemorrhage. Iran J Pharm Res. 2013 Spring;12:469-74. PMID: 24250623; X-2, X-4

2669. Mirzabagi E, Deepak NN, Koski A, et al. Uterotonic use during childbirth in Uttar Pradesh: accounts from community members and health providers. Midwifery. 2013 Aug;29:902-10. PMID: 23415370; X-2, X-3, X-4

2670. Monod C, Voekt CA, Gisin M, et al. Optimization of competency in obstetrical emergencies: a role for simulation training. Arch Gynecol Obstet. 2013 Dec 18PMID: 24346119; X-3, X-4

2671. Monteith C, Ni Ainle F, Cooley S, et al. Hepatitis C virus-associated thrombocytopenia in pregnancy: impact upon multidisciplinary care provision. J Perinat Med. 2013 Jan;42:135-8. PMID: 24006316; X-4

2672. Montufar-Rueda C, Rodriguez L, Jarquin JD, et al. Severe postpartum hemorrhage from uterine atony: a multicentric study. J Pregnancy. 2013;2013:525914. PMID: 24363935; X-2, X-4, X-5

2673. Moonstone BA. Preventing Postpartum Hemorrhage • by Respecting the Natural Process of Third Stage. Midwifery Today. 2013:30-2. PMID: X-1, X-2, X-4, X-5

2674. Mori R, Tokumasu H, Pledge D, et al. High-dose versus low-dose oxytocin for augmentation of delayed labour. Cochrane Database of Systematic Reviews. 2013(7)PMID: 2011309246. Language: English. Entry Date: 20111014. Revision Date: 20140606. Publication Type: journal article; X-1

2675. Morlando M, Sarno L, Napolitano R, et al. Placenta accreta: incidence and risk factors in an area with a particularly high rate of cesarean section. Acta Obstet Gynecol Scand. 2013 Apr;92:457-60. PMID: 23347183; X-3, X-4

2676. Moulder JK, Garrett LA, Salazar GM, et al. The role of radical surgery in the management of acquired uterine arteriovenous malformation. Case Reports in Oncology. 2013 May-August;6:303-10. PMID: X-1, X-3, X-4

2677. Mpemba F, Kampo S, Zhang X. Towards 2015: post-partum haemorrhage in sub-Saharan Africa still on the rise. J Clin Nurs. 2013 Mar 8PMID: 23472972; X-1, X-2, X-4

2678. Muir HA. Pharmacologic intervention for managing uterine atony and related maternal hemorrhage: what is the most effective drug dose? Can J Anaesth. 2013 Nov;60(11):1047-53. PMID: 24092476; X-1

2679. Mukta M, Sahay PB. Role of misoprostol 600 mcg oral in active management of third stage of labor: A comparative study with oxytocin 10 IU i.m. Journal of Obstetrics and Gynecology of India. 2013;63:325-7. PMID: X-2, X-4

2680. Naji O, Wynants L, Smith A, et al. Does the presence of a Caesarean section scar affect implantation site and early pregnancy outcome in women attending an early pregnancy assessment unit? Hum Reprod. 2013 Jun;28:1489-96. PMID: 23585560; X-4

2681. Naoko M, Yaeko K, Hiromi ETO, et al. Literature review of risk factors and preventive interventions for postpartum hemorrhage. Journal of Japan Academy of Midwifery. 2013;27:4-15. PMID: X-1

2682. Nelissen E, Ersdal H, Ostergaard D, et al. Helping mothers survive bleeding after birth: an evaluation of simulation-based training in a low-resource setting. Acta Obstet Gynecol Scand. 2013 Dec 18PMID: 24344822; X-2, X-3, X-4

2683. Nelissen EJ, Mduma E, Ersdal HL, et al. Maternal near miss and mortality in a rural referral hospital in northern Tanzania: a cross-sectional study. BMC Pregnancy Childbirth. 2013;13:141. PMID: 23826935; X-2, X-4

2684. Nelson BD, Stoklosa H, Ahn R, et al. Use of uterine balloon tamponade for control of postpartum hemorrhage by community-based health providers in South Sudan. Int J Gynaecol Obstet. 2013 Jul;122:27-32. PMID: 23623587; X-2

2685. Nelson DB, Yost NP, Cunningham FG. Acute fatty liver of pregnancy: clinical outcomes and expected duration of recovery. Am J Obstet Gynecol. 2013 Nov;209:456 e1-7. PMID: 23860212; X-4

2686. Nezvalova-Henriksen K, Spigset O, Nordeng H. Triptan safety during pregnancy: a Norwegian population registry study. Eur J Epidemiol. 2013 Sep;28:759-69. PMID: 23884894; X-1, X-4

2687. Ng VK, Lo TK, Tsang HH, et al. Intensive care unit admission of obstetric cases: a single centre experience with contemporary update. Hong Kong Med J. 2013 Feb;20:24-31. PMID: 23784532; X-4, X-5

2688. Ngowa JD, Ngassam AN, Dohbit JS, et al. Pregnancy outcome at advanced maternal age in a group of African women in two teaching Hospitals in Yaounde, Cameroon. Pan Afr Med J. 2013;14:134. PMID: 23734279; X-2, X-4

2689. Nguyen TN, Crowther CA, Wilkinson D, et al. Magnesium sulphate for women at term for neuroprotection of the fetus. Cochrane Database of Systematic Reviews. 2013PMID: X-1

2690. Nielsen C, Stengarde L, Bergsten C, et al. Relationship between herd-level incidence rate of energy-related postpartum diseases, general risk factors and claw lesions in individual dairy cows recorded at maintenance claw trimming. Acta Vet Scand. 2013;55:55. PMID: 23880035; X-1, X-3, X-4

2691. Nili F, McLeod L, O'Connell C, et al. Maternal and neonatal outcomes in pregnancies complicated by systemic lupus erythematosus: a population-based study. J Obstet Gynaecol Can. 2013 Apr;35:323-8. PMID: 23660039; X-4

2692. Nimbargi VR, Karmarkar MD. Intra uterine fetal death due to trauma - A case report. Indian Journal of Forensic Medicine and Toxicology. 2013 January-June;7:100-2. PMID: X-1

2693. Nooren M, Nawal R. Obstetric hysterectomy: A life saving emergency. Indian J Med Sci. 2013 May;67:99-102. PMID: 24326761; X-2, X-5

2694. Noreen Z, Hassan S, Kazi A, et al. The influence of antenatal care on pregnancy outcome in Primigravidae. 2013;7:782-4. PMID: X-2, X-4

2695. Nwankwo TO, Aniebue UU, Ezenkwele E, et al. Pregnancy outcome and factors affecting vaginal delivery of twins at University of Nigeria Teaching Hospital, Enugu. Niger J Clin Pract. 2013 Oct-Dec;16:490-5. PMID: 23974745; X-2, X-4

2696. Odent M. Preventing postpartum haemorrhage. Midwifery Today Int Midwife. 2013 Spring:18-9. PMID: 23581193; X-1, X-4, X-5

2697. Okby R, Shoham-Vardi I, Ruslan S, et al. Is induction of labor risky for twins compare to singleton pregnancies? J Matern Fetal Neonatal Med. 2013 Dec;26:1804-6. PMID: 23662640; X-4

2698. Okeke TC, Ezenyeaku CC, Ikeako LC. Caesarean hysterectomy. Niger J Med. 2013 Apr-Jun;22:83-8. PMID: 23829115; X-2, X-4

2699. Okeke TC, Ugwu EO, Okezie OA, et al. Trends and determinants of episiotomy at the University of Nigeria Teaching Hospital (Unth), Enugu, Nigeria. Niger J Med. 2013 Jul-Sep;21:304-7. PMID: 23304925; X-2, X-4

2700. Okonofua FE, Ogu RN, Akuse JT, et al. Assessment of sublingual misoprostol as first-line treatment for primary post-partum hemorrhage: Results of a multicenter trial. J Obstet Gynaecol Res. 2013 Dec 10PMID: 24320203; X-2

2701. Olefile KM, Khondowe O, M'Rithaa D. Misoprostol for prevention and treatment of postpartum haemorrhage: A systematic review. Curationis. 2013;36:E1-E10. PMID: 23718882; X-1

2702. Olsen R, Reisner DP, Benedetti TJ, et al. Bakri balloon effectiveness for postpartum hemorrhage: a "real world experience". J Matern Fetal Neonatal Med. 2013 Nov;26:1720-3. PMID: 23611683; X-5

2703. Osmundson SS, Wong AE, Gerber SE. Second-trimester placental location and postpartum hemorrhage. J Ultrasound Med. 2013 Apr;32:631-6. PMID: 23525388; X-4

2704. Oteng-Ntim E, Kopeika J, Seed P, et al. Impact of obesity on pregnancy outcome in different ethnic groups: calculating population attributable fractions. PLoS One. 2013;8:e53749. PMID: 23341993; X-4

2705. Owolabi MS, Blake RE, Mayor MT, et al. Incidence and determinants of peripartum hysterectomy in the metropolitan area of the District of Columbia. J Reprod Med. 2013 Mar-Apr;58:167-72. PMID: 23539887; X-4

2706. Paidas MJ, Hossain N. Unexpected Postpartum Hemorrhage Due to an Acquired Factor VIII Inhibitor. Am J Perinatol. 2013 Dec 11PMID: 24338123; X-1

2707. Palmsten K, Hernandez-Diaz S, Huybrechts KF, et al. Use of antidepressants near delivery and risk of postpartum hemorrhage: cohort study of low income women in the United States. BMJ. 2013;347:f4877. PMID: 23965506; X-4

2708. Palsson R, Vidarsson B, Gudmundsdottir BR, et al. Complementary effect of fibrinogen and rFVIIa on clotting ex vivo in Bernard-Soulier syndrome and combined use during three deliveries. Platelets. 2013 Aug 2PMID: 23909788; X-3, X-4

2709. Palumbo MA, Fauzia M, Gulino FA, et al. Macrosomia: Effect, predictive maternal factor, neonatal complications. Our casuistry. Giornale Italiano di Ostetricia e Ginecologia. 2013 May-June;35:453-6. PMID: X-4

2710. Parna FH, Latif T, Sultana N, et al. Maternal & fetal outcome of eclamptic patients admitted in obstetrics & gynaecology department of secondary care hospital in Bangladesh. Mymensingh Med J. 2013 Jul;22:522-6. PMID: 23982543; X-2, X-4

2711. Patacchiola F, D'Alfonso A, Di Fonso A, et al. Intrauterine balloon tamponade as management of postpartum haemorrhage and prevention of haemorrhage related to low-lying placenta. Clin Exp Obstet Gynecol. 2013;39:498-9. PMID: 23444752; X-5

2712. Pereira N, Delvadia D. A tool for teaching the B-Lynch brace suture method: An inexpensive new simulator allows obstetricians to polish an essential technique. Am J Obstet Gynecol. 2013 Dec;209:591 e1. PMID: 23954532; X-1

2713. Pervez SN, Javed K. Adenomyosis among samples from hysterectomy due to abnormal uterine bleeding. J Ayub Med Coll Abbottabad. 2013 Jan-Jun;25:68-70. PMID: 25098058; X-3, X-4

2714. Pongsatha S, Tongsong T. Randomized controlled trial comparing efficacy between a vaginal misoprostol loading and non-loading dose regimen for second-trimester pregnancy termination. J Obstet Gynaecol Res. 2013 Jan;40:155-60. PMID: 24033985; X-3, X-4

2715. Portilla D, Hernandez-Giraldo C, Moreno B, et al. A local hemostatic agent for the management of postpartum hemorrhage due to placenta previa and placenta accreta: a cross-sectional study. Arch Gynecol Obstet. 2013 Sep;288:543-9. PMID: 23532388; X-2

2716. Poujade O, Ceccaldi PF, Davitian C, et al. Uterine necrosis following pelvic arterial embolization for post-partum hemorrhage: review of the literature. Eur J Obstet Gynecol Reprod Biol. 2013 Oct;170:309-14. PMID: 23932304; X-1

2717. Prabhu TRB. Cerebrovascular complications in pregnancy and puerperium. Journal of Obstetrics and Gynecology of India. 2013 April;63:108-11. PMID: X-2, X-3, X-4

2718. Prata N, Bell S, Weidert K. Prevention of postpartum hemorrhage in low-resource settings: current perspectives. Int J Womens Health. 2013;5:737-52. PMID: 24259988; X-1

2719. Prick BW, Vos AA, Hop WC, et al. The current state of active third stage management to prevent postpartum hemorrhage: a cross-sectional study. Acta Obstet Gynecol Scand. 2013 Nov;92:1277-83. PMID: 23962221; X-4

2720. Raees M, Yasmeen S, Jabeen S, et al. Maternal morbidity associated with emergency versus elective caesarean section. Journal of Postgraduate Medical Institute. 2013;27:55-62. PMID: X-2, X-4

2721. Rajab KE, Al Sibai R. Ostpartum hemorrhage caused by pseudoaneurysm associated with malformations of the uterus. Bahrain Medical Bulletin. 2013;35PMID: X-1, X-2

2722. Ramachandra Bhat PB, Navada MH, Rao SV, et al. Evaluation of obstetric admissions to intensive care unit of a tertiary referral center in coastal India. Indian J Crit Care Med. 2013 Jan;17:34-7. PMID: 23833474; X-2, X-4, X-5

2723. Rana A, Baral G, Dangal G. Maternal near-miss: a multicenter surveillance in kathmandu valley. JNMA J Nepal Med Assoc. 2013 Apr-Jun;52:299-304. PMID: 24362650; X-2, X-4

2724. Rani S, Huria A. Re: Al-Sawaf A, El-Mazny A, Shohayeb A. 2013. A randomised controlled trial of sublingual misoprostol and intramuscular oxytocin for prevention of postpartum haemorrhage. Journal of Obstetrics and Gynaecology 33:277-279. J Obstet Gynaecol. 2013 Oct;33:751. PMID: 24127978; X-1, X-2, X-4, X-5

2725. Rashid N, Asif R, Zahra A, et al. Morbidity & mortality associated with placenta previa in emergency versus elective cesarean section. 2013;7PMID: X-2

2726. Rath W. [Active management of the third stage of labour (AMTSL) - the end of a 50 years-dogma?]. Z Geburtshilfe Neonatol. 2013 Oct;217:173-6. PMID: 24170442; X-1

2727. Ray A, Suri JC, Gupta M. Rifampicin induced adrenal crisis in an uncommon setting. Lung India. 2013 October-December;30:363-4. PMID: X-1

2728. Rishard MR, Galgomuwa GV, Gunawardane K. Improvised condom catheter with a draining channel for management of atonic post partum haemorrhage. Ceylon Med J. 2013 Sep;58:124-5. PMID: 24081174; X-2, X-4, X-5

2729. Robert T, Kawkabani Marchini A, Oumarou G, et al. Reversible cerebral vasoconstriction syndrome identification of prognostic factors. Clin Neurol Neurosurg. 2013 Nov;115:2351-7. PMID: 24021453; X-3, X-4

2730. Rohwer AC, Khondowe O, Young T. Antispasmodics for labour. Cochrane Database of Systematic Reviews. 2013PMID: X-1

2731. Rushing LK, Greene VM. Combating Obstetric Hemorrhage. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2013;42:S27-8. PMID: X-1, X-4, X-5

2732. Sadler LC, Austin DM, Masson VL, et al. Review of contributory factors in maternity admissions to intensive care at a New Zealand tertiary hospital. Am J Obstet Gynecol. 2013 Dec;209:549 e1-7. PMID: 23911384; X-4, X-5

2733. Samejima K, Takai Y, Matsumura H, et al. Recombinant tissue plasminogen activator for massive pulmonary thromboembolism. BMJ Case Reports. 2013PMID: X-1

2734. Samimi M, Imani-Harsini A, Abedzadeh-Kalahroudi M. Carbetocin vs. syntometrine in prevention of postpartum hemorrhage: A double blind randomized control trial. Iranian Red Crescent Medical Journal. 2013 September;15:817-22. PMID: X-2, X-4

2735. Schiraldi R, Calderon L, Maggi G, et al. Transoesophageal Doppler-guided fluid management in massive obstetric haemorrhage. Int J Obstet Anesth. 2013 Feb;23:71-4. PMID: 24315699; X-1, X-4, X-5

2736. Schmid BC, Rezniczek GA, Rolf N, et al. Uterine packing with chitosan-covered gauze for control of postpartum hemorrhage. Am J Obstet Gynecol. 2013 Sep;209:225 e1-5. PMID: 23727525; X-4, X-5

2737. Scholten BL, Page-Christiaens GC, Franx A, et al. The influence of pregnancy termination on the outcome of subsequent pregnancies: a retrospective cohort study. BMJ Open. 2013;3PMID: 23793655; X-4

2738. Scholten BL, Page-Christiaens GCML, Franx A, et al. The influence of pregnancy termination on the outcome of subsequent pregnancies: A retrospective cohort study. United Kingdom: BMJ Publishing Group (Tavistock Square, London WC1H 9JR, United Kingdom); 2013. http://bmjopen.bmj.com/content/3/5/e002803.full.pdf+htmlhttp://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed11&NEWS=N&AN=2013346583. Accessed on (Scholten, Page-Christiaens, Franx, Koster) Department of Obstetrics, University Medical Center Utrecht, Utrecht, Netherlands 3.

2739. Scott-Pillai R, Spence D, Cardwell CR, et al. The impact of body mass index on maternal and neonatal outcomes: a retrospective study in a UK obstetric population, 2004-2011. BJOG. 2013 Jul;120:932-9. PMID: 23530609; X-4

2740. Seethala S, Gaur S, Enderton E, et al. Postpartum acquired hemophilia: a rare cause of postpartum hemorrhage. Case Rep Hematol. 2013;2013:735715. PMID: 23533849; X-1, X-4, X-5

2741. Sehhati F, Naghizadeh S, Gojazadeh M. Comparison of maternal outcomes in women admitted in latent and active phases of labor. Iranian Journal of Obstetrics, Gynecology and Infertility. 2013 June;16:18-28. PMID: X-2, X-4

2742. Seijmonsbergen-Schermers AE, Geerts CC, Prins M, et al. The use of episiotomy in a low-risk population in the Netherlands: a secondary analysis. Birth. 2013 Dec;40:247-55. PMID: 24344705; X-4

2743. Sekhavat L, Karbasi SA, Fallah R, et al. Effect of hyoscine butylbromide first stage of labour in multiparus women. Afr Health Sci. 2013 Dec;12:408-11. PMID: 23515202; X-2, X-4

2744. Sellmyer MA, Desser TS, Maturen KE, et al. Physiologic, histologic, and imaging features of retained products of conception. Radiographics. 2013 May;33:781-96. PMID: 23674774; X-1, X-4

2745. Shaheen S, Akhtar S. Pregnancy after B-Lynch suture and uterine artery ligation in case of placenta increta. Journal of Postgraduate Medical Institute. 2013;27:459-60. PMID: X-2, X-5

2746. Shahzadi U. Frequency of barriers for non-using of contraception in multigravida women attending a tertiary care hospital. 2013;7:1154-6. PMID: X-2, X-4

2747. Shaikh MM, Bano K, Mujtaba S. Feto-maternal outcomes in women with congenital heart disease. 2013;24:5-9. PMID: X-2, X-4

2748. Shaikh S, Shaikh NB, Abassi R, et al. Obstetric admission to the intensive care unit: A one year review. 2013;19:59-63. PMID: X-2, X-4

2749. Sharief LA, Kadir RA. Congenital factor XIII deficiency in women: a systematic review of literature. Haemophilia. 2013 Nov;19:e349-57. PMID: 23992439; X-1

2750. Sharma N, Ganesh D, Devi L, et al. Prompt diagnosis and treatment of uterine arcuate artery pseudoaneurysm: A case report and review of literature. India: Journal of Clinical and Diagnostic Research (No 3, 1/9 Roop Nagar, G T Road, Delhi 110007, India); 2013. http://www.jcdr.net/articles/PDF/3506/62-%206063_E%28C%29_F%28T%29_PF1%28P_N_P%29_PFA%28NC%29.pdfhttp://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed11&NEWS=N&AN=2013639624. Accessed on (Sharma, Ganesh, Devi, Srinivasan) Department of Obstetrics and Gynaecology, Saveetha Medical College, No.162 Poonamalle High Road, Chennai -6000077, India 7.

2751. Sharma N, Ganesh D, Devi L, et al. Prompt Diagnosis and Treatment of Uterine Arcuate Artery Pseudoaneurysm: A Case Report and Review of Literature. J Clin Diagn Res. 2013 Oct;7:2303-6. PMID: 24298511; X-1, X-2, X-5

2752. Shashikala G, Sumathi K, Anuradha C. Pregnancy outcome in patient with adult onset still's disease-a rare case report. International Journal of Pharma and Bio Sciences. 2013 October/December;4:B694-B7. PMID: X-1

2753. Sheikh S, Naz S, Shaikh A, et al. B-Lynch suture in the management of massive post partum hemorrhage. Rawal Medical Journal. 2013;38:404-8. PMID: X-2

2754. Shekhar S, Chauhan N, Singh K, et al. Delayed and successful manual removal of abnormally adherent placenta necessitated by uterine sepsis following conservative management with adjuvant methotrexate - A rewarding clinical experience. South African Journal of Obstetrics and Gynaecology. 2013;19:19-21. PMID: X-1, X-2

2755. Sheldon WR, Durocher J, Winikoff B, et al. How effective are the components of active management of the third stage of labor? BMC Pregnancy Childbirth. 2013;13:46. PMID: 23433172; X-4

2756. Shoib S, Dar MM, Arif T, et al. Sheehan's syndrome presenting as psychosis: a rare clinical presentation. Med J Islam Repub Iran. 2013 Feb;27:35-7. PMID: 23483784; X-1

2757. Smit M, Sindram SI, Woiski M, et al. The development of quality indicators for the prevention and management of postpartum haemorrhage in primary midwifery care in the Netherlands. BMC Pregnancy Childbirth. 2013 Oct 20;13:194. PMID: 24139411; X-1, X-3, X-4

2758. Smith JM, Gubin R, Holston M, et al. Misoprostol for postpartum hemorrhage prevention at home birth: an integrative review of global implementation experience to date. MIDIRS Midwifery Digest. 2013;23:399-400. PMID: X-1

2759. Smith JM, Gubin R, Holston MM, et al. Misoprostol for postpartum hemorrhage prevention at home birth: an integrative review of global implementation experience to date. MIDIRS Midwifery Digest. 2013;23(3):399-400. PMID: 2012364528. Language: English. Entry Date: 20131220. Revision Date: 20131220. Publication Type: journal article; X-1

2760. Soni M, Agrawal S, Soni P, et al. Causes of maternal mortality: Our scenario. 2013;5:96-8. PMID: X-2, X-4, X-5

2761. Soresi M, Brunori G, Citarrella R, et al. Late-onset Sheehan's syndrome presenting with rhabdomyolysis and hyponatremia: a case report. J Med Case Rep. 2013;7:227. PMID: 24083446; X-1, X-4

2762. Souza JP. The prevention of postpartum hemorrhage in the community. PLoS Med. 2013 Oct;10:e1001525. PMID: 24130464; X-1

2763. Souza JP, Gulmezoglu AM, Vogel J, et al. Moving beyond essential interventions for reduction of maternal mortality (the WHO Multicountry Survey on Maternal and Newborn Health): a cross-sectional study. Lancet. 2013 May 18;381:1747-55. PMID: 23683641; X-2, X-4

2764. Stanton CK, Newton S, Mullany LC, et al. Effect on postpartum hemorrhage of prophylactic oxytocin (10 IU) by injection by community health officers in Ghana: a community-based, cluster-randomized trial. PLoS Med. 2013 Oct;10:e1001524. PMID: 24130463; X-2, X-4

2765. Steiner N, Weintraub AY, Madi Y, et al. The unfavorable slope from mild preeclampsia through severe preeclampsia, to eclampsia. Pregnancy Hypertension. 2013 April;3:146-50. PMID: X-1, X-4

2766. Stewart L, Kendall A, Knight M, et al. The relationship between type of labour and third stage oxytocic use on postpartum haemorrhage rates. Women & Birth. 2013;26:S27-S. PMID: 2012306164. Language: English. Entry Date: 20140404. Revision Date: 20140926. Publication Type: journal article; X-4

2767. Stock SJ, Ferguson E, Duffy A, et al. Outcomes of induction of labour in women with previous caesarean delivery: a retrospective cohort study using a population database. PLoS One. 2013;8:e60404. PMID: 23565242; X-4

2768. Stock SJ, Josephs K, Farquharson S, et al. Maternal and neonatal outcomes of successful Kielland's rotational forceps delivery. Obstet Gynecol. 2013 May;121:1032-9. PMID: 23635740; X-4

2769. Stohl HE, Ouzounian J, Rick AM, et al. Thyroid disease and gestational diabetes mellitus (GDM): is there a connection? J Matern Fetal Neonatal Med. 2013 Jul;26:1139-42. PMID: 23461673; X-3, X-4

2770. Straub HL, Morgan G, Ochoa P, et al. Targeted obstetric haemorrhage programme improves incoming resident confidence and knowledge. J Obstet Gynaecol. 2013 Nov;33:798-801. PMID: 24219716; X-3, X-4

2771. Sulaiman S, Othman S, Razali N, et al. Obstetric and perinatal outcome in teenage pregnancies. South African Journal of Obstetrics and Gynaecology. 2013;19:77-80. PMID: X-2, X-4

2772. Sutherland T, Downing J, Miller S, et al. Use of the non-pneumatic anti-shock garment (NASG) for life-threatening obstetric hemorrhage: a cost-effectiveness analysis in Egypt and Nigeria. PLoS One. 2013;8:e62282. PMID: 23646124; X-2

2773. Suwal A, Shrivastava VR, Giri A. Maternal and Fetal Outcome in Elective versus Emergency Cesarean Section. JNMA J Nepal Med Assoc. 2013 Oct-Dec;52(192):563-6. PMID: 25327227; X-2, X-4

2774. Takeda J, Makino S, Ota A, et al. Spontaneous uterine rupture at 32 weeks of gestation after previous uterine artery embolization. J Obstet Gynaecol Res. 2013 Aug 15PMID: 23945024; X-1, X-2, X-3

2775. Tan PC, Soe MZ, Sulaiman S, et al. Immediate compared with delayed oxytocin after amniotomy labor induction in parous women: a randomized controlled trial. Obstet Gynecol. 2013 Feb;121:253-9. PMID: 23344273; X-4

2776. Tang J, Kapp N, Dragoman M, et al. WHO recommendations for misoprostol use for obstetric and gynecologic indications. Int J Gynaecol Obstet. 2013 May;121:186-9. PMID: 23433680; X-1

2777. Tempest N, Hart A, Walkinshaw S, et al. A re-evaluation of the role of rotational forceps: retrospective comparison of maternal and perinatal outcomes following different methods of birth for malposition in the second stage of labour. BJOG. 2013 Sep;120:1277-84. PMID: 23906197; X-4

2778. Ten Eikelder ML, Neervoort F, Oude Rengerink K, et al. Induction of labour with a Foley catheter or oral misoprostol at term: the PROBAAT-II study, a multicentre randomised controlled trial. BMC Pregnancy Childbirth. 2013;13:67. PMID: 23506128; X-1, X-4

2779. Ten Eikelder ML, Neervoort F, Oude Rengerink K, et al. Induction of labour with a Foley catheter or oral misoprostol at term: the PROBAAT-II study, a multicentre randomised controlled trial. BMC Pregnancy Childbirth. 2013;13:67. PMID: 23506128; X-1, X-4, X-5

2780. Tewatia R, Rani S, Srivastav U, et al. Sublingual misoprostol versus intravenous oxytocin in prevention of post-partum hemorrhage. Arch Gynecol Obstet. 2013 Sep 18PMID: 24045979; X-4

2781. Thewjitcharoen Y, Udae S, Treeprasertsuk S. Severe acute fatty liver in pregnancy: A diagnostic dilemma in clinical practice. Asian Biomedicine. 2013 February;7:125-30. PMID: X-1, X-2, X-4

2782. Trinh AT, Khambalia A, Ampt A, et al. Episiotomy rate in Vietnamese-born women in Australia: support for a change in obstetric practice in Viet Nam. Bull World Health Organ. 2013 May 1;91:350-6. PMID: 23678198; X-4

2783. Tufail S, Bangash N, Siddiqui FR. Safety of Abdominal vs. Vaginal delivery in women with cardiac diseases. Rawal Medical Journal. 2013;38:413-6. PMID: X-2, X-4

2784. Tuncalp O, Souza JP, Gulmezoglu M. New WHO recommendations on prevention and treatment of postpartum hemorrhage. Int J Gynaecol Obstet. 2013 Dec;123:254-6. PMID: 24054054; X-1

2785. Tyrberg RB, Blomberg M, Kjolhede P. Deliveries among teenage women - with emphasis on incidence and mode of delivery: a Swedish national survey from 1973 to 2010. BMC Pregnancy Childbirth. 2013;13:204. PMID: 24207112; X-4

2786. Umashankar KM, Dharmavijaya MN, Sudha R, et al. Effect of a primary postpartum haemorrhage on the "Near-Miss" morbidity and mortality at a tertiary care hospital in Rural Bangalore, India. India: Journal of Clinical and Diagnostic Research (71 Veer Nagar,G.T. Road, Delhi 110007, India); 2013. http://www.jcdr.net/articles/PDF/3066/34%20-%205376_PF1%28M%29_E%28C%29_F%28T%29_PF1%28PUH%29_PFA%28PUH%29NEW.pdfhttp://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed11&NEWS=N&AN=2013355939. Accessed on (Umashankar, Dharmavijaya, Sudha, Datti, Kavitha, Laxmi) Obstetrics and Gynaecology, MVJ Medical College, Bangalore, India 7.

2787. Un-Nisa S, Un-Nisa M. Maternal outcome in active and expectant management of third stage of labour. 2013;7:758-60. PMID: X-2, X-4

2788. Upson K, Silver RM, Greene R, et al. Placenta accreta and maternal morbidity in the Republic of Ireland, 2005-2010. J Matern Fetal Neonatal Med. 2013 Jan;27:24-9. PMID: 23638753; X-4

2789. Usman N, Noblet J, Low D, et al. Intra-aortic balloon occlusion without fluoroscopy for severe postpartum haemorrhage secondary to placenta percreta. Int J Obstet Anesth. 2013 Nov 30PMID: 24300388; X-1, X-2, X-4, X-5

2790. Usmani I, Bakhsh FM. Primary post partum hemorrhage an obstetric catastrophe: A review of 270 cases. Medical Forum Monthly. 2013 June;24:69-72. PMID: X-2, X-4

2791. Usmani SY, Nisa SU, Nisa SS, et al. Out come of pregnancies associated with fibroids. Pakistan: Lahore Medical And Dental College (Tulspura, North Canal Bank, Lahore, Pakistan); 2013. http://pjmhsonline.com/http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed11&NEWS=N&AN=2013668951. Accessed on (Usmani, Nisa, Nisa, Latif) 1 Demonstrator, QAMC Bahawalpur, 2 WMO, Gynaecology, BVH Bahawalpur, 3 Department of Gynaecology, BVH Bahawalpur, 4 WMO, Gynaecology, BVH Bahawalpur 7.

2792. van Baaren GJ, Jozwiak M, Opmeer BC, et al. Cost-effectiveness of induction of labour at term with a Foley catheter compared to vaginal prostaglandin E(2) gel (PROBAAT trial). BJOG. 2013 Jul;120:987-95. PMID: 23530729; X-3, X-4

2793. van Beekhuizen HJ, Tarimo V, Pembe AB, et al. A randomized controlled trial on the value of misoprostol for the treatment of retained placenta in a low-resource setting. Int J Gynaecol Obstet. 2013 Sep;122:234-7. PMID: 23791153; X-2, X-4, X-5

2794. van Dam VC, ten Tusscher BL, Girbes ARJ. Sepsis and bleeding in an obstetric patient who is a Jehovah's Witness. Netherlands Journal of Critical Care. 2013;17:19-22. PMID: X-1

2795. Van Wagner V, Osepchook C, Harney E, et al. Remote midwifery in Nunavik, Quebec, Canada: outcomes of perinatal care for the Inuulitsivik health centre, 2000-2007. Birth. 2013 Sep;39:230-7. PMID: 23281905; X-4

2796. Velez Alvarez GA, Agudelo Jaramillo B, Gomez Davila J, et al. [Validation of Code Red: a proposal for the treatment of obstetric hemorrhage]. Rev Panam Salud Publica. 2013 Oct;34:244-9. PMID: 24301735; X-1, X-2, X-5

2797. Vetere PF, Wayock CP, Muscat J, et al. A novel approach to teaching placement of a B-lynch suture: description of technique and validation of teaching model. J Grad Med Educ. 2013 Sep;4:367-9. PMID: 23997884; X-3, X-4

2798. Vidal F, Simon C, Cristini C, et al. Instrumental rotation for persistent fetal occiput posterior position: a way to decrease maternal and neonatal injury? PLoS One. 2013;8(10):e78124. PMID: 24205122; X-4

2799. Vinayagam D, Chandraharan E. The adverse impact of maternal obesity on intrapartum and perinatal outcomes. ISRN Obstet Gynecol. 2013;2012:939762. PMID: 23316381; X-4

2800. von Schmidt Auf Altenstadt JF, Hukkelhoven CW, van Roosmalen J, et al. Pre-eclampsia increases the risk of postpartum haemorrhage: a nationwide cohort study in the Netherlands. PLoS One. 2013;8:e81959. PMID: 24367496; X-4

2801. Vrachnis N, Salakos N, Iavazzo C, et al. Bakri balloon tamponade for the management of postpartum hemorrhage. Int J Gynaecol Obstet. 2013 Sep;122:265-6. PMID: 23791152; X-5

2802. Wada N, Tachibana D, Nakagawa K, et al. Pathological findings in a case of failed uterine artery embolization for placenta previa. Jpn Clin Med. 2013;4:25-8. PMID: 23966814; X-5

2803. Waechter M. Thinking Green. Midwifery Today. 2013:16-7. PMID: X-1

2804. Waheed G, Toheed R, Mansha M, et al. Comparison of causes of postpartum haemorrhage following vaginal deliveries and caesarean sections in a tertiary care hospital of Pakistan. 2013;7:885-9. PMID: X-2, X-4

2805. Waheed SS, Siddique T, Farzand S. Evaluation of complications associated with twin pregnancy. 2013;7PMID: X-2, X-4

2806. Wan Po JL, Bhatia K. Pre-eclampsia and the anaesthetist. Anaesthesia and Intensive Care Medicine. 2013 July;14:283-6. PMID: X-1

2807. Wandabwa J, Businge C, Longo-Mbenza B, et al. Peripartum hysterectomy: two years experience at Nelson Mandela Academic hospital, Mthatha, Eastern Cape South Africa. Afr Health Sci. 2013 Jun;13:469-74. PMID: 24235951; X-2, X-4

2808. Wandabwa JN, Businge C, Longo-Mbenza B, et al. Peripartum hysterectomy: two years experience at Nelson Mandela Academic hospital, Mthatha, Eastern Cape South Africa. Afr Health Sci. 2013 Jun;13(2):469-74. PMID: 24235951; X-2, X-4

2809. Wanyonyi SZ, Ngichabe SK. Safety concerns for planned vaginal birth after caesarean section in sub-Saharan Africa. BJOG. 2013 Jan;121:141-3; discussion 4. PMID: 24206159; X-1, X-2, X-4, X-5

2810. Watson LF, Taft AJ. Intimate partner violence and the association with very preterm birth. Birth. 2013 Mar;40(1):17-23. PMID: 24635420; X-3, X-4

2811. Webbon L. Management of umbilical cord clamping. Pract Midwife. 2013 Feb;16:23-6. PMID: 23461232; X-1

2812. Weed S. Hemorrhage! Midwifery Today. 2013(105):23-5. PMID: 2012050612. Language: English. Entry Date: 20130329. Revision Date: 20140103. Publication Type: journal article. Journal Subset: Nursing; X-1

2813. Westhoff G, Cotter AM, Tolosa JE. Prophylactic oxytocin for the third stage of labour to prevent postpartum haemorrhage. Cochrane Database Syst Rev. 2013;10:CD001808. PMID: 24173606; X-1, X-4

2814. Wetta LA, Szychowski JM, Seals S, et al. Risk factors for uterine atony/postpartum hemorrhage requiring treatment after vaginal delivery. Am J Obstet Gynecol. 2013 Jul;209:51 e1-6. PMID: 23507549; X-4

2815. Wikstrom Shemer EA, Thorsell M, Marschall HU, et al. Risks of emergency cesarean section and fetal asphyxia after induction of labor in intrahepatic cholestasis of pregnancy: a hospital-based retrospective cohort study. Sex Reprod Healthc. 2013 Mar;4:17-22. PMID: 23427928; X-4

2816. Wuntakal R, Kaler M, Hollingworth T. Women with high BMI: should they be managed differently due to antagonising action of leptin in labour? Med Hypotheses. 2013 Jun;80:767-8. PMID: 23570649; X-1

2817. Xianbao L, Hong Z, Xu Z, et al. Dexmedetomidine reduced cytokine release during postpartum bleeding-induced multiple organ dysfunction syndrome in rats. Mediators Inflamm. 2013;2013:627831. PMID: 23840096; X-1, X-3, X-4

2818. Yaju Y, Kataoka Y, Eto H, et al. Prophylactic interventions after delivery of placenta for reducing bleeding during the postnatal period. Cochrane Database Syst Rev. 2013;11:CD009328. PMID: 24277681; X-1, X-4

2819. Yang XL, Zhou YF, Huang Y, et al. [Analysis of obstetric outcomes for different types of placenta previa]. Zhonghua Yi Xue Za Zhi. 2013 Mar 19;93:849-51. PMID: 23859393; X-2, X-4

2820. Yasmin S, Yasmin A, Khattak NN, et al. Active versus conservative management of prelabour rupture of membranes at term. Journal of Postgraduate Medical Institute. 2013;27:63-8. PMID: X-2, X-4

2821. Yeniel AO, Ergenoglu AM, Akdemir A, et al. Massive secondary postpartum hemorrhage with uterine artery pseudoaneurysm after cesarean section. Case Rep Obstet Gynecol. 2013;2013:285846. PMID: 23653875; X-2, X-5

2822. Zambrana L. OB Hemorrhage Complicated by DIC: Are You Ready? JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2013;42:S95-S. PMID: X-1

2823. Zhang J, Liu Q, Zhang W, et al. [Selective arterial occlusion in the treatment of placenta percreta in late trimester of pregnancy]. Zhong Nan Da Xue Xue Bao Yi Xue Ban. 2013 May;38:532-6. PMID: 23719534; X-2

2824. Zia S, Rafique M, Rizwan A, et al. Maternal outcome in emergency peripartum hysterectomy: Minimizing the risks. 2013;5:91-5. PMID: X-2

2825. Ziyauddin F, Hakim S, Beriwal S. The transcervical foley catheter versus the vaginal prostaglandin E2 gel in the induction of labour in a previous one caesarean section - A clinical study. Journal of Clinical and Diagnostic Research. 2013 01 Jan;7:140-3. PMID: X-2, X-4

2826. Ziyauddin F, Hakim S, Khan T. Delivery of the deeply engaged fetal head during cesarean section in advanced labour: A comparative study of head pushing versus reverse breech extraction. Current Pediatric Research. 2013 January-June;17:41-3. PMID: X-4

2827. . SSRI antidepressants: postpartum haemorrhage. Prescrire Int. 2014 Jul;23(151):186. PMID: 25162096; X-4

2828. . Correction... "Interpretation of National Policy Regarding Community-Based Use of Misoprostol for Postpartum Hemorrhage Prevention in Ethiopia: A Tale of Two Regions," published in the January/February 2014 special issue of the Journal of Midwifery &Women's Health (59[s1]:S83-S90). Journal of Midwifery & Women's Health. 2014;59(5):560-. PMID: 2012754115. Language: English. Entry Date: 20141017. Revision Date: 20141024. Publication Type: journal article; X-2, X-4

2829. . New from the Cochrane Library. Essentially MIDIRS. 2014;5(4):48-9. PMID: 2012591180. Language: English. Entry Date: 20140606. Revision Date: 20140620. Publication Type: journal article. Journal Subset: Editorial Board Reviewed; X-1

2830. Abdul-Kadir R, McLintock C, Ducloy AS, et al. Evaluation and management of postpartum hemorrhage: consensus from an international expert panel. Transfusion. 2014 Mar 12PMID: 24617726; X-1, X-3, X-4

2831. Al Wadi K, Schneider C, Burym C, et al. Evaluating the safety of labour in women with a placental edge 11 to 20 mm from the internal cervical Os. J Obstet Gynaecol Can. 2014 Aug;36(8):674-7. PMID: 25222161; X-3, X-4

2832. Alam K, Snover A, Sultana N. Safety and feasibility of intrauterine device insertion following post-placental delivery. 2014;39:186-9. PMID: X-2, X-3, X-4

2833. Al-Kadri HM, Dahlawi H, Al Airan M, et al. Effect of education and clinical assessment on the accuracy of post partum blood loss estimation. BMC Pregnancy Childbirth. 2014;14:110. PMID: 24646156; X-2, X-3, X-4

2834. Allard S, Green L, Hunt BJ. How we manage the haematological aspects of major obstetric haemorrhage. Br J Haematol. 2014 Jan;164:177-88. PMID: 24383841; X-1

2835. Alouini S. Bakri balloon tamponade as first step to manage severe post partum haemorrhage. Ir J Med Sci. 2014 Dec;183(4):693. PMID: 25284639; X-1

2836. Ameh CA, Adegoke A, Pattinson RC, et al. Using the new ICD-MM classification system for attribution of cause of maternal death--a pilot study. BJOG. 2014 Sep;121 Suppl 4:32-40. PMID: 25236631; X-2, X-4

2837. Amin N. Prophylactic use of misoprostol in management of third stage of labour and prevention of atonic uterus. 2014;28:196-200. PMID: X-2, X-4

2838. Anderson M. From the editor: Observing birth from the sidelines. Essentially MIDIRS. 2014;5(8):5-6. PMID: 2012711802. Language: English. Entry Date: 20140926. Revision Date: 20140926. Publication Type: journal article; X-1

2839. Arjun Sundarsingh R, Jayakumar H, Ajay Kumar A. Life threatening reactions to synthetic oxytocin - a case report. 2014;5:1371-3. PMID: X-2, X-5

2840. Arora N, Kausar H, Jana N, et al. Congenital heart disease in pregnancy in a low-income country. Int J Gynaecol Obstet. 2014 Sep 18PMID: 25270822; X-2, X-3, X-4

2841. Ashraf N, Mishra SK, Kundra P. Obstetric patients requiring intensive care: a one year retrospective study in a tertiary care institute in India. 2014;2014:789450. PMID: 24790597; X-2

2842. Ashraf N, Mishra SK, Kundra P, et al. Obstetric patients requiring intensive care: a one year retrospective study in a tertiary care institute in India. Anesthesiol Res Pract. 2014;2014:789450. PMID: 24790597; X-2, X-4

2843. Ashwal E, Yogev Y, Melamed N, et al. Characterizing the need for re-laparotomy during puerperium after cesarean section. Arch Gynecol Obstet. 2014 Feb 1PMID: 24488580; X-5

2844. Atukunda EC, Siedner MJ, Obua C, et al. Sublingual Misoprostol versus Intramuscular Oxytocin for Prevention of Postpartum Hemorrhage in Uganda: A Double-Blind Randomized Non-Inferiority Trial. PLoS Med. 2014 Nov;11(11):e1001752. PMID: 25369200; X-2, X-4

2845. Austin DM, Sadler L, McLintock C, et al. Early detection of severe maternal morbidity: a retrospective assessment of the role of an Early Warning Score System. Aust N Z J Obstet Gynaecol. 2014 Apr;54(2):152-5. PMID: 24359235; X-3, X-4

2846. Azam S, Khanam A, Tirlapur S, et al. Planned caesarean section or trial of vaginal delivery? A meta-analysis. Curr Opin Obstet Gynecol. 2014 Dec;26(6):461-8. PMID: 25304604; X-1, X-4

2847. Aziz S, Kazi S, Haq G, et al. Oral misoprostol versus oxytocin in the management of third stage of labour. J Pak Med Assoc. 2014 Apr;64:428-32. PMID: 24864638; X-2, X-4

2848. Baba Y, Matsubara S, Kuwata T, et al. Uterine artery pseudoaneurysm: not a rare condition occurring after non-traumatic delivery or non-traumatic abortion. Arch Gynecol Obstet. 2014 Sep;290(3):435-40. PMID: 24691826; X-3, X-4

2849. Baker K. How to ... manage primary postpartum haemorrhage. Midwives. 2014;17(4):34-5. PMID: 25145103; X-1, X-4, X-5

2850. Baker KC. Postpartum haemorrhage and the management approaches in the third stage of labour. MIDIRS Midwifery Digest. 2014;24(2):191-6. PMID: 2012608397. Language: English. Entry Date: 20140620. Publication Type: journal article; X-1

2851. Balachandran L, Vaswani PR, Mogotlane R. Pregnancy outcome in women with previous one cesarean section. 2014;8:99-102. PMID: X-4

2852. Bas-Lando M, Srebnik N, Farkash R, et al. Elective induction of labor in women with gestational diabetes mellitus: an intervention that modifies the risk of cesarean section. Arch Gynecol Obstet. 2014 Jun 28PMID: 24973018; X-4

2853. Bassey G, Akani CI. Emergency peripartum hysterectomy in a low resource setting: a 5-year analysis. Niger J Med. 2014 Apr-Jun;23:170-5. PMID: 24956692; X-2

2854. Batra P, Suda D, Markovic D, et al. The effect of an obstetric hemorrhage protocol on outcomes in postpartum hemorrhage. Obstet Gynecol. 2014 May;123 Suppl 1:136s. PMID: 24770003; X-1

2855. Bazzano M, Giannetto C, Fazio F, et al. Hemostatic profile during late pregnancy and early postpartum period in mares. Theriogenology. 2014 Mar 1;81(4):639-43. PMID: 24388675; X-1, X-3, X-4

2856. Begum J, Pallave P, Ghose S. B-lynch: a technique for uterine conservation or deformation? A case report with literature review. J Clin Diagn Res. 2014 Apr;8(4):Od01-3. PMID: 24959485; X-3, X-4

2857. Begum M, Alsafi F, ElFarra J, et al. Emergency peripartum hysterectomy in a tertiary care hospital in saudi arabia. J Obstet Gynaecol India. 2014 Oct;64(5):321-7. PMID: 25368454; X-2, X-4

2858. Belay T, Yusuf L, Negash S. A comparative study on first stage versus second stage caesarean section on maternal and perinatal outcome. Ethiop Med J. 2014 Jan;52:1-8. PMID: 25069208; X-2, X-4

2859. Bell S, Passano P, Bohl DD, et al. Training traditional birth attendants on the use of misoprostol and a blood measurement tool to prevent postpartum haemorrhage: lessons learnt from Bangladesh. J Health Popul Nutr. 2014 Mar;32:118-29. PMID: 24847601; X-2, X-3, X-4

2860. Bhatti K, Mahar T, Hafeez R, et al. A randomized controlled trial on prevention of postpartum haemorrhage with sublingual misoprostol or oxytocin. 2014;25:10-2. PMID: X-2, X-4

2861. Bilger A, Pottecher J, Greget M, et al. Extensive pulmonary embolism after severe postpartum haemorrhage: management with an inferior vena cava filter. Int J Obstet Anesth. 2014 Jun 19PMID: 25223642; X-3

2862. Blix E, Kumle M, Kjaergaard H, et al. Transfer to hospital in planned home births: a systematic review. BMC Pregnancy Childbirth. 2014;14:179. PMID: 24886482; X-1

2863. Blomberg M, Birch Tyrberg R, Kjolhede P. Impact of maternal age on obstetric and neonatal outcome with emphasis on primiparous adolescents and older women: a Swedish Medical Birth Register Study. BMJ Open. 2014;4(11):e005840. PMID: 25387756; X-4

2864. Brane E, Olsson A, Andolf E. A randomized controlled trial on early induction compared to expectant management of nulliparous women with prolonged latent phases. Acta Obstet Gynecol Scand. 2014 Jun 27PMID: 24974855; X-4

2865. Briley A, Seed P, Tydeman G, et al. Reporting errors, incidence and risk factors for postpartum haemorrhage and progression to severe PPH: a prospective observational study. BJOG. 2014 Feb 12PMID: 24517180; X-4, X-5

2866. Briley A, Seed PT, Tydeman G, et al. Reporting errors, incidence and risk factors for postpartum haemorrhage and progression to severe PPH: a prospective observational study. BJOG. 2014 Jun;121(7):876-88. PMID: 24517180; X-4

2867. Briley A, Tydeman G, Seed P, et al. PLD.20 Postpartum haemorrhage: immediate management and failures of adherence to guidelines and prompt actions. Arch Dis Child Fetal Neonatal Ed. 2014 Jun;99 Suppl 1:A111-2. PMID: 25020959; X-4, X-5

2868. Brown A, Jordan S. Active Management of the Third Stage of Labor May Reduce Breastfeeding Duration Due to Pain and Physical Complications. Breastfeed Med. 2014 Oct 27PMID: 25347567; X-4

2869. Buchmann E, Mnyani C, Frank K, et al. Declining maternal mortality in the face of persistently high HIV prevalence in a middle-income country. Bjog. 2014 Sep 12PMID: 25213804; X-2, X-4

2870. Budden A, Chen LJ, Henry A. High-dose versus low-dose oxytocin infusion regimens for induction of labour at term. Cochrane Database Syst Rev. 2014;10:CD009701. PMID: 25300173; X-1, X-4

2871. Butchon R, Liabsuetrakul T, McNeil E, et al. Birth rates and pregnancy complications in adolescent pregnant women giving birth in the hospitals of Thailand. J Med Assoc Thai. 2014 Aug;97(8):785-90. PMID: 25345252; X-2, X-4

2872. Butler K, Ramphul M, Dunney C, et al. A prospective cohort study of the morbidity associated with operative vaginal deliveries performed by day and at night. BMJ Open. 2014;4(10):e006291. PMID: 25354825; X-4

2873. Butwick AJ, Carvalho B, El-Sayed YY. Risk factors for obstetric morbidity in patients with uterine atony undergoing Caesarean deliverydagger. Br J Anaesth. 2014 Jun 6PMID: 24907281; X-4

2874. Butwick AJ, Carvalho B, El-Sayed YY. Risk factors for obstetric morbidity in patients with uterine atony undergoing caesarean delivery. Br J Anaesth. 2014 Oct;113(4):661-8. PMID: 24907281; X-4

2875. Cao L, Lu Z, Zheng Y. Sheehan's syndrome with cardiac arrest: A case report and review of the literature. Neuro Endocrinol Lett. 2014 Sep 9;35(5):352-4. PMID: 25275267; X-1, X-3, X-4

2876. Capozzola DD, Terrence J, Gratiano A. Excessive bleeding after childbirth leads to mother's death, over $15 million in damages. Healthcare Risk Management. 2014:1-3. PMID: X-1, X-4, X-5

2877. Caserta D, Bordi G, Stegagno M, et al. Maternal and perinatal outcomes in spontaneous versus assisted conception twin pregnancies. Eur J Obstet Gynecol Reprod Biol. 2014 Mar;174:64-9. PMID: 24405729; X-4

2878. Casini A, Blondon M, Lebreton A, et al. Natural history of patients with congenital dysfibrinogenemia. Blood. 2014 Oct 15PMID: 25320241; X-4

2879. Cavazos-Rehg PA, Krauss MJ, Spitznagel EL, et al. Maternal Age and Risk of Labor and Delivery Complications. Matern Child Health J. 2014 Nov 4PMID: 25366100; X-4

2880. Cekmez Y, Ozkaya E, Ocal FD, et al. Experience with different techniques for the management of postpartum hemorrhage due to uterine atony: compression sutures, artery ligation and Bakri balloon. Ir J Med Sci. 2014 May 15PMID: 24831795; X-2

2881. Chai H, Fang Q, Huang X, et al. Prenatal management and outcomes in mirror syndrome associated with twin-twin transfusion syndrome. Prenat Diagn. 2014 Jul 9PMID: 25043377; X-4

2882. Chai VY, To WW. Uterine compression sutures for management of severe postpartum haemorrhage: five-year audit. Hong Kong Med J. 2014 Apr;20(2):113-20. PMID: 24141858; X-5

2883. Chaudhuri P, Majumdar A. Sublingual misoprostol as an adjunct to oxytocin during cesarean delivery in women at risk of postpartum hemorrhage. Int J Gynaecol Obstet. 2014 Sep 16PMID: 25277789; X-2, X-4

2884. Chaudhuri P, Mandi S, Mazumdar A. Rectally administrated misoprostol as an alternative to intravenous oxytocin infusion for preventing post-partum hemorrhage after cesarean delivery. J Obstet Gynaecol Res. 2014 Sep;40:2023-30. PMID: 25181622; X-4

2885. Childress KM, Holloran-Schwartz MB, Wuebker H, et al. The third stage of labor: a study of outcomes in the second trimester of pregnancy. J Reprod Med. 2014 Jul-Aug;59:348-54. PMID: 25098024; X-3, X-4

2886. Chongsomchai C, Lumbiganon P, Laopaiboon M. Prophylactic antibiotics for manual removal of retained placenta in vaginal birth. Cochrane Database Syst Rev. 2014;10:CD004904. PMID: 25327508; X-1, X-3, X-4

2887. Chuma C, Kihunrwa A, Matovelo D, et al. Labour management and Obstetric outcomes among pregnant women admitted in latent phase compared to active phase of labour at Bugando Medical Centre in Tanzania. BMC Pregnancy Childbirth. 2014;14:68. PMID: 24521301; X-2, X-4

2888. Clark SL, Christmas JT, Frye DR, et al. Maternal mortality in the United States: predictability and the impact of protocols on fatal postcesarean pulmonary embolism and hypertension-related intracranial hemorrhage. Am J Obstet Gynecol. 2014 Jul;211:32 e1-9. PMID: 24631705; X-3, X-4

2889. Coeytaux F, Hessini L, Ejano N, et al. Facilitating women's access to misoprostol through community-based advocacy in Kenya and Tanzania. Int J Gynaecol Obstet. 2014 Jan 2PMID: 24447412; X-2, X-3, X-4

2890. Collins D. Failure to perform vulvar biopsy delays diagnosis of cancer. Contemporary OB/GYN. 2014;59(4):20-73. PMID: 2012678848. Language: English. Entry Date: 20140822. Publication Type: journal article; X-1, X-3, X-4

2891. Collins PW, Lilley G, Bruynseels D, et al. Fibrin-based clot formation an early and rapidly available biomarker for progression of postpartum hemorrhage: a prospective cohort study. Blood. 2014 Jul 14PMID: 25024304; X-4, X-5

2892. Collins PW, Lilley G, Bruynseels D, et al. Fibrin-based clot formation as an early and rapid biomarker for progression of postpartum hemorrhage: a prospective study. Blood. 2014 Sep 11;124(11):1727-36. PMID: 25024304; X-4, X-5

2893. Cook A, Hirth RL. A Breastfeeding Education Initiative for Registered Nurses Outside the Obstetric Unit: Emergency Department and Medical-Surgical Nurses Learn to be Baby-Friendly. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2014;43(Supp 1):S33-S. PMID: 2012663213. Language: English. Entry Date: 20140926. Revision Date: 20141107. Publication Type: journal article; X-1, X-3, X-4

2894. Cortet M, Maucort-Boulch D, Deneux-Tharaux C, et al. Severity of post-partum hemorrhage after vaginal delivery is not predictable from clinical variables available at the time post-partum hemorrhage is diagnosed. J Obstet Gynaecol Res. 2014 Oct 10PMID: 25303234; X-4, X-5

2895. Crowe SD, Faulkner B. Lean management system application in creation of a postpartum hemorrhage prevention bundle on postpartum units. Obstet Gynecol. 2014 May;123 Suppl 1:45s. PMID: 24770195; X-1, X-4, X-5

2896. Curry R, Gelson E, Swan L, et al. Marfan syndrome and pregnancy: maternal and neonatal outcomes. BJOG. 2014 Jan 13PMID: 24418012; X-4

2897. Curry RA, Gelson E, Swan L, et al. Marfan syndrome and pregnancy: maternal and neonatal outcomes. BJOG. 2014 Apr;121(5):610-7. PMID: 24418012; X-4

2898. Curtis M, El Ayadi A, Mkumba G, et al. Association between severe obstetric hemorrhage and HIV status. Int J Gynaecol Obstet. 2014 Apr;125(1):79-80. PMID: 24507890; X-2, X-4, X-5

2899. Cussen L, O'Donoghue K. PMM.15 Maternal Admissions to Intensive Care. Arch Dis Child Fetal Neonatal Ed. 2014 Jun;99 Suppl 1:A128. PMID: 25021012; X-4

2900. Dajani NK, Magann EF. Complications of shoulder dystocia. Semin Perinatol. 2014 Jun;38:201-4. PMID: 24863025; X-1

2901. D'Alton ME, Main EK, Menard MK, et al. The National Partnership for Maternal Safety. Obstet Gynecol. 2014 May;123:973-7. PMID: 24785848; X-1

2902. Daniels K, Clark A, Lipman S, et al. Multidisciplinary simulation drills improve efficiency of emergency medication retrieval. Obstet Gynecol. 2014 May;123 Suppl 1:143s-4s. PMID: 24770020; X-4, X-5

2903. D'Antonio F, Bhide A. Ultrasound in placental disorders. Best Pract Res Clin Obstet Gynaecol. 2014 Jan 14PMID: 24461676; X-1

2904. de Boer HJ, Cotingting C. Medicinal plants for women's healthcare in southeast Asia: a meta-analysis of their traditional use, chemical constituents, and pharmacology. J Ethnopharmacol. 2014 Feb 3;151(2):747-67. PMID: 24269772; X-1, X-2, X-4, X-5

2905. de Lange NM, van Rheenen-Flach LE, Lance MD, et al. Peri-partum reference ranges for ROTEM(R) thromboelastometry. Br J Anaesth. 2014 Jan 31PMID: 24486836; X-4

2906. del-Rio-Vellosillo M, Garcia-Medina JJ, Fernandez-Rodriguez LE, et al. Subdural hygroma accompanied by parenchymal and subarachnoid haemorrhage after epidural analgesia in an obstetric patient. Acta Anaesthesiol Scand. 2014 Aug;58:897-902. PMID: 24628098; X-1, X-3, X-4

2907. Dhananjaya BS, Charishma S. Comparative study of efficacy and safety of intramuscular oxytocin with intramuscular methylergometrine in the active management of third stage of labour. 2014;5:734-9. PMID: X-4, X-5

2908. Dhariwal SK, Khan KS, Allard S, et al. Does current evidence support the use of intraoperative cell salvage in reducing the need for blood transfusion in caesarean section? Curr Opin Obstet Gynecol. 2014 Dec;26(6):425-30. PMID: 25259949; X-1

2909. Diaz-Castro J, Florido J, Kajarabille N, et al. The timing of cord clamping and oxidative stress in term newborns. Pediatrics. 2014 Aug;134(2):257-64. PMID: 25022744; X-3, X-4

2910. Dinyain A, Olutoyin Omoniyi-Esan G, Olaofe OO, et al. Autopsy-certified maternal mortality at Ile-Ife, Nigeria. New Zealand: Dove Medical Press; 2014. http://www.dovepress.com/getfile.php?fileID=18592http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed12&NEWS=N&AN=2014014088. Accessed on (Dinyain) Department of Anatomic Pathology, Niger Delta University Teaching Hospital, Okolobiri, Bayelsa State, Nigeria 6.

2911. Dinyain A, Omoniyi-Esan GO, Olaofe OO, et al. Autopsy-certified maternal mortality at Ile-Ife, Nigeria. Int J Womens Health. 2014;6:41-6. PMID: 24403844; X-2, X-4

2912. Drassinower D, Timofeev J, Huang CC, et al. Racial disparities in outcomes of twin pregnancies: elective cesarean or trial of labor? Am J Obstet Gynecol. 2014 Aug;211(2):160 e1-7. PMID: 24534184; X-4

2913. Ducloy-Bouthors AS, Susen S, Wong CA, et al. Medical advances in the treatment of postpartum hemorrhage. Anesth Analg. 2014 Nov;119(5):1140-7. PMID: 25329026; X-1

2914. Dudeja RK, Belavadi P. Trans-oesophageal Doppler-guided fluid management in massive obstetric haemorrhage. Int J Obstet Anesth. 2014 Jun 2PMID: 25066818; X-1, X-4, X-5

2915. Dutta TK, Verma SP. Rational Use of Recombinant Factor VIIa in Clinical Practice. Indian J Hematol Blood Transfus. 2014 Jun;30(2):85-90. PMID: 24839361; X-1

2916. Eboumbou Moukoko CE, Ngo Sack F, Essangui Same EG, et al. HIV, HBV, HCV and T. pallidum infections among blood donors and Transfusion-related complications among recipients at the Laquintinie hospital in Douala, Cameroon. BMC Hematol. 2014 Feb 12;14:5. PMID: 24517107; X-2, X-4

2917. Economou M, Banov L, Ljung R. Perinatal aspects of haemophilia. Eur J Haematol Suppl. 2014 Aug;76:21-5. PMID: 24957104; X-1

2918. Ejembi C, Shittu O, Moran M, et al. Community-level distribution of misoprostol to prevent postpartum hemorrhage at home births in northern Nigeria. Afr J Reprod Health. 2014 Jun;18:166-75. PMID: 25022154; X-2, X-4

2919. El Ayadi A, Gibbons L, Bergel E, et al. Per-protocol effect of earlier non-pneumatic anti-shock garment application for obstetric hemorrhage. Int J Gynaecol Obstet. 2014 Jul;126:95-6. PMID: 24721615; X-2

2920. El-Agwany AS. Postpartum uterine caesarean incision necrosis and pelvic abscess managed by hysterectomy: A complication of puerperal endomyometritis. 2014;8:53-5. PMID: X-3

2921. Eleje GU, lgwegbe AO, Okonkwo JE, et al. Elderly primigravidae versus young primigravidae: a review of pregnancy outcome in a low resource setting. Niger J Med. 2014 Jul-Sep;23:220-9. PMID: 25185379; X-2, X-4

2922. Elie N. Maternal and neonatal complications of macrosomia. Trop Doct. 2014 Jun 23PMID: 24958734; X-2, X-4

2923. Elmir R. Finding Meaning in Life Following Emergency Postpartum Hysterectomy: What Doesn't Kill Us Makes Us Stronger. Journal of Midwifery & Women's Health. 2014;59(5):510-5. PMID: 2012754112. Language: English. Entry Date: 20141017. Revision Date: 20141107. Publication Type: journal article; X-1, X-4

2924. El-Refaeey A-A, Gibreel A, Fawzy M. Novel modification of B- Lynch uterine compression sutures for management of atonic postpartum hemorrhage: VV uterine compression sutures. Journal of Obstetrics & Gynaecology Research. 2014;40(2):387-91. PMID: 2012449390. Language: English. Entry Date: 20140307. Revision Date: 20140919. Publication Type: journal article; X-2, X-5

2925. Elstein D, Hughes D, Goker-Alpan O, et al. Outcome of pregnancies in women receiving velaglucerase alfa for Gaucher disease. J Obstet Gynaecol Res. 2014 Apr;40:968-75. PMID: 24612151; X-3, X-4

2926. Era S, Matsunaga S, Matsumura H, et al. Usefulness of shock indicators for determining the need for blood transfusion after massive obstetric hemorrhage. J Obstet Gynaecol Res. 2014 Aug 28PMID: 25164603; X-4, X-5

2927. Esakoff TF, Cheng YW, Snowden JM, et al. Velamentous cord insertion: is it associated with adverse perinatal outcomes? J Matern Fetal Neonatal Med. 2014 May 27:1-4. PMID: 24758363; X-4

2928. Evans CL, Johnson P, Bazant E, et al. Competency-based training "Helping Mothers Survive: Bleeding after Birth" for providers from central and remote facilities in three countries. Int J Gynaecol Obstet. 2014 Sep;126(3):286-90. PMID: 24834851; X-2, X-4, X-5

2929. Evans K. Active management of the third stage of labor with and without controlled cord traction: a systematic review and meta-analysis of randomized controlled trials. MIDIRS Midwifery Digest. 2014;24(3):338-40. PMID: 2012733652. Language: English. Entry Date: 20141003. Revision Date: 20141003. Publication Type: journal article; X-1

2930. Ferrazzi E, Visconti E, Paganelli A, et al. The Outcome Of Midwife-Led Labor In Low Risk Women Within An Obstetric Referral Unit. J Matern Fetal Neonatal Med. 2014 Sep 5:1-24. PMID: 25190281; X-4

2931. Ferrazzi E, Visconti E, Paganelli AM, et al. The outcome of midwife-led labor in low-risk women within an obstetric referral unit. J Matern Fetal Neonatal Med. 2014 Sep 19:1-7. PMID: 25190281; X-4

2932. Fickley SK. Achieving Realism With Low-Tech Simulation. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2014;43(Supp 1):S27-S. PMID: 2012663205. Language: English. Entry Date: 20140926. Revision Date: 20141107. Publication Type: journal article. Journal Subset: Core Nursing; X-1, X-3, X-4

2933. Fidan U, Keskin U, Ulubay M, et al. The effect of the use of oxytocin on blood loss during different postpartum periods. J Perinat Med. 2014 May 15PMID: 24897394; X-4

2934. Filho ALS, Noviello MB, Bessa-Junior RC, et al. Damage control for managing life-threatening postpartum hemorrhage. 2014;30:230-3. PMID: X-3

2935. Fong A, Wu E, Pan D, et al. Temporal trends and morbidities of vacuum, forceps, and combined use of both. J Matern Fetal Neonatal Med. 2014 Apr 9PMID: 24635372; X-4

2936. Fuglsang J. Later reproductive health after B-Lynch sutures: a follow-up study after 10 years' clinical use of the B-Lynch suture. Fertil Steril. 2014 Apr;101:1194-9. PMID: 24534289; X-5

2937. Fuks AM, Khanna P, Yusaf T, et al. Use of prophylactic misoprostol in reduction of blood loss at vaginal delivery. Obstet Gynecol. 2014 May;123 Suppl 1:144s-5s. PMID: 24770023; X-4

2938. Furuta M, Sandall J, Bick D. Women's perceptions and experiences of severe maternal morbidity--a synthesis of qualitative studies using a meta-ethnographic approach. Midwifery. 2014 Feb;30(2):158-69. PMID: 24144992; X-1

2939. Gabrielloni MC, Armellini CJ, Barbieri M, et al. Analysis of hemorrhage at vaginal delivery by erythrocyte and hematocrit indices. Acta Paulista de Enfermagem. 2014;27(2):186-93. PMID: 2012597380. Language: English. Entry Date: 20140613. Revision Date: 20140725. Publication Type: journal article; X-4

2940. Gandhi H. Prevention of postpartum hemorrhage: exogenous oxytocin in the third stage of labor. Ky Nurse. 2014 Jul-Sep;62:4. PMID: 25087331; X-1, X-4, X-5

2941. Garcia-Elorrio E, Aleman A, Cafferata ML, et al. A multifaceted intervention to increase prophylactic oxytocin use during the third stage of labor and to reduce routine episiotomies in Nicaragua. Int J Gynaecol Obstet. 2014 Oct;127(1):31-4. PMID: 25005056; X-2, X-4

2942. Georgiou C. Menses, fertility and pregnancy following the use of balloon tamponade technology in the management of postpartum haemorrhage. Aust N Z J Obstet Gynaecol. 2014 Feb 8PMID: 24506416; X-4, X-5

2943. Gerli S, Favilli A, Mosca S, et al. The factors associated with the failure of transcatheter pelvic arterial embolization for intractable postpartum hemorrhage. J Perinat Med. 2014 Nov 1;42(6):777-8. PMID: 24728849; X-1

2944. Ghag K, Bahl R. PLD.18 Recurrence rate of Manual Removal of Placenta and associated Postpartum Haemorrhage. Arch Dis Child Fetal Neonatal Ed. 2014 Jun;99 Suppl 1:A111. PMID: 25020957; X-4

2945. Gheshlagh RG, Baghi V, Aminpour E. The relationship between sleep apnea and hypertension in women with gestational diabetes. 2014;16:18-24. PMID: X-2, X-3, X-4

2946. Girard T, Mortl M, Schlembach D. New approaches to obstetric hemorrhage: the postpartum hemorrhage consensus algorithm. Curr Opin Anaesthesiol. 2014 Jun;27:267-74. PMID: 24739248; X-1

2947. Girija BS, Raju VS. A study of combined surgery in control of Atonic PPH during caesarian section and its outcome. 2014;5:174-7. PMID: X-2

2948. Godara SM, Kute VB, Trivedi HL, et al. Clinical profile and outcome of acute kidney injury related to pregnancy in developing countries: A single-center study from India. Saudi J Kidney Dis Transpl. 2014 Jul-Aug;25:906-11. PMID: 24969215; X-1, X-2, X-4

2949. Goh A, Nicoll A. PFM.52 Review of maternal and perinatal outcomes for women with polyhydramnios. Arch Dis Child Fetal Neonatal Ed. 2014 Jun;99 Suppl 1:A99. PMID: 25021419; X-4

2950. Gollop ND, Childs CA, Coupe B, et al. Body weight, body image and primary postpartum haemorrhage: a review of the literature. J Obstet Gynaecol. 2014 Jul;34(5):373-82. PMID: 24694033; X-1, X-3, X-4

2951. Gordon C, Jimenez-Fernandez S, Daniels L, et al. Pregnancy in women with a history of Kawasaki disease: management and outcomes. BJOG. 2014 Mar 6PMID: 24597833; X-1, X-3, X-4

2952. Gordon CT, Jimenez-Fernandez S, Daniels LB, et al. Pregnancy in women with a history of Kawasaki disease: management and outcomes. BJOG. 2014 Oct;121(11):1431-8. PMID: 24597833; X-3, X-4

2953. Green L, Knight M, Seeney F, et al. 6.4 Transfusion management and haemostatic changes in major obstetric haemorrhage in the UK. Arch Dis Child Fetal Neonatal Ed. 2014 Jun;99 Suppl 1:A8. PMID: 25021360; X-4, X-5

2954. Grillo-Ardila CF, Ruiz-Parra AI, Gaitan HG, et al. Prostaglandins for management of retained placenta. Cochrane Database Syst Rev. 2014;5:Cd010312. PMID: 24833288; X-1, X-2, X-3, X-4

2955. Grillo-Ardila CF, Ruiz-Parra AI, Gaitán HG, et al. Prostaglandins for management of retained placenta. Cochrane Database of Systematic Reviews. 2014(5)PMID: 2012632032. Language: English. Entry Date: 20140704. Publication Type: journal article; X-1

2956. Grobman WA, Bailit JL, Rice MM, et al. Frequency of and factors associated with severe maternal morbidity. Obstet Gynecol. 2014 Apr;123:804-10. PMID: 24785608; X-4

2957. Grobman WA, Bailit JL, Rice MM, et al. Can differences in obstetric outcomes be explained by differences in the care provided? The MFMU Network APEX study. Am J Obstet Gynecol. 2014 Aug;211:147 e1- e16. PMID: 24631441; X-4

2958. Gronvall M, Tikkanen M, Metsatahti M, et al. Pelvic arterial embolization in severe obstetric hemorrhage. Acta Obstet Gynecol Scand. 2014 Jul;93:716-9. PMID: 24617830; X-5

2959. Guillaume A, Sananes N, Poirier V, et al. Benefits of cord blood collection in the prevention of post-partum hemorrhage: a cohort study. J Matern Fetal Neonatal Med. 2014 Nov 14:1-4. PMID: 25341670; X-4

2960. Haas T, Gorlinger K, Grassetto A, et al. Thromboelastometry for Guiding Bleeding Management of the Critically Ill Patient: A Systematic Review of the Literature. Minerva Anestesiol. 2014 Feb 11PMID: 24518216; X-1

2961. Hafeez M, Badar N, Akram N. Placenta previa; prevalence, risk factor and outcome. 2014;8:208-11. PMID: X-2, X-4

2962. Hartwig SM, Schwartz PD. Striving to Attain High Reliability in Perinatal Services: Perinatal Safety SMART Lean Process Improvement. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2014;43(Supp 1):S46-7. PMID: 2012663232. Language: English. Entry Date: 20140926. Revision Date: 20141107. Publication Type: journal article; X-1

2963. Heesen M, Bohmer J, Klohr S, et al. Prophylactic tranexamic acid in parturients at low risk for post-partum haemorrhage: systematic review and meta-analysis. Acta Anaesthesiol Scand. 2014 Oct;58:1075-85. PMID: 25069636; X-1, X-4

2964. Heesen M, Bohmer J, Klohr S, et al. Prophylactic tranexamic acid in parturients at low risk for post-partum haemorrhage: systematic review and meta-analysis. Acta Anaesthesiol Scand. 2014 Oct;58(9):1075-85. PMID: 25069636; X-1

2965. Henderson JT, Whitlock EP, O'Conner E, et al. 2014 Apr A Systematic Evidence Review for the U.S. Preventive Services Task ForcePMID: 24783270; X-1, X-4

2966. Henry D, Harris I, Bosco V, et al. Maternal arrhythmia and perinatal outcomes: a pregnancy and cardiac disease treatment program. Obstet Gynecol. 2014 May;123 Suppl 1:56s. PMID: 24770222; X-4

2967. Hensch S, Al Shakhshir O, Rajesh S, et al. PMM.03 The management of patients with primary immune thrombocytopenia during pregnancy in Leeds. Arch Dis Child Fetal Neonatal Ed. 2014 Jun;99 Suppl 1:A124-5. PMID: 25021000; X-4, X-5

2968. Herrick TM, Harner-Jay CM, Levisay AM, et al. Prioritizing investments in innovations to protect women from the leading causes of maternal death. BMC Pregnancy Childbirth. 2014;14:10. PMID: 24405972; X-1, X-3, X-4

2969. Hewarathna UI, Karunaratne SP, Tennakoon R, et al. Septic embolization of left and right coronary arteries resulting in sudden death: A rare complication of infective endocarditis. 2014;10:22-4. PMID: X-3, X-4

2970. Hobeika E, Abi Chaker S, Harb H, et al. Maternal mortality ratio in Lebanon in 2008: a hospital-based reproductive age mortality study (RAMOS). J Med Liban. 2014 Jan-Mar;62:1-6. PMID: 24684119; X-2, X-4

2971. Hodgins S. Oxytocin: taking the heat. Glob Health Sci Pract. 2014 Aug;2(3):259-60. PMID: 25276584; X-1

2972. Hongsakul K, Songjamrat A, Rookkapan S. Transarterial embolization for the treatment of massive bleeding in gynecologic and obstetric emergencies: a single center experience. Emerg Radiol. 2014 Aug;21:333-9. PMID: 24522752; X-2, X-5

2973. Huber G, Schutz H, Seelbach-Gobel B. Induction of labor in twin pregnancies with oral misoprostol versus vaginal dinoprostone - is it effective and safe? J Matern Fetal Neonatal Med. 2014 Jul 28:1-4. PMID: 25001425; X-4

2974. Hussain SS, Shafqat T. Frequency of postpartum haemorrhage in induced versus spontaneous labour. Pakistan: Lahore Medical And Dental College (Tulspura, North Canal Bank, Lahore, Pakistan. E-mail: prof_abdulmajeed@hotmail.com); 2014. http://pjmhsonline.com/JulySep2014/frequency_of_postpartum_haemorrh.htmhttp://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed12&NEWS=N&AN=2014808891. Accessed on (Hussain, Shafqat) Department of Obstetrics and Gynaecology, Lady Reading Hospital, Peshawar, Pakistan 8.

2975. Ibrahim M, Ziegler C, Klam SL, et al. Incidence, indications, and predictors of adverse outcomes of postpartum hysterectomies: 20-year experience in a tertiary care centre. J Obstet Gynaecol Can. 2014 Jan;36:14-20. PMID: 24444283; X-4, X-5

2976. Iqbal M, Akhtar Z, Jamal T. Outcome of pregnancies associated with FIBROIDS. 2014;22:3-5. PMID: X-2, X-4

2977. Iqbal M, Majid A, Muhammad Z, et al. Perinatal mortality and its related obstetrics risk factors. 2014;22:76-9. PMID: X-2, X-4

2978. Irshad F, Ikram MA. Role of misoprostol for the management of post partum hemorrhage due to uterine atony. 2014;39:182-5. PMID: X-2

2979. Islam AK, Hasnat MA, Doza F, et al. Sheehan's syndrome with reversible dilated cardiomyopathy: A case report and brief overview. J Saudi Heart Assoc. 2014 Apr;26:117-20. PMID: 24719543; X-1, X-3, X-4

2980. Iyoke CA, Ugwu GO, Ezugwu FO, et al. Risks associated with subsequent pregnancy after one caesarean section: A prospective cohort study in a Nigerian obstetric population. Niger J Clin Pract. 2014 Jul-Aug;17:442-8. PMID: 24909467; X-2, X-4

2981. James AH, Konkle BA, Kouides P, et al. Postpartum von Willebrand factor levels in women with and without von Willebrand disease and implications for prophylaxis. Haemophilia. 2014 Oct 21PMID: 25333737; X-4

2982. Jani M, Hor K, Brolly A, et al. PLD.38 Major Obstetric Haemorrhage in a Tertiary Maternity Unit in Scotland: Review of Practice and Future Implications. Arch Dis Child Fetal Neonatal Ed. 2014 Jun;99 Suppl 1:A117. PMID: 25020975; X-2, X-4

2983. Janion-Sadowska A, Sadowski M, Zandecki L, et al. Pregnancy after myocardial infarction and coronary artery bypass grafting - Is it safe? 2014;10:29-31. PMID: X-1, X-4

2984. Jayanna K, Mony P, B MR, et al. Assessment of facility readiness and provider preparedness for dealing with postpartum haemorrhage and pre-eclampsia/eclampsia in public and private health facilities of northern Karnataka, India: a cross-sectional study. BMC Pregnancy Childbirth. 2014;14:304. PMID: 25189169; X-2, X-3, X-4

2985. Jayanna K, Mony P, Bm R, et al. Assessment of facility readiness and provider preparedness for dealing with postpartum haemorrhage and pre-eclampsia/eclampsia in public and private health facilities of northern Karnataka, India: a cross-sectional study. BMC Pregnancy Childbirth. 2014;14(1):304. PMID: 25189169; X-2

2986. Ji W, Wang W, Sun S, et al. A clinical analysis of uterine artery embolisation in the treatment of placenta praevia or placenta praevia state. J Obstet Gynaecol. 2014 Jun 9:1-3. PMID: 24911560; X-2, X-5

2987. Jin R, Guo Y, Chen Y. Risk factors associated with emergency peripartum hysterectomy. Chin Med J (Engl). 2014;127(5):900-4. PMID: 24571885; X-2, X-4

2988. Kabiri D, Hants Y, Shanwetter N, et al. Outcomes of subsequent pregnancies after conservative treatment for placenta accreta. Int J Gynaecol Obstet. 2014 Jul 6PMID: 25069629; X-4, X-5

2989. Kacmar RM, Mhyre JM, Scavone BM, et al. The use of postpartum hemorrhage protocols in United States academic obstetric anesthesia units. Anesth Analg. 2014 Oct;119(4):906-10. PMID: 25238236; X-3, X-4

2990. Kanwal M, Iftikhar PM, Khalil S. Role of B lynch sutures for control of postpartum hemorrhage. 2014;39:190-2. PMID: X-2

2991. Kaoiean S. Successful use of the B-Lynch uterine compression suture in treating intractable postpartum hemorrhage after cesarean delivery in Rajavithi Hospital. J Med Assoc Thai. 2014 Nov;96:1408-15. PMID: 24428089; X-2

2992. Kavak SB, Kavak EC, Demirel I, et al. Double-balloon tamponade in the management of postpartum hemorrhage: a case series. Ther Clin Risk Manag. 2014;10:615-20. PMID: 25120367; X-2, X-5

2993. Kaya B, Tuten A, Daglar K, et al. Balloon tamponade for the management of postpartum uterine hemorrhage. J Perinat Med. 2014 Mar 25PMID: 24663227; X-2, X-5

2994. Kerr NL, Hauswald M, Tamrakar SR, et al. An inexpensive device to treat postpartum hemorrhage: a preliminary proof of concept study of health provider opinion and training in Nepal. BMC Pregnancy Childbirth. 2014;14:81. PMID: 24564622; X-2

2995. Kevane B, McKenna P, Walsh K, et al. Haemorrhagic and thrombotic complications in pregnant women with acquired and congenital cardiac disease. J Perinat Med. 2014 Jul 11PMID: 25014516; X-4

2996. Khaskheli M, Baloch S, Farooq S. Hepatitis C in haemorrhagic obstetrical emergencies. J Coll Physicians Surg Pak. 2014 Mar;24:178-81. PMID: 24613113; X-2, X-4

2997. Kim JW, Kim YH, Kim CH, et al. Uterine artery pseudoaneurysm manifesting as delayed postpartum hemorrhage after precipitous delivery: three case reports. Gynecol Obstet Invest. 2014;78:136-40. PMID: 25012906; X-1, X-4

2998. Kim MS, Uhm YK, Kim JY, et al. Obstetric outcomes after uterine myomectomy: Laparoscopic versus laparotomic approach. Obstet Gynecol Sci. 2014 Nov;56:375-81. PMID: 24396816; X-4

2999. Kirke AB, Evans SF, Walters B. Gestational diabetes in a rural, regional centre in south Western Australia: predictors of risk. Rural Remote Health. 2014 Jul-Sep;14:2667. PMID: 25171091; X-4

3000. Kirke AB, Evans SF, Walters BN. Gestational diabetes in a rural, regional centre in south Western Australia: predictors of risk. Rural Remote Health. 2014 Jul-Sep;14(3):2667. PMID: 25171091; X-4

3001. Kissell N, Mudd JO, Gelow JM, et al. Cardiogenic Shock Due to Non-Ischemic Cardiomyopathy Induced by Severe Anterior Hypopituitarism. Endocr Pract. 2014 Nov 4:1-17. PMID: 25370320; X-1, X-3, X-4

3002. Kok N, Ruiter L, Hof M, et al. Risk of maternal and neonatal complications in subsequent pregnancy after planned caesarean section in a first birth, compared with emergency caesarean section: a nationwide comparative cohort study. BJOG. 2014 Jan;121:216-23. PMID: 24373595; X-4, X-5

3003. Kondoh E, Konishi M, Kariya Y, et al. Ultrasonographic visualization of bleeding sites can help control postpartum hemorrhage using intrauterine balloon tamponade. J Clin Ultrasound. 2014 Sep 2PMID: 25181258; X-4, X-5

3004. Koo FH, Chao ST, Wang PH, et al. Delayed postpartum hemorrhage secondary to idiopathic rupture of right uterine artery: a case report and literature review. Taiwan J Obstet Gynecol. 2014 Jun;53(2):276-8. PMID: 25017287; X-1, X-2, X-3

3005. Kortekaas JC, Bruinsma A, Keulen JK, et al. Effects of induction of labour versus expectant management in women with impending post-term pregnancies: the 41 week - 42 week dilemma. BMC Pregnancy Childbirth. 2014;14:350. PMID: 25338555; X-1, X-3, X-4

3006. Kozinszky Z, Sand S, Klow NE, et al. Shortened cervix in the subsequent pregnancy after embolization for postpartum cervical hemorrhage. Case Rep Obstet Gynecol. 2014;2014:607835. PMID: 24800090; X-1, X-3

3007. Krishnan D, Ongso Y, Leknys M. Misoprostol for post-partum haemorrhage in the Australian bush. Aust Fam Physician. 2014 Aug;43:569-70. PMID: 25114997; X-1, X-4, X-5

3008. Kulkarni VG, Kulkarni JV, Sreekantha, et al. The study of comparision of sublinguinal versus vaginal 25 micro gram of misoprostol in the induction of labour at term. International Journal of Pharma and Bio Sciences. 2014 January/March;5:P1-P13. PMID: X-4

3009. Kumar N, Singh P, Kumar J, et al. Recurrent hypoglycaemia: a delayed presentation of Sheehan syndrome. BMJ Case Rep. 2014;2014PMID: 24842349; X-1, X-3, X-4

3010. Lagrew DC, Jr. Postpartum hemorrhage: state and national response. Curr Opin Hematol. 2014 Sep 17PMID: 25232833; X-1

3011. Laway BA, Mir SA, Zargar AH. Recovery of prolactin function following spontaneous pregnancy in a woman with Sheehan's syndrome. Indian J Endocrinol Metab. 2014 Dec;17:S696-9. PMID: 24910842; X-1, X-3

3012. Laws PJ, Xu F, Welsh A, et al. Maternal morbidity of women receiving birth center care in new South wales: a matched-pair analysis using linked health data. Birth. 2014 Sep;41:268-75. PMID: 24935768; X-4

3013. Lawton B, Macdonald EJ, Brown SA, et al. Preventability of severe acute maternal morbidity. Am J Obstet Gynecol. 2014 Feb 1PMID: 24508582; X-2, X-4, X-5

3014. Le Bas A, Chandraharan E, Addei A, et al. Use of the "obstetric shock index" as an adjunct in identifying significant blood loss in patients with massive postpartum hemorrhage. Int J Gynaecol Obstet. 2014 Mar;124:253-5. PMID: 24373705; X-4, X-5

3015. Lee HH, Kim TH. Uterus preservation as an alternative to an emergency hysterectomy for postpartum hemorrhage. Arch Gynecol Obstet. 2014 May;289(5):929-30. PMID: 24643803; X-1, X-4, X-5

3016. Lee JW, Song IA, Ryu J, et al. Anesthetic management of a parturient with placenta previa totalis undergoing preventive uterine artery embolization before placental expulsion during cesarean delivery: a case report. Korean J Anesthesiol. 2014 Oct;67(4):279-82. PMID: 25368788; X-3

3017. Lee YJ, Ju DH, Yi SW, et al. Successful management of maternal factor VII deficiency in a cesarean section. Obstet Gynecol Sci. 2014 Jul;57(4):314-7. PMID: 25105106; X-3, X-4

3018. Leung EY, Daniels JP. A report from #BlueJC: fertility implications following the surgical management of postpartum haemorrhage. Bjog. 2014 May;121(6):776. PMID: 24738905; X-1, X-4, X-5

3019. Li GT, Li XF, Liu YJ, et al. Symbol "&" suture to control atonic postpartum hemorrhage with placenta previa accreta. Arch Gynecol Obstet. 2014 Oct 7PMID: 25288270; X-2

3020. Lindqvist PG, Nasiell J, Gustafsson LL, et al. Selective serotonin reuptake inhibitor use during pregnancy increases the risk of postpartum hemorrhage and anemia: a hospital-based cohort study. J Thromb Haemost. 2014 Oct 16PMID: 25322909; X-4

3021. Litorp H, Kidanto HL, Roost M, et al. Maternal near-miss and death and their association with caesarean section complications: a cross-sectional study at a university hospital and a regional hospital in Tanzania. BMC Pregnancy Childbirth. 2014;14:244. PMID: 25056517; X-2, X-4

3022. Liu S, Mathur M, Tagore S. Complications and pregnancy outcome following uterine compression suture for postpartum haemorrhage: A single centre experience. J Obstet Gynaecol. 2014 Mar 28PMID: 24678816; X-2, X-5

3023. Liu X, Zhang W. Effect of maternal age on pregnancy: a retrospective cohort study. Chin Med J (Engl). 2014;127:2241-6. PMID: 24931235; X-2, X-4

3024. Loustau V, Debouverie O, Canoui-Poitrine F, et al. Effect of pregnancy on the course of immune thrombocytopenia: a retrospective study of 118 pregnancies in 82 women. Br J Haematol. 2014 Sep;166(6):929-35. PMID: 24957165; X-4

3025. Luangruangrong P, Sudjai D, Wiriyasirivaj B, et al. Pregnancy outcomes of placenta previa with or without antepartum hemorrhage. J Med Assoc Thai. 2014 Nov;96:1401-7. PMID: 24428088; X-4

3026. Ma LK, Cao DY, Yang JX, et al. Pregnancy outcome and obstetric management after vaginal radical trachelectomy. Eur Rev Med Pharmacol Sci. 2014 Oct;18(20):3019-24. PMID: 25392098; X-1, X-2, X-4

3027. Mahmud G, Javaid K, Tasnim N, et al. Where does ergometrine stand in prevention of postpartum haemorrhage in caesarean section? J Pak Med Assoc. 2014 Aug;64(8):911-4. PMID: 25252517; X-2, X-4

3028. Manning E, Lutomski J, O'Connor L, et al. PPO.02 Severe maternal morbidity in Ireland. Arch Dis Child Fetal Neonatal Ed. 2014 Jun;99 Suppl 1:A151. PMID: 25021091; X-4, X-5

3029. Marchetti D, Vellone V, Dhimitri O, et al. Post-partum hemorrhage and malpractice claims: what can we learn from the findings of placental examination and endometrial curettage? A retrospective analysis of surgical pathology reports. Med Sci Law. 2014 Feb 4PMID: 24496591; X-3, X-4

3030. Marinez-Gaytan V, Torcida-Gonzalez ME, Felix-Zamudio LL, et al. Gelatin-thrombin matrix hemostatic for management of severe obstetric hemorrhage. Obstet Gynecol. 2014 May;123 Suppl 1:67s-8s. PMID: 24770248; X-2, X-5

3031. Marshall NE, Vanderhoeven J, Eden KB, et al. Impact of simulation and team training on postpartum hemorrhage management in non-academic centers. J Matern Fetal Neonatal Med. 2014 May 29:1-5. PMID: 24824110; X-4

3032. Masood MQ, Ali SA. Long Standing Undiagnosed Sheehan's Syndrome Presenting as Polymorphic & Monomorphic Ventricular Tachycardia: A Case Series of Two Patients. Endocr Pract. 2014 Aug 6:1-13. PMID: 25100393; X-4

3033. Matsuzaki S, Ueda Y, Egawa-Takata T, et al. Placenta percreta with a vaginal fistula after successful management by uterine transverse fundal incision and subsequent cesarean hysterectomy. Obstet Gynecol Sci. 2014 Sep;57(5):397-400. PMID: 25264531; X-3, X-4

3034. McCloskey C, Rada C, Bailey E, et al. The inwardly rectifying K+ channel KIR7.1 controls uterine excitability throughout pregnancy. EMBO Mol Med. 2014;6:1161-74. PMID: 25056913; X-3, X-4

3035. McClure EM, Jones B, Rouse DJ, et al. Tranexamic Acid to Reduce Postpartum Hemorrhage: A MANDATE Systematic Review and Analyses of Impact on Maternal Mortality. Am J Perinatol. 2014 Oct 7PMID: 25289705; X-1, X-2, X-3

3036. McGiveron A, Foster S, Pearce J, et al. Limiting antenatal weight gain improves maternal health outcomes in severely obese pregnant women: findings of a pragmatic evaluation of a midwife-led intervention. J Hum Nutr Diet. 2014 May 9PMID: 24809211; X-4

3037. McKenna DS, Rudinsky K, Sonek J. Effects of a new patient safety-driven oxytocin dosing protocol on postpartum hemorrhage. J Pregnancy. 2014;2014:157625. PMID: 24868465; X-4

3038. McLean MT, Marchant G, Rannisi C, et al. Is there a time or circumstance in the 3rd stage of labor when it is appropriate to massage the fundus? Midwifery Today Int Midwife. 2014 Summer(110):66-7. PMID: 25112078; X-4

3039. Meena M, Chopra S, Jain V, et al. Prevalence of antithyroid peroxidase antibodies in pregnant women and the effect on the outcome of pregnancy. Obstet Gynecol. 2014 May;123 Suppl 1:157S. PMID: 24770051; X-4

3040. Mehrabadi A, Liu S, Bartholomew S, et al. Temporal trends in postpartum hemorrhage and severe postpartum hemorrhage in Canada from 2003 to 2010. J Obstet Gynaecol Can. 2014 Jan;36:21-33. PMID: 24444284; X-4

3041. Miller JA, Junes A. A Progressive Format for Annual Interdisciplinary Education Featuring High-Risk Obstetric Simulation. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2014;43(Supp 1):S9-s10. PMID: 2012663178. Language: English. Entry Date: 20140926. Revision Date: 20141107. Publication Type: journal article. Journal Subset: Core Nursing; X-1

3042. Mirkuzie AH, Sisay MM, Reta AT, et al. Current evidence on basic emergency obstetric and newborn care services in Addis Ababa, Ethiopia; a cross sectional study. BMC Pregnancy Childbirth. 2014;14:354. PMID: 25300789; X-2, X-3, X-4

3043. Mone F, Adams B, Manderson JG, et al. The East Timorese: A High-Risk Ethnic Minority in UK Obstetrics: A Cohort Study. J Matern Fetal Neonatal Med. 2014 Sep 5:1-16. PMID: 25189758; X-2, X-4

3044. Monteith CW, Berger GS, Zerden ML. Pregnancy success after hysteroscopic sterilization reversal. Obstet Gynecol. 2014 Dec;124(6):1183-9. PMID: 25415170; X-3, X-4

3045. Montgomery AL, Fadel S, Kumar R, et al. The effect of health-facility admission and skilled birth attendant coverage on maternal survival in India: a case-control analysis. PLoS One. 2014;9:e95696. PMID: 24887586; X-2

3046. Mullany LC, Newton S, Afari-Asiedu S, et al. Cumulative effects of heat exposure and storage conditions of Oxytocin-in-Uniject in rural Ghana: implications for scale up. Glob Health Sci Pract. 2014 Aug;2(3):285-94. PMID: 25276588; X-2, X-3, X-4

3047. Naranjo-Gutierrez LA, Oliva-Cristerna J, Ramirez-Montiel ML, et al. Pelvic packing with vaginal traction for the management of intractable hemorrhage. Int J Gynaecol Obstet. 2014 May 29PMID: 24950907; X-2

3048. Nascimento B, Goodnough LT, Levy JH. Cryoprecipitate therapy. Br J Anaesth. 2014 Jun 27PMID: 24972790; X-1

3049. Nathan H, Hezelgrave N, Briley A, et al. PLD.37 Shock Index (SI) as a Predictor of Adverse Outcome in Women with Post Partum Haemorrhage (PPH). Arch Dis Child Fetal Neonatal Ed. 2014 Jun;99 Suppl 1:A116. PMID: 25020974; X-1, X-4, X-5

3050. Nebout S, Merbai N, Faitot V, et al. [Management of major postpartum hemorrhage.]. Presse Med. 2014 Dec 26PMID: 24373716; X-1

3051. Nelissen E, Ersdal H, Ostergaard D, et al. Helping mothers survive bleeding after birth: an evaluation of simulation-based training in a low-resource setting. Acta Obstet Gynecol Scand. 2014 Mar;93(3):287-95. PMID: 24344822; X-2, X-3, X-4

3052. Nichols SD, Furey PM, Palmer JP, et al. Lights, Camera, Hemorrhage: Using Creative Learning Strategies to Engage Nurses. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2014;43(Supp 1):S23-S. PMID: 2012663199. Language: English. Entry Date: 20140926. Revision Date: 20141107. Publication Type: journal article; X-1

3053. Nilsson C, Sorensen BL, Sorensen JL. Comparing hands-on and video training for postpartum hemorrhage management. Acta Obstet Gynecol Scand. 2014 May;93:517-20. PMID: 24754607; X-2, X-3, X-4

3054. Niola R, Cavaliere C, Marcello L, et al. Role of interventional radiology in treating obstetric haemorrhages. Radiol Med. 2014 Jan 10PMID: 24408047; X-4, X-5

3055. Nkwabong E. Maternal and neonatal complications of macrosomia. Trop Doct. 2014 Oct;44(4):201-4. PMID: 24958734; X-2, X-3, X-4

3056. Nor Azlin MI, Maisarah AS, Rahana AR, et al. Pregnancy outcomes with a primary complaint of perception of reduced fetal movements. J Obstet Gynaecol. 2014 Jul 2:1-3. PMID: 24987985; X-3, X-4

3057. Nutter E, Meyer S, Shaw-Battista J, et al. Waterbirth: an integrative analysis of peer-reviewed literature. J Midwifery Womens Health. 2014 May-Jun;59:286-319. PMID: 24850284; X-1, X-4

3058. Obert E. Herbal management of postpartum hemorrhage. Midwifery Today Int Midwife. 2014 Winter:48-9. PMID: 24511843; X-1, X-5

3059. Oguz Orhan E, Dilbaz B, Aksakal SE, et al. Prospective randomized trial of oxytocin administration for active management of the third stage of labor. Int J Gynaecol Obstet. 2014 Jul 17PMID: 25108586; X-2, X-4

3060. Olmedo B, Miranda E, Cordon O, et al. Improving maternal health and safety through adherence to postpartum hemorrhage protocol in Latin America. Int J Gynaecol Obstet. 2014 May;125:162-5. PMID: 24548891; X-2, X-4, X-5

3061. Orbach-Zinger S, Aviram A, Ioscovich A, et al. Anesthetic considerations in pregnant women at advanced maternal age. J Matern Fetal Neonatal Med. 2014 Apr 9PMID: 24593845; X-3, X-4

3062. Ortiz SR, Perez RA, Hernandez RS, et al. WITHDRAWN: Carbetocin versus oxytocin for prevention of postpartum hemorrhage: a randomised controlled trial. Eur J Obstet Gynecol Reprod Biol. 2014 Sep 16PMID: 25266913; X-1

3063. Ostri C, Zibrandtsen N, Larsen M, et al. Profound bilateral visual loss after hysterectomy indicated for severe postpartum haemorrhage. BMJ Case Rep. 2014;2014PMID: 24395872; X-1, X-4, X-5

3064. Ovesen P, Jensen D, Damm P, et al. Maternal and neonatal outcomes in pregnancies complicated by gestational diabetes. A nation-wide study. J Matern Fetal Neonatal Med. 2014 Sep 17:1-14. PMID: 25228278; X-4

3065. Owolabi H, Ameh CA, Bar-Zeev S, et al. Establishing cause of maternal death in Malawi via facility-based review and application of the ICD-MM classification. BJOG. 2014 Sep;121 Suppl 4:95-101. PMID: 25236641; X-2, X-4

3066. Oyerinde K, Baravilala W. Alternative Measures of Spatial Distribution and Availability of Health Facilities for the Delivery of Emergency Obstetric Services in Island Communities. Maternal & Child Health Journal. 2014;18(10):2245-9. PMID: 2012784901. Language: English. Entry Date: 20141114. Revision Date: 20141121. Publication Type: journal article; X-1, X-2

3067. Parveen T, Iqbal T, Kausar T. Grand multiparity and its obstetrical complications at Bahawal Victoria Hospital Bahawalpur. Pakistan: Lahore Medical And Dental College (Tulspura, North Canal Bank, Lahore, Pakistan. E-mail: prof_abdulmajeed@hotmail.com); 2014. http://pjmhsonline.com/JulySep2014/grand_multiparity_and_its_obstet.htmhttp://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed12&NEWS=N&AN=2014808809. Accessed on (Parveen, Iqbal, Kausar) Department of Obstetrics and Gynaecology, Bahawal Victoria Hospital, 489/1 B-VI, Karbala Road, Model Town-B, Bahawalpur, Pakistan 8.

3068. Patterson JA, Roberts CL, Bowen JR, et al. Blood transfusion during pregnancy, birth, and the postnatal period. Obstet Gynecol. 2014 Jan;123:126-33. PMID: 24463672; X-4

3069. Patterson JA, Roberts CL, Taylor LK, et al. Reporting postpartum haemorrhage with transfusion: a comparison of NSW birth and hospital data. N S W Public Health Bull. 2014 Jun;24:153-8. PMID: 24939224; X-4

3070. Paxton JL, Presneill J, Aitken L. Characteristics of obstetric patients referred to intensive care in an Australian tertiary hospital. Aust N Z J Obstet Gynaecol. 2014 Apr 17PMID: 24738907; X-4

3071. Pembe AB, Paulo C, D'Mello B S, et al. Maternal mortality at muhimbili national hospital in Dar-es-Salaam, Tanzania in the year 2011. BMC Pregnancy Childbirth. 2014;14:320. PMID: 25217326; X-2, X-4

3072. Penn N, Oteng-Ntim E, Doyle P. PPO.39 Advanced maternal age and adverse pregnancy outcomes in a South London population. Arch Dis Child Fetal Neonatal Ed. 2014 Jun;99 Suppl 1:A163. PMID: 25021129; X-4

3073. Perez-Munuzuri A, Couce-Pico ML, Bana-Souto A, et al. Preclinical screening for retinopathy of prematurity risk using IGF1 levels at 3 weeks post-partum. PLoS One. 2014;9:e88781. PMID: 24523937; X-3, X-4

3074. Peterson W, Deonandan R, Arole S, et al. Village health worker training for complications of labor and delivery in rural Maharashtra, India. Int J Gen Med. 2014;7:295-301. PMID: 24971034; X-2, X-3, X-4

3075. Phadungkiatwattana P, Rujivejpongsathron J, Tunsatit T, et al. Analyzing pregnancy outcomes in women of extremely advanced maternal age (> or = 45 years). J Med Assoc Thai. 2014 Jan;97:1-6. PMID: 24701722; X-2, X-4

3076. Phuong U L, Emam M, Jouvin-Castro M. REMARKABLE FUNCTIONAL RECOVERY IN A YOUNG GRAVID FEMALE PATIENT SUFFERING FROM A LARGE INTRACRANIAL HEMORRHAGE DUE TO HELLP SYNDROME AND ECLAMPSIA AND CONCOMITANT DEVELOPMENT OF PEMPHIGOID GESTATIONIS. American Journal of Physical Medicine & Rehabilitation. 2014:a91-a. PMID: 2012577061. Language: English. Entry Date: 20140704. Revision Date: 20140815. Publication Type: journal article; X-3, X-4

3077. Prankerd RJ, Nguyen TH, Ibrahim JP, et al. Pulmonary delivery of an ultra-fine oxytocin dry powder formulation: potential for treatment of postpartum haemorrhage in developing countries. PLoS One. 2014;8:e82965. PMID: 24376618; X-3, X-4

3078. Prata N, Bell S, Holston M, et al. Is attendant at delivery associated with the use of interventions to prevent postpartum hemorrhage at home births? The case of Bangladesh. BMC Pregnancy Childbirth. 2014;14:24. PMID: 24428902; X-2, X-4

3079. Prata N, Bell S, Quaiyum MA. Modeling maternal mortality in Bangladesh: the role of misoprostol in postpartum hemorrhage prevention. BMC Pregnancy Childbirth. 2014;14:78. PMID: 24555848; X-2, X-3, X-4

3080. Pulcinella R, Giannone L, Candelori E, et al. Post-traumatic amenorrhea: the role of diagnostic and operative hysteroscopy in the prevention, diagnosis, differential diagnosis and treatment. Minerva Ginecol. 2014 Feb;66:69-76. PMID: 24569405; X-4, X-5

3081. Puri S, Mohan B, Verma S, et al. Internal iliac-artery balloon occlusion in a patient with placenta increta during cesarean hysterectomy. 2014;30:121-3. PMID: X-2, X-3

3082. Quintana KA, Hartwig SM. Leveraging Technology to Help Manage Oxytocin/Tachysystole, Hyperbilirubinemia, and Postpartum Hemorrhage. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2014;43(Supp 1):S44-S. PMID: 2012663228. Language: English. Entry Date: 20140926. Revision Date: 20141107. Publication Type: journal article; X-1

3083. R P, Bhatara U, Iyengar RS. A Rare Case of A2+ve Blood Group in an Obstetric Emergency. J Clin Diagn Res. 2014 Feb;8:181-2. PMID: 24701528; X-1, X-4

3084. Raagab AE, Mesbah YH, Brakat RI, et al. Re-laparotomy after cesarean section: risk, indications and management options. Med Arch. 2014;68:41-3. PMID: 24783911; X-2

3085. Raba G. Unilateral recanalisation of hypogastric artery after ligation for postpartum haemorrhage treatment. Wideochir Inne Tech Malo Inwazyjne. 2014 Jun;9(2):289-91. PMID: 25097703; X-3

3086. Rahim N, Rehana T, Ara A. Risk factors associated with major placenta previa. 2014;22:63-5. PMID: X-2, X-4

3087. Rajaei M, Karimi S, Shahboodaghi Z, et al. Safety and efficacy of misoprostol versus oxytocin for the prevention of postpartum hemorrhage. J Pregnancy. 2014;2014:713879. PMID: 24734184; X-4

3088. Rasheed SM, Amin MM, Abd Ellah AH, et al. Reproductive performance after conservative surgical treatment of postpartum hemorrhage. Int J Gynaecol Obstet. 2014 Mar;124:248-52. PMID: 24380610; X-2, X-4, X-5

3089. Reynolds A, Briggs L. We Can Save Her: Managing Postpartum Hemorrhage. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2014;43(Supp 1):S8-S. PMID: 2012663175. Language: English. Entry Date: 20140926. Revision Date: 20141107. Publication Type: journal article; X-1

3090. Ridout A, Nanda S, Robinson S, et al. PMM.33 Twin pregnancy in maternal sickle cell disease: identifying learning points for successful outcome. Arch Dis Child Fetal Neonatal Ed. 2014 Jun;99 Suppl 1:A133-4. PMID: 25021032; X-4

3091. Rivera-Rosado M, Flores-Perez IS, Mendez K, et al. Risk factors for hysterectomy in abnormal placentation at the University District Hospital. Bol Asoc Med P R. 2014;106:27-9. PMID: 24791360; X-4

3092. Robinson N, Kapungu C, Carnahan L, et al. Recommendations for scale-up of community-based misoprostol distribution programs. Int J Gynaecol Obstet. 2014 Jun;125(3):285-8. PMID: 24680582; X-1, X-4

3093. Rohilla M, Singh P, Kaur J, et al. Uterine necrosis and lumbosacral-plexopathy following pelvic vessel embolization for postpartum haemorrhage: report of two cases and review of literature. Arch Gynecol Obstet. 2014 Oct;290(4):819-23. PMID: 24947325; X-2, X-5

3094. Rossi AC, Prefumo F. Pregnancy outcomes of induced labor in women with previous cesarean section: a systematic review and meta-analysis. Arch Gynecol Obstet. 2014 Sep 2PMID: 25178187; X-1, X-4

3095. Roth CK, Parfitt SE, Hering SL, et al. Developing protocols for obstetric emergencies. Nurs Womens Health. 2014 Oct;18(5):378-90. PMID: 25316538; X-1, X-4, X-5

3096. Ruhl C, Cockey CD. "Don't Rush Me . . . Go the Full 40" as a Public Health Strategy to Promote Spontaneous Labor and Normal Birth. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2014;43(Supp 1):S24-5. PMID: 2012663201. Language: English. Entry Date: 20140926. Revision Date: 20141107. Publication Type: journal article. Journal Subset: Core Nursing; X-1

3097. Saad A, Costantine MM. Obstetric hemorrhage: recent advances. Clin Obstet Gynecol. 2014 Dec;57(4):791-6. PMID: 25264700; X-1

3098. Sahhaf F, Abbasalizadeh S, Ghojazadeh M, et al. Comparison effect of intravenous tranexamic acid and misoprostol for postpartum haemorrhage. Niger Med J. 2014 Jul;55:348-53. PMID: 25114373; X-2

3099. Sahin S, Guzin K, Eroglu M, et al. Emergency peripartum hysterectomy: our 12-year experience. Arch Gynecol Obstet. 2014 May;289(5):953-8. PMID: 24213098; X-4

3100. Salman MC, Calis P, Deren O. Uterine Rupture with Massive Late Postpartum Hemorrhage due to Placenta Percreta Left Partially In Situ. Case Rep Obstet Gynecol. 2014;2013:906351. PMID: 24392232; X-1

3101. Satish S, Deckers EA, Philip BM, et al. Novel system for rapid assessment of blood loss in elective surgery and cesarean delivery. Obstet Gynecol. 2014 May;123 Suppl 1:170s. PMID: 24770080; X-3, X-4

3102. Schack SM, Elyas A, Brew G, et al. Experiencing challenges when implementing active management of third stage of labor (AMTSL): a qualitative study with midwives in Accra, Ghana. BMC Pregnancy Childbirth. 2014;14:193. PMID: 24903893; X-2, X-3, X-4

3103. Schafer DJ, Larkin J. A Case of Abnormal Placental Invasion. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2014;43(Supp 1):S100-S. PMID: 2012663125. Language: English. Entry Date: 20140926. Revision Date: 20141107. Publication Type: journal article; X-1, X-3

3104. Schorn MN, Phillippi JC. Volume replacement following severe postpartum hemorrhage. J Midwifery Womens Health. 2014 May-Jun;59:336-43. PMID: 24751109; X-1

3105. Shabbir S, Zahid M, Qazi A. To detect outcome of pregnancy in advanced maternal age among Pakistani women. Pakistan: Lahore Medical And Dental College (Tulspura, North Canal Bank, Lahore, Pakistan. E-mail: prof_abdulmajeed@hotmail.com); 2014. http://pjmhsonline.com/JulySep2014/to_detect_outcome_of_pregnancy_i.htmhttp://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed12&NEWS=N&AN=2014808810. Accessed on (Shabbir) KVSS Site Hospital, Karachi, Pakistan 8.

3106. Sharma M, Kaur P, Kaur K, et al. A comparative study of oxytocin/misoprostol/methylergometrine for active management of the third stage of labor. 2014;64:175-9. PMID: X-2, X-4

3107. Sharma NS, Wille KM, Bellot SC, et al. Modern Use of Extracorporeal Life Support in Pregnancy and Post-Partum. ASAIO J. 2014 Sep 22PMID: 25248040; X-1, X-4, X-5

3108. Sheldon WR, Blum J, Vogel JP, et al. Postpartum haemorrhage management, risks, and maternal outcomes: findings from the World Health Organization Multicountry Survey on Maternal and Newborn Health. Bjog. 2014 Mar;121 Suppl 1:5-13. PMID: 24641530; X-2, X-4, X-5

3109. Shen LH, Fang YY, Zheng YB, et al. Retrospective Review on Obstetric Cases of Critically Ill and Dead Patients in Dongguan. Cell Biochem Biophys. 2014 Oct 15PMID: 25315638; X-2, X-4

3110. Shibata Y, Shigemi D, Ito M, et al. Association between fibrinogen levels and severity of postpartum hemorrhage in singleton vaginal deliveries at a Japanese perinatal center. J Nippon Med Sch. 2014;81:94-6. PMID: 24805095; X-5

3111. Shoushtari SZ, Makvandi S, Mirzaeian S, et al. The effect of placental cord drainage on the length of the third stage of labor in primiparous women. 2014;16:20-5. PMID: X-2, X-4

3112. Shripad H, Rai L, Mohan A. Comparison of Blood Loss in Induced vs. Spontaneous Vaginal Delivery Using Specialized Blood Collection Bag. J Clin Diagn Res. 2014 Apr;8:OC01-4. PMID: 24959480; X-2, X-4

3113. Sibley LM, Spangler SA, Barry D, et al. A regional comparison of distribution strategies and women's awareness, receipt, and use of misoprostol to prevent postpartum hemorrhage in rural Amhara and Oromiya regions of Ethiopia. J Midwifery Womens Health. 2014 Jan;59 Suppl 1:S73-82. PMID: 24588919; X-2, X-4

3114. Silfelera DB, Celikb M, Gokcec C, et al. Sheehan's syndrome with recurrent hyponatremia and anemia: A case report. 2014;19:33-7. PMID: X-3, X-4

3115. Singh N, Varshney P, Tripathi R, et al. Safety and efficacy of low molecular weight heparin therapy during pregnancy: three year experience at a tertiary care center. J Obstet Gynaecol India. 2014 Dec;63:373-7. PMID: 24431682; X-2, X-4

3116. Singhal S, Singh A, Raghunandan C, et al. Uterine artery embolization: exploring new dimensions in obstetric emergencies. Oman Med J. 2014 May;29(3):217-9. PMID: 24936273; X-1, X-2, X-5

3117. Smit M, Dijkman A, Rijnders M, et al. Haemorrhage after home birth: audit of decision making and referral. Pract Midwife. 2014 Nov;16:12-5. PMID: 24371910; X-4

3118. Smith JM, Baawo SD, Subah M, et al. Advance distribution of misoprostol for prevention of postpartum hemorrhage (PPH) at home births in two districts of Liberia. BMC Pregnancy Childbirth. 2014;14:189. PMID: 24894566; X-2, X-4

3119. Smith JM, Currie S, Cannon T, et al. Are national policies and programs for prevention and management of postpartum hemorrhage and preeclampsia adequate? A key informant survey in 37 countries. Glob Health Sci Pract. 2014 Aug;2(3):275-84. PMID: 25276587; X-3, X-4

3120. Smith JM, Dimiti A, Dwivedi V, et al. Advance distribution of misoprostol for the prevention of postpartum hemorrhage in South Sudan. Int J Gynaecol Obstet. 2014 Jul 9PMID: 25051905; X-2, X-4

3121. Snowden JM, Cheng YW, Emeis CL, et al. The impact of hospital obstetric volume on maternal outcomes in term, non-low-birthweight pregnancies. Am J Obstet Gynecol. 2014 Sep 28PMID: 25263732; X-4

3122. Spangler SA, Gobezayehu AG, Getachew T, et al. Interpretation of national policy regarding community-based use of misoprostol for postpartum hemorrhage prevention in Ethiopia: a tale of two regions. J Midwifery Womens Health. 2014 Jan;59 Suppl 1:S83-90. PMID: 24588920; X-2, X-3, X-4

3123. Sparic R, Lazovic B, Sulovic N, et al. Our experience with intraoperative cell salvage during cesarean delivery in women with uterine myomas--four case reports. Med Pregl. 2014 Mar-Apr;67:111-7. PMID: 24961054; X-3, X-4

3124. Spatling L, Schneider H. "Sumo-Kompression" stoppt postpartale Blutungen. Z Geburtshilfe Neonatol. 2014 Oct;218(5):223-5. PMID: 25353217; X-5

3125. Spitzer RF, Steele SJ, Caloia D, et al. One-year evaluation of the impact of an emergency obstetric and neonatal care training program in Western Kenya. Int J Gynaecol Obstet. 2014 Jul 17PMID: 25124101; X-2

3126. Stanton C, Nand D, Koski A, et al. Accessibility and potency of uterotonic drugs purchased by simulated clients in four districts in India. BMC Pregnancy Childbirth. 2014 Nov 13;14(1):386. PMID: 25392131; X-2, X-3, X-4

3127. Stanton CK, Deepak NN, Mallapur AA, et al. Direct observation of uterotonic drug use at public health facility-based deliveries in four districts in India. Int J Gynaecol Obstet. 2014 Oct;127(1):25-30. PMID: 25026891; X-2, X-4

3128. Steel A, Adams J, Sibbritt D, et al. Relationship between complementary and alternative medicine use and incidence of adverse birth outcomes: An examination of a nationally representative sample of 1835 Australian women. Midwifery. 2014 Mar 29PMID: 24742636; X-3, X-4

3129. Steele HB, Goetzl L. The practical utility of routine postpartum hemoglobin assessment. Am J Obstet Gynecol. 2014 Jun;210:576 e1-6. PMID: 24583198; X-4, X-5

3130. Stephens-Hennessy BM. The Modern Woman's Labor Curve. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2014;43(Supp 1):S53-S. PMID: 2012663160. Language: English. Entry Date: 20140926. Revision Date: 20141107. Publication Type: journal article; X-1

3131. Straface G, Bassi E, De Santis M, et al. Tranfusion risk: is "two-step" vaginal delivery a risk for postpartum hemorrhage? J Matern Fetal Neonatal Med. 2014 Nov 14:1-4. PMID: 25354292; X-4

3132. Subramaniam A, Abramovici AR, Szychowski JM, et al. Higher-Dose Oxytocin to Prevent Obstetric Hemorrhage at Vaginal Delivery-Does Duration of Infusion Matter? Am J Perinatol. 2014 Feb 28PMID: 24585000; X-4, X-5

3133. Subramaniam A, Abramovici AR, Szychowski JM, et al. Higher-Dose Oxytocin to Prevent Obstetric Hemorrhage at Vaginal Delivery—Does Duration of Infusion Matter? American Journal of Perinatology. 2014;31(11):1003-7. PMID: 2012765243. Language: English. Entry Date: 20141024. Publication Type: journal article; X-2, X-4, X-5

3134. Suidan RS, Rondon KC, Apuzzio JJ, et al. Labor Outcomes of Obese Patients Undergoing Induction of Labor with Misoprostol compared to Dinoprostone. Am J Perinatol. 2014 Jun 10PMID: 24915563; X-4

3135. Suzuki S. Selective uterine fundal pressure maneuver during the second stage of the first twin delivery at near term. J Matern Fetal Neonatal Med. 2014 May 29:1-3. PMID: 24809223; X-3, X-4

3136. Szkodziak P, Wozniak S, Czuczwar P, et al. Usefulness of three dimensional transvaginal ultrasonography and hysterosalpingography in diagnosing uterine anomalies. Ginekol Pol. 2014 May;85:354-9. PMID: 25011216; X-3, X-4

3137. Tadakawa M, Sugawara J, Saito M, et al. Fertility and pregnancy outcomes following B-Lynch sutures for post-partum hemorrhage. J Obstet Gynaecol Res. 2014 Oct 20PMID: 25331482; X-5

3138. Takebayashi A, Kimura F, Yamanaka A, et al. Exaggerated placental site, consisting of implantation site intermediate trophoblasts, causes massive postpartum uterine hemorrhage: case report and literature review. Tohoku J Exp Med. 2014;234:77-82. PMID: 25186195; X-1, X-3, X-4

3139. Takeda A, Koike W, Imoto S, et al. Three-dimensional computerized tomographic angiography for diagnosis and management of intractable postpartum hemorrhage. Eur J Obstet Gynecol Reprod Biol. 2014 May;176:104-11. PMID: 24630300; X-5

3140. Takeda A, Koike W, Imoto S, et al. Conservative management of uterine artery pseudoaneurysm after laparoscopic-assisted myomectomy and subsequent pregnancy outcome: case series and review of the literature. Eur J Obstet Gynecol Reprod Biol. 2014 Sep 19;182C:146-53. PMID: 25277771; X-3, X-4

3141. Tam T, Calero D. Does morbid obesity in preeclampsia affect maternal and neonatal outcomes? Obstet Gynecol. 2014 May;123 Suppl 1:81S-2S. PMID: 24770282; X-4

3142. Tandon P, Juneja SK, Mohan B. Angiographic embolization for intractable obstetrical bleeding. Int J Appl Basic Med Res. 2014 Jan;4:25-7. PMID: 24600574; X-2, X-5

3143. Tatler S, Nicoll T. PPO.57 Antenatal Mental Health Status and Pregnancy Outcomes. Arch Dis Child Fetal Neonatal Ed. 2014 Jun;99 Suppl 1:A168-9. PMID: 25021146; X-3, X-4

3144. Teixidor Vinas M, Chandraharan E, Moneta MV, et al. The role of interventional radiology in reducing haemorrhage and hysterectomy following caesarean section for morbidly adherent placenta. Clin Radiol. 2014 Aug;69:e345-51. PMID: 24880757; X-4, X-5

3145. Tran NT, Portela A, de Bernis L, et al. Developing capacities of community health workers in sexual and reproductive, maternal, newborn, child, and adolescent health: a mapping and review of training resources. PLoS One. 2014;9:e94948. PMID: 24736623; X-3, X-4

3146. Ur Din N, Bukhari AS, Kawan S, et al. The B-lynch surgical technique for the control of massive postoperative haemorrhage an alternative to hysterectomy, clinical trial at Nishtar hospital, Multan. 2014;8:247-8. PMID: X-2

3147. Urner F, Zimmermann R, Krafft A. Manual removal of the placenta after vaginal delivery: an unsolved problem in obstetrics. 2014;2014:274651. PMID: 24812585; X-1

3148. Urushiyama D, Yoshizato T, Kora S, et al. Predictive factors related to the efficacy of pelvic arterial embolization for postpartum hemorrhage: a retrospective analysis of 21 cases. Taiwan J Obstet Gynecol. 2014 Sep;53(3):366-71. PMID: 25286792; X-2, X-5

3149. Uygur D, Altun Ensari T, Ozgu-Erdinc AS, et al. Successful use of BT-Cath balloon tamponade in the management of postpartum haemorrhage due to placenta previa. Eur J Obstet Gynecol Reprod Biol. 2014 Aug 13;181c:223-8. PMID: 25171267; X-2

3150. Uygur D, Altun Ensari T, Ozgu-Erdinc AS, et al. Successful use of BT-Cath((R)) balloon tamponade in the management of postpartum haemorrhage due to placenta previa. Eur J Obstet Gynecol Reprod Biol. 2014 Oct;181:223-8. PMID: 25171267; X-2, X-4, X-5

3151. Vagge DS, Mamatha KR, Shivamurthy G, et al. A comparative study to assess the efficacy and tolerability of per rectal misoprostol and intravenous oxytocin in prevention of primary postpartum haemorrhage in a tertiary care hospital. 2014;6:1134-40. PMID: X-2, X-4

3152. van der Bom JG. Rotem in postpartum hemorrhage. Blood. 2014 Sep 11;124(11):1700-1. PMID: 25214195; X-1, X-2, X-4, X-5

3153. Vaswani PR, Sabharwal S. Trends in the occurrence of antenatal and perinatal complications with increasing parity. J Obstet Gynaecol India. 2014 Aug;63:260-7. PMID: 24431653; X-2, X-4

3154. Waechter M. Tricks of the Trade: Placenta Stories by Marlene. Midwifery Today. 2014(109):6-. PMID: 2012518406. Language: English. Entry Date: 20140404. Revision Date: 20140530. Publication Type: journal article; X-1

3155. Wakimoto S, Hidaka N, Fukushima K, et al. Spontaneous post-partum rupture of an ovarian artery aneurysm: A case report of successful embolization and a review of the published work. J Obstet Gynaecol Res. 2014 Sep 26PMID: 25256954; X-3, X-4

3156. Walker D, Cohen S, Fritz J, et al. PRONTO: Obstetric and Neonatal Emergency Simulation in Mexico Improves Patient Outcomes, Provider Knowledge, Team Coordination, and Identifies Latent Systems Errors. Journal of Midwifery & Women's Health. 2014;59(5):548-9. PMID: 2012754121. Language: English. Entry Date: 20141017. Revision Date: 20141024. Publication Type: journal article; X-2, X-3, X-4

3157. Walker R. Improved Birth Outcomes With Implementation of a Perinatal Quality and Patient Safety Collaborative. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2014;43(Supp 1):S53-4. PMID: 2012663161. Language: English. Entry Date: 20140926. Revision Date: 20141107. Publication Type: journal article; X-1

3158. Wang W, Wang AM, Huang XQ, et al. Thromboelastography in women with pathological pregnancies: a preliminary study. Chin Med Sci J. 2014 Mar;29:63-4. PMID: 24698684; X-2, X-3, X-4

3159. Watson H, Sihra N, Sau A. PA.21 Does all placenta praevia need hospital admission? Arch Dis Child Fetal Neonatal Ed. 2014 Jun;99 Suppl 1:A23-4. PMID: 25021181; X-4

3160. Weedin EA, Mercer LT, Wood DL, et al. Ovarian artery aneurysm after postpartum hemorrhage: a case report. Obstet Gynecol. 2014 May;123 Suppl 1:177s. PMID: 24770094; X-1, X-3, X-4

3161. Weeks A. The prevention and treatment of postpartum haemorrhage: what do we know, and where do we go to next? Bjog. 2014 Oct 7PMID: 25289730; X-1

3162. Wenckus DJ, Gao W, Kominiarek MA, et al. The effects of labor and delivery on maternal and neonatal outcomes in term twins: a retrospective cohort study. BJOG. 2014 Aug;121:1137-44. PMID: 24575851; X-4

3163. Williams C. Should midwives measure blood loss in the fourth stage of labour? British Journal of Midwifery. 2014;22(6):394-8. PMID: 2012608588. Language: English. Entry Date: 20140620. Revision Date: 20140704. Publication Type: journal article. Journal Subset: Double Blind Peer Reviewed; X-1

3164. Wohlmuth C, Tulzer G, Arzt W, et al. Maternal Aspects Of Fetal Cardiac Intervention. Ultrasound Obstet Gynecol. 2014 Jun 11PMID: 24920505; X-3, X-4

3165. Wolfe H, Timofeev J, Tefera E, et al. Risk of Cesarean in Obese Nulliparous Women with Unfavorable Cervix: Elective Induction vs. Expectant Management at Term. Am J Obstet Gynecol. 2014 Jan 30PMID: 24486226; X-4

3166. Wright CE, Chauhan SP, Abuhamad AZ. Bakri Balloon in the Management of Postpartum Hemorrhage: A Review. Am J Perinatol. 2014 Apr 4PMID: 24705972; X-1

3167. Wu E, Jolley JA, Hargrove BA, et al. Implementation of an obstetric hemorrhage risk assessment: validation and evaluation of its impact on pretransfusion testing and hemorrhage outcomes. J Matern Fetal Neonatal Med. 2014 Apr 9PMID: 24670202; X-4

3168. Xiang L, Wei Z, Wu J, et al. Clinical significance of first-trimester intrauterine haematomas detected in pregnancies achieved by IVF-embryo transfer. Reprod Biomed Online. 2014 Jul 11PMID: 25164168; X-3, X-4

3169. Yamada T, Akaishi R, Oda Y, et al. Antenatal fibrinogen concentrations and postpartum haemorrhage. Int J Obstet Anesth. 2014 Jun 25PMID: 25262279; X-4

3170. Yan JY, Zhou ZM, Xu X, et al. Risk factors and surgical interventions associated with primary postpartum haemorrhage unresponsive to first-line therapies. J Obstet Gynaecol. 2014 Jun 9:1-5. PMID: 24911676; X-2, X-5

3171. Yang G, Lee D, Lee S, et al. Successful live births after surgical treatments for symptomatic cesarean scar pregnancies: report of 3 cases. Gynecol Obstet Invest. 2014;78(3):208-12. PMID: 25228400; X-3, X-4

3172. Yang S, Zhang B, Zhao J, et al. Progress on the maternal mortality ratio reduction in Wuhan, China in 2001-2012. PLoS One. 2014;9(2):e89510. PMID: 24586836; X-2, X-4

3173. Yang Z, Mei-Ying L, Shan-Mi W, et al. Pregnancy and myelodysplastic syndrome: an analysis of the clinical characteristics, maternal and fetal outcomes. J Matern Fetal Neonatal Med. 2014 Nov 14:1-5. PMID: 25354291; X-4

3174. Yates Huwe V, Mullen M. Can We Save Her Without Giving Blood? An Incredible Case of Obstetric Hemorrhage. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing. 2014;43(Supp 1):S99-s100. PMID: 2012663124. Language: English. Entry Date: 20140926. Revision Date: 20141107. Publication Type: journal article; X-3

3175. Ye C, Ruan Y, Zou L, et al. The 2011 survey on hypertensive disorders of pregnancy (HDP) in China: prevalence, risk factors, complications, pregnancy and perinatal outcomes. PLoS One. 2014;9(6):e100180. PMID: 24937406; X-2, X-3, X-4

3176. Yee LM, Liu LY, Grobman WA. The relationship between obstetricians' cognitive and affective traits and their patients' delivery outcomes. Am J Obstet Gynecol. 2014 Jun 4PMID: 24907699; X-3, X-4

3177. Yogender P, Balram Singh T, Rangaswamy R, et al. The study of folic acid and vitamin B12 levels in anaemia in pregnancy. 2014;5:B41-B7. PMID: X-2, X-3, X-4

3178. Yonemoto N, Dowswell T, Nagai S, et al. Schedules for home visits in the early postpartum period. Evid Based Child Health. 2014 Mar;9(1):5-99. PMID: 25404577; X-1

3179. Yousefi Z, Ghasemian Mehrdizaj S, Bidar Frimany M, et al. Metastatic choriocarcinoma in the small bowel: A case report. 2014;72:335-9. PMID: X-2, X-3, X-4

3180. Yuce T, Acar D, Kalafat E, et al. Thrombocytopenia in pregnancy: do the time of diagnosis and delivery route affect pregnancy outcome in parturients with idiopathic thrombocytopenic purpura? Int J Hematol. 2014 Oct 8PMID: 25293555; X-4

3181. Yulia A, Johnson MR. Myometrial oxytocin receptor expression and intracellular pathways. Minerva Ginecol. 2014 Jun;66:267-80. PMID: 24971782; X-1

3182. Zanette E, Parpinelli MA, Surita FG, et al. Maternal near miss and death among women with severe hypertensive disorders: a Brazilian multicenter surveillance study. Reprod Health. 2014;11:4. PMID: 24428879; X-2, X-4

3183. Zatta AJ, McQuilten ZK, Mitra B, et al. Elucidating the clinical characteristics of patients captured using different definitions of massive transfusion. Vox Sang. 2014 Jul;107:60-70. PMID: 24697251; X-3, X-4

3184. Zeitler H, Ulrich-Merzenich G, Marquardt N, et al. Immunoadsorption for pregnancy-associated severe acquired hemophilia. Ther Apher Dial. 2014 Feb;18:103-10. PMID: 24499091; X-4, X-5

3185. Zhang Y, Li W, Xiao J, et al. The complication and mode of delivery in Chinese women with severe preeclampsia: a retrospective study. Hypertens Pregnancy. 2014 Jan 29PMID: 24475773; X-2, X-4

3186. Zhang Z, Liu C, Yu N, et al. Removable uterine compression sutures for postpartum haemorrhage. BJOG. 2014 Sep 1PMID: 25175111; X-2, X-5

3187. Zhao Y, Zhang Y, Li Z. Appropriate second-line therapies for management of severe postpartum hemorrhage. Int J Gynaecol Obstet. 2014 Jul 5PMID: 25277790; X-2

3188. Zia S, Rafique M. Intra-operative complications increase with successive number of cesarean sections: Myth or fact? Obstet Gynecol Sci. 2014 May;57:187-92. PMID: 24883289; X-4

3189. Zou CJ, Wang XF, Ye ZH. Maternal health care services in Zhejiang Province, China: From 1998 to 2010. 2014;19:151-60. PMID: X-2, X-4

3190. Zubor P, Kajo K, Dokus K, et al. Recurrent secondary postpartum hemorrhages due to placental site vessel subinvolution and local uterine tissue coagulopathy. BMC Pregnancy Childbirth. 2014;14:80. PMID: 24558972; X-3

Appendix D. Evidence Tables

Table D-1. Evidence table for studies addressing management of PPH (Cheong 2014)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Cheong et al., 2014[1] **Country:** Korea **Enrollment period:** January 2006 to June 2013 **Birth setting:** Hospital **Facility characteristics:** Tertiary care, **Funding:** NR **Design:** Retrospective case series	**Intervention:** Pelvic arterial embolization (PAE) **Groups:** **G1:** Embolization **G1a:** following vaginal delivery **G1b:** following cesarean delivery **G1c:** PAE success **G1d:** PAE failure **N at enrollment:** **G1:** 117 **G1a:** 69 (59%) **G1b:** 48 (41%) **G1c:** 103 **G1d:** 14 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** Primary PPH occurring within first 24 hours Secondary PPH occurring from 24 hours to 6 weeks after delivery Definition of success of treatment: Cessation of bleeding after PAE without need for repeat procedure or additional surgery during the hospital stay **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** All patient who underwent pelvic arterial embolization for primary or secondary PPH **Exclusion criteria:** Patients who underwent Cesarean hysterectomy prior to PAE **Maternal age, yrs, mean ± SD:** **G1a:** 32.0 ± 5.0 **G1b:** 33.0 ± 5.0 p= 0.29 **G1c:** 32.0 ± 5.0 **G1d:** 32.0 ± 4.0 p= 0.16 **Parity, n (%):** Primiparity **G1a:** 41 (59.4) **G1b:** 15 (31.3) p=0.003	**Blood loss:** NR **Transfusion:** **G1c:** 32 (31.1) **G1d:** 11 (78.6) p= 0.002 **ICU admission:** NR **Anemia – Initial hgb <8 g/dL** **G1c:** 48 (46.6) **G1d:** 7 (50.0) **Length of stay:** NR **Mortality:** NR **Uterine preservation:** NR **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** Clinical Success: 103/117 (88) Clinical Failure: 14/117 Hemostatic hyst 4/14 Repeat PAE 10/14 **G1a:** 9 (13) **G1b:** 5 (10.4 p= 0.66 **One PAE success**

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1c: 51 (49.5) **G1d:** 5 (35.7) p= 0.33 **Weeks gestation, n (%):** < 34 **G1a:** 0 **G1b:** 1 (2.1) **G1c:** 1 (1.0) **G1d:** 0 (0) 34-36 week 6 days **G1a:** 4 (5.8) **G1b:** 8 (16.7) **G1c:** 11 (10.7) **G1d:** 1 (7.1) ≥ 37 weeks **G1a:** 65 (94.2) **G1b:** 39 (81.3) **G1c:** 91 (88.3) **G1d:** 1 (7.1) **Single pregnancy, n (%):** NR **Twin pregnancy, n (%):** **G1a:** 0 **G1b:** 3 (6.3) **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** Vaginal	**G1c:** 103/103 (100) **G1d:** 4/14 (28) Two or more PAE **G1c:** 0 (0) **G1d:** 10/14 (71.4) **Harms pre-specified:** No **Harms, n (%):** **PPH-related complications:** 12 (10.3) Acute renal failure **G1:** 5 (4.3) Hepatic failure **G1:** 1 (0.9) Pulmonary edema **G1:** 3 (2.6) Postpartum cardiomyopathy **G1:** 3 (2.6) PAE-related complications: 7 (6.0) Uterine necrosis requiring hysterectomy **G1:** 3 (2.6) Buttock necrosis requiring surgical debridment **G1:** 0 Fever > 38.5º C without a focus of infection **G1:** 2 (1.7) Puncture site hematoma **G1:** 2 (1.7)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1a: 69 **G1c:** 60 (58.3) **G1d:** 9 (64.3) Cesarean **G1b:** 48 **G1c:** 43 (41.7) **G1d:** 5 (35.7) **Type of PPH, n (%)** Primary **G1a:** 62 (89.9) **G1b:** 36 (75) **G1c:** 85 (82.5) **G1d:** 13 (92.9) Secondary **G1a:** 7 (10.1) **G1b:** 12 (25) p=0.032 (type of PPH by type of delivery) **G1c:** 18 (17.5) **G1d:** 1 (7.1) p= 0.3 (Type of PPH by PAE success or failure) **Risk factors, n (%):** Preeclampsia **G1a:** 1 (1.4) **G1b:** 6 (12.5) p=0.038 **Primary etiology of PPH, n (%):** Atony **G1a:** 39 (56.5) **G1b:** 25 (52.1) **G1c:** 57 (55.3) **G1d:** 7 (50) Abnormal placentation **G1a:** 2 (2.9)	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1b: 15 (31.3) **G1c:** 14 (13.6) **G1d:** 3 (21.4) Low genital tract trauma **G1a:** 25 (36.2) **G1b:** 0 **G1c:** 22 (21.4) **G1d:** 3 (21.4) Retained placental fragments **G1a:** 2 (2.9) **G1b:** 1 (2.1) **G1c:** 2 (1.9) **G1d:** 1 (7.1) Others **G1a:** 1 (1.4) **G1b:** 7 (14.6) **G1c:** 8 (7.8) **G1d:** 0 (0)	

Table D-2. Evidence table for studies addressing management of PPH (Cowan 2014)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Cowan et al., 2014[2] **Country:** US **Enrollment period:** January 2000 to June 2010 **Birth setting:** Hospital **Facility characteristics:** Tertiary care **Funding:** NR **Design:** Retrospective cohort	**Intervention:** B-lynch suture **Groups:** **G1:** B-lynch suture **G2:** controls (no suture) **N at enrollment:** **G1:** 63 **G2:** 189 **N at follow-up:** **G1:** 63 **G2:** 189 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** Estimated blood loss > 500 mL for vaginal delivery or > 1000 mL for cesarean **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** Women with PPH between Jan 2000 and June 2010 who had subsequent pregnancy that achieved 24 weeks gestation Cases: had B-lynch suture Controls: subsequent three cases per each case with index pregnancy complicated by PH but did not receive suture **Exclusion criteria:** NR **Maternal age at index pregnancy, yrs, mean ± SD:** **G1:** 31.0 ± 3.9 **G2:** 30.5 ± 4.8 p=0.48 **Maternal age at subsequent pregnancy, yrs, mean ± SD:** **G1:** 33.5 ± 5.0 **G2:** 33.7 ± 3.7 p=0.81 **Parity, n:** Nulliparous **G1:** 40 (63.5) **G2:** 149 (78.8) p=0.02 **Weeks gestation, n (%):** NR **Single pregnancy, n (%):** NR	**Blood loss, index pregnancy, mean (range):** **G1:** 1,800 (1,400-2,200) **G2:** 1,200 (1,000-1,500) p= <0.001 **Transfusion, n (%):** **G1:** 14 (29.2) **G2:** 25 (13.3) p=0.01 **ICU admission:** NR **Anemia:** NR **Length of stay:** NR **Mortality:** NR **Uterine preservation:** NR **Future fertility, n (%):** Pregnancy outcomes in subsequent pregnancy Composite **G1:** 9 (14.3) **G2:** 26 (13.8) p=0.92 Previa **G1:** 5 (7.9) **G2:** 7 (3.7) p=0.17 Accreta **G1:** 1 (1.6) **G2:** 1 (0.5) p=0.41 Preeclamsia

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Multiple pregnancy, n (%) **G1:** 5 (2.6) **G2:** 1 (1.6) p=1.0 **Race/ethnicity, n (%):** White **G1:** 46 (73) **G2:** 124 (65.6) Black **G1:** 1 (1.6) **G2:** 20 (10.6) Latina **G1:** 10 (15.9) **G2:** 25 (13.2) Asian **G1:** 1 (1.6) **G2:** 8 (4.2) Other or unknown **G1:** 5 (7.9) **G2:** 12 (6.3) **BMI, mean ± SD** **G1:** 29.9 ± 4.2 **G2:** 33.7 ± 4.8 **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n (%):** Vaginal **G1:** 1 (1.6) **G2:** 3 (1.6) Cesarean	**G1:** 0 **G2:** 7 (3.7) p= 0.13 Preterm birth **G1:** 5 (7.9) **G2:** 19 (10.1) p= 0.62 SGA (small for gestational age) **G1:** 0 **G2:** 8 (4.2) p=0.1 **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** NR **Confounders:** NR **Effect modifiers:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 62 (98.4) **G2:** 186 (98.4) **Risk factors/pregnancy complications in index pregnancy, n (%):** Placenta previa **G1:** 2 (3.2) **G2:** 9 (4.8) Preeclampsia **G1:** 4 (6.3) **G2:** 11 (5.8) Preterm birth **G1:** 5 (7.9) **G2:** 16 (8.5) Small for gestational age birth index **G1:** 6 (9.8) **G2:** 10 (5.3) **Primary etiology of PPH, n (%):** NR	

Table D-3. Evidence table for studies addressing management of PPH (Dupont 2014)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Dupont et al., 2014[3] See also Dupont et al., 2011[4] **Country:** France **Enrollment period:** 2005 to 2012 **Birth setting:** Hospital **Facility characteristics:** level 3 University hospital **Funding:** NR **Design:** Pre-post systems level	**Intervention:** First stage started in 2005: Combining a clinical audit with quarterly audits of morbidity and mortality from severe PPH Second stage started in 2008: special data collection procedures including summary forms completed by obstetric staff during daily staff meetings. Quality of care defined as optimal if four key steps were taken: 1) call to senior physician < 10 minutes, 2) performance of manual uterine exam or manual removal of placenta < 15 minutes, 3) administration of oxytocin as first line treatment and 4) sulprostome in 30 minutes after diagnosis if atony persisted. Third stage began in 2010 added quarterly monitoring of severe PPH rate **N severe PPH by year:** **2005:** 27 **2006:** 25 **2007:** 16 **2008:** 9 **2009:** 16 **2010:** 13 **2011:** 16 **2012:** 18 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** Severe PPH was defined as one of more of following criteria: blood loss > 1500 mL or transfusion with concentrated red cells, treatment by radiologic embolization, or conservative surgical treatment, or hysterectomy, or transfer to critical care department or intrapartum hemoglobin loss of 4 g/dl or more, or maternal death **Definition of success of treatment**: NR **Method of blood loss measurement:** blood collector bags **Severity:** see definition above **Inclusion criteria:** All women with vaginal delivery between 2005 and 2012 (21,822) d 140 cases of severe PPH **Exclusion criteria:** NR **Maternal age, yrs, mean ± SD:** NR **Parity, n:** NR **Weeks gestation, n (%):** NR **Single pregnancy, n (%):** NR **Multiple pregnancy, n (%):** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR	**Incidence of severe PPH by year, n (%):** **2005:** 27 (1.2) **2006:** 25 (1.0) **2007:** 16 (0.7) **2008:** 9 (0.4) **2009:** 16 (0.6) **2010:** 13 (0.4) **2011:** 16 (0.5) **2012:** 18 (0.6) p for trend < 0.001 **Care provided, n (%):** Optimal **2005:** 7 (25.9) **2006:** 4 (16) **2007:** 7 (43.8) **2008:** 6 (66.7) **2009:** 8 (50) **2010:** 9 (69.2) **2011:** 11 (68.8) **2012:** 12 (66.7) Suboptimal **2005:** 10 (37) **2006:** 17 (68) **2007:** 8 (50) **2008:** 2 (22.2) **2009:** 4 (25) **2010:** 3 (23.1) **2011:** 4 (25) **2012:** 3 (16.7) Non-optimal **2005:** 10 (37) **2006:** 4 (16) **2007:** 1 (6.3) **2008:** 1 (11.1) **2009:** 4 (25)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Mode of birth, n: Vaginal delivery (100%) **Risk factors, n (%):** NR **Primary etiology of PPH, n (%):** Atony **2005:** 24 (88.9) **2006:** 19 (769) **2007:** 8 (50) **2008:** 7 (77.8) **2009:** 10 (62.5) **2010:** 8 (61.5) **2011:** 9 (56.3) **2012:** 10 (100)	**2010:** 1 (7.7) **2011:** 1 (6.25) **2012:** 3 (16.7) p for trend < 0.001 Prophylactic administration of oxytocin **2005:** 5 (18.5) **2006:** 18 (72) **2007:** 10 (63) **2008:** 9 (100) **2009:** 14 (87.5) **2010:** 13 (100) **2011:** 16 (100) **2012:** 16 (88.8) p for trend < 0.001 Examination of the uterine cavity **2005:** 19 (70.4) **2006:** 23 (92) **2007:** 16 (100) **2008:** 8 (89) **2009:** 15 (93.8) **2010:** 12 (92.3) **2011:** 16 (100) **2012:** 18 (100) p for trend =0.03 Examination of the uterine cavity within 15 minutes of PPH diagnosis **2005:** 7 (25.9) **2006:** 22 (88) **2007:** 10 (63) **2008:** 8 (89) **2009:** 15 (93.8) **2010:** 12 (92.3) **2011:** 16 (100) **2012:** 17 (94.4) p for trend <0.001 Instrumental examination of vagina/cervix **2005:** 11 (40.7)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
			2006: 18 (72) **2007:** 9 (56) **2008:** 8 (89) **2009:** 15 (93.8) **2010:** 13 (100) **2011:** 15 (95.8) **2012:** 18 (100) p for trend < 0.001 Intravenous administration of sulprostone for subset with severe PPH due to uterine atony **2005:** 11 (45.8) **2006:** 15 (78.9) **2007:** 7 (87.5) **2008:** 6 (85.7) **2009:** 8 (80) **2010:** 8 (100) **2011:** 8 (88.9) **2012:** 8 (80) p for trend =0.1 Intravenous administration of sulprostone within 30 minutes of PPH diagnosis for subset with severe PPH due to uterine atony **2005:** 0 **2006:** 8 (42.1) **2007:** 2 (25) **2008:** 6 (85.7) **2009:** 5 (50) **2010:** 5 (62.5) **2011:** 8 (88.9) **2012:** 8 (80) p for trend < 0.001 **Harms of intervention:** NR **Confounders:** NR **Effect modifiers:** NR

Table D-4. Evidence table for studies addressing management of PPH (Einerson 2014)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Einerson et al., 2014[5] **Country:** US **Enrollment period:** August 2007 to December 2011 **Birth setting:** Hospital **Facility characteristics:** Tertiary care **Funding:** Grant from Kenneth and Anne Griffin Foundation **Design:** Pre-post (Systems level)	**Intervention:** Training program for perinatal nursing, residents, fellows, midwives and physicians in OB and anesthesia departments in early diagnosis and management of PPH. Program d: 1) mandatory educational sessions to improve EBL assessment, 2) multidisciplinary checklist for PPH management, and 3) institution if universal active management of 3rd stage of labor. **Groups:** **G1:** pre protocol **G2:** post protocol **N:** **G1:** 592 **G2:** 2513 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** Estimated blood loss greater than 500 mL for vaginal delivery and > 1,000 mL for cesarean delivery or if received a blood transfusion or uterotonic medications for obstetric hemorrhage **Definition of success of treatment**: changes in patient care and outcomes **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** Query electronic records to identify women with PPH defined as EBL of > 500 mL for vaginal delivery or > 1000 mL for cesarean or if received a blood transfusion or uterotonic medications for obstetric hemorrhage Records identified electronically were individually reviewed to confirm diagnosis of PPH **Exclusion criteria:** NR **Maternal age, yrs, mean ± SD:** **G1:** 31.5 ± 6.1 **G2:** 32.0 ± 5.6 p=0.038 **Parity, n (%):** Nulliparous **G1:** 378 (63.9) **G2:** 1543 (61.4) p= 0.265 **Gestational age, mean weeks ± SD:** **G1:** 38.6 ± 2.8 **G2:** 38.6 ± 2.7 p=0.879	**Blood loss, estimated mL** **G1:** 1,168 ± 688 **G2:** 1,265 ± 905 p= 0.014 EBL > 1,500 mL, n (%) **G1:** 127 (21.5) **G2:** 669 (26.6) p= 0.01 **Transfusion, n (%):** Packed red cells **G1:** 63 (10.6) **G2:** 134 (12.5) p= 0.21 Fresh frozen plasma **G1:** 18 (3.0) **G2:** 64 (2.6) p= 0.50 Cyroprecipitate **G1:** 11 (1.9) **G2:** 94 (3.8) p= 0.02 Platelets **G1:** 7 (1.2) **G2:** 39 (1.6) p= 0.50 More than 2 units pRBCs **G1:** 27 (4.6) **G2:** 113 (4.5) p= 0.94 More than 2 units FFP **G1:** 9 (1.5)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Single pregnancy, n (%): NR **Multiple pregnancy, n (%):** **G1:** 75 (12.7) **G2:** 309 (12.3) p=0.802 **Race/ethnicity:** Caucasian **G1:** 307 (51.9) **G2:** 1379 (54.9) African-American **G1:** 72 (12.2) **G2:** 282 (11.2) Hispanic **G1:** 107 (18.1) **G2:** 444 (17.7) Asian **G1:** 19 (3.2) **G2:** 185 (7.4) Other **G1:** 87 (14.7) **G2:** 220 (8.8) p< 0.001 **BMI** **G1:** 30.4 ± 5.9 **G2:** 31.4 ± 6.5 p< 0.001 **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:**	**G2:** 36 (1.4) p= 0.87 More than 2 units cryoprecipitate **G1:** 1 (0.2) **G2:** 22 (0.9) p= 0.07 More than 2 units platelets **G1:** 1 (0.2) **G2:** 11 (0.4) p= 0.34 4 or more units total blood products **G1:** 22 (3.7) **G2:** 106 (4.2) p= 0.58 ICU admission **G1:** 14 (2.4) **G2:** 57 (2.3) p= 0.93 **Anemia:** NR **Length of stay:** NR **Mortality:** None **Uterine preservation, n (%):** Embolization via interventional radiology **G1:** 4 (0.7) **G2:** 45 (1.8) p= 0.05 Hysterectomy **G1:** 7 (1.2) **G2:** 43 (1.7) p= 0.36

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Spontaneous vaginal **G1:** 271 (45.8) **G2:** 1084 (43.1) Operative vaginal **G1:** 63 (10.6) **G2:** 215 (8.6) Cesarean **G1:** 258 (43.6) **G2:** 1215 (48.3) p= 0.067 **Risk factors, n (%):** History of cesarean **G1:** 71 (12) **G2:** 362 (14.4) p=0.13 Labor induction **G1:** 158 (26.7) **G2:** 793 (31.6) p=0.021 Preeclampsia **G1:** 54 (9.1) **G2:** 269 (10.7) p=0.26 Placenta previa **G1:** 20 (3.4) **G2:** 73 (2.9) p=0.54 Use of oxytocin **G1:** 378 (64.2) **G2:** 1659 (66.3) p=0.32 Chorioamnionitis	**Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** NR **Confounders:** NR **Effect modifiers:** NR **Uterotonic used, n (%):** **G1:** 278 (47.0) **G2:** 1628 (64.8) p<0.001 **Intrauterine balloon tamponade, n (%):** **G1:** 17 (2.9) **G2:** 155 (6.2) p=0.002 **B-Lynch, n (%):** **G1:** 23 (3.9) **G2:** 151 (6.0) p = 0.042 **Curettage, n (%):** **G1:** 29 (4.9) **G2:** 127 (5.1) p = .875 **Use of >2 uterotonics, n (%):** **G1:** 125 (21.1) **G2:** 1064 (42.3) p<.001

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 65 (11) **G2:** 300 (11.9) p=0.52 **Primary etiology of PPH, n (%):** NR	

Comments: See also Lappen et al., 2013 for earlier report on same intervention

Table D-5. Evidence table for studies addressing management of PPH (Ferrazzani 2014)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Ferrazzani et al., 2014[6] **Country:** Italy **Enrollment period:** December 2002 to July 2012 **Birth setting:** Hospital **Facility characteristics:** Two hospitals **Funding:** NR **Design:** Prospective case series	**Intervention:** Intrauterine inflated catheter balloon (Rusch balloon) inserted after failure of medical treatment to control PPH **Groups:** **G1:** intrauterine balloon **N:** **G1:** 52 **Duration of treatment:** NR **Timing of treatment:** after medical treatment failed **Order of treatment:** Initial treatment d 20 IU oxytocin i.v., then 0.2 mg i.m. or i.v.v methylergometrine, and finally iv. Sulprostone (0.5 mg in 250 mL saline) **Length of follow-up:** NR	**Operational definition of PPH:** According to ACOG definition and/or any blood loss that had the potential to produce hemodynamic instability Definition of success of treatment: Bleeding stopped – "positive tamponade test" **Method of blood loss measurement:** clinical estimation, collection bag after vaginal delivery; both suction and collection of blood loss by drape measurement during cesarean **Severity:** NR **Inclusion criteria:** PPH **Exclusion criteria:** traumatic cases of PPH, such as vaginal or cervical lacerations **Maternal age, yrs, mean ± SD:** **G1:** 34.4 ± 4.4 **Parity, n (%):** **G1:** 39 (75) **Weeks gestation, mean ± SD:** **G1:** 36.2 ± 4.2 **Single pregnancy, n (%):** NR **Multiple pregnancy, n (%):** **G1:** 5 (9.6) **Race/ethnicity:** NR **BMI:** NR	**Blood loss, mean ± SD:** **G1:** 1759 ± 1011 **Transfusion, meadian (range):** RBC Units **G1:** 2 (0-15) **ICU admission:** NR **Anemia:** NR **Length of stay (days of postpartum admission)** **G1:** 6.2 ± 3.0 **Mortality:** **G1:** 0 **Uterine preservation: n (%)** **G1:** 42/52 (80) **Future fertility n=31 Follow-up in 4-108 months** **G1:** 7/31 (had subsequent pregnancies) 4 carried to term without complications 1 still pregnant at follow up 2 early abortions 1 ectopic pregnancy **Breastfeeding:** NR **Psychological impact** **G1:** 9/31 psychological trauma Harms of intervention **Harms pre-specified:** No **Harms, n (%):**

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Baseline hemoglobin, mean ± SD: Prepartum **G1:** 11.0 ± 1.6 Postpartum **G1:** 7.5 ± 1.7 **SES:** NR **Mode of birth, n (%):** Vaginal **G1:** 12 (23) Instrumental **G1:** 2 (3.8) Emergency cesarean **G1:** 19 (36.5) Elective cesarean **G1:** 19 (36.5) **Risk factors, n (%):** NR **Primary etiology of PPH, n (%):** Atony **G1:** 31 (59.6) Placenta accrete **G1:** 5 (9.6) Placenta previa **G1:** 11 (21.2) Placenta previa and accrete **G1:** 5 (9.6)	Inadvertant discharge of balloon **G1:** 1 (1.9) Post-partum sepsis **G1:** 2 (3.8) Successful treatment: 39/52 (75) Successful treatment by cause of PPH: NR Atony alone: 20/24 (83) Atony & previa &/or accrete: 3/7 (42) Previa alone: 9/11 (81) Previa-accreta: 2/5 (40)

Table D-6. Evidence table for studies addressing management of PPH (Inoue 2014)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Inoue et al., 2014[7] **Country:** Japan **Enrollment period:** Jan 2002 to Dec 2011 **Birth setting:** Hospitals (n=23) **Facility characteristics:** Tertiary care, **Funding:** Agency/NR **Design:** Case series, retrospective	**Intervention:** Transarterial embolization (TAE) **Groups:** **G1:** intervention **G1a:** emergency TAE **G1b:** preventive TAE **N at enrollment:** **G1:** 211 **G1a:** 161 **G1b:** 60 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** 3 months to 3 years (n=113)	**Operational definition of PPH:** Over 500 mL of bleeding **Definition of success of treatment**: In emergency situation: no other surgical procedure necessary for hemostasis Preventive procedure: when hemorrhage could be controlled with no additional procedures **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** Women who underwent TAE for PPH in time period, including as preventative treatment **Exclusion criteria:** None **Maternal age, yrs, mean ± SD:** **G1a:** 32.4 ± 4.8 **G1b:** 30.1 ± 6.1 **Parity, n:** Primipara **G1a:** 76 (47.2) **G1b:** 25 (50) Multipara **G1a:** 85 (52.8) **G1b:** 25 (50) **Weeks gestation, n (%):** < 22 weeks **G1a:** 37 (23) **G1b:** 19 (38) ≥ 22 weeks **G1a:** 124 (77)	**Blood loss, n (%):** 0-500 mL **G1a:** 8 (5.0) **G1b:** 30 (60) 500-1999 mL **G1a:** 34 (24.2) **G1b:** 4 (8.0) 2000-4999 mL **G1a:** 54 (33.5) **G1b:** 2 (4.0) > 5000 mL **G1a:** 25 (15.5) **G1b:** 0 Not reported **G1a:** 40 (24.8) **G1b:** 14 (28.0) **Transfusion, n (%):** Red blood cell **G1a:** 113 (70.2) **G1b:** 2 (2.0) Fresh frozen plasma **G1a:** 85 (62.8) **G1b:** 0 Platelets **G1a:** 47 (29.2) **G1b:** 0 **ICU admission:** NR **Anemia:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1b: 31 (62) **Single pregnancy, n (%):** NR **Multiple pregnancy, n (%):** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** NR **Risk factors, n (%):** NR **Primary etiology of PPH, n (%):** Subset > 22 weeks gestation n=155 Atony **G1:** 73/155 Placental polyp/retained placenta **G1:** 53/155 Amniotic embolism **G1:** 8 Placenta accreta **G1:** 8 Placenta previa **G1:** 5 Low lying placenta **G1:** 4 Vaginal and vulva hematoma **G1:** 10	**Length of stay:** NR **Mortality:** None reported **Uterine preservation:** Success of TAE procedure **G1a:** 91.9% **G1b:** 96% Hysterectomy **G1:** 18 **Future fertility:** Pregnancies conceived after TAE **G1:** 42 pregnancies in 40 women Pregnancy rate among spontaneous conceived or visited fertility clinic (n=76) **G1:** 52.6% **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** Amenorrhea **G1:** 7/113 Abnormal menstruation **G1:** 2/113 Asherman syndrome **G1:** 4/113 Intrauterine infection **G1:** 6/113 Uterine necrosis **G1:** 3/113

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Uterine rupture **G1:** 4 Vaginal and perinlea tears **G1:** 3 Uterine arteriovenous malformation **G1:** 2 Others **G1:** 8	Acute complications **G1:** 5.3% Overall complication rate **G1:** 13.3% **Confounders:** NR **Effect modifiers:** NR

Table D-7. Evidence table for studies addressing management of PPH (Mallaiah 2014)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Mallaiah et al., 2014[8] **Country:** UK **Enrollment period:** April 2011 to June 2013 **Birth setting:** Hospital **Facility characteristics:** Tertiary care, **Funding:** NR **Design:** Pre-post	**Intervention:** Phase 1- shock pack major hemorrhage packs of 4 units RBS, 4 units FFP, and one adult dose of platelets Phase 2- fibrinogen- protocol updated to remove blind administration of FFP from start of pathway **Groups:** **G1:** shock pack April 2011-Mar 2012 **G2:** fibrinogen July 2012 to June 2013 **N at enrollment:** **G1:** 42 **G2:** 51 **N at follow-up:** **G1:** 42 **G2:** 51 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** Estimated blood loss > 1500 mL **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** Major obstetric hemorrhage, EBL > 1500 mL) associated with coagulopathy (FIBTEM A5 < 12 mm, indicative of plasma fibrinogen level of 2 $g.l^{-1}$ **Exclusion criteria:** patients receiving anticoagulant therapy **Maternal age, yrs, mean ± SD:** NR **Parity, n:** NR **Weeks gestation, n (%):** NR **Single pregnancy, n (%):** NR **Multiple pregnancy, n (%):** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** NR **Risk factors, n (%):** NR **Primary etiology of PPH, n:**	**Blood loss, n:** < 1499 mL **G1:** 10 **G2:** 12 1500-2999 mL **G1:** 12 **G2:** 19 3000-4999 mL **G1:** 8 **G2:** 7 > 5000 mL **G1:** 3 **G2:** 3 Not recorded **G1:** 9 **G2:** 10 **Transfusion, median (range):** Blood components **G1:** 8.0 (0-32) **G2:** 3.0 (0-26 p= 0.0004 Fibrinogen **G1:** 3.2 (0-20.4) **G2:** 0 (0-12.4) p= 0.0005 **ICU admission, n (%)** **G1:** 4 (9%) **G2:** 1 (2%) **Anemia:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Abruption **G1:** 3 **G2:** 7 Placenta previa **G1:** 5 **G2:** 1 Trauma **G1:** 11 **G2:** 19 Atony **G1:** 7 **G2:** 5 Uterine inversion **G1:** 0 **G2:** 2 Other **G1:** 6 **G2:** 17	**Length of stay:** NR **Mortality:** None **Uterine preservation, n (%):** Postpartum hysterectomy **G1:** 6 (14) **G2:** 3 (6) p=ns Balloon tamponade **G1:** 9 **G2:** 6 Brace suture **G1:** 8 **G2:** 7 **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention, n (%):** TACO **G1:** 4 (9) **G2:** 0 p= 0.0367 TRALI **G1:** 0 **G2:** 0 **Confounders:** NR **Effect modifiers:** NR

Table D-8. Evidence table for studies addressing management of PPH (Park 2014)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Park et al., 2014[9] **Country:** S. Korea **Enrollment period:** January 2000 to December 2012 **Birth setting:** NR **Facility characteristics:** Tertiary care **Funding:** NR **Design:** Retrospective case series	**Intervention:** Transcatheter arterial embolization performed by interventional radiologists to treat secondary PPH **Groups:** **G1:** Embolization **G1a:** Successful **G1b:** Failed **N:** **G1:** 52 **G1a:** 47 **G1b:** 5 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** Obstetric maneuvers used to control hemorrhage d uterine massage, uterine packing, administration of uterotonic agents, and surgical intervention (eg inspection and repair of lower genital tract tears, manual exploration of uterine cavity, uterine suturing, and uterine artery ligation or hysterectomy). **Length of follow-up:** NR	**Operational definition of intractable secondary PPH:** Continuous vaginal bleeding despite medical management, including administration of intravenous fluid, transfusion, or uterotonic agents Definition of success of treatment: Clinical success defined as cessation of bleeding after TAE with no further management such as repeat TAE or additional surgery during the hospital stay **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** Patients who underwent TAE for secondary PPH at single institution between Jan 2000 to Dec 2012 **Exclusion criteria:** NR **Maternal age, yrs, mean (range):** **G1:** 31.6 (25-40) **Parity, n (%):** Primiparous **G1:** 35 (67.3) Multiparous **G1:** 17 (32.7) **Weeks gestation, n (%):** NR **Single pregnancy, n (%):** NR **Multiple pregnancy, n (%):** NR **Race/ethnicity:** NR **BMI:** NR	**Successful control of bleeding n, (%):** **G1:** 47/52 (90.4) **Harms pre-specified:** Classified as major vs. minor using Society of Interventional Radiology guidelines **Harms, n:** Procedure related complications **G1:** 0

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Baseline hemoglobin: NR **SES:** NR **Mode of birth, n (%):** Vaginal **G1:** 34 (65.4) Cesarean **G1:** 18 (34.6) **Risk factors, n:** History of cesarean **G1:** 8 **Primary etiology of PPH, n:** Retained placenta **G1:** 23 Placental anomaly **G1:** 3 Placental accreta/increta **G1:** 2 Placenta previa **G1:** 1 Uterine AVM **G1:** 6 Rupture or injury of uterine artery **G1:** 9 Uterine subinvolution/atony **G1:** 5 Trauma (cervical laceration) **G1:** 1 Coagulopathy (maternal ITP)	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 2 Unknown **G1:** 3	

Table D-9. Evidence table for studies addressing management of PPH (Prick 2014)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Prick et al., 2014[10, 11] **Country:** Netherlands **Enrollment period:** May 2004 to February 2011 **Birth setting:** delivered at hospital or were admitted after a home birth **Facility characteristics:** 37 Dutch hospitals **Funding:** Grants from Landsteiner Foundation for Blood Transfusion Research and Stichting Vrienden van de Bloedtransfusie **Design:** RTC, stratified for mode of delivery and participating hospital	**Intervention:** Red blood cell (RBC) transfusion of at least one unit of RBCs aiming to reach Hb concentration of at least 8.9 g/dl (5.5 mmol.l). Non-intervention group were allowed RBC transfusion if severe symptoms of anemia developed or at physicians discretion. Additional use of iron and/or folic acid supplementation according to local protocol was allowed **Groups:** **G1:** RBC transfusion **G2:** Control Additional use of iron and/or folic acid supplementation according to local protocol was allowed **N at enrollment:** **G1:** 259 **G2:** 262 **N at follow-up:** **G1:** 258 **G2:** 261 **Duration of treatment:** NA **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** 6 weeks postpartum	**Operational definition of PPH:** blood loss of ≥1000 ml and/or a decrease in Hb concentration of ≥1.9 g/dl (1.2 mmol/l) and had an Hb concentration between 4.8 and 7.9 g/dl (3.0-4.9 mmol/l) 12-24 hours after delivery **Definition of success of treatment**: in transfused subjects, aim was to reach Hb concentration of at least 8.9 g/dl (5.5 mmol/l) **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • postpartum hemorrhage (defined above) • good knowledge of the Dutch language **Exclusion criteria:** • severe symptoms of anemia (defined as dyspnea, syncope, tachycardia >100 beats/minute, angina pectoris and/or transient ischemic attacks • RBC transfusion administered during or within 12 hours after delivery • severe pre-eclampsia • severe infectious disease • congenital hemolytic disease • compromised immunological status • malignancy • severe comorbidity (ASA II/III) • death or critical condition of the neonate **Maternal age, yrs, mean ± SD:** **G1:** 30.7 ± 5.0 **G2:** 30.9 ± 5.3 **Parity, n:**	**Fatigue, measured by Multidimensional Fatigue Inventory, mean adjusted for baseline and mode of delivery:** At three days: **G1:** 15.68 **G2:** 16.45 **G1 vs G2:** p=0.024 At one week: **G1:** 14.02 **G2:** 15.08 **G1 vs G2:** p=0.007 At three weeks: **G1:** 10.88 **G2:** 11.54 **G1 vs G2:** p=0.14 At six weeks: **G1:** 8.69 **G2:** 8.95 **G1 vs G2:** p=0.56 **Blood loss ml, during delivery, median (IQR):** **G1:** 1485 (1000-1950) **G2:** 1500 (1000-1975) **Transfusion:** Received transfusion n (%) **G1:** 251/258 (97) **G2:** 33/261 (13) Total units (including units transfused during follow up) **G1:** 517 **G2:** 88 **G1 vs G2:** p <0.001

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Nulliparous **G1:** 152 (59) **G2:** 143 (55) **Weeks gestation, median (IQR):** **G1:** 40^{+1} (38^{+5}-41^{+1}) **G2:** 40^{+0} (38^{+3}-41^{+0}) **Single pregnancy:** See below **Multiple pregnancy, n (%):** Twin pregnancy **G1:** 13 (5%) **G2:** 16 **(**6%) **Race/ethnicity** "Western" ethnic origin (not defined) **G1:** 186 (78%) **G2:** 177 (76%) **BMI (preconception, kg/m^2)** **G1:** 23.3 (21.1-26.6) **G2:** 22.9 (20.8-26.5) **Baseline hemoglobin (g/dl), median (IQ range)** **G1:** 7.3 (6.8-7.7) **G2:** 7.4 (6.8-7.7) **SES, n (%)** Highest education: None/Primary school **G1:** 4 (3%) **G2:** 5 (3%) Lower/Senior secondary vocational education **G1:** 88 (56%) **G2:** 77 (51%) Higher professional education and university	Units per woman, median (IQR) **G1:** 2 (2-2) **G2:** 0 (0-0) **G1 vs G2:** p <0.001 **ICU admission:** NR **Anemia:** NR **Hb concentration after transfusion (g/dl), median (IQR):** **G1:** 9.0 (8.5-9.6) **G2:** 8.9 (8.2-9.7) **G1 vs G2:** p =0.56 **Hb concentration at discharge (g/dl):** **G1:** 9.0 (8.5-9.5) **G2:** 7.4 (6.8-7.7) **G1 vs G2:** p<0.001 **Hb concentration at 6 weeks (g/dl):** **G1:** 12.1 (11.3-12.6) **G2:** 11.9 (10.9-12.6) P=0.18 **Length of stay (median days):** **G1:** 2 **G2:** 2 **G1 vs G2:** p=0.37 **Mortality:** NR **Uterine preservation:** NR **Future fertility:** NR **Breastfeeding, continued until 6 weeks:** **G1:** 99/154 (64%) **G2:** 101/143 (71%) **Psychological impact:**

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 64 (41%) **G2:** 70 (46%) **Mode of birth, n (%):** Vaginal **G1:** 213 (83) **G2:** 206 (79) Operative vaginal (subset of total vaginal) **G1:** 62 (30) **G2:** 48 (24) Elective cesarean **G1:** 8 (3) **G2:** 15 (6) Emergency cesarean **G1:** 37 (14) **G2:** 40 (15) **Risk factors:** NR **Primary etiology of PPH:** NR	Health-related quality of life **Harms of intervention** Transfusion reactions: **G1:** 3 (1%) **G2:** 0 **Physical complications during follow-up** Thromboembolic event: **G1:** 2 (0.9%) **G2:** 2 (0.9%) Urinary tract infection: **G1:** 10 (4.4%) **G2:** 14 (6.2%) Infected surgery wound: **G1:** 0 **G2:** 1 (2.2%) Infected episiotomy/rupture: **G1:** 6 (4.1%) **2:** 6 (4.4%) Endometritis: **G1:** 5 (2.2%) **G2:** 3 (1.3%) **Confounders:** NR **Effect modifiers:** NR

Table D-10. Evidence table for studies addressing management of PPH (Shields 2014)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Shields et al., 2014[12] **Country:** US **Enrollment period:** Baseline: Nov 2011 to Dec 2011 Post implementation: April 2012 to June 2012 Sept. 2012 to Oct 2012 **Birth setting:** Hospital **Facility characteristics:** 29 hospitals varied in size from small rural to large urban **Funding:** Agency/NR **Design:** Pre-post (systems level) Note: See related study Shields et al.[13]	**Intervention:** Comprehensive protocol for treatment of maternal hemorrhage. Initial risk assessment at time of admission. Stage 0: normal intra and postpartum course Stage 1: bleeding > 500 mL for vaginal or > 1000 mL Cesarean Stage 2: bleeding that did not respond to conservative treatment outlined in stage 1 Stage 3: continuous bleeding with actual or expected blood loss > 1500 mL **Groups:** **G1:** baseline **G2:** post implementation time 1 **G3:** post implementation time 2 **N deliveries:** **G1:** 10,433 **G2:** 10,457 **G3:** 11,169 **Stage 2, n (% per 1000 deliveries):** **G1:** 73 (7.01) **G2:** 99 (9.47) **G3:** 107 (9.58) **Stage 3, n (% per 1000 deliveries(:** **G1:** 28 (2.68) **G2:** 32 (3.06) **G3:** 48 (4.29) **Duration of treatment:** NR **Timing of treatment:** NR	**Operational definition of PPH:** Estimated blood loss > 500 mL for vaginal delivery or > 1000 mL for cesarean **Definition of success of treatment**: Compliance with treatment protocols assessed by checklist Admission hemorrhage risk assessment completed, correct blood bank request based on risk, blood and clots weighed per protocol, correct lab results obtained for stage 2 and 3 hemorrhage, were > 2 uterotonics given without doctor present, blood products administered according to protocol **Method of blood loss measurement:** recommended: weighing all lap sponges, bed linens if needed, and fluid in collection systems **Severity:** NR **Inclusion criteria:** NR **Exclusion criteria:** NR **Maternal age, yrs, mean ± SD:** NR **Parity, n:** NR **Weeks gestation, n (%):** NR **Single pregnancy, n (%):** NR **Multiple pregnancy, n (%):** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR	**Blood loss:** NR Compliance with 5 monitored parameters **G1:** 54% **G3:** 80% **Transfusion, n:** Packed red blood cells **G1:** 232 **G2:** 180 **G3:** 197 **Change from G1 to G3**: -15% p =0.02 Platelets, n **G1:** 65 **G2:** 37 **G3:** 26 **Change from G1 to G3**: -60% p < 0.01 Cryoprecipitate, n **G1:** 43 **G2:** 18 **G3:** 18 **Change from G1 to G3**: -58% p < 0.01 Fresh frozen plasma, n **G1:** 35 **G2:** 24 **G3:** 56 **Change from G1 to G3**: +60% p < 0.01 Total blood products, n (% per 1000 deliveries) **G1:** 375 (35.9) **G2:** 354 (33.9) **G3:** 297 (26.6) **Change from G1 to G3**: -25.9% p < 0.01

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	Order of treatment: NR **Length of follow-up:** NR	**SES:** NR **Mode of birth, n:** NR **Risk factors, n (%):** NR **Primary etiology of PPH, n (%):** NR	**ICU admission:** NR **Anemia:** NR **Length of stay:** NR **Mortality:** NR **Uterine preservation:** Hemorrhage with peripartum hysterectomy, n (per 1000 births) (by calendar year) **2011:** 82 (1.22) **2012:** 67 (1.04) Difference -14.8% (p=0.2) **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** NR **Confounders:** NR **Effect modifiers:** NR

Comments: Authors note 6 items in protocol compliance checklist but report on compliance with 5 items (not specified).

Table D-11. Evidence table for studies addressing management of PPH (Teofili 2014)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Teofili et al., 2014[14] **Country:** Italy **Enrollment period:** Jan 2005 to Dec 2011 **Birth setting:** Hospital **Facility characteristics:** Tertiary care, **Funding:** NR (Authors state no competing interests exist) **Design:** Case series, retrospective	**Intervention:** Transfusion **Groups:** **G1:** intervention **N at enrollment:** **G1:** 71 **N at follow-up:** **G1:** 71 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** NR Definition of success of treatment: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** patients receiving at least 3 units of blood within in 24 hours after delivery **Exclusion criteria:** NR **Maternal age, yrs, mean ± SD:** **G1:** 34 ± 5.5 **Parity, n:** NR **Weeks gestation, n (%):** NR **Single pregnancy, n (%):** NR **Multiple pregnancy, n (%):** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, %:** Vaginal **G1:** 21 Cesarean **G1:** 79	**Harms pre-specified:** No **Harms, n (%):** Transfusion-related acute lung injury (TRALI), including possible TRALI (defined as new onset hypoxemia within 6 hours after transfusion, with bilateral pulmonary changes, in absence of cardiogenic pulmonary edema) n: **G1:** 14 Transfusion-associated circulatory overload (TACO) (d in above count) **G1:** 1

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Risk factors, n (%): Pregnancy associated hypertensive disorders **G1:** 8 (11.3) Preexisting morbidities **G1:** 21 (29.6) **Primary etiology of PPH, n (%):** NR	

Table D-12. Evidence table for studies addressing management of PPH (Zatta 2014)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Zatta et al., 2014[15] **Country:** Australia and New Zealand **Enrollment period:** 2000 to 2009 **Birth setting:** NR **Facility characteristics:** 96 hospitals d, 75 reported off-label use of rFVIIa **Funding:** Unrestricted educational grant from Novo Nordisk Pharmaceuticals (makers of rFVIIa) **Design:** Registry- case series	**Intervention:** Received rFVIIa for off-label indication- subset of registry cases who received it for obstetric hemorrhage **Groups:** **G1:** intervention **N: 3446 cases of off-label use of rFVIIa, 177 obstetric cases** **G1:** 175 patients (177 cases) **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** up to 28 days following rFVIIa administration	**Operational definition of PPH:** NR **Definition of success of treatment:** NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** Registry patients receiving rFVIIa to preempt or treat clinical bleeding episodes outside the approved indications criterion 2 **Exclusion criteria:** patients with acquired hemophilia **Maternal age, yrs, mean ± SD:** NR **Parity, n:** NR **Weeks gestation, n (%):** NR **Single pregnancy, n (%):** NR **Multiple pregnancy, n (%):** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** NR **Risk factors, n (%):** NR **Primary etiology of PPH, n (%):**	**Harms pre-specified:** 28-day mortality **Harms, n (%):** 28-day mortality **G1:** 11 (6) Total with thromboembolic adverse events **G1:** 15 (8.6) Arterial thrombosis **G1:** 2 (1.1) Cerebrovascular accident **G1:** 1 (0.6) Acute myocardial infarction **G1:** 1 (0.6) Venous thrombosis **G1:** 5 (2.9) Deep vein thrombosis **G1:** 1 (0.6) Pulmonary embolism **G1:** 1 (0.6) Other thrombosis **G1:** 3 (1.7) Patients with DIC **G1:** 9 (5.1) Stroke **G1:** 0 (0)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Atony **G1:** 39 Placenta previa **G1:** 46 Placenta accreta/percreta **G1:** 30 Intrauterine fetal death **G1:** 23 Preeclampsia/Eclampsia **G1:** 20 Placental abruption **G1:** 17 Other **G1:** 2	

Table D-13. Evidence table for studies addressing management of PPH (An 2013)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: An et al., 2013[16] **Country:** Korea **Enrollment period:** 2006-2011 **Birth setting:** Hospital **Facility characteristics:** Tertiary care **Funding:** NR (No conflicts of interest) **Design:** Case-control	**Intervention:** Modified B-Lynch suture and square suture techniques for managing PPH refractory to medical management. Controls had cesarean delivery without compression sutures **Groups:** **G1:** Uterine compression sutures **G2:** Control **N at enrollment:** **G1:** 42 **G2:** 139 **N at follow-up:** **G1:** 42 **G2:** 139 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** NR **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** Women who received uterine compression sutures including modified B-Lynch or multiple square sutures Conceived again and received antenatal care at hospital Controls matched for age and parity who did not require uterine compression sutures during prior cesarean **Exclusion criteria:** women whose subsequent pregnancy outcomes were unknown **Maternal age at subsequent pregnancy, yrs, mean ± SD:** **G1:** 34.8 ± 3.0 **G2:** 33.8 ± 3.2 **Parity, n:** Nulliparity **G1:** 39 (92.9) **G2:** 136 (97.8) **Previous delivery, n (%):** Emergent cesarean, n (%): **G1:** 34 (81) **G2:** 108 (77.7) **Weeks gestation, mean:** **G1:** 38.4 ± 0.87 **G2:** 38.4 ± 0.81 **Single pregnancy, n (%):** **G1:** 41 (97.6)	**Estimated blood loss (mL):** **G1:** 654 ± 152 **G2:** 621 ± 144 **Transfusion, n (%)** **G1:** 0 **G2:** 2 (1.7) Preoperative hemoglobin (g/dL): **G1:** 11.7 ± 1.2 **G2:** 12.0 ± 1.1 p= 0.19 Postoperative hemoglobin (g/dL): **G1:** 10.4 ± 1.0 **G2:** 10.8 ± 1.1 p= 0.05 Pelvic adhesions, n (%): **G1:** 12 (34.3) **G2:** 21 (17.5) p= 0.03 Uterine compression sutures, n (%): **G1:** 1 (2.9) **G2:** 0 p= 0.06 **ICU admission:** NR **Anemia:** NR **Length of stay** Post op hospital stay over 5 days, n (%): **G1:** 4 (11.4) **G2:** 6 (5.0) p= 0.23

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G2: 137 (98.6) **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** Cesarean **Risk factors, n (%):** Prior PPH (100%) History of emergent cesarean **G1:** 34 (81) **G2:** 108 (77.7) **Primary etiology of PPH, n (%):** NR	**Subsequent pregnancy outcomes, n (%)** Term delivery **G1:** 34 (81) **G2:** 114 (82) p=0.88 Preterm delivery **G1:** 2 (4.7) **G2:** 7 (5) p=0.60 Miscarriage **G1:** 4 (9.5) **G2:** 14 (10.1) p=0.92 Ectopic pregnancy **G1:** 1 (2.4) **G2:** 2 (1.5) p=0.68 Fetal death **G1:** 0 **G2:** 1 (0.7) p=0.58 Perinatal loss **G1:** 1 (2.4) **G2:** 0 p=0.07 Chromosomal abnormality **G1:** 0 **G2:** 1 (0.7) p=0.58 **Breastfeeding:** NR **Psychological impact:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
			Harms of intervention: NR **Confounders:** NR **Effect modifiers:** NR

Table D-14. Evidence table for studies addressing management of PPH (Bateman 2013)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Bateman et al., 2013[17] **Country:** US **Enrollment period:** 2007-2011 **Birth setting:** Hospitals **Facility characteristics:** Varied **Funding:** Supported by the T32 Training Grant **Design:** Retrospective cohort	**Intervention:** Injectable or Oral Methylergonovine administered during delivery **Groups:** **G1:** Methylergonovine **G2:** Control (no exposure) **N at enrollment:** **G1:** 139,617 **G2:** 2,094,013 **N at follow-up:** NR **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** NR **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** Measured by charge codes for the number of units of packed red blood cells that were transfused **Inclusion criteria:** • All inpatient admissions of women who were 12-55 years old for delivery with the use of a validated algorithm methylergonovine exposure defined by presence of charge code for injectable or oral methylergonovine during delivery hospitalization **Exclusion criteria:** • Hospitalizations with diagnoses that indicate ectopic pregnancy, hydatiform mole, or other abnormal products of conception or procedure codes that indicate abortion **Maternal age, yrs, mean:** **G1 + G2:** 27.7 **Parity, n:** NR **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy, n (%):** **G1:** 4422 (3.17) **G2:** 38,218 (1.83)	**Blood loss:** NR **Transfusion:** Packed red blood cells (units), n (%) 0 **G1:** 133,312 (95.48) **G2:** 2,078,170 (99.24) 1-5 **G1:** 5580 (4.00) **G2:** 14,893 (0.71) 6-9 **G1:** 469 (0.34) **G2:** 670 (0.03) ≥ 10 **G1:** 256 (0.18) **G2:** 280 (0.01) Fresh frozen plasma (units) 0 **G1:** 138,386 (99.12) **G2:** 2,092,159 (99.91) 1-5 **G1:** 967 (0.69) **G2:** 1520 (0.07) 6-9 **G1:** 157 (0.11) **G2:** 214 (0.01) ≥ 10 **G1:** 107 (0.08) **G2:** 120 (0.01) **ICU admission:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Race/ethnicity, n (%): White **G1:** 68,880 (49.33) **G2:** 1,078,758 (51.52) Black **G1:** 16,378 (11.73) **G2:** 288,592 (13.78) Hispanic **G1:** 19,254 (13.79) **G2:** 226,627 (10.82) Other/Unknown **G1:** 35,105 (25.14) **G2:** 500,036 (23.88) **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, %:** Cesarean **G1 + G2:** 34.0 **Risk factors, n (%):** History of cesarean delivery, n (%): **G1:** 18,131 (12.99) **G2:** 345,487 (16.50) Mild Preeclampsia, n (%): **G1:** 1863 (1.33) **G2:** 50,322 (2.40) Eclampsia, n (%): **G1:** 876 (0.63) **G2:** 31,033 (1.48)	**Anemia:** NR **Length of stay:** NR **Mortality:** NR **Uterine preservation:** Peripartum hysterectomy **G1:** 636 (0.46) **G2:** 1398 (0.07) **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** Acute Coronary Syndrome (ACS) n, (%): Unadjusted **G1:** 6 (0.004) **G2:** 52 (0.002) Risk ratio (95% CI), Risk difference (95% CI): 1.73 (0.74-4.03), 1.81 (-1.69 to 5.32) Propensity score matched **G1:** 5(0.003) **G2:** 3(0.002) Risk ratio (95% CI), Risk difference (95% CI): 1.67 (0.40-6.97) 1.44 (-2.56 to 5.45) Acute Myocardial Infarction (AMI) n, (%): Unadjusted **G1:** 4 (0.003) **G2:** 44 (0.002) Risk ratio (95% CI), Risk difference (95% CI): 1.36 (0.49-3.79), 0.76 (-2.11 to 3.64) Propensity score matched

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Pregnancy-induced hypertension, n (%): **G1:** 3294 (2.36) **G2:** 75,697 (3.61) Pre-existing hypertension, n (%): **G1:** 1491 (1.07) **G2:** 45,246 (2.16) Preexisting hypertension with superimposed preeclampsia, n (%): **G1:** 278 (0.20) **G2:** 11,946 (0.57) Obesity n, (%): **G1:** 4980 (3.57) **G2:** 80,503 (3.84) Preexisting diabetes, n, (%): **G1:** 1041 (0.75) **G2:** 19,022 (0.91) Gestational diabetes mellitus, n (%) **G1:** 7902 (5.66) **G2:** 116,709 (5.57) Multiple gestation n, (%): **G1:** 4422 (3.17) **G2:** 38,218 (1.83) Chorioamnionitis n, (%): **G1:** 4273 (3.06) **G2:** 31,224 (1.49) **Primary etiology of PPH, n (%):** Abnormal Placentation: **G1:** 4717 (3.38) **G2:** 22,640 (1.08) Atony:	**G1:** 4(0.003) **G2:** 3(0.002) Risk ratio (95% CI), Risk difference (95% CI): 1.00 (0.20-4.95), 0.00 (-3.47 to 3.47) **Confounders:** Patient demographics (age, race/ethnicity, and calendar year of delivery) Obstetric/medical conditions: hypertensive disorders (including preexisting a/o gestational disorder or preeclampsia), diabetes mellitus (preexisting or gestational), chronic ischemic heart disease, chronic renal disease, obesity, dyslipidemia, drug or alcohol abuse, tobacco use, asthma, hypercoagulable conditions, migraine headache, chronic anemia, cesarean delivery, previous cesarean, still birth/intrauterine fetal death, multiple gestations, chorioamnionitis, and major puerperal infection Markers of the presence, cause and severity of obstetric hemorrhage Characteristics of the hospital at which the delivery occurred. **Effect modifiers:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 19,410 (13.90) **G2:** 22,915 (1.09) Coagulopathy: **G1:** 795 (0.57) **G2:** 3648 (0.17) Trauma: **G1:** 10,808 (7.74) **G2:** 140,088 (6.69) Amniotic fluid embolism: **G1:** 31 (0.02) **G2:** 74 (0.00) Uterine rupture: **G1:** 144 (0.10) **G2:** 984 (0.05) Placental abruption: **G1:** 2016 (1.44) **G2:** 21,504 (1.03) Antepartum hemorrhage from other sources: **G1:** 653 (0.47) **G2:** 6030 (0.29) Delayed hemorrhage: **G1:** 2050 (1.47) **G2:** 3128 (0.15)	

Table D-15. Evidence table for studies addressing management of PPH (Bonnet 2013)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Bonnet et al., 2013[18] **Country:** France **Enrollment period:** December 2004 to November 2006 **Birth setting:** Hospital (all levels) **Facility characteristics:** Maternity units at public, private and university-based institutions that belong to regional perinatal networks **Funding:** Pithagore6 project funded by the French Ministry of Health's Clinical Research Hospital Program (contract no. 27-35) This study was supported by a doctoral grant from AXA Research Funds.	**Intervention:** Blood transfusion started within first 12 hrs. after PPH diagnosis (vaginal or cesarean delivery) RBC, fresh frozen plasma (FFP), platelets, blood-derived product (fibrogen concentrates), use of RBC+FFP+PLT+fibrinogen, or massive transfusion ≥ 10 RBC Units **Groups:** **G1 (overall):** early RBC transfusion (within 12 hrs of PPH diagnosis) *Data for G1 is further broken down spontaneous vaginal delivery (170/426); operative vaginal delivery (61/426); cesarean delivery before labor (109/246) and cesarean delivery during labor (86/246)* **G1a:** spontaneous vaginal **G1b:** operative vaginal **G1c:** cesarean before labor **G1d:** cesarean during labor **G2 (overall):** not transfused or transfused later than 12 hrs of PPH DX **N at enrollment: n (%)** **G1 (overall):** 426 (65.8% of all transfused) **G1a:** 170 (40) **G1b:** 61 (14.3) **G1c:** 109 (25.5) **G1d:** 86 (20.1) **G2:** 6170	**Operational definition of PPH:** PPH defined as > decline2.0 g/dL decline in hemoglobin level. Clinical definition of PPH: > 500 mL blood loss and/or excessive blood loss prompting manual removal of placenta or examination of the uterine cavity. **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Inclusion criteria:** • Clinical dx of PPH that required RBC transfusion within 12 hrs of diagnosis **Exclusion criteria:** • PPH defined by hemoglobin decline, but not clinical diagnosis of PPH **Maternal age, yrs (%):** **<25 yrs:** **G1 (overall):** 65/426 (15.3) **G2** 970/6170 (15.7) **25-35 yrs:** **G1:** 257/426 (60.3) **G2:** 4061/6170 (65.8) **>35 yrs:** **G1:** 104/426 (24.4) **G2:** 1137/6170 (18.4) **Maternal BMI (kg/m^2),n (%)** *Note: data not clearly reported in both groups: G1 totals 357 (83.9%) here and G2 totals 5384 (87.3%)* **≤ 18 (kg/m^2):**	**Blood loss:** NR **Transfusion** RBC only, n (%): **G1 (overall):** 168/426 (39.4) **G1a:** 65 (38.2) **G1b:** 17 (27.9) **G1c:** 46 (42.2) **G1d:** 40 (46.5) p=NS FFP, n (%): **G1 (overall):** 248/426 (58.1) **G1a:** 102 (60.0) **G1b:** 44 (72.1) **G1c:** 59 (54.1) **G1d:** 43 (50.0) p = 0.04 Fibrogen, n (%): **G1 (overall):** 83/426 (19.5) **G1a:** 31 (18.2) **G1b:** 12 (19.7) **G1c:** 23 (21.1) **G1d:** 17 (19.8) p=NS Platelets, n (%): **G1 (overall):** 52/426 (12.2) **G1a:** 18 (10.6) **G1b:** 13 (21.3) **G1c:** 15 (13.8) **G1d:** 6 (7.0) p=ns RBC + FFP + Platelets + Fibrogen, n (%): **G1 (overall):** 32/426 (7.5) **G1a:** 14 (8.2)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Design: Population-based retrospective case series Note: See related studies Deneux-Tharaux 2010[19], Schmitz 2011[20]	**N at follow-up:** NR **Duration of treatment:** NR **Timing of treatment:** **G1:** within 12 hrs of PHH Dx **G2:** later than 12 hrs post PPH Dx or not transfused **Order of treatment:** **Step 1:** transfusion **Step 2:** surgical intervention (embolization, conservative surgery, hysterectomy) **Length of follow-up:** NR	**G1 (overall):** 22/426 (5.2) **G2** 284/6170 (4.6) **19-25 (kg/m^2):** **G1:** 255/426 (59.9) **G2:** 3837/6170 (62.2) **26-30 (kg/m^2):** **G1:** 55/426 (12.9) **G2:** 848/6170 (13.8) **>30 (kg/m^2):** **G1:** 25/426 (5.9) **G2:** 415/6170 (6.7) **Race/ethnicity:** NR **Prenatal HB level (g/dL), mean ± SD:** **G1:** 11.5 ± 1.4 **G2:** 12.0 ± 1.2 p<0.001 **Labor and Delivery:** Mode of birth, n (%): Vaginal (spontaneous or operative delivery) **G1:** 231/246 (54.2) **G2:** 53456170 (86.6) p<0.001 Spontaneous vaginal delivery **G1**, 170/426 (73.6) **G2:** 4147/6170(77.6) Operative vaginal delivery **G1:** 61/426 (26.4) **G2:** 1198/6170 (22.4) Caesarean delivery (before or during labor) **G1:**, 195/426 (21.3)	**G1b:** 8 (13.1) **G1c:** 7 (6.4) **G1d:** 3 (3.5) p=ns Median transfused quantity RBC, units, (IQR): **G1 (overall):** 3(2-6) **G1a:** 3 (2-5) **G1b:** 4 (3-9) **G1c:** 3 (2-6) **G1d:** 4 (2-5) p=0.01 FFP, units (IQR): **G1 (overall):** 4 (2-6) **G1a:** 3 (2-4) **G1b:** 4 (2-6) **G1c:** 4 (3-6) **G1d:** 3 (2-4) p=0.0004 Fibrogen, g (IQR): **G1 (overall):** 3 (3-4.5) **G1a:**3 (1.5-4.5) **G1b:** 4 (3 – 7.5) **G1c:** 4 (3-5.5) **G1d:** 3 (2 – 4.5) p=ns Platelets units (IQR): **G1 (overall):** 1 (1-2) **G1a:** 1 (1-2) **G1b:** 1 (1-2) **G1c:** 1 (1-2) **G1d:** 2 (1-2) p=ns ≥10 RBC units, n (%):

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G2: 824/6170 (13.4) Caesarean delivery before labor **G1:**, 109/426 (55.9) **G2:** 439/6170 (53.3) Caesarean delivery during labor **G1:**, 86/426 (44.1) **G2:** 385/6170 (46.7) Time from delivery to PPH dx, median (IQR) **G1:** 12 min (2-45) **G2:** 15 min (9-30) **Risk factors, n (%):** Prior PPH, n (%) **G1:** 29/426 (6.8) **G2:** 2876170 (4.7) p=<0.04 Prior Cesarean, n (%) **G1:** 70/426 (16.4) **G2:** 554/6170 (9.0) *(p<0.001)* Primiparous, n (%) **G1:** 173/426 (40.6) **G2:** 3130/6170 (50.7) p<0.001 Multiple pregnancies n (%) **G1:** 33/426 (7.8) **G2:** 216/6170 (3.5) p<0.001 **Primary etiology of PPH:** Atony Coagulopathy Trauma Abnormal placenta	**G1 (overall):** 46 (10.8) **G1a:** 10 (5.9) **G1b:** 15 (24.6) **G1c:** 16 (14.7) **G1d:** 5 (5.8) p=<0.001 **FFP/RBC:** Median (IQR): **G1 (overall):** 0.9=8 (0.5-1) **G1a:** 0.7 (0.6-1) **G1b:** 0.8 (0.5-1) **G1c:** 0.8 (0.6-1) **G1d:** 0.6 (0.5-1) p=ns FFP/RBC ≥ 0.5, n (%): **G1 (overall):** 209 (84.3) **G1a:** 85 (83.3) **G1b:** 39 (88.6) **G1c:** 52 (88.1) **G1d:** 33 (76.7) p=ns Median time from PPH dx to RBC admin (IQR): **G1 (overall**): 2 h 18 min (1 hr 18 min to 3 hr 54 min) **G1a:** 2 h 30 min (1hr 24 min to 4 h 18 min) **G1b:** 2 hr 12 min (1 hr 18 min to 3 hr 48 min) **G1c:** 2 hr 0 min (48 min to 3 hr 36 min) **G1d:** 2 hr 12 min (1 hr 06 min to 3 hr 48 min p=ns Use of pro-hemostatic agents, n (%): **G1 (overall):** 17 (4.0) **G1a:** 6(3.5) **G1b:** 7 (11.5) **G1c:** 2 (1.8) **G1d:** 2 (2.3)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Unidentified	p= NA **ICU Admission, n (%):** **G1 (overall):** 180/426 (42.3) **G1a:** 64/170 (37.7) **G1b:** 33/61 (54.1) **G1c:** 45/109 (41.3) **G1d:** 38/86 (44.2) p=ns **Anemia:** NR **Length of stay:** NR **Mortality:** NR **Uterine preservation:** see Harms **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** see below **Confounders:** NR **Effect modifiers:** NR **Harms pre-specified:** No **Harms, n (%), p across all 4 groups:** 5 transfusion-related adverse effects were recorded; one was severe (pulmonary edema requiring ICU admission) **Secondary disseminated intravascular coagulation (DIC), n (%):** **G1 (overall):** 110/426 (25.8) **G1a:** 42/170 (24.7)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
			G1b: 19/61 (31.2) **G1c:** 22/109 (20.2) **G1d:** 27/86 (31.4) p=ns **Embolization, n (%):** **G1 (overall):** 106/426 (24.9) **G1a:** 49/170 (28.8) **G1b:** 19/61 (31.2) **G1c:** 22/109 (20.2) **G1d:** 16/86 (18.6) p=ns **Conservative treatment, n (%):** **G1 (overall):** 58/426 (13.6) **G1a:** 12/170 (7.1) **G1b:** 12/61 (19.7) **G1c:** 23/109 (21.1) **G1d:** 11 (12.8) p=0.004 **Hysterectomy, n (%):** **G1 (overall):** 64/426 (15.0) **G1a:** 23/170 (13.5) **G1b:** 13/61 (21.3) **G1c:** 23/109 (21.1) **G1d:** 5/86 (15.0) p=0.01

Table D-16. Evidence table for studies addressing management of PPH (Chan 2013)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes

Author: Chan et al., 2013[21] **Country:** Hong Kong **Enrollment period:** Jan 2006 to Dec 2011 **Birth setting:** Hospital **Facility characteristics:** Consultant led maternity center **Funding:** NR (authors report no conflicts of interest) **Design:** Cohort	**Intervention:** Use and success of second line therapies including uterine compression sutures, uterine artery embolization, and balloon tamponade after failure of uterine massage and uterotonic agents to stop bleeding. **Groups:** **G1:** intervention **G1a:** second line therapies **G1b:** oxytocin only **G1c:** oxytocin and other uterotonic agents **G2:** second line therapies subgroup **G2a:** sutures **G2b:** balloon tamponade **G2c:** uae Alternate groupings **G3a:** sutures **G3b:** embolization **G3c:** balloon tamponade **G3d:** 2 second line therapies **G3e:** no second line therapy **N:** **G1:** 91 **G1a:** 42 **G1b:** 33 **G1c:** 16 **G2:** 42 **G2a:** 25 **(**followed by UAE n=4) **G2b:** 12 (followed by UAE n=1 **G2c:** 5 (followed by sutures n=1) **G3a:** 21 **G3b:** 4 **G3c:** 11 **G3d:** 6 **G3e** 49	**Operational definition of PPH:** Estimated blood loss of at least 1500 mL within 24 hours after birth **Definition of success of treatment**: NR **Method of blood loss measurement:** Bucket collection for vaginal deliveries. Volume estimated with measuring jar. Blood on sheets or pads estimated subjectively by midwives or doctors. Blood loss in operating theatre usually sucked into measuring bottle and objectively measured. **Severity:** NR **Inclusion criteria:** Gestational age at least 24 weeks Massive PPH- EBL at least 1500 mL **Exclusion criteria:** NR **Maternal age, yrs, mean ± SD:** **G1:** 33.3 ± 4.6 **Parity, n:** **G1:** 0 (0-3) **Weeks gestation, n (range):** **G1:** 38.3 (26.6 - 41.4) **Single pregnancy, n (%):** NR **Multiple pregnancy, n (%):** **G1:** 8 (8.8) **Race/ethnicity:** NR **BMI:** **G1:** 21.6 ± 3.2 **Baseline hemoglobin:** NR	**Blood loss, L mean (range):** **G1:** 2 (1.5-20) **G3a:** 2.0 (1.5-20) **G3b:** 5.1 (1.5-15.0) **G3c:** 2.3 (1.5-8.7) **G3d:** 3.3 (1.6-4.5) **G3e** 1.8 (1.5-15) **Transfusion, n (%):** Received packed cell transfusion **G1:** 79 (86.8) **G3a:** 4 (0-77) **G3b:** 20 (2-32) **G3c:** 10 (3-34) **G3d:** 10.5 (10-24) **G3e:** 3 (0-39) Volume transfused, pints of packed red cells **G1:** 4 (0-77) **Admitted to ICU, n (%):** **G3a:** 8/21 (38.1) **G3b:** 3/4 (75) **G3c:** 8/11 (72.7)1 **G3d:** 6/6 (100) **G3e:** 12/49 (24.5) **Length of hospital stay, days (range):** **G3a:** 7 (4-31) **G3b:** 10.5 (5-94) **G3c:** 8 (4-12) **G3d:** 7.5 (7-9) **G3e:** 6 (3-29) **Mortality, n:** **G1:** 1 **G3a:** 0 **G3b:** 0 **G3c:** 1/11 (9.1) **G3d:** 0

	Duration of treatment: NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**SES:** NR **Mode of birth, n:** Spontaneous vaginal **G1:** 21 (23.1) **G3a:** 0/21 **G3b:** 0/4 **G3c:** 4/11 (36.3) **G3d:** 1/6 (16.7) **G3e** 16/49 (32.7) Instrumental (vacuum or low forceps) **G1:** 4 (4.4) **G3a:** 1/21 (4.8) **G3b:** 0/4 **G3c:** 2/11 (18.2) **G3d:** 0/6 (**G3e** 1/49 (2.0) Elective cesarean **G1:** 38 (41.7) **G3a:** 11/21 (52.4) **G3b:** 4/4 (100) **G3c:** 2/11 (18.2) **G3d:** 4/6 (66.6) **G3e** 18/49 (36.7) Emergency cesarean **G1:** 28 (30.8) **G3a:** 9/21 (42.8) **G3b:** 0/4 **G3c:** 3/11 (27.3) **G3d:** 1/6 (16.7) **G3e** 14/49 (28.6) **Risk factors, n (%):** NR **Primary etiology of PPH, n (%):** Atony **G3a:** 12/21 (57.2) **G3b:** 1/4 (25)	**G3e:** 0 **Uterine preservation, n (%):** Hysterectomy **G1:** 13 (14.3) **G1a:** 9/42 **G1b:** 1/33 **G1c:** 3/16 For G2: subset who received second line therapy N, Success % (95% CI) **G2a:** 6 71.4% (51.2%-88.5%) **G2b:** 2 81.6% (59.1%-100%) **G2c:** 1 75% (39.6%-100%) **G3a:** 6 (28.6) **G3b:** 1 (25) **G3c:** 2 (18.2) **G3d:** 0 **G3e:** 4 (8.2) Disseminated intravascular coagulopathy **G1:** 16 (17.6) **G3a:** 5 (23.8) **G3b:** 2 (50) **G3c:** 5 (45.5) **G3d:** 1 (16.7) **G3e:** 2 (4.1) **Harms of intervention, n:** Hysterectomy **G1a:** 9/42 **G1b+ G1c:** 4/49 **DIC** **G1a:** 13**/**42 **G1b+ G1c:** 2**/**49 Maternal death **G1a:** 1/42 **G1b+ G1c:** 0/49

		G3c: 8/11 (72.7) **G3d:** 1/6 (16.7) **G3e** 13/49 (26.5) Placenta previa **G3a:** 7/21 (33.3) **G3b:** 2/4 (50) **G3c:** 0/11 **G3d:** 2/6 (33.30) **G3e** 4/49 (8.2) Placenta accreta **G3a:** 2/21 (9.5) **G3b: 1/4** (25) **G3c: 0/**11 **G3d: 3/**6 (50) **G3e** 3/49 (6.1) Lower genital tract bleeding **G3a:** 0/21 **G3b: 0/**4 **G3c: 1/**11 (9.1) **G3d: 0/**6 **G3e** 8/49 (16.3) Others **G3a:** 0/21 **G3b: 0/**4 **G3c: 2/**11 (18.2) **G3d: 0/**6 **G3e** 21/49 (42.9)	**Confounders:** NR **Effect modifiers:** NR

Table D-17. Evidence table for studies addressing management of PPH (Dildy 2013)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Dildy et al., 2013[22] **Country:** US **Enrollment period:** September 2010 to October 2012 **Birth setting:** Hospital **Facility characteristics:** Multi-site study **Funding:** Post marketing surveillance study **Design:** Case series **Funding:** Supported by Glenveigh Medical, manufacturer of the medical device, and the two lead authors are the inventors and patent holders of the device	**Intervention:** Dual-balloon catheter tamponade device (Belfort-Didly Obstetrical Tamponade System- ebb) **Groups:** **G1:** BD-OTS **N at enrollment:** **G1:** 57 (55 had PPH) **N at follow-up:** **G1:** 51 with diagnosis of PPH who had BD-OTS placed according to product labeling **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** NR **Definition of success of treatment:** NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Diagnosis of PPH • Uterine device placed according to product labeling **Exclusion criteria:** • NR **Maternal age, yrs, median (range)** **G1:** 33 (19-47) **Parity, n:** Primigravid **G1:** 15 (29) **Weeks gestation, median range):** **G1:** 38.4 (22.0-42.0) **Single pregnancy:** NR **Multiple pregnancy, n (%):** **G1:** 12 (24) **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** Cesarean	**Blood loss, mL:** **G1:** 2000 (855-8700) **Transfusion:** Recevied transfusion, n (%) **G1:** 39 (77) Units transfused, n median (range) **G1:** 3 (1-17) **ICU admission:** **G1:** 12 (24) **Psychological impact:** Harms of intervention Uterine rupture **G1:** 1 Hysterectomy after balloon insertion **G1:** 4 (8) Serious adverse events attributable to device **G1:** 0 **Confounders:** NR **Effect modifiers:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 23 (45) **Risk factors:** NR **Primary etiology of PPH, (%):** Atony **G1:** (73) Abnormal placentation **G1:** (33) Multiple causes **G1:** NR	

Table D-18. Evidence table for studies addressing management of PPH (Froessler 2013)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Froessler et al., 2013[23] **Country:** Australia **Enrollment period:** 2009-2010 **Birth setting:** NR **Facility characteristics:** NR **Funding:** NR **Design:** RCT	**Intervention:** **Intravenous Iron sucrose:** 400 mg of Intravenous iron sucrose divided into two 200 mg infusions of 30 minutes duration, given a minimum of 24 hours apart, plus folate tablets (folic acid 600 µg) until delivery. **FGF tablets:** Two FGF tablets (containing ferrous iron sulfate 250 mg, equiv. elemental iron 80 mg, folic acid 600 µg) totaling 160 mg of elemental iron daily until delivery or for six weeks following delivery, depending on the timing of recruitment (either antenatal or postnatal). **Groups:** **G1:** Iron sucrose **G1a:** Antenatal cohort **G1b:** Postnatal cohort **G2:** FGF tablets **G2a:** Antenatal cohort **G2b:** Postnatal cohort **N at enrollment:** **G1:** 137 **G2:** 134 **N at follow-up:** **G1:** 100 **G1a:** 69 **G1b:** 31 **G2:** 94 **G2a:** 51 **G2b:** 43 **Duration of treatment:** NR	**Operational definition of PPH:** NR **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Women who met the criteria for iron deficiency anemia (Hb <110 g/L and ferritin <12 µg/L) and were hemodynamically stable • Women identified during either the antenatal period (at routine clinic appointments between 28 and 36 weeks gestation) or within 72 hours of birth following either a caesarean section or vaginal delivery with blood loss > 500 ml **Exclusion criteria:** • Women who did not consent to the study • Women who presented with other causes of anemia, acute systemic infection, vitamin B12 or folate deficiency, hepatitis, HIV, severe asthma • Allergy to iron • Pre-treatment ferritin levels >300 ng/mL • Multiple pregnancy or high risk of premature birth. **Maternal age, yrs, median (IQR):** **G1:** 27 (23-32) **G1b:** 28 (26-32) **G2:** 29 (25-33) **G2b:** 30 (26-34) **Parity, n:** NR **Weeks gestation, median (IQR):** NR **Single pregnancy:** NR	**Blood loss at delivery (mL), median (IQR):** **G1b:** 775 (500-1175) **G2b:** 800 (637-1100) **G1b Vs G2b:** p = 0.6 **Received transfusion, n (%):** RBC **G1b:** 0 **G2b:** 1 (2.2) **Hemoglobin (g/L),median (IQR):** Post delivery Day 14: **G1b:** 115 (107-123) **G2b:** 118 (110-127) **G1b Vs G2b:** p =0.2 Day 42: **G1b:** 124 (118-132) **G2b:** 127 (120-132) **G1b Vs G2b:** p =0.7 p Value (across time within group) for all groups <0.001 **Ferritin (µg/L) median (IQR):** Day 14: **G1b:** 101 (82-141) **G2b:** 37 (24-52) **G1b Vs G2b:** p < 0.001 Day 42: **G1b:** 46 (24-64) **G2b:** 19 (13-33) **G1b Vs G2b:** p 0.01 p Value (across time within group) for all groups <0.005 **ICU admission:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	Timing of treatment: NR **Order of treatment:** NR **Length of follow-up:** NR	**Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI, (kg/m^2), mean ± SD:** **G1b:** 29 ± 6 **G2b:** 30 ± 7 **Baseline hemoglobin (g/L), median (IQR):** **G1b:** 96 (87-102) **G2b:** 95 (89 -106) **Ferritin (µg/L)** **G1b:** 18 (11-32) **G2b:** 21 (12-36) **SES:** NR **Mode of birth, n:** NR **Risk factors:** NR **Primary etiology of PPH:** NR	**Length of stay:** NR **Mortality:** NR **Uterine preservation:** NR **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** **G1b:** n=1 excluded due to arrhythmia during first transfusion (authors stated it appeared unrelated as it had occurred previously) No other serious adverse effects observed**.** **Confounders:** NR **Effect modifiers:** NR

Table D-19. Evidence table for studies addressing management of PPH (Lee 2013)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Lee et al., 2013[24] **Country:** Korea **Enrollment period:** January 2006 to August 2011 **Birth setting:** Hospital **Facility characteristics:** Tertiary care (academic medical center) **Funding:** NR **Design:** Retrospective case series	**Intervention:** Transcatheter arterial embolization performed by interventional radiologists **Groups:** **G1:** Embolization **N at enrollment:** **G1:** 176 **N at follow-up:** **G1:** 148 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** Patients received primary treatment in obstetric wards, including i.v. uterotonic drug administration, blood transfusions, fluid resuscitation, vaginal packing, uterine massage, vaginal, cervical, and perineal inspection, and tear suturing when needed. If bleeding continued, patient referred for angiography and transcatheter arterial embolization. Six patients had surgical procedure prior to embolization: 5 hysterectomies, 1 vascular ligation **Length of follow-up:** NR	**Operational definition of PPH:** Early-onset PPH occurred within the first 24 hours after delivery and late-onset occurred > 24 hours after delivery **Definition of success of treatment:** Technical success: cessation of bleeding on angiography or successful embolization of bleeding artery Clinical success: obviation of repeated embolization or surgical intervention **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Patients with PPH treated with transcatheter arterial embolization at two medical centers between Jan. 2006 to Aug. 2011 **Exclusion criteria:** • NR **Maternal age, yrs, mean (range):** **G1:** 33.9 (24-46) **Parity, n (%):** Primiparous **G1:** 73 (41.5) Multiparous **G1:** 103 (58.5) **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy, n (%):** Twin pregnancy	**Harms pre-specified:** Classified as major vs. minor using Society of Interventional Radiology guidelines **Harms, n (%):** Needed repeat embolization or surgical intervention **G1:** 18 (10.2) Hysterectomy **G1:** 5 (2.8) Mortality **G1:** 2 (1.1) Immediate Complications, including transient fever, mild leukocytosis, and abdominal pain (Postembolization syndrome): **G1:** 13 Hematoma formation **G1:** 3 Altered menstrual quality **G1:** 23 Heavier n=5 Lighter n=17 Dysmenorrhea n=1 No major complications related to embolization. No uterine infarctions, ischemic injuries or neurological complications **Minor complications:** Axillary sweating **G1:** 1

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 16 (9.1) **Race/ethnicity:** NR **BMI:** NR **Hemoglobin, mean ± SD:** **G1:** 8.4 ± 2.0 **SES:** NR **Mode of birth, n:** Cesarean **G1:** 71 (40.3) Vaginal **G1:** 105 (59.7) **Risk factors:** NR **Primary etiology of PPH, n (%):** Atony **G1:** 102 (57.6) Cervical or vaginal laceration **G1:** 21 (11.9) Abnormal placentation (including placenta accrete and percreta) **G1:** 52 (29.5) Placental abruption **G1:** 1 (0.6)	

Table D-20. Evidence table for studies addressing management of PPH (Kim 2013a)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Kim et al., 2013[25] **Country:** Korea **Enrollment period:** Feb 2002 to Dec 2009 **Birth setting:** Hospital **Facility characteristics:** Tertiary care hospital. **Funding:** NR **Design:** Retrospective cohort study	**Intervention:** Uterine artery embolization performed by two interventional radiologists; preferred for patients with stable systolic and diastolic BP or heart rate. Performed using gelfoam pieces approximately 4 mm in diameter. **Other medications received, n (%):** Oxytocin **G1:** 60 (100) **G2:** 60 (100) Sulprostone **G1:** 41 (68) **G2:** 37 (60.6) Ervin **G1:** 22 (36) **G2:** 12 (19.6) **Groups:** **G1:** Uterine artery embolization **G2:** Complete hysterectomy (CH) **N at enrollment:** **G1:** 60 **G2:** 61 **N at follow-up:** NR **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** Blood loss of 500ml or more as measured by the pad count in the first 24 hours following delivery **Definition of success of treatment**: Cessation of bleeding and stable vital signs **Method of blood loss measurement:** Pad count **Severity:** NR **Inclusion criteria:** • Diagnosed with PPH or referred from primary care facility with diagnosis **Exclusion criteria:** • Three patients who did not undergo Uterine artery embolization or CH within 24 hours after delivery **Maternal age, yrs, mean ± SD:** **G1:** 31.0 ± 4.8 **G2:** 31.8 ± 4.0 p = 0.358 **Parity, mean ± SD:** **G1 + G2:** 2.5 ± 0.2 **Primaparous, n:** **G1:** 17 **G2:** 22 **Weeks gestation, mean ± SD:** **G1 + G2:** 36.6 ± 2.5 **Preterm deliveries, n:** **G1:**14 **G2:**15	**Blood loss (ml), mean:** **G1:** 676.7 **G2:** 1769.1 **Transfusion, n (%):** **G1:** 25 (41.6) **G2:** 57 (93.4) **ICU admission, n:** **G1:** 5 (8.3) **G2:** 39 (63.9) **Duration (days), mean:** **G1:** 5 **DIC, n (%):** **G1:** 4 (6.6) **G2:** 34 (55.7) p<0.001 **Anemia:** NR **Length of stay in days, mean:** **G1:** 8.60 **G2:** 11.5 **Length of time in ICU, mean:** **G1:** 5 **Mortality, n (%):** **G1 + G2:** 5 (4) **Uterine preservation:** Subsequent complete hysterectomy: **G1:** 2 **Future fertility:** Ovarian failure after Uterine artery embolization

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Single pregnancy: NR **Multiple pregnancy, n (%):** Twins **G1:** 5 (8.3) **G2:** 4 (6.5) **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin (g/dL), mean ± SD:** **G1:** 10.5 ± 2.3 **G2:** 9.0 ± 2.8 p = 0.004 **SES:** NR **Mode of birth, n (%):** Vaginal **G1:** 23 (38) **G2:** 33 (54) p = 0.081 **Risk factors:** NR **Primary etiology of PPH, n (%):** Atony **G1 + G2:** 101(83.4) **G1:** 55 (92.4) **G2:** 46 (75.4) Placenta previa with Placenta accrete: **G1 + G2:** 4 (3.3) **G2:** 4 (6.5) Placenta previa without Placenta accrete: **G1 + G2:** 4 (3.3) **G1:** 4 (7.5) Vaginal wall laceration:	, n **G1:** 1 **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention, n:** Surgical complications Transient fever (> 38.5 C) **G1:** 11 **G2:** 14 Skin wounds in CH revision **G2:** 2 Continued bleeding after CH, n **G2:** 4 **Confounders:** NR **Effect modifiers:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1 + G2: 12 (9.8) **G1:** 1 (1.6) **G2:** 11 (18.0)	

Comments: The patient with ovarian failure had a previous history of pelvic arterial embolization as a result of adenomyosis and uterine multiple myomas and a history of infertility. She had conceived the present pregnancy through in vitro fertilization.
Study hospital is a bloodless medical center serving Jehovah's Witnesses

Table D-21. Evidence table for studies addressing management of PPH (Kim 2013b)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Kim et al., 2013[26] **Country:** Korea **Enrollment period:** March 2004 – January 2011 **Birth setting:** hospital **Facility characteristics:** Tertiary care **Funding:** NR **Design:** Retrospective case series	**Intervention:** Pelvic arterial embolization (PAE) **Groups:** **G1a:** successful PAE (intervention) **G1b:** failed PAE (intervention) **N at enrollment:** **G1:** 257 **G1a:** 233 **G1b:** 24 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** PAE was performed due to continued bleeding despite appropriate medical and/or surgical treatments **Length of follow-up:** NR	**Operational definition of PPH:** NR **Definition of success of treatment:** Technical success was defined as the cessation of bleeding on angiography and/or angiographically successful embolization of the uterine or anterior division of the hypogastric artery (12). Clinical success was defined as the cessation of bleeding after one PAE session. Clinical failure was defined as the need for subsequent intervention, including repeat embolization or additional surgery during the hospital stay. **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Patients undergoing PAE at hospital within study period **Exclusion criteria:** NR **Maternal age, yrs, median (range):** **G1:** 32 (20-40) **Maternal age >32 y, n (%):** **G1a:** 102 (87.2) **G1b**: 15 (12.8) p = 0.08 **Primiparity, n:** **G1a:** 150 (92.6) **G1b:** 12 (7.4) p = 0.19 **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy:** NR	**Harms pre-specified:** Yes **Harms, n (%):** Total **G1a:** 22 (9.4) **G1b:** 9 (37.5) p < 0.01 **Embolization related total:** **G1a:** 11 **G1b:** 4 p = 0.01 **Paresthesia:** 10 **G1a:** 7 **G1b:** 3 **Uterine abscess**: 3 **G1a:** 2 **G1b:** 1 **Postembolization syndrome:** 2 **G1a:** 2 **G1b:** 0 **Transfusion related:** Pulmonary edema: 5 **G1a:** 4 **G1b:** 1 p = 0.41 **Hypovolemia-related total:** 11 **G1a:** 7 **G1b:** 4 p <0.01 **Cerebral infarction:** 5 **G1a:** 2

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Race/ethnicity: NR **BMI:** NR **Baseline hemoglobin (<8 g/dl):** **G1a:** 103 (85.1) **G1b:** 18 (14.9) p < 0.01 **SES:** NR **Mode of birth, n:** Cesarean, n (%): **G1a:** 103 (92.0) **G1b**: 9 (8.0) **Risk factors, n (%):** PAE after failed surgical procedure, n (%): 9 **G1a:** 7 **G1b:** 2 p = .20 **Primary etiology of PPH, n (%):** Atony: 154 **G1a:** 140 (89.7) **G1b:** 16 (10.3) p = 0.53 Lower genital tract laceration: 44 **G1a:** 38 (86.4) **G1b:** 6 (13.6) p = 0.39 Placenta accrete: 22 **G1a:** 20 (90.9) **G1b:** 2 (9.1) p = 0.66 Retained placental fragments: 19 **G1a:** 19 (100)	**G1b:** 3 **Optic nerve ischemia:** 2 **G1a:** 2 **G1b:** 0 **Acute renal failure:** 2 **G1a:** 2 **G1b:** 0 **Multiorgan failure:** **G1a:** 1 **G1b:** 1

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1b: 0 Placenta previa: 16 **G1a:** 16 **G1b:** 0	

Table D-22. Evidence table for studies addressing management of PPH (Lappen 2013)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Lappen et al., 2013[27] **Country:** US **Enrollment period:** Pre: 6 month prior to systems intervention Intervention: Feb 2008 to Jan 2009 Post: 6 months after intervention **Birth setting:** Hospital **Facility characteristics:** Tertiary care hospital **Funding:** Ken and Anne Griffin Foundation **Design:** Pre-post	**Intervention:** Safety program that d 1) educational initiative to improve accuracy of blood loss estimation, 2) training regarding and institution of a checklist for management of PPH, and 3) institution of routine use of active management of 3rd stage of labor. **Groups:** **G1:** period A- pre intervention **G2:** period B: post **N:** **G1:** 278 **G2:** 341 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** Estimated blood loss greater than 500 mL for vaginal delivery and > 1,000 mL for cesarean delivery) **Definition of success of treatment**: Changes in patient care and outcomes **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Identified from perinatal database and meeting criteria of PPH **Exclusion criteria:** • All patients presenting with PPH during time period d **Maternal age, yrs, mean ± SD:** **G1:** 31.6 ± 6.0 **G2:** 31.6 ± 6.2 **Parity, n:** Nulliparous **G1:** 183 (66) **G2:** 235 (69) **Gestational age, weeks mean:** **G1:** 38.6 ± 2.87 **G2:** 38.9 ± 244 **Single pregnancy, n (%):** **G1:** 243 (87) **G2:** 296 (88) **Multiple pregnancy, n (%):** **G1:** 35 (13) **G2:** 41 (12) **Race/ethnicity:** Caucasian	**Blood loss:** EBL (mL) **G1:** 1,211 ± 681 **G2:** 1,274 ± 932 p= 0.33 EBL > 1,500 mL **G1:** 45 (16.2) **G2:** 62 (18.2) p= 0.51 **Transfusion:** Any packed red cells **G1:** 34 (44.7) **G2:** 42 (55.3) 4 or more Units pRBCs **G1:** 9 (3.2) **G2:** 11 (3.2) Fresh frozen plasma **G1:** 9 (3.2) **G2:** 8 (2.4) Cyroprecipitate **G1:** 4 (1.4) **G2:** 4 (1.2) ICU admission **G1:** 7 (2.5) **G2:** 12 (3.5) p= 0.47 **Anemia:** Nadir Hemoglobin g/dL **G1:** 8.8 ± 1.6 **G2:** 8.9 ± 1.6 p= 0.55 **Length of stay:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 139 (52) **G2:** 176 (55) African-American **G1:** 41 (16) **G2:** 32 (10) Hispanic **G1:** 53 (20) **G2:** 60 (19) Asian **G1:** 9 (3) **G2:** 15 (5) Other **G1:** 36 (9) **G2:** 58 (11) **BMI** **G1:** 29.9 ± 5.7 **G2:** 31.3 ± 6.6 **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** Spontaneous vaginal **G1:** 135 (49) **G2:** 140 (41) Operative vaginal **G1:** 29 (10) **G2:** 34 (10) Cesarean **G1:** 114 (41) **G2:** 167 (49)	**Mortality:** NR **Uterine preservation:** NR **Uterine artery embolization:** **G1:** 1 (0.4) **G2:** 5 (1.5) **Hysterectomy:** **G1:** 3 (1.1) **G2:** 6 (1.8) **Composite morbidity (transfusion, embolization, hysterectomy, ICU admission):** **G1:** 36 (13.0) **G2:** 42 (12.3) p= 0.81 **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** NR – "There were no adverse events related to interventions for PPH, including the use of uterotonics or B-lynch sutures, in either time period of the stuy. **Confounders:** NR **Effect modifiers:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Risk factors, n (%): Race/ethnicity: NR History of cesarean **G1:** 35 (13) **G2:** 41 (12) Labor induction/augmentation **G1:** 81 (29) **G2:** 120 (35) Preeclampsia **G1:** 32 (12) **G2:** 35 (10) Placenta previa **G1:** 9 (3) **G2:** 7 (2) Birth weight (g) G1: 3310 +/- 701 G2: 3384 +/- 698 Multiple gestation **G1:** 35 (13) **G2:** 45 (13) Chorioamnionitis **G1:** 38 (14) **G2:** 54 (16) Retained placenta: NR Antepartum hemorrhage: NR Magnesium sulfate use **G1:** 32 (12) **G2:** 33 (10) Any oxytocin	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 185 (67) **G2:** 249 (73) **Primary etiology of PPH, n (%):** Uterine Atony **G1:** 169 (160.8) **G2:** 214 (62.8) Surgical laceration **G1:** 47 (16.9) **G2:** 76 (22.3) Vaginal laceration **G1:** 17 (6.1) **G2:** 27 (7.9) Retained products **G1:** 19 (6.8) **G2:** 16 (4.7) Placenta accreta **G1:** 4 (1.4) **G2:** 2 (0.6) Uterine inversion **G1:** 2 (0.7) **G2:** 1 (0.3) Other **G1:** 20 (7.2) **G2:** 5 (1.4)	

Table D-23. Evidence table for studies addressing management of PPH (Sohn 2013)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Sohn et al., 2013[28] **Country:** Korea **Enrollment period:** January 2004 to May 2012 **Birth setting:** Hospital **Facility characteristics:** Tertiary care hospital **Funding:** NR (No conflicts) **Design:** Retrospective cohort	**Intervention:** Massive transfusion- patients who required transfusion of 10 or more units pRBCs **Groups:** **G1:** required Massive transfusion **G2:** did not require Massive transfusion **N at enrollment:** **G1:** 26 **G2:** 100 **N at follow-up:** **G1:** 26 **G2:** 100 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** Blood loss of 500 mL or more that occurs within 24 hours after birth. **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Primary PPH patients who presented to Emergency Department **Exclusion criteria:** • Transfusion of > 1 U packed RBCs before Emergency Dept arrival • Missing data for initial vital sign **Maternal age, yrs, median (IQR):** **G1:** 31 (29.8-34.5) **G2:** 31 (29-34) p = 0.67 **Parity, n:** Primipara **G1:** 17 (65.4) **G2:** 56 (56) Multipara **G1:** 9 (34.6) **G2:** 44 (44) p = 0.39 **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR	**Blood loss:** Transfusion amount, median (IQR) units Packed RBCs during initial 24 hours **G1:** 18 (11.8-24) **G2:** 3 (2-5) p< 0.01 pRBCs during hospitalization **G1:** 20 (15.8-28.8) **G2:** 4 (2-6) p< 0.01 FFP during hospitalization **G1:** 11.5 (7.8-15.8) **G2:** 0 (0-3) PCs during hospitalization **G1:** 14 (10-25.5) **G2:** 0 (0-0) p< 0.01 **ICU admission:** **G1:** 11 (42.3) **G2:** 5 (5) p < 0.01 **Anemia:** Hemoglobin, g/dL, median (IQR) **G1:** 5.9 (4.7-9.6) **G2:** 9.5 (8.3-10.5) p< 0.01 Hematocrit **G1:** 18.4 (15.2-29) **G2:** 28.5 (25.8-31.8) p< 0.01 Platelets **G1:** 129.5 (93.8-161.5) **G2:** 174.5 (142.3-201

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Baseline hemoglobin: NR **SES:** NR **Mode of birth, n:** Vaginal **G1:** 20 (76.9) **G2:** 77 (77) Cesarean **G1:** 6 (23.1) **G2:** 23 (23) p = 0.99 **Bleeding time, minutues median (IQR):** **G1:** 122 (76.3-162.3) **G2:** 138 (81-219) p = 0.15 **Risk factors, n (%):** Initial Mental Status (alert, verbal, unresponsive p < 0.01 Initial vital signs, median (IQR) SBP, mmHg **G1:** 101.5 (80.0 – 118.8) **G2:** 118.5 (105.0 – 129.0) p < 0.01 SBP < 90mmHg, n (%) **G1:** 8 (30.8) **G2:** 11 (11.0) p = 0.03 DBP, mmHg **G1:** 59.0 (52.0 – 66.5) **G2:** 71.0 (63.3 – 81.0) p < 0.01	p< 0.01 **Length of stay, days median (IQR):** **G1:** 4 (3-6.5) **G2:** 2 (1-3) p < 0.01 **Mortality in hospital:** **G1:** 3 (11.5) **G2:** 0 p< 0.01 **Uterine preservation:** Hysterectomy **G1:** 2 (3.8) **G2:** 1 (1) p = 0.37 Embolization **G1:** 22 (84.6) **G2:** 36 (36) p < 0.01 **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** NR **Confounders:** Initial mental status SBP Hypotensive state DBP HR SI **Effect modifiers:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		HR, beats/min **G1:** 129.0 (119.3 – 144.3) **G2:** 97.5 (82.3 – 109.0) p < 0.01 Body temperature, °C **G1:** 36.7 (36.2 – 37.4) **G2:** 37.0 (36.5 – 37.5) p = 0.28 Shock Index (SI), median (IQR) **G1:** 1.3 (1.0 – 1.7) **G2:** 0.8 (0.7 – 1.0) p < 0.01 **Primary etiology of PPH:** NR	

Table D-24. Evidence table for studies addressing management of PPH (Sugawara 2013)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Sugawara et al., 2013[29] **Country:** Japan **Enrollment period:** April 2006 to May 2011 **Birth setting:** Hospital **Facility characteristics:** Tertiary care **Funding:** No financial support; no conflicts of interest **Design:** Retrospective cohort	**Intervention:** Recombinant human soluable thrombomodulin (rTM), 380 U/kg per day drip infused for 30 minutes once daily Patients were also treated with fresh frozen plasma (FFP), platelet concentrate (PC), red cell concentrate (RCC), or antithrombin-III concentrate Control group received gabexate mesilate (GAB) **Groups:** **G1:** rTM **G2:** control **N at enrollment:** **G1:** 10 **G2:** 26 **N at follow-up:** **G1:** 10 **G2:** 26 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** 3 days	**Operational definition of PPH:** Blood loss > 500 mL after vaginal delivery and > 1000 mL after cesarean **Definition of success of treatment**: Posttreatment improvement in disseminated intravascular coagulation (DIC) assessed by Japanese Ministry of health and Wellness (JMHW) DIC criteria **Method of blood loss measurement:** NR **Severity: Shock index, mean ± SE:** (defined as systolic blood pressure divided by heart rate and corresponded to the severity of PPH) **G1:** 1.5 ± 0.2 **G2:** 1.1 ± 0.1 **G1 vs G2:** p< 0.05 **Inclusion criteria:** • PPH, complicated by DIC (all patients fulfilled criteria of International Society on Thrombosis and Hemostasis classification for overt DIC) **Exclusion criteria:** • NR **Maternal age, yrs, mean ± SE:** **G1:** 33.2 ± 1.7 **G2:** 31.7 ± 1.1 **Parity, mean ± SE:** **G1:** 1.0 ± 0.4 **G2:** 1.2 ± 0.2 **Weeks gestation, mean ± SE:** **G1:** 34.6 ± 2.1 **G2:** 35.4 ± 0.9 **Single pregnancy:** NR **Multiple pregnancy:** NR	**Blood loss, ml mean ± SE:** **G1:** 4665.1 ± 625.4 **G2:** 3927.3 ± 424.9 **Bleeding symptoms, day 1(%):** **G1:** 22.2 **G2:** 42.3 **G1 vs G2:** p=0.14 **Bleeding symptoms, day 2 (%):** **G1:** 11.1 **G2:** 19.2 **G1 vs G2:** p=0.28 **Transfusion, units, mean ± SE:** RCC **G1:** 16.3 ± 3.0 **G2:** 15.9 ± 1.7 FFP **G1:** 16.3 ± 3.1 **G2:** 14.6 ± 1.9 PC **G1:** 20 **G2:** 18.4 ± 2.5 Use of PC, n (%) **G1:** 4 (40) **G2:** 13 (50) **ICU admission:** NR **Anemia:** NR **Length of stay:** NR **Mortality:** NR **Uterine preservation:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Race/ethnicity: NR **BMI:** NR **Baseline hemoglobin, mean ± SE** **G1:** 6.7 ± 0.4 **G2:** 7.4 ± 0.4 **SES:** NR **Mode of birth, n (%):** Cesarean **G1:** 2 (20) **G2:** 11 (42.3) Cesarean, hysterectomy **G1:** 4 (40) **G2:** 5 (19.2) **Risk factors:** NR **Primary etiology of PPH, n (%):** Atony **G1:** 3 (30) **G2:** 10 (38.4) Placenta accrete **G1:** 2 (20) **G2:** 22 (7.7) Placenta previa **G1:** 2 (20) **G2:** 3 (11.5) Placental abruption **G1:** 3 (30) **G2:** 10 (38.4)	**Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** No treatment related adverse events observed in either group **Confounders:** NR **Effect modifiers:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Uterine rupture **G1:** 0 **G2:** 1 (3.8)	

Table D-25. Evidence table for studies addressing management of PPH (Yamasaki 2013)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Yamasaki et al., 2013 [30] **Country:** Japan **Enrollment period:** January 2003 to January 2013 **Birth setting:** hospitals **Facility characteristics:** university hospital **Funding:** NR **Design:** Case series	**Intervention:** transcatheter pelvic arterial embolization (TAE) performed by expert radiologists. Catheterization occurred from the right femoral artery with subsequent embolization of uni- or bilateral uterine arteries with use of absorbable gelatin sponge. Performed under pelvic angiogram at interventional radiology unit. In case of insufficient hemostasis, embolization of different vessels including iliac, ovarian, inferior gluteal and round ligament arteries done subsequently. **Groups:** **G1:** embolization **N at enrollment:** **G1:** 55 **N at follow-up:** **G1:** 55 **Duration of treatment:** N/A **Timing of treatment** TAE occurred after assessment for cause and conservative management including uterine fundal massage, uterin packing, uterotonic medication including oxytocin, methyl-ergonovine and prostaglandin analogue. **Order of treatment** TAE occurred after conservative management. **Length of follow-up:** NR	**Operational definition of PPH:** NR **Definition of success of treatment**: Sufficient hemostasis achieved by a series of embolization without surgical treatments. **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • intractable PPH within 24 hours after delivery **Exclusion criteria:** • NR **Maternal age, yrs, mean (range):** **G1:** 33 (21-46) **Parity, n:** Number of previous deliveries, median (range): **G1:** 1 (0-3) **Weeks gestation, median (range):** **G1:** 39 (23-41) **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** Vaginal delivery	**Harms pre-specified:** No **Harms, n (%):** Fever: **G1:** 6 (10.9) Lower limb neuropathy **G1:** 1 (1.8) Uterine necrosis **G1:** 2 (3.6)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 34 Cesarean section **G1:** 21 **Risk factors:** NR **Primary etiology of PPH, n (%):** Atony **G1:** 41 (74.5) Retained placenta **G1:** 11 (20) Cervical laceration **G1:** 3 (5.5)	

Table D-26. Evidence table for studies addressing management of PPH (Blanc 2012)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Blanc et al., 2012[31] **Country:** France **Enrollment period:** 2000 to 2009 **Birth setting:** Hospital **Facility characteristics:** Tertiary care **Funding:** Agency/NR **Design:** Case series	**Intervention:** Uterine-sparing procedures including triple uterine artery ligation (TUAL) possibly complimented with hemostatic multiple square suturing (HMSS) **Groups:** **G1:** intervention **N:** **G1:** 59 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** Oxytocin administration and uterine revision (n=59**)** Sulrostone administration (n=50) One step TUAL (n=56) HMSS of uterus (n=43) Selective embolization (n=1) Hemostatic hysterectomy (n=4) **Length of follow-up:** NR	**Operational definition of PPH:** NR **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** Delivered by cesarean Diagnosed with PPH Managed by uterine sparing surgical management using TUAL, possibly complimented with HMSS criterion 2 **Exclusion criteria:** three patients not managed according to institution guidelines **Maternal age, yrs, median (range):** **G1:** 31.5 (17-44) **Parity, median (range):** **G1:** 0.5 (0-8) **Weeks gestation, median (range):** **G1:** 37 (25-41) **Single pregnancy, n (%):** **G1:** 52 (92.9) **Multiple pregnancy, n (%):** **G1:** 4 (7.1) **Race/ethnicity:** NR **BMI, median (range)** **G1:** 28 (19-45)	**Successful control of bleeding, n (%):** **G1:** 51/56 (91) **Harms pre-specified:** No **Transfusion** **G1:** 20 (35.7) **ICU admission** **G1:** 7 (12.5) **Harms, n (%):** Hemorrhagic shock **G1:** 4 (7.1) Ureter injury **G1:** 0 Endometritis requiring antibiotic therapy rupture **G1:** 2 (3.6)

		Baseline hemoglobin: NR **SES:** NR **Mode of birth:** NR **Risk factors, n (%):** Previous cesarean **G1:** 16 (28.6) **Primary etiology of PPH, n (%):** Atony **G1:** 45 (80.4) Placenta accrete **G1:** 11 (19.6) Uterine rupture during labor (associated with atony) **G1:** 3 (5.4) Placental abruption **G1:** 3 (5.4)	

Table D-27. Evidence table for studies addressing management of PPH (Laas 2012)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Laas, et al. 2012[32] **Country:** France **Enrollment period:** Pre: July 2005 to March 2008 Post:April 2008 to December 2010 **Birth setting:** hospital **Facility characteristics:** Tertiary care **Funding:** NR **Design:** Pre-post	**Intervention:** Intrauterine balloon tamponade/24 hours/ once **Groups:** **G1:** post balloon **G2:** pre ballon **N at enrollment:** All PPH **G1T:** 663 **G2T:** 820 Received sulposterone **G1:** 395 **G2:** 290 Stratified by delivery type **G1v:** 218/395 (vaginal) **G2v:** 194290 (vaginal) **G1c:** 177/395 (cesarean) **G2c:** 96/290 (cesarean) Did not respond to sulposterone **G1:** 72/395 **G1av:** 35 vaginal **G1ac:** 37 cesarean **G2:** 38/290 **G2ac:** 12 cesarean **G2av:** 26 vaginal Received tamponade test **G1b:** 43 **G2b:** NA **Duration of treatment:** 24 hours **Timing of treatment** After failure of protocol which d oxytocin, circulatory support, sulprostone infusion	**Operational definition of PPH:** NR **Definition of success of treatment**: No need for surgical procedures including hysterectomy and embolization **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • All patients with PPH due to uterine atony that is unresponsive to sulprostone from 7/2005-March 2008 and April 2008-December 2010 **Exclusion criteria:** • Placenta accrete, lacerations, retained placenta **Maternal age, yrs, median (IQR):** **G1av:** 31 (27-36) **G2av:** 30 (26-33) **G1av:** 31 (27-35) **G2av:** 32 (29-35) **G1b:** 31 (27-34) **Nulliparous, n (%):** **G1av:** 15 (42.9) **G2av:** 12 (46.2) **G1ac:** 13 (35.1) **G2ac:** 4 (33.3) **G1b:** 15 (34.9) **Weeks gestation, median (IQR):** **G1av:** 39 (38-41) **G2av:** 40 (38-41) **G1ac:** 38 (36-40) **G2ac:** 39 (35-41) **G1b:** 39 (38-41)	**Blood loss (Peripartum hemoglobin loss ≥ 2g/dl) n (%):** **G1v:** 117/218 (53.7) **G2v:** 129/194 (66.5) **G1c:** 77/177 (43.5) **G2c:** 54/96 (56.3) **Embolization:** **G1v:** 5/218 (2.3) **G2v:** 16/194 (8.2) **G1c:** 2/177 (1.1) **G2c:** 0/96 **Conservative surgical procedures:** **G1v:** 3/218 (1.4) **G2v:** 10/194 (5.1) **G1c:** 23/177 (13.0) **G2c:** 12/96 (12.5) **Transfusion:** **G1v:** 23**/**218 (10.6) **G2v:** 16/194 (8.3) **G1c:** 20/177 (11.3) **G2c:** 9/96 (9.4) **ICU admission:** NR **Anemia:** NR **Length of stay:** NR **Mortality:** 0 **Uterine preservation:** Hysterectomy **G1v: 1/**218 (0.46) **G2v:** 2/194 (1.0) **G1c: 3**/177 (1.7)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	Order of treatment: Intrauterine tamponade was after failure of sulprostone infusion **Length of follow-up:** NR	**Single pregnancy:** NR **Multiple pregnancy, n (%):** **G1av:** 5 (14.3) **G2av:** 4 (15.4 **G1ac:** 12 (32.4) **G2ac:** 1 (8.3) **G1b:** 7 (16.3) **Race/ethnicity:** NR **BMI, median (IQR)** **G1av:** 21.9 (19.9-23.7) **G2av:** 20.5 (19.2-23.4) **G1ac:** 23.0 (21.5-26.4) **G2ac:** 27.7 (26.2-28.6) **G1b:** 22.7 (20.7-25.7) **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** Vaginal **G1:** 218/395 **G2:** 194/290 Cesarean **G1:** 177/395 **G2:** 96/290 **Risk factors:** NR **Primary etiology of PPH, n (%):** Atony	**G2c:** 1/96 (1.0) **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** Endometritis **G1b:** 1/43 (2.3%) **Confounders:** NR **Effect modifiers:** NR

Table D-28. Evidence table for studies addressing management of PPH (Lee 2012)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Lee et al., 2012[33] **Country:** Korea **Enrollment period:** Jan 2000 to Feb 2011 **Birth setting:** Hospital **Facility characteristics:** Tertiary care (academic medical center). **Funding:** NR No authors reported any potential conflicts of interest **Design:** Retrospective case series	**Intervention:** Pelvic arterial embolization (PAE) performed with local anesthesia by interventional radiologists in conventional angiographic suite **Groups:** **G1:** intervention **N at enrollment:** **G1:** 251 **N at follow-up (more than 6 months):** **G1:** 113 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up, months mean (range):** **G1:** 30 ± 23 (6-99)	**Operational definition of PPH:** Primary PPH occurring within the first 24 hours after delivery and secondary PPH was bleeding occurring later than this and until 6th week of puerperium **Definition of success of treatment:** Technical success defined as cessation of bleeding on postembolization angiogram and cessation of vaginal bleeding at speculum inspection performed immediately after PAE Clinical success defined as cessation of bleeding after PAE without need for repeat PAE or additional surgery during hospital stay. **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Primary PPH and underwent PAE during time period **Exclusion criteria:** • Women with secondary PPH **Maternal age, yrs, mean ± SD:** **G1:** 32 ± 4 (range: 19-45) **Parity, n:** Nulliparous **G1:** 139 **Weeks gestation:** NR **Single pregnancy:** NR **Twin pregnancy, n:** **G1:** 14 **Race/ethnicity:** NR **BMI:** NR	**Harms pre-specified:** No **Harms, n (%):** Failure to achieve success after first session of embolization **G1:** 34 (13.5) Repeat embolization failure **G1:** 3/12 Hysterectomy **G1:** 10/251 Mortality, n (%) **G1:** 5 (2) (three after first session, one after repeat embolization, and one after additional laparotomy) Total Complications **G1:** 8 Dissection of uterine arteries **G1:** 2 Other minor complications **G1:** 6 Transient numbness of lower extremities **G1:** 2 Edema of lower legs **G1:** 1 Hematoma at puncture site **G1:** 3

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Baseline hemoglobin: NR **SES:** NR **Mode of birth, n:** Vaginal **G1:** 141 Cesarean **G1:** 110 **Risk factors, n:** History of cesarean **G1:** 13 **Primary etiology of PPH, n:** Atony **G1:** 198 Coagulopathy **G1:** 6 Retained placenta **G1:** 24 Vaginal or cervical laceration **G1:** 20 Uterine rupture **G1:** 3	

Table D-29. Evidence table for studies addressing management of PPH (Ahmed 2012)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Ahmed et al., 2012[34] **Country:** Ireland **Enrollment period:** Jan 2009 to June 2011 **Birth setting:** Hospital **Facility characteristics:** Tertiary care/ Academic medical center **Funding:** NR; Authors reported no conflicts of interest **Design:** Retrospective cohort	**Intervention:** Cryoprecipitate supplied by IBTS in pools of five donor units with minimum fibrinogen content of > 700 mg pool and mean of 1470 ± 263 (range 727-2182). It was withdrawn in July 2009 but patients received it until stocks were depleted. Fibrinogen concentrate was first used in Nov. 2009 Mean dose of cryoprecipitate 2.2 ± 0.35 pools and for fibrinogen 4 ± 0.8 g **Groups:** **G1:** cryoprecipitate **G2:** fibrinogen **N at enrollment:** **G1:** 14 **G2:** 20 **N at follow-up:** **G1:** 14 **G2:** 20 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** Medical record review (up to discharge)	**Operational definition of PPH:** Estimated blood loss of 2.5 L or more, transfusion of five or more units RCC, or treatment of a coagulopathy in acute event. 77 cases of MOH identified during the period and 34 received treatment for hypofibrinogenaemia. Treatment of MOH used d: (shown in figure) oxytocin bolus, oxytocin infusion, ergometrine, misoprotol, haemabate, and: Intra uterine hydrostatic balloon **G1:** 7 **G2:** 7 Internal iliac ligation **G1:** 2 **G2:** 0 Recombinant Factor VII **G1:** 1 **G2:** 0 Hysterectomy **G1:** 3 **G2:** 2 **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Patients who required treatment with cryoprecipitate or fibrinogen (identified retrospectively) • Fibrinogen level < 2 g/L **Exclusion criteria:**	**Blood loss, estimated L, mean ± SE:** **G1:** 5.19 ± 1.07 **G2:** 3.34 ± 0.51 p = 0.10 **Hematocrit, min, mean ± SE:** **G1:** 0.21 ± 0.02 **G2:** 0.19 ± 0.01 p = 0.25 **Platelets minimum (x 10^9 g/L), mean ± SE:** **G1:** 92.9 ± 12.98 **G2:** 100.6 ± 10.07 p = 0.49 **Fibrinogen level, minimum (g/L), mean ± SE:** **G1:** 1.04 ± 0.13 **G2:** 1.23 ± 0.18 p = 0.42 **Transfusion:** RCC units, mean ± SE **G1:** 7.21 ± 1.23 **G2:** 5.90 ± 0.96 p = 0.40 Octaplas units, mean ± SE **G1:** 4.07 ± 0.74 **G2:** 3.15 ± 0.65 p = 0.36 Platelets, pools, mean ± SE **G1:** 1.00 ± 0.36 **G2:** 1.00 ± 0.30 p = 0.99

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		• Patient who received both products **Maternal age, yrs, mean:** **G1:** 32.8 **G2:** 31.0 **Parity, n:** 0 **G1:** 6 **G2:** 6 ≥ 1 **G1:** 8 **G2:** 14 **Days gestation, mean:** **G1:** 247 **G2:** 252 **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** Caucasian **G1:** 9 **G2:** 14 Other **G1:** 5 **G2:** 6 **BMI, mean kg/m^2:** **G1:** 25.8 **G2:** 24.5 **Baseline hemoglobin, mean g/dL:** **G1:** 12.4 **G2:** 11.9	Fibrinogen post treatment (g/L), mean ± SE **G1:** 3.05 ± 0.19 **G2:** 3.34 ± 0.22 p = 0.35 **ICU admission:** **G1:** 0 **G2:** 1 **Anemia:** Hgb 1-3d post event **G1:** 8.55 ± 0.49 **G2:** 8.79 ± 0.20 p = 0.46 **Length of stay:** Duration of obstetric high-dependency unit (HDU) stay, hours, mean ± SE **G1:** 34.1 ± 4.32 **G2:** 33.6 ± 5.44 p = 0.95 Duration of hospital stay, days, mean ± SE **G1:** 5.21 ± 0.33 **G2:** 6.55 ± 0.81 p = 0.19 **Mortality:** No maternal deaths **Uterine preservation:** Hysterectomy **G1:** 3 **G2:** 2 **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:**

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		SES: NR **Mode of birth, n:** Previous cesarean **G1:** 6 **G2:** 2 p = 0.04 **Risk (causative) factors, n (%):** Uterine atony **G1:** 7 (50) **G2:** 11 (55) Placenta previa **G1:** 4 (28.6) **G2:** 3 (15) Placental abruption **G1:** 1 (7.1) **G2:** 5 (25) Placenta accreta **G1:** 4 (28.6) **G2:** 3 (15) Retained products of conception **G1:** 1 (7.1) **G2:** 3 (15) Uterine rupture **G1:** 1 (7.1) **G2:** 0 Uterine/broad lig tear **G1:** 0 **G2:** 1 (5) Cervical/vaginal tear **G1:** 0 **G2:** 1 (5)	None (no adverse reaction to RCC, cryoprecipitate or fibrinogen and no thrombotic complications record up to hospital discharge) **Confounders:** NR **Effect modifiers:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Coagulopathy **G1:** 4 (28.6) **G2:** 10 (50) **Primary etiology of PPH, n (%):** Atony **G1:** 6 (42.9) **G2:** 7 (35) Coagulopathy **G1:** 1 (7.1) **G2:** 3 (15) Trauma **G1:** 1 (7.1) **G2:** 2 (10) Placenta accreta **G1:** 3 (21.4) **G2:** 2 (10) Placenta previa **G1:** 0 **G2:** 1 (5) Placental abruption **G1:** 0 **G2:** 2 (10) Retained products of conception **G1:** 0 **G2:** 2 (10) Vascular malformation **G1:** 1 (7.1) **G2:** 0 Mixed etiology **G1:** 1 (7.1)	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G2: 1 (5) First trimester (miscarriage with MOH at surgical evacuation of uterus) **G1:** 1 (7.1) **G2:** 0	

Comments: The authors also provide definitions of uterine atony, placenta accrete, and retained placental tissue. Note: many cases of MOH have multiple causative factors.

Table D-30. Evidence table for studies addressing management of PPH (Gronvall 2012)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Gronvall et al., 2012[35] **Country:** Finland **Enrollment period:** Oct 2008 to June 2011 **Birth setting:** Hospital **Facility characteristics:** Tertiary care **Funding:** Helsinki University Hospital research grants **Design:** Case series, retrospective	**Intervention:** Bakri balloon tamponade (BBT) **Groups:** **G1:** intervention **N at enrollment:** **G1:** 50 **N at follow-up:** **G1:** 50 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** Massive PPH (blood loss > 1000 mL) Expected high risk of PPH (blood loss < 1000 mL) **Definition of success of treatment**: Hemostasis achieved after balloon placement **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** Women who delivered at Helsinki University hospital during study period and who had tamponade after delivery **Exclusion criteria:** NR **Maternal age, yrs, mean:** **G1:** 31.3 (range 19-47) **Parity, n:** 0 **G1:** 30 1-2 **G1:** 16 ≥ 3 **G1:** 4 **Weeks gestation, mean (range):** **G1:** 38^{+6} range (31^{+6} to 42^{+2}) **Single pregnancy, n (%):** NR **Multiple pregnancy, n (%):** NR **Race/ethnicity:** NR	**Blood loss, before insertion of balloon, n** < 1000 mL **G1:** 6 1000-2500 mL **G1:** 18 2500-5000 mL **G1:** 16 5000-10,000 mL **G1:** 6 > 10,000 mL **G1:** 4 **Transfusion:** NR **ICU admission:** NR **Anemia:** NR **Length of stay:** NR **Mortality:** NR **Uterine preservation, n:** Bilateral uterine artery embolization **G1:** 3 Hysterectomy after AE **G1:** 1 Hysterectomy after tamponade failure **G1:** 2 Supravaginal uterine amputation **G1:** 3

		BMI: NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** Vaginal **G1:** 29 (11 spontaneous, 10 induced, 8 vacuum extraction) Cesarean, elective **G1:** 9 Cesarean, emergency **G1:** 9 Cesarean, crash **G1:** 3 **Risk factors, n:** History of cesarean **G1:** 30 **Primary etiology of PPH, n:** Atony **G1:** 8 Cervical rupture **G1:** 7 Vaginal rupture a/o paravaginal hematoma **G1:** 11 Placenta previa **G1:** 9 Placeta retention **G1:** 15 (5 had placenta accrete)	**Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention (complications), n:** Groin hematoma after embolization **G1:** 1 Wound infection after cesarean, mild **G1:** 2 Wound infection after episiotomy, mild **G1:** 1 Readmission for placental retention **G1:** 2 **Confounders:** NR **Effect modifiers:** NR

Comments: Authors state complications not due to tamponade

Table D-31. Evidence table for studies addressing management of PPH (Markova 2012)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Markova et al., 2012[36] **Country:** Denmark **Enrollment period:** 2003, 2005, and 2007 **Birth setting:** NR **Facility characteristics:** University hospital **Funding:** None **Design:** Pre-post (retrospective database audit)	**Intervention:** Obstetric skills training for all staff including midwives, nurses, auxiliary nurses and doctors. Training d a variety of emergency obstetric situations associated with vaginal birth including PPH. **Groups:** **G1: "**Before" (2003) hardly anyone had training **G2: "**During" (2005) almost all had recent training **G3:** "After" (2007) the training was routine & had been repeated **N=**number of deliveries **G1T:** 3284 **G2T:** 3272 **G3T:** 3905 **N=**number of patients who had RBC transfusion for PPH **G1:** 50 **G2:** 52 **G3:** 46 **Duration of treatment:** NR **Timing of treatment:** Any transfusion within 7 days of birth **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** NR **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Received RBC transfusion w/in 7 days of birth • Able to obtain medical record **Exclusion criteria:** • Unable to obtain medical record • Transfusion not associated with PPH • Bleeding due to medical conditions or anticoagulant treatment **Maternal age, yrs, mean ± SD:** NR **Parity:** NR **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** Vaginal,	**Blood loss:** NR **Transfusion rates:** **G1:** 1.5% **G2:** 1.6 **G3:** 1.2 **Number of units, n (%):** 1 unit **G1:** 3 (6) **G2:** 2 (3.8) **G3:** 5 (10.9) 2 units **G1:** 32 (64) **G2:** 27 (51.9) **G3:** 26 (56.5) 3 units **G1:** 3 (6) **G2:** 7 (13.5) **G3:** 8 (17.4) 4 units **G1:** 4 (8) **G2:** 9 (17.3) **G3:** 5 (10.9) 5 + units **G1:** 8 (16) **G2:** 7 (13.5) **G3:** 2 (4.3) Total **G1:** 162 **G2:** 172 **G3:** 135 **Immediate transfusions (within 24 hours), n:**

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1+ G2+G3: 98 Cesarean **G1+ G2+G3:** 50 **Risk factors:** NR **Primary etiology of PPH vaginal birth, n (%):** Atony **G1:** 7 (14) **G2:** 9 (17.3) **G3:** 12 (26.1) Trauma/laceration **G1:** 4 (8) **G2:** 9 (17.3) **G3:** 12 (26.1) Retained placenta **G1:** 16 (23) **G2:** 15 (28.8) **G3:** 14 (30.4) **Primary etiology of PPH cesarean birth, n (%):** Atony **G1:** 12 (24) **G2:** 7 (13.5) **G3:** 4 (8.7) Operative complication incl uterine rupture **G1:** 2 (4) **G2:** 5 (9.6) **G3:** 1 (2.2) Placenta accreta **G1:** 4 (8) **G2:** 2 (3.8) **G3:** 2 (4.3) Placenta previa	**G1:** 26 **G2:** 29 **G3:** 21 **Delayed transfusions (24 hours to 7 days), n:** **G1:** 22 **G2:** 17 **G3:** 19 **Immediate/delayed-ratio** **G1:** 1.2 **G2:** 1.7 **G3:** 1.1 **ICU admission:** NR **Anemia:** Pre-transfusion Hgb mmol/L mean,(median; range) **G1:** 4.3 (4.4; 3.5-5.3) **G2:** 4.4 (4.5; 3.7-5.0) **G3:** 4.3 (4.3; 3.5-5.3) Post-transfusion Hgb mean mmol/L **G1:** 5.7 **G2:** 6.1 **G3:** 5.6 **Median time from delivery to manual removal of the placenta** (excluding cases where placental tissue was retained for more than 8 hours): min (n, range): **G1:** 64 (11, 33-131) **G2:** 70 (13, 23-497) **G3:** 75 (13, 35-397) **Need for anesthetic support, n** **G1:** 18

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 2 (4) **G2:** 3 (5.8) **G3:** 1 (2.2) Placental abruption **G1:** 3 (6) **G2:** 2 (3.8) **G3:** 0	**G2:** 28 **G3:** 24 **Time from decision to perform surgery to commencement of the intervention** (for manual removal, exploration of the uterus, & uterine massage or compression, minutes (n, range): **G1:** 30 (15, 0-60) **G2:** 30 (17, 0-80) **G3:** 30 (14, 15-53.5) **Delay for laceration or paravaginal hematomas**, min (n, range): **G1:** 53.5 (2, 42-65) **G2:** 60 (6, 15-185) **G3:** 22.5 (6, 15-405) **Length of stay:** NR **Mortality:** NR **Uterine preservation:** NR **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** NR **Confounders:** NR **Effect modifiers:** NR

Table D-32. Evidence table for studies addressing management of PPH (Poujade 2012)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Poujade et al., 2012[37] **Country:** France **Enrollment period:** Jan 2007 to Nov 2009 **Birth setting:** Hospital **Facility characteristics:** Tertiary care? **Funding:** NR (Authors report no conflicts of interest) **Design:** Case series	**Intervention:** Emergency pelvic angiography and pelvic embolization for intractable PPH Prior to embolization women were treated with standard protocol including: Exam of uterine cavity and/or manual removal of placenta, manual compression, uterine massage. Ultrasound exam performed. IV oxytocin (10 IU during delivery and 10 IU diluted in 50 ml of 0,.9% sodium chloride solution infused up to 120 ml/min) If persistent atony, IV sulprostome (500 µg diluted in 50 ml 0.9% sodium chloride infused at rate 500 µg /hour and subsequently 500 µg at rate of 100 µg/hour In case of persistent PPH, pelvic angiography and pelvic arterial embolization In case of major PPH, uterine compression sutures and/or uterine or hypogastric artery ligation or stepwise uterine devascularization and ultimately hysterectomy **Groups:** **G1:** intervention **N at enrollment:** **G1:** 98 **G1a:** 90 success **G1b:** 8 failure **Duration of treatment:** NR	**Operational definition of PPH:** 1 or more of the following: peripartum Hgb ? of 4g/dL or more, hemodynamic instability, or hypovolemic shock **Definition of success of treatment:** cessation of hemorrhage with hemodynamic stability and absence of subsequent surgical procedure **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Women with PPH referred for emergency pelvic angiography and Uterine artery embolization **Exclusion criteria:** • NR **Maternal age, yrs, mean ± SD:** **G1a:** 32.3 ± 5.7 **G1b:** 31.2 ± 6.4 **Parity, n:** **G1a:** 2.1 ± 1.3 **G1b:** 2.1 ± 1.7 **Weeks gestation, mean ± SD:** **G1a:** 38.6 ± 3.1 **G1b:** 39.5 ± 1.1 **Twin pregnancy, n (%):** **G1a:** 6 (6.6) **G1b:** 0 **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR	**Harms pre-specified:** No **Harms, n (%):** Pulmonary edema with transfusion-associated circulatory overload **G1:** 1 (1) Uterine necrosis (diagnosed 21 days after embolization and requiring hysterectomy) **G1:** 1 (1) Endometritis **G1:** 11 (11.2) Wound infection **G1:** 1 (1)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	Timing of treatment: NR **Order of treatment:** NR **Length of follow-up:** As reported/NR	**SES:** NR **Mode of birth, n:** Vaginal **G1:** 45 (45.9) Instrumental extraction **G1:** 14 (14.2) Cesarean before labor **G1:** 28 (28.5) Emergency cesarean **G1:** 11 (11.2) **Risk factors, n (%):** History of ceasarean **G1a:** 12 (13.3) **G1b:** 1 (12.5) p = 0.93 Gestational diabetes mellitus **G1a:** 8 (8.8) **G1b:** 2 (25) p=0.14 Gestational hypertension **G1a:** 6 (6.6) **G1b:** 2(25) p=0.06 Preeclampsia **G1a:** 13 (14.4) **G1b:** 0 p=0.24 Labor induction **G1a:** 25 (27.7) **G1b:** 3 (37.5)	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		p= 0.64 Cervical or vaginal tear **G1a:** 25 (27.7) **G1b:** 3 (37.5) p = 0.80 Third or fourth degree perineal tear **G1a:** 3 (3.3) **G1b:** 0 p=0.56 Prolonged labor (second stage) **G1a:** 10 (11.1) **G1b:** 1 (12.5) p=0.75 **Primary etiology of PPH, n (%):** Atony **G1a:** 80 (88.8) **G1b:** 8 (100) p=0.65 Retained placenta **G1a:** 11 (12.2) **G1b:** 2 (25) p=0.71 Placenta accreta **G1a:** 4 (4.4) **G1b:** 3 (37.5) p = <.0005 Placenta previa **G1a:** 4 (4.4) **G1b:** 1 (12.5) p = .35 Lower genital tract lacerations **G1a:** 10 (11.1)	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1b: 3 (37.5) p = 0.11	

Table D-33. Evidence table for studies addressing management of PPH (Ducloy-Borthers 2011)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Ducloy-Borthers et al, 2011[38] **Country:** France **Enrollment period:** 2005 to 2008 **Birth setting:** 8 obstetric centers **Facility characteristics:** Tertiary care (n=5) and secondary care obstetric units (n=3) **Funding:** French Ministry of Health **Design:** RCT	**Intervention:** Tranexamic acid, 4 g mixed with 50 mL normal saline IV over an hour. After load dose infusion, maintenance infusion administered for 6 hours. **Groups:** **G1:** tranexamic acid **G2:** control **N at enrollment:** **G1:** 78 **G2:** 74 **N at follow-up (ITT):** **G1:** 77 **G2:** 74 **Duration of treatment:** 6 hours **Timing of treatment** **Order of treatment:** bladder catheter, manual removal of retained placenta, genital tract exam, uterine exploration, oxytocin 30 U/30 minutes. If these procedures inefficacious, sulprostone (500 µg in 1 hour) without any precoagulant treatment **Length of follow-up:** T1: inclusion T2: T1 + 30 minutes T3: T1 + 2 hours T4: T1 + 6 hours	**Operational definition of PPH:** All patients with PPH > 500 mL managed according to French practice guidelines. Study eligible: Vaginal delivery with PPH > 800 Ml within in 2 hours **Definition of success of treatment**: Reduction in blood loss **Method of blood loss measurement:** Under buttocks drape with a graduated collection pouch measured at 4 time points. Gauze was kept for weighing. **Severity: NR** **Inclusion criteria:** • PPH > 800 mL **Exclusion criteria:** • age < 18 years • absence of informed consent • caesarean section • presence of known hemostatic abnormalities before pregnancy • history of thrombosis or epilepsy **Maternal age, yrs, mean ± SD:** **G1:** 29 ± 4 **G2:** 28 ± 5 **Parity, primiparae n (%):** **G1:** 46 (64) **G2:** 50 (69) **Weeks gestation, mean ± SD:** **G1:** 39.5 ± 2 **G2:** 39.5 ± 1.8 **Twin pregnancy, n (%):** **G1:** 4 (6)	**Blood loss** Persistent bleeding at T2, n (%): **G1:** 28 (36) **G2:** 40 (54) p=0.03 Hemoglobin drop > 4 g/dl, n (%): **G1:** 19 (25) **G2:** 32 (43) p=0.02 **Transfusion**: PRBC transfusion before T4, n (%): **G1:** 10 (13) **G2:** 13 (18) p=0.17 PRBC units administered before T4, n: **G1:** 32 **G2:** 62 p=0.26 PRBC transfusion total through day 42, n (%): **G1:** 13 (17) **G2:** 20 (27) p=0.33 PRBC units administered through day 42, n (%): **G1:** 28 **G2:** 62 P< 0.0001 **ICU admission, n (%)** **G1: 3** (3.9) **G2:** 5 (6.7) p=1 **Arterial embolization, n (%)**

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G2: 3 (4) **Race/ethnicity** NR **BMI** Weight kg, mean ± SD: **G1:** 67 ± 16 **G2:** 65 ± 12 Height cm, mean ± SD: **G1:** 164 ± 5 **G2:** 165 ± 6 **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** Vaginal (100%) **Risk factors, n (%):** Abnormal placental insertion **G1:** 2 (3) **G2:** 3 (4) Instrumental delivery **G1:** 7 (9) **G2:** 10 (14) Oxytocin for labor induction **G1:** 9 (12) **G2:** 12 (17) Mean labor duration, hours **G1:** 6 ± 3 **G2:** 6 ± 3 Epidural analgesia	**G1: 5** (6.8) **G2:** 5.1 (6.1) p=1 Uterine preservation Surgical arterial ligature or hysterectomy, n (%) **G1:** 0 **G2:** 2 (2.7) p=0.24 Late postpartum curettage, n (%) **G1:** 1 (1.3) **G2:** 2 (2.7) p=1 Any vasopressor, n (%) **G1:** 4 (5.2) **G2:** 4 (5.4) p=1 Mild dyspnea, n (%) **G1:** 0 **G2:** 1 (1.3) p=1 Multiple organ failure, n (%) **G1:** 0 **G2:** 0 p=1 **Anemia:** NR **Length of stay:** NR **Mortality:** NR **Future fertility:** NR **Breastfeeding:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 59 (82) **G2:** 61 (84) Abnormal placental insertion **G1:** 2 (3) **G2:** 3 (4) **Primary etiology of PPH, n (%):** Atony **G1:** 54 (75) **G2:** 50 (69)	**Psychological impact:** NR Harms of intervention **Severe side effects:** Deep vein thrombosis, n (%) **G1:** 2 (3) **G2:** 1 (1) p=0.4 Renal failure, n (%) **G1:** 0 **G2:** 0 Mean T4 urea, g/l ± SD **G1:** 0.17 ± 0.06 **G2:** 0.2 ± 0.1 p=0.9 Mean T4 creatininemia, mg/l ± SD **G1:** 6.3 ± 1.8 **G2:** 6.4 ± 1.7 p= 0.79 Mean T4 diuresis, ml ± SD **G1:** 1,058 ± 1,010 **G2:** 882 ± 480 p=0.25 Seizures, n (%) **G1:** 0 **G2:** 0 Maternal death, n (%) **G1:** 0 **G2:** 0 Non severe side effects Nausea/vomiting, n (%)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
			G1: 12 (15) **G2:** 1 (2) p=0.002 Phosphenes, n (%) **G1:** 9 (12) **G2:** 2 (3) p=0.02 Dizziness, n (%) **G1:** 4 (5) **G2:** 3 (4) P=0.28 Total non severe adverse events, n (%) **G1:** 18 (23) **G2:** 4 (6) P=0.03 **Confounders:** NR **Effect modifiers:** NR

Table D-34. Evidence table for studies addressing management of PPH (Dupont 2011)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Dupont et al., 2011[4] **Country:** France **Enrollment period:** 2005 to 2008 **Birth setting:** Hospital **Facility characteristics:** One level 3 University hospital and one level 2 hospital **Funding:** French Ministry of Health under its Clinical Research Hospital Program **Design:** Pre-post systems level	**Intervention:** Quarterly clinical audit meetings; team of reviewers analyzed all cases of severe PPH and provided feedback on quality of care and where all staff actively participated **Groups:** **G1:** Severe PPH, year 2005 **G1a:** Level II Unit; 2005 **G1b:** Level III Unit; 2005 **G2:** Severe PPH, year 2008 **G2a:** Level II Unit; 2008 **G2b:** Level III Unit; 2008 **N at enrollment:** **G1a:** 32 **G1b:** 45 **G2b:** 11 **G2b:** 31 **N at follow-up:** NA **Duration of treatment:** NA **Timing of treatment:** NA **Order of treatment:** 1 Examination of the uterine cavity and/or manual removal of the placenta within 15 minutes of the PPH diagnosis 2 Call for additional staff and instrumental examination of the vagina and cervix 3 Intravenous administration of oxytocin 4 If PPH persisted and was due to uterine atony, intravenous administration of sulprostone within 30	**Operational definition of PPH:** Severe PPH was defined as a PPH associated with one or more of the following: blood transfusion, arterial embolization, arterial ligation, other conservative uterine surgery, hysterectomy, transfer to an intensive care unit, peripartum haemoglobin drop of 4 g/dl or more, or maternal death. **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** see definition above **Inclusion criteria:** • Severe PPH **Exclusion criteria:** • Women with transfusion during the postpartum period but not clinically diagnosed with PPH **Maternal age:** NR **Parity:** NR **Weeks gestation, n (%):** NR **Single pregnancy, n (%):** NR **Multiple pregnancy, n (%):** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **Mode of birth, n:** Vaginal delivery **G1a:** 21	**Rates of Severe PPH (2005 vs. 2008), n (%):** Level II Unit: **G1a:** 32 (2.1) **G2a:** 11 (.6) **G1a vs G2a:** p <0.01 Level III Unit: **G1b:** 45 (1.5) **G2b:** 31 (1.0) **G1b vs G2b:** p= 0.05 **Confounders:** NR **Effect modifiers:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	min of the initial diagnosis **Length of follow-up:** NR	**G2a:** 8 **G1b:**27 **G2b:** 9 Cesarean delivery **G1a:**11 **G2a:** 3 **G1b:** 18 **G2b:** 22 **Risk factors:** Previous cesarean delivery Multiple pregnancy Placenta praevia or accreta Mode of delivery: Cesarean Mode of delivery: Instrumental vaginal delivery Foetal macrosomia (baby's weight >4000 g) Postpartum hemorrhage **Primary etiology of PPH, n (%):** Uterine Atony **G1:** 56/77 (72.7) **G2:** 25/42 97 (59.5)	

Comments: Risk factors presented for all births in the time period (not the subset with severe PPH)

Table D-35. Evidence table for studies addressing management of PPH (Gayat 2011)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Gayat et al., 2011[39] **Country:** France **Enrollment period:** Phase 1: January 1, 2004 – December 31, 2005 Phase 2 - 2007 **Birth setting:** Phase 1 – referral hospital Phase 2 – 7 referral centers (including center from Phase 1) **Facility characteristics:** Tertiary care **Funding:** NR **Design:** Phase 1 – retrospective cohort (using algorithm Phase 2 – Severe PPH (SPPH) score validation	**Intervention:** **Phase 1** Intervention: advanced interventional procedure (AIP) defined as uterine artery embolization, intraabdominal packing, arterial ligation or hysterectomy for suspected persistent active bleeding **Groups:** Phase 1: **G1:** AIP **G2:** medical management (after initial evaluation, bleeding was considered non-active) Phase 2: **G1:** AIP **G2:** medical management **N at enrollment:** Phase 1 **G1:** 110 **G2:** 147 Phase 2 (n = 237): **G1:** NR **G2:** NR **N at follow-up:** NR **Duration of treatment:** NR **Timing of treatment:** NR **Treatment detail, n** Embolization only **G1:** 85 Open surgery only **G1:** 14	**Operational definition of PPH:** NR **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Inclusion criteria:** • any parturient patient admitted and registered with a main diagnosis. PPH was coded as ''postpartum complication'' and ''haemorrhagic shock'' or ''acute anaemia'' or ''shock'' • Same inclusion criteria for Phase 1 and Phase 2, just different enrollment time periods **Exclusion criteria:** NR **Maternal age, yrs, median (1st to 3rd quartile):** **G1:** 32 (30-36) **G2:** 31 (27-35) **G1 vs G2:** p= 0.02 **Parity, n (%):** First delivery **G1:** 45 (41) **G2:** 72 (49) **G1 vs G2:** p = ns First pregnancy **G1:** 32 (29) **G2:** 57 (39) **G1 vs G2:** p = ns **Weeks gestation, median (1st – 3rd quartile):** **G1:** 39 (37-40) **G2:** 39 (38-40) **G1 vs G2:** p= 0.04 **Single pregnancy:** NR **Multiple pregnancy (twins), n (%):**	**Phase 1 Outcomes** (identifying factors predictive of severe postpartum hemorrhage requiring an advanced interventional procedure) **Blood loss:** NR **Transfusion:** NR **ICU admission:** **G1:** 31 (28) **G2:** 6 (4) **G1 vs G2:** p < 0.0001 **Anemia:** NR (only reported on admission not post intervention) **Length of stay in ICU, days, mean (IQR):** **G1:** 3.2 (2.3 – 6.2) **G2:** 1 (0.7 – 2.1) **G1 vs G2:** P < 0.0001 **Mortality, n (%):** **G1:** 2 (2) One death from amniotic fluid embolism and one from refractory hemorrhagic shock **G2:** 0 (0) **G1 vs G2:** p=ns **Uterine preservation:** NR **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	Combined embolization and surgery **G1:** 11 **Length of follow-up:** NR	**G1:** 8 (7) **G2:** 7(6) **G1 vs G2:** p = ns **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin, median (1st – 3rd quartile):** **G1:** 8.7 (7.0 – 9.9) **G2:** 9.5 (8.2 – 10.6) **G1 vs G2:** p= 0.001 **Mode of birth, n (%):** Cesarean **G1:** 45 (35) **G2:** 37 (25) **G1 vs G2:** p=ns **Risk factors, n (%):** Prior PPH **G1:** 2 (2) **G2:** 6 (4) **G1 vs G2:** p=ns Labor induction/augmentation **G1:** 12 (13) **G2:** 37 (25) **G1 vs G2:** p= 0.03 Fibroids **G1:** 3 (3) **G2:** 9 (6) **G1 vs G2:** p=ns Preeclampsia **G1:** 12 (12) **G2:** 18 (12) **G1 vs G2:** p=ns	**Independent factors predicting the need for advanced interventional procedure:** Abnormalities of placental implantation Prothrombin time < 50% HR > 115 bpm Fibrinogen < 2 g/l Troponin I detectable **Phase 2 Outcomes** The SPPH score was established and d each of the five predictive factors with a value of 0 or 1 when absent or present on admission, respectively, with the total ranging from 0 to 5. Area under the curve (AUC): Global validation cohort: 0.83 Primary center: 0.83 Referral centers: 0.82 Sensitivity, specificity, and positive and negative predictive values were 0.91, 0.58, 0.62 and 0.90 for SPPH scores C1, and 0.62, 0.85, 0.76 and 0.76 for SPPH scores C2 in the multicentre validation cohort.

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Prolonged labor; labor duration, hours (mean, 1st – 3rd quartiles) **G1:** 4 (2-6) **G2:** 6 (4-8) **G1 vs G2:** p= 0.02 **Primary etiology of PPH, n (%):** Atony **G1:** 69 (61) **G2:** 109 (74) Genital Tract Laceration **G1:** 22 (20) **G2:** 34 (23) Abnormalities of placentation **G1:** 16 (14) **G2:** 4 (3) Uterine rupture **G1:** 3 (3) **G2:** 0 (0)	

Table D-36. Evidence table for studies addressing management of PPH (Kayem 2011a)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Kayem et al., 2011[40] **Country:** UK **Enrollment period:** September 2007 to March 2009 **Birth setting:** Consultant-led maternity units **Facility characteristics:** NR **Funding:** Wellbeing of Women. AXA Research Fund. National Coordinating Centre for Research Capacity Development of the National Institute for Health Research. Policy Research	**Intervention:** Uterine compression sutures Pelvic vessel ligation Interventional radiological techniques Recombinant factor VIIa (rFVIIa) **Groups:** **G1:** Uterine compression sutures **G2:** Pelvic vessel ligation **G3:** Interventional radiological techniques **G4:** Recombinant factor VIIa (rFVIIa) **N at enrollment:** **G1:** 199 **G2:** 20 **G3:** 22 **G4:** 31 **N at follow-up:** NR **Duration of treatment:** NR **Timing of treatment :** NR **Order of treatment:** NR **Length of follow-up:** NR **Primary treatment of women managed with different second-line therapies, n (%):** Uterotonic prophylaxis **G1:** 195 (98) **G2:** 20 (100)	**Operational definition of PPH:** NR **Definition of success of treatment**: No requirement for either a further therapy to treat PPH or hysterectomy **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Woman giving birth and undergoing treatment for PPH with the following procedures: uterine compression sutures, rFVIIa, interventional radiology including intra-arterial balloon occlusion and arterial embolization or pelvic vessel ligation during the study period. **Exclusion criteria:** • Women who had a PPH treated successfully by intra-uterine balloon tamponade, and who were not managed with any of the other therapies **Maternal age, yrs, n (%):** <35 **G1:** 128 (64) **G2:** 12 (60) **G3:** 12 (55) **G4:** 21 (68) ≥35 **G1:** 71 (36) **G2:** 8 (40) **G3:** 10 (45)	**Blood loss:** NR **Transfusion, n (%):** Red cells **G1:** 168 (87) **G2:** 19 (95) **G3:** 21 (95) **G4:** 30 (100) Fresh frozen plasma **G1:** 124 (66) **G2:** 17 (85) **G3:** 16 (73) **G4:** 30 (100) Platelets **G1:** 65 (35) **G2:** 13 (65) **G3:** 9 (41) **G4:** 24 (80) Cryoprecipitate **G1:** 47 (26) **G2:** 11 (55) **G3:** 6 (29) **G4:** 24 (80) **Success rates, n (%), 95% CI:** After Uterotonic only, n=205 **G1:** 120 (75), 67-81 **G2:** 5 (36), 13-65 **G3:** 12 (86), 57-98 **G4:** 5 (31), 11-59 After failure of intrauterine tamponade, n=67 **G1:** 20 (53), 36–69 **G2:** 1 (17), 0–64 **G3:** 7 (87), 47–100 **G4:** 4 (27), 8–55

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Programme in the Department of Health part funded UKOSS (Independent study from which this paper reports) **Design:** Prospective cohort study Note: See related study, Kayem 2011[41]	**G3:** 22 (100) **G4:** 30 (97) **Primary uterotonic treatments:** Oxytocin **G1:** 195 (98) **G2:** 16 (80) **G3:** 18 (82) **G4:** 28 (90) Ergometrine **G1:** 106 (53) **G2:** 6 (30) **G3:** 6 (27) **G4:** 11 (35) Misoprostol **G1:** 127 (64) **G2:** 8 (40) **G3:** 9 (41) **G4:** 18 (58) Carboprost **G1:** 142 (71) **G2:** 12 (60) **G3:** 11 (50) **G4:** 17 (55) **Uterine balloon or packing before second-line therapy procedure** **G1:** 38 (19) **G2:** 6 (30) **G3:** 8 (36)	**G4:** 10 (32) **Parity, n (%):** Nulliparous **G1:** 92 (46) **G2:** 3 (15) **G3:** 6 (27) **G4:** 9 (29) Multiparous **G1:** 107 (54) **G2:** 17 (85) **G3:** 16 (73) **G4:** 22 (71) **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy, n (%):** **G1:** 19 (10) **G2:** 1 (5) **G3:** 1 (5) **G4:** 0 **Race/ethnicity:** NR **BMI (kg/m2), n (%):** **<30** **G1:** 149 (80) **G2:** 15 (79) **G3:** 12 (71) **G4:** 25 (89)	**Additional treatment, n (%), 95% CI:** After Uterotonic only **G1:** 16 (10), 6–16 **G2:** 7 (50), 23–77 **G3:** 0 (0), 0–23 **G4:** 4 (25), 7–52 After failure of intrauterine tamponade **G1:** 10 (26), 13–43 **G2:** 5 (83), 36–100 **G3:** 1 (12), 0–53 **G4:** 4 (27), 8–55 **Uterine preservation, total n (%), 95% CI:** Hysterectomy after Uterotonic only **G1:** 32 (20), 14-27 **G2:** 6 (43), 18-71 **G3:** 2 (14), 0-43 **G4:** 7(44), 20-70 Hysterectomy after failure of intrauterine tamponade **G1:** 14 (37), 22–54 **G2:** 3 (50), 12–88 **G3:** 0 (0), 0–37 **G4:** 7 (47), 21–73 **ICU admission:** NR **Anemia:** NR **Length of stay:** NR **Mortality, total n:** 0 **Future fertility:** NR **Breastfeeding:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	G4: 15 (48)	**≥30** **G1:** 37 (20) **G2:** 4 (21) **G3:** 5 (29) **G4:** 3 (11) **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n (%):** Vaginal birth **G1:** 17 (9) **G2:** 3 (15) **G3:** 7 (32) **G4:** 15 (48) Caesarean section during labour **G1:** 96 (48) **G2:** 5 (25) **G3:** 4 (18) **G4:** 5 (16) Caesarean section before labour **G1:** 86 (43) **G2:** 12 (60) **G3:** 11 (50) **G4:** 11 (35) **Risk factors, n (%):** History of cesarean: **G1:** 57 (29) **G2:** 9 (45) **G3:** 11 (50)	**Psychological impact:** NR **Harms of intervention, total n:** Acute Respiratory Syndrome 5 Pulmonary oedema 11 Cardiac arrest 5 Other 6 **Confounders:** NR **Effect modifiers:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G4: 11 (35) Previous uterine surgery: **G1:** 33 (17) **G2:** 4 (20) **G3:** 1 (5) **G4:** 5 (17) Placenta praevia diagnosed before labour: **G1:** 19 (10) **G2:** 4 (20) **G3:** 8 (36) **G4:** 6 (19) Placenta accreta suspected before labour: **G1:** 3 (2) **G2:** 1 (5) **G3:** 4 (18) **G4:** 2 (6) Multiple gestation **G1:** 19 (10) **G2:** 1 (5) **G3:** 1 (5) **G4:** 0 Induction of labour: Yes **G1:** 53 (27) **G2:** 1 (5) **G3:** 3 (14) **G4:** 13 (42)	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		No **G1:** 146 (73) **G2:** 19 (95) **G3:** 19 (83) **G4:** 18 (58) Use of oxytocin during labour: Yes **G1:** 57 (51) **G2:** 2 (25) **G3:** 3 (27) **G4:** 8 (40) No **G1:** 54 (48) **G2:** 6 (75) **G3:** 8 (73) **G4:** 12 (60) **Primary etiology of PPH, n (%):** Atony **G1:** 126 (63) **G2:** 5 (25) **G3:** 2 (9) **G4:** 13 (42) Placenta accreta **G1:** 17 (9) **G2:** 1 (5) **G3:** 4 (18) **G4:** 4 (13) Placenta previa without accreta **G1:** 13 (7)	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G2: 4 (20) **G3:** 4 (18) **G4:** 3 (10) Uterine tear **G1:** 22 (11) **G2:** 6 (30) **G3:** 3 (14) **G4:** 3 (10) Other **G1:** 21 (11) **G2:** 4 (20) **G3:** 9 (41) **G4:** 8 (26) Disseminated intravascular coagulation **G1:** 24 (12) **G2:** 3 (15) **G3:** 3 (14) **G4:** 12 (39)	

Table D-37. Evidence table for studies addressing management of PPH (Kayem 2011b)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Kayem et al., 2011[41] **Country:** UK **Enrollment period:** September 2007 to March 2009 **Birth setting:** Consultant-led maternity units **Facility characteristics:** NR **Funding:** Wellbeing of Women. AXA Research Fund. National Coordinating Centre for Research Capacity Development of the National Institute for Health Research. Policy Research Programme in the Department of Health part funded UKOSS (Independent study from which	**Intervention:** Uterine compression suture Uterine compression suture followed by hysterectomy **Groups:** **G1:** Uterine compression suture **G1a:** Uterine compression suture only **G1b:** Uterine compression suture followed by hysterectomy **N at enrollment:** **G1:** 211 **G1a:** 159 **G1b:** 52 **N at follow-up:** NR **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR **Number of Women Treated With Specific Uterine Compression Sutures, n (%):** B-Lynch **G1:** 79 (37) Modified B-Lynch **G1:** 48 (23) Other **G1:**32 (15) Unspecified	**Operational definition of PPH:** NR **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • All women in whom uterine compression sutures were used to treat a postpartum hemorrhage from the entire cohort of U.K. births during the study period **Exclusion criteria:** NR **Maternal age, yrs, n (%), OR (95% CI):** <35 **G1a:** 106(80), **G1b:** 26 (20) P=1 ≥35 **G1a:** 53 (67) **G1b:** 26(33) 2.00 (1.06–3.78) **Parity, n (%), OR (95% CI):** Nulliparous **G1a:** 81 (86) **G1b:** 13 (14) P=1 Multiparous **G1a:** 78 (67) **G1b:** 39 (33) 3.12 (1.55–6.28) **Weeks gestation:** NR	**Blood loss:** NR **Transfusion:** NR **ICU admission:** NR **Anemia:** NR **Length of stay:** NR **Mortality:** NR **Uterine preservation:** Hysterectomies after specific uterine compression sutures, n (% [95% confidence interval]): B-Lynch **G1b:** 19 (24 [15–35]) Modified B-Lynch **G1b:** 17 (35 [22–51]) Other **G1b:** 4 (13 [4–29]) Unspecified **G1b:** 12 (23 [12–37]) Any suture **G1b:** 52 (25 [19–31]) **Rate of failure leading to hysterectomy,%:** ≥ 35yrs, 33 <35 yrs, 20 Multiparous, 33 Nulliparous, 14

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
this paper reports) **Design:** Population-based case series Note: See related study, Kayem 2011[40]	**G1:** 52 (25) Any suture **G1:** 211 (100) **Other treatment, n (%):** Uterine balloon or packing before uterine compression suture: Yes **G1a:** 45 (68) **G1b:** 21 (32) No **G1a:** 114 (80) **G1b:** 28 (20) Uterine balloon or packing after uterine compression suture: **G1:** 25 (38) Arterial embolization or ligation before Uterine compression suture **:** **G1:** 10 (5) Recombinant factor VIIa before Uterine compression suture**:** **G1:** 2 (1) Arterial embolization or ligation after Uterine compression suture **:** **G1:** 18 (9) Recombinant factor VIIa Uterine after compression suture**:** **G1:** 9 (4)	**Single pregnancy:** NR **Multiple pregnancy, n (%), OR (95% CI):** Yes **G1a:** 15 (75) **G1b:** 5 (25) 1.02 (0.35–2.96) No **G1a:** 144 (74) **G1b:** 47 (26) 1 **Race/ethnicity, n (%), OR (95% CI):** White **G1a:** 122 (75) **G1b:** 40 (25) 1 Black or other ethnic minority Groups **G1a:** 37 (76) **G1b:** 12 (24) 0.99 (0.47–2.08) **Socioeconomic group, n (%), OR (95% CI):** Managerial **G1a:** 48 (83) **G1b:** 10 (17) 1 Unemployed or nonmanagerial **G1a:** 81 (72) **G1b:** 32 (28) 1.90 (0.86–4.20) **BMI (kg/m^2), n (%), OR (95% CI):** <30	Unemployed and routine or manual occupational groups, 28 Managerial or professional Groups, 17 Vaginal delivery, 47 Cesarean delivery group, 22 Delay from delivery to uterine suture compression: 2-6hrs, 42 <1hr, 16 **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** NR **Confounders:** NR **Effect modifiers:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1a: 124 (75) **G1b:** 41 (25) 1 ≥30 **G1a:** 28 (85) **G1b:** 5 (15) 0.54 (0.20–1.49) **Smoking status, n (%), OR (95% CI):** Never or exsmoker **G1a:** 131 (75) **G1b:** 44 (25) 1 Smoked during pregnancy **G1a:** 27 (87) **G1b:** 4 (13) 0.44 (0.15–1.33) **Baseline hemoglobin:** NR **Mode of birth, n, OR (95% CI):** Vaginal **G1a:** 10 (53) **G1b:** 9 (47) 3.12 (1.04–9.10) Cesarean **G1a:** 149 (78) **G1b:** 43 (22) 1 **Risk factors, n (%), OR (95% CI):** Multiparity: **G1a:** 78 (67) **G1b:** 39 (33) Race/ethnicity:	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		White **G1a:** 122 (75) **G1b:** 40 (25) 1 Black or other ethnic minority Groups **G1a:** 37 (76) **G1b:** 12 (24) 0.99 (0.47–2.08) History of cesarean: Yes **G1a:** 23 (64) **G1b:** 13 (36) 2.09 (1.07–4.07) No **G1a:** 136 (78) **G1b:** 38 (22) 1 **Primary etiology of PPH, n (%) or n(% [95% CI]):** Atony: **G1:** 129 (61) **G1a:** 96 (74) **G1b:** 33 (26 [18–34]) Uterine tear **G1:** 27 (13) **G1a:** 18 (67) **G1b:** 9 (33 [17–54]) Placenta accreta: **G1:** 18 (9) **G1a:** 11 (61) **G1b:** 7 (39 [17–64]) Placenta previa without accreta:	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 15 (7) **G1a:** 13 (87) **G1b:** 2 (13 [2–40]) Others (Placental abruption, Amniotic fluid embolism, infection, bleeding in left broad ligament and unspecified): **G1:** 22 (10) **G1a:** 21 (95) **G1b:** 1 (5 [0–23])	

Comments: G1b = number of women who had a uterine compression suture who subsequently had a hysterectomy (G1b is a subset of G1)

Table D-38. Evidence table for studies addressing management of PPH (Palacios-Jaraquemada 2011)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Palacios-Jaraquemada, 2011[42] **Country:** Argentina **Enrollment period:** August 1989 to Dec 2009 **Birth setting:** Hospital **Facility characteristics:** 12 sites (single practitioner) **Funding:** None (No conflict of interest) **Design:** Case series	**Intervention:** Surgical interventions including selective arterial ligation and compression procedures: (a) Bilateral uterine artery ligation; (b) selective ligation of pelvic subperitoneal pedicles; (c) B-Lynch procedure; (d) Hayman's procedure; (e) Cho's procedure; (f) Pereira's procedure **Groups:** **G1:** intervention **N at enrollment:** **G1:** 539 (541 were initially presented, but 2 died prior to intervention) **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** 6-12 months for 404/501 women who retained their uterus)	**Operational definition of PPH:** NR **Definition of success of treatment:** Control of uterine bleeding; accurate hemostasis was defined as complete cessagtion of bleeding after the use of a specific surgical hemostatic technique **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** NR **Exclusion criteria:** NR **Maternal age, yrs, mean ± SD:** NR **Parity:** NR **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth:** NR **Risk factors:** NR **Primary etiology of PPH, n (%):** Atony **G1:** 114 (21.1)	**Blood loss:** Accurate hemostasis **G1:** 499 (93%) **Transfusion:** NR **ICU admission:** NR **Anemia:** NR **Length of stay:** NR **Mortality:** Multi-organ failue after massive transfusion **G1:** 2 **Uterine preservation:** Hysterectomy **G1:** 40 **Future fertility:** Spontaneous successful pregnancy **G1:** 116 **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** NR **Confounders:** NR **Effect modifiers:** NR **Harms pre-specified:** No **Harms, n:** **G1:** 541 Postsurgical bleeding

		Placenta accrete **G1:** 361 (67.0) Cervical scar pregnancy **G1:** 19 (3.5) Placenta previa **G1:** 21 (3.9) Uterine-cervical-vaginal tears **G1:** 24 (4.5)	**G1:** 9 Inadvertent ligation of uterus **G1:** 5 Postpartum hypophysiary necrosis (Sheehan's syndrome) **G1:** 2 Uterine necrosis **G1:** 1 Endometrial adhesions **G1:** 3/100 followed up by hysteroscopy

Table D-39. Evidence table for studies addressing management of PPH (Schmitz 2011)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Schmitz et al., 2011 [20] **Country:** France **Enrollment period:** NR **Birth setting:** As reported/NR **Facility characteristics:** Hospitals (public, private and university-based) within 6 perinatal networks **Funding:** French Ministry of Health's Clinical research Hospital Program (contract 27-35) **Design:** Population-based case series Note: See related studies Bonnett 2013[18], Deneux-Tharaux 2010[19]	**Intervention:** Sulprostone administration after Dx of PPH **Groups:** **G1:** atonic PPH post-delivery treated with sulprostone **G1a:** atonic PPH after vaginal delivery treated with sulprostone **G1b:** atonic PPH after cesarean delivery treated with sulprostone **N at enrollment:** (4038 women with clinically assessed atonic PPH) (%) **G1 (total of a +b):** 1370/4038 (33.9) **G1a:** 995/3570 (27.9) **G1b:** 375/468 (80.1) **N at follow-up:** **G1 (total of a +b):** 1370 **G1a:** 995 **G1b:** 375 **Duration of treatment:** NR **Timing of treatment:** Per the French guidelines, continuous intravenous infusion of sulprostone not later than 30 min after PPH Dx. (see Driessen article for details) **Order of treatment:** **Step 1:** administration of oxytocin and/or ergometrine **Step 2:** administration of prostaglandins (sulprostone) **Step 3:** embolization, conservative surgery, hysterectomy Total dose of sulprostone,	**Operational definition of PPH:** Biologically defined: peripartum hemoglobin decline of > 2 g/dL (equivalent of blood loss of >500 mL) Clinically defined: blood loss of > 500 mL or excessive blood loss that motivated manual removal of placenta and/or examination of uterine cavity. Severe PPH defined as PPH with blood transfusion, arterial embolization, arterial ligation, other conservative uterine surgery, hysterectomy, transfer to ICU, peripartum Hb decline ≥ 4 g/dL (blood loss ≥ 1000 mL) **Definition of success of treatment:** NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Women with PH selected from the Pithagore6 trial population (see Driessen, 2011, PMID: 21173641 • for details) **Exclusion criteria:** • Pts with PPH with no excessive bleeding and who did not receive specific care for PPH **Maternal age:** NR **Parity:** NR **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR	**Severity of blood loss:** Hemoglobin decrease (g/dL), mean (1st quartile – 3rd quartile): **G1a:** 3.4 (2.1 – 4.7) **G1b:** 3.5 (2.3 – 4.5) p=0.41 Hemoglobin decrease ≥ 4 g/dL, n (%): **G1a:** 360/995 (36.2) **G1b:** 140/375 (37.3) p=0.97 Red cell transfusion, n (%), mean # units (min, max): **G1a:** 202/995 (20.3), 4.8 (1, 31) **G1b:** 124/375 (33.1), 4.4 (1, 17) *p<0.01, p=0.43* Hysterectomy, n (%): **G1a**: 29/995 (2.9) **G1b:** 14/375 (3.7) p=0.61 Any of the 3rd line treatments (embolization, conservative surgery or hysterectomy), mean (%): **G1a:** 129/995 (13.0) **G1b:** 98/375 (26.1) p<0.01 Women not requiring additional treatment beyond sulprostone to control bleeding, n (%): **G1a:** 866/995 (87) **G2b:** 277/375 (73) Overall, 83.4% of the 1370 sulprostone recipients did not require additional treatment. **ICU admission:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	micrograms, (mean ± SD): **G1a:** 964 (837±343) **G1b:** 370 (943 ± 359) p<0.01 **Initial Care, n (%):** Examination of uterine cavity: **G1a:** 947/995 (69.1) **G1b:** NA Instrumental examination of genital tract: **G1a:** 681/995 (68.4) **G1b:** NA Prophylactic oxytocin: **G1a:** 696/995 (69.9) **G1b:** 357/375 (95.2) p<0.01 Oxytocin: **G1a:** 942/995 (94.7) **G1b:** 355/375 (94.7) p=0.78 Vascular volume expansion: **G1a:** 475/995 (47.7) **G1b:** 178/375 (47.5) p=0.46 **Length of follow-up:** As reported/NR	**Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** **G1a:** vaginal delivery (995) **G1b:** cesarean delivery (468) **Risk factors:** NR **Primary etiology of PPH, n (%):** Atony (100)	**Anemia:** NR **Length of stay:** NR **Mortality:** NR **Uterine preservation:** NR **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Confounders:** NR **Effect modifiers:** NR **Harms prespecified:** No **Harms, n (%):** ≥ side effects of sulprostone: **G1:** 51/1370 (3.7) (95% CI: 2.7 to 4.7) Digestive side effects: **G1:** 34/1370 (2.5) (95% CI: 1.7 to 3.5) Hyperthermia, chills: **G1:** 7/1370 (0.5) (95% CI: 0.2 to 1.0) Cardiac side effects : **G1:** 5/1370 (0.4) (95% CI: 0.1 to 0.8) High blood pressure: **G1:** 2/1370 (0.1) (95% CI: 0.02 to 0.5) Respiratory side effects: **G1:** 2/1370 (0.1) (95% CI: 0.02 to 0.5)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
			Dizziness: **G1:** 2/1370 (0.1) (95% CI: 0.02 to 0.5) Severe cardiovascular or respiratory symptoms (including acute high blood pressure and acute cyanosis) : **G1:** 7/1370 (0.5) (95% CI: 0.2 to 1.0)

Table D-40. Evidence table for studies addressing management of PPH (Shields 2011)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Shields et al., 2011[13] **Country:** US **Enrollment period:** Protocol Development: November 2008-January 2009 Educational Phase: February – April 2009 Protocol Implementation: May 2009 Enrollment period varied for different aspects of maternal hemorrhage protocol: <u>(1) Reduction in severity of hemorrhage</u>: • 4 mo prior to protocol (control) • 12 mo after protocol (intervention) divided into 3 4-month periods	**Intervention:** Maternal Hemorrhage Protocol Algorithms for Stages 0-3 <u>Stage 0</u> – normal intrapartum and postpartum course <u>Stage 1</u> – Bleeding greater than expected for normal delivery (>500ml vaginal, > 1000mL cesarean) <u>Stage 2</u> – Bleeding not responsive to conservative management <u>Stage 3</u> – Continued bleeding with actual or expected blood loss >1500mL **Groups:** **G1:** post-protocol **G2:** control/pre-protocol **N at enrollment:** N = 5813 deliveries during study period (doesn't specify which study period or give dates) **(1) Reduction in severity of hemorrhage, N:** **G1 :** 2874 deliveries **G2:** 985 deliveries **(2) More aggressive mgmt. and use of blood products:** **G1:** 2874 deliveries **G2:** 2939 deliveries **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** Algorithms for Stages 0-3 for order of treatment	**Operational definition of PPH:** Bleeding greater than expected for normal delivery (>500mL vaginal, >1000mL cesarean) **Definition of success of treatment**: Patients requiring less intervention for treatment of PPH (1) facilitate early intervention (2) Reduction in number of blood product units used (3) decrease DIC **Method of blood loss measurement:** Weighing all lap sponges, bedware if needed, and fluid in collection systems Subtraction of non-blood fluid in collection systems Changed bedding after delivery to reduce risk of amniotic fluid contamination **Severity:** Stage 0 - normal Stage 1: Bleeding greater than expected for normal delivery Stage 2: bleeding not responsive to conservative management (uterine massage, uterotonics) Stage 3: bleeding not responsive to additional measures (tamponade, D&C, laceration repair, compression sutures) **Inclusion criteria:** • NR • ASSUMED to be: admitted to L&D unit at the hospital ("protocol was initiated at the time of admission") **Exclusion criteria:** NR **Maternal age:** NR **Parity:** NR **Weeks gestation:** NR **Single pregnancy:** NR	**Blood loss:** Overall hemorrhage rate was 3.6% (Stages 1-3) Hemorrhage rate for Stages 2-3 combined was 1.5% **Transfusion, n** Average number of blood products used per month: **G1:** (12 mo post protocol): 6.3 **G2:** (12 mo pre protocol): 16.7 $p < 0.01$ **ICU admission:** NR **Anemia:** NR **Length of stay:** NR **Mortality:** NR **Uterine preservation:** NR **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** NR **Confounders:** NR **Effect modifiers:** NR **OTHER OUTCOMES:** **DIC**: Rate of DIC was reduced 64% in the 12 mo post protocol period (doesn't report how long

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
(post-period 1, 2, 3) (2) Aggressive mgmt. and liberal use of blood products • Preprotocol (12 months prior to protocol and training) • Postprotocol (12 months after protocol) (3) Staff and physician survey on perceptions Pre and post protocol **Birth setting:** hospital **Facility characteristics:** Tertiary care **Funding:** NR **Design:** Systems level intervention See related study Shields 2014[12]	**Length of follow-up:** NR	**Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** NR **Risk factors:** NR **Primary etiology of PPH:** NR	the pre-protocol period was for this comparison or give raw data, or the definition of DIC). p = 0.06 **Staff and physician survey:** "Significant shift in low levels of comfort to being most comfortable/confident in hemorrhage situations and team communications" Physicians p < 0.01 Nursing staff p < 0.01 (No raw data given) **Systems level outcomes:** • Number of patients treated at either stage 1 or 2: no difference pre vs post protocol (raw data and P value not given) • Number of patients successfully treated at each stage Stage 1 **G2:** (pre-protocol): 22 (35%) **G1a:** (post protocol 1): 25 (51%) **G1b:** (post protocol 2): 27 (69%) **G1c:** (post protocol 3): 49 (82%) p = 0.02 (more patients treated at Stage 1 after institution of protocol, which translates into less blood loss) • Stage 2 **G2:** (pre protocol): 33 (53%) **G1a:** (post protocol 1): 22 (45%) **G1b:** (post protocol 2): 7 (18%)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
			G1c: (post protocol 3): 5 (8%) p = 0.02 (fewer patients treated at stage 2 after institution of protocol) • Stage 3 **G2:** (pre-protocol): 7 (11%) **G1a:** (post protocol 1): 2 (4%) **G1b:** (post protocol 2): 5 (13%) **G1c:** (post protocol 3): 6 (10%) p = non-significant but actual P value NR

Table D-41. Evidence table for studies addressing management of PPH (Sentilhes 2011a)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Sentilhes et al., 2011[43] **Country:** France **Enrollment period:** May 1994 to July 2007 **Birth setting:** NR **Facility characteristics:** University-affiliated tertiary referral center **Funding:** NR **Design:** Retrospective case series See related studies, Sentilhes 2009[44, 45]	**Intervention:** Pelvic arterial embolization **Groups:** **G1:** Pelvic arterial embolization **N at enrollment:** **G1:** 91 **N at follow-up:** **G1:** 68 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up, mean months (range):** **G1:** 71.4 (12-152)	**Operational definition of PPH:** NR **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • All consecutive women with postpartum hemorrhage who underwent embolization at the tertiary obstetric center (Rouen University Hospital) and whose uterus was preserved **Exclusion criteria:** • Women with PPH undergoing peripartum hysterectomy **Maternal age, yrs, n (%):** <25 **G1:** 10 (14.7) 25-35 **G1:** 48 (70.6) >35 **G1:** 10 (14.7) **Parity, n (%):** Primiparous **G1:** 24 (35.3) **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy, n (%):** **G1:** 7 (10.3) **Race/ethnicity, n (%):**	**Harms pre-specified:** No **Harms, n (%):*** Psychological impact: Negative memories of the event No **G1:** 22 (32.4) Yes **G1:** 46 (67.6) **Main negative memories of the event:** Fear of death **G1:** 24 (35.3) Pain **G1:** 13 (19.1) Separation from the baby **G1:** 6 (8.8) Complete amnesia about the birth **G1:** 3 (4.4) **Long-term repercussion of PPH:** No **G1:** 40 (58.8) Yes **G1:** 28 (41.2) **Type of long-term repercussion:** Thought about the event at least once a month **G1:** 16 (23.5) De novo phobia **G1:** 5 (7.3)

		White **G1:** 61 (89.7) Sub-Saharan Africa **G1:** 4 (5.9) North Africa **G1:** 3 (4.4) **BMI:** NR **Baseline hemoglobin:** NR **SES, n (%):** Never married **G1:** 20 (29.4) **Mode of birth, n, (%):** Cesarean before labor **G1:** 18 (26.5) Cesarean during labor **G1:** 18 (26.5) Spontaneous vaginal delivery **G1:** 20 (29.4) Operative vaginal delivery **G1:** 12 (17.6) **Other, n (%):** History of psychiatric disorder, including depression **G1:** 1(1.5) **Risk factors, n (%):** Prior PPH **G1:** 7 (10.3) Advanced maternal age Multiparity **G1:** 7 (10.3)	Persistent fear of death **G1:** 5 (7.3) Impossible to have sexual intercourse with their partner for at least a year **G1:** 4 (5.9) Problems in marital relationships that women considered to be related to this event **G1:** 3 (4.4) Fear of a recurrence of PPH caused women to decide against another pregnancy **G1:** 14 (20.6) **Harms of intervention, n (%):** Major maternal complication **G1:** 2 (2.9) Pulmonary embolism **G1:** 1 (1.5) Postpartum myocarditis **G1:** 1 (1.5)

		Primary etiology of PPH, n (%): Uterine atony **G1:** 37 (54.4) Placenta accreta/percreta **G1:** 10 (14.7) Placenta previa **G1:** 6 (8.8) Vascular abnormality **G1:** 9 (13.2) Lower genital tract lacerations **G1:** 4 (5.9) Coagulopathies **G1:** 2 (3.0)	

Comment: *women completing the survey may have considered both the actual PPH and the treatment process in their responses

Table D-42. Evidence table for studies addressing management of PPH (Sentilhes 2011b)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Sentilhes et al., 2011[44] **Country:** France **Enrollment period:** May 1994 to July 2007 **Birth setting:** NR **Facility characteristics:** University-affiliated tertiary referral center **Funding:** NR **Design:** Retrospective case series Note: See related studies Sentilhes 2009[43, 45]	**Intervention:** Pelvic arterial embolizations **Groups:** **G1:** Total Pelvic arterial embolizations **G1a:** Successful Pelvic arterial embolizations **G1b:** Failed Pelvic arterial embolizations **N at enrollment:** **G1:** 100 **G1a:** 89 **G1b:** 11 **N at follow-up:** **G1:** 100 **G1a:** 89 **G1b:** 11 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** Step 1: blood transfusion Step 2: Digital subtraction angiography Step 3: Aortography Step 4: selective catheterization of uterine artery or anterior trunk of the hypogastric artery Step 5: Same procedure or contralateral artery **Length of follow-up:** NR	**Operational definition of PPH:** Primary PPH - postpartum hemorrhage occurring within the first 24 hours after delivery Secondary PPH - postpartum hemorrhage occurring 24 hours to 6 weeks after delivery **Definition of success of treatment**: An arrest of the hemorrhage after pelvic arterial embolization, whatever the number of pelvic arterial embolization procedures, with no subsequent surgical procedure. **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • All consecutive women with postpartum hemorrhage who underwent embolization at the tertiary obstetric center (Rouen University Hospital) • Patients who were referred to the institution from other centers where pelvic arterial embolization was not available or who had undergone a surgical procedure before or after the pelvic arterial embolization **Exclusion criteria:** • Subsequent pregnancies with postpartum hemorrhage requiring pelvic arterial embolization in patients with a previous history of pelvic arterial embolization for postpartum hemorrhage **Maternal age, yrs, n (%):** <25 **G1a:** 16 (18) **G1b:** 1 (9) 25-35 **G1a:** 59 (66) **G1b:** 8 (73)	**Harms pre-specified:** No **Harms of intervention, n (%):** Major complications **G1a:** 2 (2) **G1b:** 1 (9) **G1a vs. G1b:** p = 0.30 Buttock necrosis requiring surgical debridement **G1:** 1 (1) **G2:** 0 **G1a vs. G1b:** p > 0 .99 Pulmonary embolism **G1:** 0 **G2:** 1 (9) **G1a vs. G1b:** p = 0.11 Postpartum myocarditis **G1:** 1 (1) **G2:** 0 **G1a vs. G1b:** p > .99 Minor complications (see comments) **G1:** 19 (21) **G2:** 4 (36) **G1a vs. G1b:** p = 0.27 Puncture site hematoma **G1:** 1 (1) **G2:** 0 **G1a vs. G1b:** p > 0.99 Postpartum fever higher than 38.5°C **G1:** 18 (20) **G2:** 4 (36) **G1a vs. G1b:** p = 0.25

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		>35 **G1a:** 14 (16) **G1b:** 2 (18) **Parity, n (%):** Nulliparity **G1:** 38 (42) **G2:** 3 (27) **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy, n (%):** Twin pregnancy **G1:** 9 (10) **G2:** 3 (27) **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n (%):** Cesarean before labor **G1:** 25 (28) **G2:** 3 (27) Cesarean during labor **G1:** 20 (23) **G2:** 1 (9) Spontaneous vaginal delivery **G1:** 27 (30) **G2:** 3 (27)	Endometritis **G1:** 13 (15) **G2:** 1 (9) **G1a vs. G1b:** p > 0.99 Wound infection **G1:** 5 (6) **G2:** 3 (27) **G1a vs. G1b:** p = 0.04

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Operative vaginal delivery **G1:** 17 (19) **G2:** 4 (37) **Risk factors, n (%):** Prior PPH: **G1:** 8 (9) **G2:** 0 History of cesarean: **G1:** 23 (26) **G2:** 4 (36) Labor induction/augmentation: **G1:** 24 (27) **G2:** 3 (27) Chorioamnionitis: **G1:** 9 (10) **G2:** 3 (27) **Primary etiology of PPH, n (%):** Uterine atony **G1:** 49 (55) **G2:** 4 (36) Placenta accreta/percreta **G1:** 13 (14) **G2:** 4 (36) Retained placental tissue **G1:** 5 (38) **G2:** 0 Uterine cavity empty **G1:** 8 (62) **G2:** 4 (100) Placenta Previa **G1:** 6 (7) **G2:** 0	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Vascular abnormality **G1:** 7 (8) **G2:** 3 (28) Lower genital tract lacerations **G1:** 12 (13) **G2:** 0 Coagulopathies **G1:** 2 (2) **G2:** 0	

Comments: minor complications = postpartum fever > 38.5ºC with endometriosis or wound infection

Table D-43. Evidence table for studies addressing management of PPH (Sentilhes 2011c)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Sentilhes et al., 2011[45] **Country:** France **Enrollment period:** May 1994 to July 2007 **Birth setting:** NR **Facility characteristics:** University-affiliated tertiary referral center **Funding:** NR **Design:** Retrospective cohort study Note: See related studies: Sentilhes 2009[44] and Sentilhes 2011[43]	**Intervention:** Embolization as the sole procedure Embolization in combination with uterine-sparing surgery **Groups:** **G1:** Embolization as the sole procedure **G2:** Embolization in combination with uterine-sparing surgery **N at enrollment:** **G1 + G2:** 85 **N at follow-up:** **G1+ G2:** 68 **G1:** 58 **G2:** 10 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** 13 months	**Operational definition of PPH:** Primary PPH - PPH occurring within the first 24 hours Secondary PPH - PPH occurring 24 hours to 6 weeks following delivery **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • All consecutive women with PPH who underwent embolization as either the sole procedure or in combination with uterine-sparing surgery at the tertiary obstetric center (Rouen University Hospital) during the study period **Exclusion criteria:** • Women with peripartum hysterectomy or vaginal artery-only embolization **Maternal age:** NR **Parity:** NR **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** NR **Risk factors:** NR **Primary etiology of PPH:** NR	**Menstruation:** Resumed **G1 + G2:** 63 (92.6) **G1:** 53 (91.4) **G2:** 10 (100) p >0.99 Unchanged **G1 + G2:** 42 (61.8) **G1:** 38 (65.5) **G2:** 4 (40) p = 0.16 Increased flow of menstruation 11 (16.2) **G1:** 9 (15.5) **G2:** 2 (20) p = 0.66 Amenorrhoea or decreased flow of menstruation: **G1 + G2:** 15 (22.0) **G1:** 11 (19) **G2:** 4 (40) p = 0.21 Menstrual change secondary to synechia **G1 + G2:** 8 (11.8) **G1:** 6 (10.3) **G2:** 2 20) p = 0.33 Cause of menstrual change not investigated **G1 + G2:** 7 (26.5) **G1:** 5 (8.6) **G2:** 2 (40) p = 0.27 **Clinical ovarian insufficiency:**

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
			G1 + G2: 7 (10.3) **G1:** 6 (10.3) **G2:** 0 p >0.99 Normal hormonal profiles **G1 + G2:** 3 (4.4) **G1:** 3 (5.2) **G2:** 0 p >0.99 Not investigated **G1 + G2:** 4 (5.9) **G1:** 4 (6.9) **G2:** 0 p >0.99 **Future fertility (n=68 with data available):** Biological ovarian insufficiency **G1 + G2:** 0 **G1:** 0 **G2:** 0 p = 1 Preserved fertility (n = 66) **G1 + G2:** 66 (97.1) **G1:** 56 (96.6) **G2:** 10 (100) p = 1 Desire for pregnancy (n = 30) **G1 + G2:** 30 (45.5) **G1:** 25 (44.6) **G2:** 5 (50) p = 1 Previous history of infertility **G1 + G2:** 2 (6.7) **G1:** 0

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
			G2: 2 (40) p = 0.02 Secondary infertility **G1 + G2:** 0 **G1:** 0 **G2:** 0 p = 1 Participants attempting to become pregnant **G1 + G2:** 13 (43.3) **G1:** 13 (52) **G2:** 0 p = 0.053 Conception delay >24 months **G1 + G2:** 0 **G1:** 0 **G2:** 0 p = 1 Participants succeeding in becoming pregnant **G1 + G2:** 17 (56.7) **G1:** 12 (48) **G2:** 5 (100) p = 0.053 Pregnancies obtained (n = 26): **G1 + G2:** 26 **G1:** 18 **G2:** 8 p = NR Mean conception delay, mean ± SD (range) **G1 + G2:** 11.5 ± 11.9 (1–48) **G1:** 11.6 ± 12.5 (1–48) **G2:** 12.3 ± 11.1 (3–36) p = 0.82

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
			Conception delay >24 months **G1 + G2:** 1 (3.8) **G1:** 1 (5.6) **G2:** 1 (12.5) p = 0.53 With assisted reproductive techniques **G1 + G2:** 0 **G1:** 0 **G2:** 0 p = 1 Pregnancy with birth of live child (n = 19): **G1 + G2:** 19 (73.1) **G1:** 13 (72.2) **G2:** 6 (75) p = 1 Full-term pregnancy with no complications **G1 + G2:** 19 (100) **G1:** 13 (100) **G2:** 6 (100) p = 1 Caesarean delivery **G1:** 6 (31.6) 4 (30.8) 2 (33.3) p = 1 Recurrent postpartum hemorrhage (n = 6): **G1 + G2:** 6 (31.6) **G1:** 3 (23.1) **G2:** 3 (50) p = 0.32 Uterine atony in followup pregnancy **G1 + G2:** 4 (66.7) **G1:** 3 (100)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
			G2: 1 (33.3) p = 0.40 Placenta accrete in followup pregnancy **G1 + G2:** 2 (33.3) **G1:** 0 **G2:** 2 (66.7) p = 0.40 **Confounders:** NR **Effect modifiers:** NR **Harms:** Harms prespecified: No **Synechia, n (%):** **G1 + G2:** 8 (11.8) **G1:** 6 (10.3) **G2:** 2 (20) p = 0.33 **Postpartum fever, n:** **G1+G2:** 13 **Endometritis, n:** **G1+G2:** 6 See also fertility data above

Table D-44. Evidence table for studies addressing management of PPH (Deneux-Tharaux 2010)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Deneux-Tharaux et al., 2010[19] **Country:** France **Enrollment period:** September 2004 – November 2006 **Birth setting:** NR **Facility characteristics:** 106 maternity units (university, public and private) within six perinatal networks **Funding:** French Ministry of Health's Clinical Research Hospital Program (contract no. 27-35) **Design:** Cluster-randomized controlled trial Note: See related studies Bonnett 2013[18], Schmitz 2011[20]	**Intervention:** Multifaceted intervention for maternity unit including educational sessions, instruction on PPH protocol, local implementation of the protocol, posted placards of steps for addressing PPH, and installation of a "PPH box" (emergency kit w/drugs, etc), peer review of deliveries with severe PPH. (intervention: more than 3 mo. in duration) **Groups:** **G1:** educational intervention **G2:** passive dissemination of PPH protocol **N (maternity units) at enrollment:** **G1:** 54 **G2:** 52 **N (maternity units) at follow-up:** **G1:** 54 **G2:** 52 **Duration of treatment:** Phase 1 of intervention = ≥ 3 mo Phase 2 of intervention (data collection) = 1 year. **Timing of treatment:** NR **Order of treatment:** NA **Length of follow-up:** NR	**Operational definition of PPH:** PPH was defined by a peripartum hemoglobin decrease of 2 g/dl or more (equivalent to loss of more than 500 ml of blood). Severe PPH - a PPH associated with one or more: blood transfusion, arterial embolization, arterial ligation, other conservative uterine surgery, hysterectomy, transfer to intensive care unit, peripartum hemoglobin decrease of 4 g/dl or more (equivalent to loss of 1000 ml or more of blood), maternal death. **Definition of success of treatment**: effect of the multifaceted intervention on mean rate of severe PPH. (#deliveries with severe PPH / total number of deliveries) **Method of blood loss measurement:** Prepartum hemoglobin measured as part of routine prenatal care during last weeks of pregnancy. **Severity:** defined above **Inclusion criteria:** • Maternity units belonging to one of six health networks **Exclusion criteria:** • Maternity units involved in concomitant clinical study **Maternal age:** NR **Parity:** NR **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy, mean ± SD (min, max):** Rate of multiple pregnancy: **G1:** 1.1 ± 0.7 (0.1; 2.9) **G2:** 1.3 ± 0.9 (0.0; 4.6)	**Incidence of severe PPH mean ± SD (min, max):** **G1:** 1.64 ± 0.80 (0.00, 3.84) **G2:** 1.65 ± 0.96 (0.29, 4.29) OR=1.02 (95% CI: 0.83 to 1.24) Severe PPH blood transfusion (% of deliveries) mean rate (SD) (min, max) **G1:** 0.44 ± 0.30 (0.00, 1.00) **G2:** 0.41 ± 031 (000, 1.47) OR=1.13 (95% CI: 0.88 to 1.44) Severe PPH postpartum haemoglobin change ≥ 4 g/dl) (% of deliveries) mean rate ± SD (min, max): **G1:** 1.49 ± 0.75 (0.00, 3.83) **G2:** 1.44 ± 0.88 (0.15, 3.95) OR=1.05 (95% CI: 0.86 to 1.29) All PPH (% of deliveries) mean ± SD (min, max): **G1:** 6.37 ± 3.63 (1.95, 22.05) **G2:** 6.37 ± 4.16 (1.52, 17.63) OR=1.01 (95% CI: 0.8 to 1.3) Embolization for PPH, mean rates ± SD: **G1:** 0.09 ± 0.15 **G2:** 0.10 ± 0.21 Conservative uterine surgery, mean rates ± SD: **G1:** 0.04 ± 0.05 **G2:** 0.04 ± 0.07 Hysterectomy, mean rates ± SD: **G1:** 0.05 ± 0.07 **G2:** 0.04 ± 0.06 Transfer to ICU, mean rates ± SD:

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Race/ethnicity: NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth mean ± SD (min, max):** Rate of caesarean delivery **G1:** 20.2 ± 4.2 (11.1; 28.8) **G2:** 20.0 ± 4.7 (11.8; 34.0) **Risk factors:** NR **Primary etiology of PPH:** NR	**G1**:0.16 ± 0.15 **G2:** 0.16 ± 0.22 Mean ± SD rate of severe PPH between 1st three month period to 3rd three month period: **G1**: 1.79 ± 1.21 to 1.52 ± 0.87 (*p*=0.07) **G2:** 1.91 ± 1.44 to 1.60 ± 1.05 (*p<0.05)* Mean ± SD rate of ALL PPH between 1st three month period to 3rd three month period: **G1:** 7.02 ± 4.48 to 6.2 ±3.82 (*p<0.05)* **G2:** 7.33 ± 5.49 to 6.61 ± 4.75 (*p<0.05)* **Procedures for PPH Management:** Examination of uterine cavity and/or manual removal of placenta (*PPH after vaginal delivery)* mean rate ± SD (min, max): **G1**: 75.9 ± 15 (30.8, 97.6) **G2**: 76.3 ± 13.4 (42.9, 100) OR=0.97 (95% CI: 0.71 to 1.32) Examination of uterine cavity and/or manual removal of placenta within 15 min of PPH DX* *after vaginal delivery* (incomplete data) mean rate ± SD (min, max): G**1:** 53.2 ± 16.9 (15.4, 96) **G2**: 49.5 ± 19.5 (0, 81.6) OR=1.05 (95% CI: 0.79 to 1.4) Instrumental examination of vagina and cervix *(PPH after vaginal delivery)* mean rate ± SD (min, max): **G1:** 28.8 ± 17.2 (0, 69.8) **G2:** 24.0 ± 18.1 (0, 66.7) OR= 1.26 (95% CI: 0.87 to 1.81) Call for help from senior staff mean rate ± SD (min, max): **G1:** 79.9 ± 14.7 (42.7, 100) **G2:** 71.2 ± 19.1 (27.8,100)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
			OR=1.65 (95% CI: 1.17 to 2.33) Call for help from senior staff within 15 min of PPH Dx* (data incomplete) mean rate ± SD (min, max) **G1:** 67.0 ± 17,3 (27.6, 100) **G2:** 58.4 ± 19.4 (17.6, 100) OR=1.48 (95% CI: 1.05 to 2.09) Administration of oxytocin, mean rate ± SD (min, max): **G1**: 92.2 ± 6.6 (76.5, 100) **G2**: 91.9 ± .6 (52.9, 100) OR=0.92 (95% CI: 0.63 to 1.33) **Procedures for *Severe* PPH Management:** Administration of sulprostone (uterine atony or retained placenta) (severe PPH), mean ± SD (min, max): **G1:** 48.7 ± 25.3 (0, 100) **G2**: 39.9 ± 26.0 (0, 100) OR=1.45 (95% CI: 0.99 to 2.13) Administration of sulprostone within 30 min of PPH Dx (uterine atony or retained placenta) (severe PPH) mean ± SD (min, max): **G1:** 24.2 ± 17.5 (0, 75.0) **G2:** 16.9 ± 15.9 (0, 51.9) OR=1.39 (95% CI: 0.96 to 2.00) Blood test for hemoglobin and hemostasis within 60 min of PPH Dx* (incomplete data) Mean ± SD (min, max): **G1**: 37.5 ± 20.5 (0, 87.5) **G2**: 28.4 ± 22.1 (0, 80.0) OR=1.36 (95% CI: 0.95 to 1.94)

Comments: *data on time of procedure missing in 19.1% of cases for exam of uterine cavity; 2.4% for call for extra help; 2.6% for admin of sulprostone and 10% for blood test

Table D-45. Evidence table for studies addressing management of PPH (Ganguli 2008)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Ganguli et al., 2008[46] **Country:** US **Enrollment period:** 52 months ending in April 2009 **Birth setting:** Hospital **Facility characteristics:** Tertiary care hospital **Funding:** NR **Design:** Cases series	**Intervention:** Uterine artery embolization (Uterine artery embolization) **Groups:** **G1:** Uterine artery embolization **G1a:** Uterine artery embolization for primary PPH **G1b:** Uterine artery embolization for secondary PPH **N at enrollment:** **G1:** 76 **N at follow-up, n (%):** **G1:** 66 **G1a:** 50 (76) **G1b:** 16 (24) **Duration of treatment:** NR **Timing of treatment:** After usual obstetric maneuvers performed **Order of treatment:** Intravenous uterotonic agents, Aggressive uterine massage, Manual extraction of the placenta, Examination and repair of genital lacerations, Balloon tamponade Uterine artery embolization **Length of follow-up:** NR	**Operational definition of PPH:** Primary PPH was defined as hemorrhage that occurred within the first 24 hours after delivery. Secondary PPH was defined as hemorrhage occurring more than 24 hours after delivery. **Definition of success of treatment:** Technical success was defined as successful catheterization of both uterine arteries with embolization to stasis, embolization of a nonuterine pelvic vessel giving rise to active contrast agent extravasation, or successful coil embolization of a specific vascular lesion (ie, pseudoaneurysm). Clinical success of Uterine artery embolization was defined as obviation of subsequent hysterectomy. **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • All women who underwent Uterine artery embolization for obstetric reasons at a single institution during a 52-month period culminating in April 2009 **Exclusion criteria:** • Those with leiomyoma- or tumor-related uterine hemorrhage **Maternal age, yrs, mean (range):** **G1:** 33 (17-47) **G1a:** 32.7 (17-44) **G1b:** 32.4 (21-42) **Parity, mean (range):** **G1:** 1.8 (0-9) **G1a:** 1.9 (1-9)	**Harms pre-specified:** No **Transfusion of PRBCs (units), mean (range):** Primary PPH: 0.4(0-4) **Harms, n (%):** Hysyerectomy, total **G1:** 3 (4.5) **G1a:** 1 **G1b:** 2 Hysterectomy due to persistent PPH **G1:** 2 (3) Hysterectomy due to endometritis **G1:** 1 (1.5) Overall complication **G1:** 3 (4.5) Lower extremity deep vein thrombosis **G1:** 1 Post procedural pancreatitis **G1:** 1 Presumed endometritis after Uterine artery embolization as well as dilation and curettage **G1:** 1 **Post-Uterine artery embolization hospital stay in days, mean (range):** Total **G1:** 3.5 (1-12) **G1a:** 3.9 (1-12) **G1b:** 2 (1-5)

		G1b: 1.8 (1-4) **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** Vaginal delivery, n (%) **G1:** 48 (73) Cesarean section, n (%) **G1:** 18 (27) **G1a** 12/50 (24) **G1b:** 6/16 (38) **Risk factors:** NR **Primary etiology of PPH, n:** Retained products of conception: **G1b:** 13/16 (81) Uterine artery pseudoaneurysm: **G1b:** 3/16 (19)	Mortality, n: **G1:** 0

Comment: Authors note one woman experienced a peripartum seizure that did not appear related to Uterine artery embolization procedure.

Table D-46. Evidence table for studies addressing management of PPH (Lone 2010)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Lone et al., 2010[47] **Country:** UK **Enrollment period:** Jan 1989 to Jan 2009 **Birth setting:** Hospital **Facility characteristics:** Tertiary care (university) **Funding:** NR **Design:** Retrospective case series	**Intervention:** Emergency obstetric hysterectomy performed after 24 completed weeks of pregnancy and up to 6 weeks post-partum. **Groups:** **G1:** Emergency obstetric hysterectomy **N:** **G1:** 52 **N at follow-up:** NR **Interventions to control prior to emergency hysterectomy:** **G1a:** n=25 (1989-1998) **G1b:** n=27 (1999-2009) Bimanual compression, n (%): **G1a:** 23 (92) **G1b:** 23 (85.2) Intravenous oxytocin, n (%): **G1a:** 25 (100) **G1b:** 27 (100) Ergometrine, n (%): **G1a:** 20 (80) **G1b:** 22 (81.5) Internal iliac artery ligation, n (%): **G1a:** 21 (84) **G1b:** 7 (25.9) Uterine packing, n (%): **G1a:** 16 (64) **G1b:** 2 (7.4)	**Operational definition of PPH:** NR **Definition of success of treatment:** NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Women who underwent hysterectomy at Mayday University Hospital, Croydon, UK, between January 1989 and January 2009 **Exclusion criteria:** NR **Maternal age, yrs, mean (range):** **G1:** 29.4 (14-54) **Parity, mean:** **G1:** 1.35 **Weeks gestation, n (%):** Less than 28 **G1:** 3 (5.8) 29-32 **G1:** 7 (13.5) 33-37 **G1:** 13 (25) 38-42 **G1:** 26 (50) More than 42 **G1:** 3 (5.8) **Single pregnancy:** NR	**Harms pre-specified:** No **Harms, n (%):** Operative: Ureteric injury **G1:** 4 (7.7) Bladder injury **G1:** 3 (5.8) Small bowel injury **G1:** 2 (3.8) **Infective:** Urinary tract infection **G1:** 4 (7.7) Septicemia **G1:** 3 (5.8) Wound infection **G1:** 4 (7.7) Adult respiratory distress syndrome **G1:** 9 (17.3) Renal failure **G1:** 2 (3.8) Disseminated intravascular coagulation **G1:** 11 (21.1) Repeat surgery **G1:** 15 (28.8) Cardiac arrest **G1:** 2 (3.8)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	Intrauterine balloon, n (%): **G1a:** 1 (4) **G1b:** 16 (59.3) B-Lynch suture, n (%): **G1a:** 2 (8) **G1b:** 13 (48.1) Factor V11, n (%): **G1a: 0** **G1b:** 2 (7.4) **Duration of treatment:** Operating time, hrs, mean (range) **G1:** 2.5 (1.5-4.5) **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Multiple pregnancy:** NR **Race/ethnicity, n (%):** African-Caribbean **G1:** 26 (50) White **G1:** 13 (25) Asian **G1:** 10 (19.2) Other **G1:** 3 (5.8) **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n (%):** Cesarean **G1:** 38 (73.1) Instrumental vaginal **G1:** 10 (19.2) Normal Vaginal **G1:** 4 (7.7) **Risk factors, n (%):** Primary PPH: **G1:** 50 (96.2) Placenta previa **G1:** 20 (40) Uterine atony	Maternal mortality **G1:** 1 (1.9)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 14 (28) Uterine rupture **G1:**10 (20) Extension of the uterine incision **G1:** 6 (12) Secondary PPH: Severe sepsis **G1:** 2 (3.8) **Risk factors, unadjusted OR (95% CI):** Univariate analysis: Primary PPH **G1:** 18.83 (7.06-50.19) p=0.022 Maternal age **G1:** 1.13 (1.05-1.20) p=0.001 Multiparity **G1:** 1.32 (1.04-1.67) P<0.001 Duration of gestation **G1:** 0.925 (0.84-1.02) p=0.110 Race/ethnicity: Bangladeshi **G1:** 8.76 (1.05-73.18) p=0.045 African-Caribbean **G1:** 3.10 (1.04-9.25) p<0.001	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		History of cesarean **G1:** 6.88 (2.49-19.0) p<0.001 Placenta previa **G1:** 20.9 (6.22-70.4) p<0.001 Failed induction **G1:** 12.44 (4.65-33.3) p<0.001 Multivariate analysis: Primary PPH **G1:** 10.69 (3.33-34.3) p<0.001 Multiparity **G1:** 1.35 (1.06-1.73) p=0.017 Placenta previa **G1:** 14.4 (3.72-55.4) p<0.001 Failed induction **G1:** 9.29 (2.81-30.9) p<0.001	

Table D-47. Evidence table for studies addressing management of PPH (Wright 2010)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Wright et al., 2010[48] **Country:** US **Enrollment period:** 2002 to 2007 **Birth setting:** hospital **Facility characteristics:** 320 acute-care hospitals in the United States **Funding:** NR **Design:** Population-based case series	**Intervention:** Peripartum hysterectomy within 2 days of cesarean delivery **Groups:** Subgroups (tertiles based on hospital volume), n of facilities: **G1a:** low-volume hospitals 221 facilities (69%) **G1b:** intermediate-volume 73 facilities (23 **G1c:** high-volume hospitals 26 facilities (8%) **N at enrollment n (%):** **G1:** 2209 **G1a:** 715 (33.4) **G1b:** 867 (39.3) **G1c:** 627 (28.4) **N at follow-up:** **G1:** 2209 **Duration of treatment:** NA **Timing of treatment:** hysterectomy within 2 days of cesarean delivery **Order of treatment** NA **Length of follow-up:** NR	**Operational definition of PPH:** NR **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • data d in the Perspective database of acute care US hospitals • women aged 50 years or less • treated between 2002 and 2007 • underwent peripartum hysterectomy defined as hysterectomy within 2 days of cesarean delivery detected by ICD 9 codes **Exclusion criteria:** • concomitant diagnosis of invasive malignancy **Maternal age at surgery, yrs, median (range)** **G1:** 33 (14-50) **< 30:** 673 (30.5%) **≥ 30:** 1536 (69.5%) **Parity, n:** NR **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity, n (%)** White **G1:** 1108 (50.2) African American **G1:** 394 (17.8)	**Blood loss:** NR **Received transfusion n, %, unadjusted:** **G1a:** 409 (57.2%) **G1b:** 405 (46.7%) **G1c:** 283 (45.1%) p<.001 **ICU admission, n (%), unadjusted:** **G1a:** 322 (45.0) **G1b:** 343 (39.6) **G1c:** 172 (27.4) p<.001 **Anemia:** NR **Length of stay:** Unadjusted mean ± SD **G1a:** 3.5 ± 2.5 **G1b:** 4.0 ± 4.6 **G1c:** 4.1 ± 11.0 Mortality, n (%) unadjusted **G1a:** 13 (1.8) **G1b:** 8 (0.9) **G1c:** 5 (0.8) p=.02 **Uterine preservation:** NA **Future fertility:** NA **Breastfeeding:** NR **Psychological impact:** NR Harms of intervention **Intraoperative injury, n, (%), unadjusted:** Bladder injury **G1a:** 52 (7.2)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Other **G1:** 707 (32.0) **BMI:** NR **Baseline hemoglobin:** NR **SES, type of insurance, %:** Commercial insurance **G1:** 61 Medicaid **G1:** 32 No insurance **G1:** 3 **Mode of birth:** NR **Risk factors:** NR **Primary etiology of PPH:** NR **Indication for hysterectomy, n (%)** Placenta accrete **G1:** 775 (35.1%) Uterine atony **G1:** 770 (34.9%) Extension of hysterotomy **G1:** 72 (3.3%) Uterine rupture **G1:** 18 (0.8%) Delayed hemorrhage **G1:** 49 (2.2%) Leiomyoma	**G1b:** 69 (8.0) **G1c:** 56 (8.9) Ureteral injury **G1a** 2 (0.3) **G1b:** 3 (0.4) **G1c:** 3 (0.5) Intestinal injury **G1a:** 3 (0.4) **G1b:**3 (0.4) **G1c:** 4 (0.6) Vascular injury **G1a:** 1 (0.1) **G1b:** 0 **G1c:** 0 Other injury **G1a:** 69 (9.7) **G1b:** 89 (10.3) **G1c:** 61 (9.7) **Perioperative surgical complications, n (%), unadjusted:** Reoperation **G1a:** 46 (6.4) **G1b:** 38 (4.4) **G1c:** 20 (3.2) Postoperative hemorrhage **G1a:** 49 (6.9) **G1b:** 37 (4.3) **G1c3:** 37 (5.9) Wound complication **G1a:** 71 (9.9) **G1b:** 59 (6.8) **G1c:** 42 (6.7)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 230 (10.4%)	Venous thromboembolism **G1a:** 6 (0.8) **G1b:** 14 (1.6) **G1c:** 14 (2.2) **Medical Complications, n (%), unadjusted:** Cardiovascular **G1a:** 46 (6.4) **G1b:** 40 (4.6) **G1c:** 27 (4.3) Pulmonary **G1a:** 101 (14.1) **G1b:**109 (12.6) **G1c:** 61 (9.7) Gastrointestinal **G1a:** 58 (8.1) **G1b:** 63 (7.3) **G1c:** 55 (8.8) Renal **G1a:** 24 (3.4) **G1b:** 19 (2.2) **G1c:** 10 (1.6) Infectious **G1a:** 83 (11.6) **G1b:** 106 (12.2) **G1c:** 78 (12.4) **Adjusted OR (95% CI), provided for G1b and G1c only (age, race, year diagnosis, insurance status, hospital type and size):** Intraoperative injury **G1b:** 0.97 (0.68-1.38) **G1c:** 0.95 (0.61-1.48)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
			Perioperative surgical complication **G1b:** 0.66 (0.51-0.86) **G1c:** 0.66 (0.47-0.93) Medical complication **G1b:** 0.97 (0.74-1.28) **G1c:** 0.98 (0.71-1.34) Transfusion **G1b:** 0.83 (0.54-1.27) **G1c:** 0.79 (0.42-1.47) Length of stay **G1b:** 0.44 (-0.27-1.14) **G1c:** 0.63 (-0.20-1.45) Intensive care use **G1b:** 0.81 (0.60-1.09) **G1c:** 0.53 (0.34-0.83) Perioperative death **G1b:** 0.41 (0.16-1.03) **G1c:** 0.29 (0.10-0.88) **Confounders:** NR **Effect modifiers:** NR

Comments: Women could have multiple or unknown indications for hysterectomy.

Table D-48. Evidence table for studies addressing management of PPH (Zwart 2010)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Zwart et al., 2010[49] **Country:** Netherlands **Enrollment period:** August, 2004 – August, 2006 **Birth setting:** Hospital or home **Facility characteristics:** 98 hospitals with a maternity unit **Funding:** Netherlands Organization for Health Research and the Matty Brand Foundation. **Design:** Prospective cohort study	**Intervention:** Hysterectomy/ Arterial embolization **Groups:** **G1a:** Hysterectomy **G1b:** Arterial embolization **G2:** Total number of births in the Netherlands during the study period **N at enrollment:** **G1:** 205 **G2:** 358, 874 **G1a:** 108 (17 women had hysterectomy after embolization) **G1b:** 114 **N at follow-up:** NR **Duration of treatment:** NR **Timing of treatment for G1a, n (%):** Hysterectomy after vaginal Delivery: 41(38) Cesarean hysterectomy: 29(27) Relaparotomy after caesarean Delivery: 38(35) **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** NR **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • All women with hysterectomy or arterial embolization because of obstetric hemorrhage during pregnancy, delivery, and puerperium (limited to 6 weeks after delivery) **Exclusion criteria:** NR **Maternal age ≥ 35yrs, %:** **G1:** 43.4 **G2:** 24.7 **Parity, %:** Nulliparity **G1:** 39.5 **G2:** 45.2 ≥ 3 **G1:** 7.3 **G2:** 5.0 **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy, %:** **G1:** 10.2 **G2:** 1.7 **Race/ethnicity, %:** Non-Western Immigrant	**Blood loss:** NR **Transfusion, n (%):** Plasma replacement therapy **G1a:** 86 (80) **G1b:** 75 (77) Recombinant factor VII **G1a:**19 (18) **G1b:**14 (14) Prothrombin complex **G1a:** 1 (1) **G1b:** 2 (2) Fibrinogen **G1a:** 3 (3) **G1b:** 1 (1) Red blood cells **G1a:** 105 (98) **G1b:** 89 (98) ≥ 8 red blood cells **G1a:** 86 (80) **G1b:** 59 (65) Fresh frozen plasma **G1a:** 90 (89) **G1b:** 86 (95) Platelets **G1a:** 61 (62) **G1b:** 49 (53) Red Blood Cells, median **G1a:** 14 **G1b:** 10

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 24.4 **G2:** 16.8 **BMI (kg/m^2), %** ≥ 25 (overweight) **G1:** 28.2 **G2:** 31.7 ≥ 30 (obese) **G1:** 10.9 **G2:** 9.8 ≥ 35 (morbidly obese) **G1:** 4.7 **G2:** N/A **Baseline hemoglobin:** NR **SES:** Low income, % **G1:** 26.7 **G2:** N/A **Mode of birth, %:** Induction of labor: **G1:** 29.8 **G2:** 12.3 Cesarean delivery: **G1:** 49.8 **G2:** 13.0 Prelabor cesarean delivery: **G1:** 23.9 **G2:** 5.9 Ventouse/forceps: **G1:** 11.7 **G2:** 8.6	p = 0.002 ≥ 8 units of red blood cells, RR (95% CI) **G1a:** 1.5 (1.1-2.1) **G1b < G1a** **ICU admission, RR (95% CI):** **G1a**: 1.6 (1.1-2.4) **G1b < G1a** **Anemia:** NR **Length of stay, days, median(range):** **G1a:** 10 (2-65) **G1b:** 7 (1-38) **Mortality, n:** Total: 4/205 (2%) **G1a:** 1 **G1b:** 2 **G1a & G1b:** 1 **Uterine preservation, %:** **G1b:** 46 **Future fertility,n (%):** **G1b:** 95 (46) **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention, n (%):** Hysterectomy (n=108): Urinary tract lesions **G1a:** 11 (10) Removal of ovary **G1a:** 8 (7) Infection

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Home delivery: **G1:** 3.4 **G2:** 31.6 Breech delivery: **G1:** 9.3 **G2:** 4.9 **Risk factors,%, RR (95%CI):** Patient: Advanced maternal age ≥ 35yrs: **G1:** 43.4 **G2:** 24.7 2.3 (1.8-3.1) Low income, % **G1:** 26.7 **G2:** N/A **BMI (kg/m^2):** ≥ 25 (overweight) **G1:** 28.2 **G2:** 31.7, 0.9(0.6-1.2) ≥ 30 (obese) **G1:** 10.9 **G2:** 9.8, 1.1 (0.6–1.9) ≥ 35 (morbidly obese) **G1:** 4.7 **G2:** N/A **Race/ethnicity**: Non-Western Immigrant **G1:** 24.4 **G2:** 16.8 1.6 (1.2–2.2)	**G1a:** 8 (7) Relaparotomy **G1a:** 15 (14) Sheehan syndrome **G1a:** 4 (4) Paralytic ileus **G1a:** 3 (3) Deep venous thrombosis/pulmonary embolism **G1a:** 3 (3) Others **G1a:** 2 (2) Embolization (n=114): Hysterectomy **G1b:** 17 (15) Infection (9 after cesarean delivery) **G1b:** 9 (8) Acute respiratory distress syndrome **G1b:** 1 (1) Laparotomy **G1b:** 3 (3) Ischemic complaints **G1b:** 2 (2) **Confounders:**NR **Effect modifiers:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Pregnancy: History of cesarean: **G1:** 26.8 **G2:** 10.1 3.3 (2.4–4.5) Placenta previa: **G1:** 10.7 **G2:** N/A Nulliparity: **G1:** 39.5 **G2:** 45.2 0.8 (0.6–1.1) Multiparity: ≥ 3 **G1:** 7.3 **G2:** 5.0 1.5 (0.9–2.5) Multiple gestation: **G1:** 10.2 **G2:** 1.7 6.6 (4.2–10.4) Artificial reproduction techniques: in vitro fertilization/intracytoplasmic sperm injection: **G1:** 9.5 **G2:** 1.9 5.4 (3.2–9.0) **Delivery:** Labor induction/augmentation: **G1:** 29.8 **G2:** 12.3 3.1 (2.3–4.2)	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Cesarean delivery: **G1:** 49.8 **G2:** 13.0 6.6 (5.0–8.7) Prelabor cesarean delivery: **G1:** 23.9 **G2:** 5.9 5.0 (3.6–6.9) Ventouse/forceps: **G1:** 11.7 **G2:** 8.6 1.4 (0.9–2.2) Home delivery: **G1:** 3.4 **G2:** 31.6 0.1 (0.04–0.2) Breech Delivery: **G1:** 9.3 **G2:** 4.9 2.1 (1.3–3.4) **Primary etiology of PPH, n (%):** Disorders of placentation: **G1a:** 37 (35) **G1b:** 5 (5) Uterine atony: **G1a:** 29 (28) **G1b:** 32 (33) Uterine rupture: **G1a:** 11 (10) **G1b:** 0 Retained placenta or placental remnants:	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1a: 10 (10) **G1b:** 30 (31) Iatrogenic during surgery: **G1a:** 8 (8) **G1b:** 13 (14) Genital tract laceration: **G1a:** 4 (4) **G1b:** 11 (11) Blood coagulation disorders: **G1a:** 1 (1) **G1b:** 0 Miscellaneous: **G1a:** 4 (4) **G1b:** 4 (4) Placenta previa as single diagnosis: **G1a:** 1 (1) **G1b:** 1 (1) Total placenta previa: **G1a:** 15 (14) **G1b:** 7 (7)	

Comment: There were 4 deaths; one women who received both hysterectomy and embolization.

Table D-49. Evidence table for studies addressing management of PPH (Hardeman 2010)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Hardeman et al., 2010[50] **Country:** France **Enrollment period:** October 2000 to August 2006 **Birth setting:** Hospital **Facility characteristics:** Tertiary care **Funding:** NR (Authors report nothing to disclose) **Design:** Case-control	**Intervention:** Embolization of uterine arteries **Groups:** **G1:** Embolization **G2:** control **N at enrollment:** **G1:** 53 **G2:** 106 **N at follow-up:** **G1:** 53 **G2:** 106 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** Maximal months, n **G1:** 82 **G2:** 83	**Operational definition of PPH:** NR **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Cases: women who underwent embolization and responded to follow-up questionnaire • Controls: women who had never undergone embolization, matched by date of delivery, age, parity, total number of pregnancies, spontaneous vs fertility-assisted pregnancy, and mode of delivery **Exclusion criteria:** NR **Maternal age, yrs, (range):** **G1:** 34.3 (19-44) **G2:** NR **Parity, mean (range):** **G1:** 2.02 (1-8) **G2:** NR **Weeks gestation, n (%):** ≥ 37 weeks **G1:** 43 (81.1) **G2:** NR 32-37 weeks **G1:** 7 (13.2)	**Blood loss:** NR **Transfusion:** NR **ICU admission:** NR **Anemia:** NR **Length of stay:** NR **Mortality:** NR **Uterine preservation:** NR **Future fertility:** Desire to become pregnant **G1:** 14 (26.4) (text reports n=17 but three were still using o.c. due to fear of another hemorrhage) **G2:** NR Occurrence of pregnancy **G1:** 12/14 **G2:** 37/denominator not clear **G1 vs G2:** p=0.17 **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** Total complications (n=53) **G1:** 19 (35.9) Pain and fever **G1:** 16 (30.2)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G2: NR 28-32 weeks **G1:** 2 (3.8) **G2:** NR ≤ 28 weeks **G1:** 1 (1.9) G2: NR **Single pregnancy, n (%):** **G1:** 48 (91) **G2:** NR **Multiple pregnancy, n (%):** **G1:** 5 (9) **G2:** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** Vaginal **G1:** 29 (54) Cesarean **G1:** 25 (46) **Risk factors:** NR	Hematoma/inguinal pain **G1:** 3 (5.7) Menstrual cycles (n=53) Normal/unchanged **G1:** 40 (75.5) Metrorrhagia **G1:** 2 (3.8) Secondary amenorrhea **G1:** 11 (20.7) Absence due to contraception **G1:** 8/11 (15.1) Absence due to embolization **G1:** 3/11 (5.6%) **Confounders:** NR **Effect modifiers:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Primary etiology of PPH, n (%): Atony **G1:** 43 (81.1) Placenta accreta **G1:** 5 (9.4) Thrombus **G1:** 2 (3.8) Vascular damage **G1:** 3 (5.7)	

Table D-50. Evidence table for studies addressing management of PPH (Alexander 2009)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Alexander et al., 2009 [51] **Country:** US **Enrollment period:** March 2002 to June 2006 **Birth setting:** hospital **Facility characteristics:** Tertiary care **Funding:** Authors report no financial conflicts **Design:** Population-based observation study	**Intervention:** Blood transfusion (any type) to treat hypovolemia caused by obstetric hemorrhage **Groups:** **G1**: whole blood transfusion **G2**: packed RBCs **G3**: combination of blood products **N at enrollment:** **G1:** 659 (43%) **G2:** 593 (39%) **G3:** 288 (19%) **N at follow-up:** NR **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** NR **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Inclusion criteria:** • Admitted to hospital for delivery • Hypovolemia from obstetric hemorrhage as defined by one or more of the following: 1) systolic blood pressure less than 100 mm Hg not due to regional analgesia or anesthesia; 2) pulse 100 beats per minute or more; 3) a positive "tilt" test (20 beats per minute increase in pulse or decrease in systolic blood pressure of 20 mm Hg) or of the static symptoms (to dizziness, fainting, nausea, or vomiting upon sitting up); and 4) urine flow less than 30 mL/h. • hematocrit less than 20% secondary to hemorrhage or who had a hematocrit between 20% and 30% in the face of ongoing hemorrhage and evidence of hemodynamic instability per the above criteria received blood. **Exclusion criteria:** NR **Maternal age, yrs (%):** **G1:** 17 or less – 54 (8) 35 or more – 66 (10) **G2:** 17 or less – 39 (7) 35 or more – 54 (9) **G3:** 17 or less – 28 (10) 35 or more – 34 (12) **Parity (Nulliparity), n (%):** **G1:** 333 (51) **G2:** 306 (52) **G3:** 135 (47) **Weeks gestation:** NR	**Blood loss:** NR **Transfusion:** NR **Units transfused (mean):** **G1:** 2.2 **G2:** 2.3 **G3:** 5.5 **ICU admission, n (%):** **G1:** 4 (1) **G2:** 7 (1) **G3:** 23 (8) p < 0.05 **Anemia :** HCT at time of transfusion, mean (IQR) **G1:** 24.1 (21.3-27.2) **G2:** 24.2 (21.6-27.5) **G3:** 24.3 (20.9-27.2) p = NR **Length of stay:** NR **Mortality:** **G1:** 0 **G2:** 1 Maternal death in a woman with diabetes and chronic congestive heart failure after cesarean for prolonged labor and nonreassuring fetal heart rate pattern **G3:** 2 One maternal death thought to be due to pulmonary embolism and multiorgan failure following primary cesarean for a failed induction of labor for severe preeclampsia One maternal death in a woman with severe

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Single pregnancy: NR **Multiple pregnancy:** NR **Race/ethnicity, n (%):** Hispanic **G1:** 573 (83%) **G2:** 493 (83%) **G3:** 236 (82%) African American **G1:** 61 (9%) **G2:** 75 (13%) **G3:** 30 (10%) White **G1:** 17 (3%) **G2:** 14 (2%) **G3:** 12 (4%) Other **G1:** 8 (1%) **G2:** 11 (2%) **G3:** 10 (3.5%) **BMI, 30 kg/m^2 or more, n/N (%):** **G1:** 328/582 (56%) **G2:** 328/548 (59%) **G3:** 139/257 (54%) **Baseline hemoglobin:** NR **SES:** NR **Mode of birth:** NR **ASA Class, n (%):** I	preeclampsia who experienced placental abruption and liver failure leading to multisystem organ failure and respiratory failure **Uterine preservation:** Hysterectomy, n (%) **G1:** 18(3) **G2:** 16 (3) **G3:** 48 (17) p < 0.001 **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Other outcomes reported, n, (%):** Acute tubular necrosis **G1:** 2 (0.3) **G2:** 12 (2) **G3:** 11 (4) p <0.001 Adult respiratory distress **G1:** 3 (0.5) **G2:** 2 (0.3) **G3:** 6 (2) p < 0.01 Pulmonary edema **G1**: 47 (7) **G2:** 24 (4) **G3:** 39 (14) p < 0.001 Hypofibrinogenemia **G1:** 1 (0.2) **G2:** 2 (0.3)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 8(1) **G2:** 0(0) **G3:** 2 (0) II **G1:** 517 (78) **G2:** 470 (79) **G3:** 219 (76) III **G1:** 45 (7) **G2:** 50 (8) **G3:** 41(14) IV **G1:** 2 (0) **G2:** 5 (1) **G3:** 4 (1) Not available **G1:** 87 (13) **G2:** 68 (11) **G3:** 22 (8) **Risk factors, n (%):** Advanced maternal age (see above) **Cesarean delivery n (%):** **G1:** 337 (51) **G2:** 305 (51) **G3:** 164 (57) p = 0.22 **Labor induction/augmentation, n (%):** Total **G1:** 359 (55) **G2:** 322 (54) **G3:** 55 (19) p = 0.24	**G3:** 47 (16) p <0.01 **Harms of intervention:** NR **Confounders:** NR/list **Effect modifiers:** NR/list

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Induction **G1:** 151 (23) **G2:** 143 (24) **G3:** 82 (28) p = 0.63 Augmentation **G1:** 208 (32) **G2:** 179 (30) **G3:** 0 Pregnancy-related hypertension **G1:** 176 (27) **G2:** 179 (30) **G3:** 84 (29) p = 0.38 Placenta previa or abruption **G1:** 31 (5) **G2:** 47 (8) **G3:** 46 (16) p < 0.001 Chorioamnionitis **G1:** 141 (21) **G2:** 127 (21) **G3:** 56 (19) p = 0.76 Perineal trauma **G1:** 4 (1) **G2:** 7 (1) **G3:** 23 (8) p < 0.001 **Primary etiology of PPH, n (%):** Uterine atony **G1:** 22 (3) **G2:** 11 (2)	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G3: 6 (2) p = 0.22	

Table D-51. Evidence table for studies addressing management of PPH (Audureau 2009)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Audureau et al., 2009[52] **Country:** France **Enrollment period:** 2002 to 2005 (Pre: Sep to Dec 2002 and Post: Sep to Dec 2005) **Birth setting:** Maternity Units **Facility characteristics:** Level 1 (no non-routine neonatal care facilities), Level 2 (neonatal care unit), and Level 3 (onsite neonatal intensive care unit) units **Funding:** Grant from the Hospital Program for Clinical Research from the French Ministry of Health **Design:** Pre-post systems level	**Intervention:** Multifaceted intervention conducted in a French regional perinatal network including all maternity unites of a defined geographic region and aimed at increasing the translation into practice of clinical guidelines related to PPH. The primary objective of the study was to assess the impact of the intervention on practices for prevention, diagnosis, and management of PPH. The secondary objective was to evaluate the impact of the intervention on the prevalence of major PPH. Sample I: random selection of all women delivering in the time period Sample II: representative sample of women with PPH deliveries Sample III: all cases of major PPH **Groups:** **G1:** All deliveries 2002 **G1a:** Sample I 2002 **G1b:** Sample II 2002 **G1c:** Sample III 2002 **G2:** All deliveries 2005 **G2a:** Sample I 2005 **G2b:** Sample II 2005 **G2c:** Sample III 2005 **N:** **G1:** 17,664 **G1a:** 294 **G1b:** 164	**Operational definition of PPH:** The definition of PPH was based on its clinical diagnosis by attending staff, or by reports of abnormal bleeding leading to examination of the uterine cavity or manual removal of the placenta. Major PPH was defined by the presence of one or more of the following criteria: blood transfusion of one unit or more, arterial embolization, arterial ligation, or other conservative uterine surgery, hysterectomy, peripartum hemoglobin delta of 4 g/dl or more or maternal death. **Definition of success of treatment:** NR **Method of blood loss measurement:** blood collecting bags **Severity:** PPH; Major PPH **Inclusion criteria:** • Deliveries in the study area during 2002 and 2005 **Exclusion criteria:** NR **Maternal age, yrs, mean (SD):** **G1a:** 29.2 (5.1) **G1b:** 29.8 (5.4) **G1c:** 29.2 (9.1) **G2a:** 29.6 (5.6) **G2b:** 28.7 (5.3) **G2c:** 29.4 (5.0) **Parity:** NR **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR	**Prevalence of prophylactic oxytocin administration after birth at all units Sample I, n (%):** **G1a:** 137 (58.8) **G2a:** 195 (75.9) **G1a vs G2a:** p < 0.0001 **Prevalence of use of blood collecting bags after vaginal delivery at all units, n (%):** **G1a:** 9 (3.9) **G2a:** 196 (76.3) **G1a vs G2a:** p < 0.0001 **Management of PPH practices from Sample II Examination of the uterine cavity and/or manual removal of placenta, n (%):** **G1b:** 129 (84.9) **G2b:** 118 (78.7) **G1b vs G2b:** p=0.18 **Instrumental examination of the genital tract, n (%):** **G1b:** 29 (17.7) **G2b:** 40 (24.1) **G1b vs G2b:** p=0.32 **Intravenous administration of oxytocin, n (%):** **G1b:** 127 (77.4) **G2b:** 125 (75.3) **G1b vs G2b:** p=0.70 **Intravenous administration of sulprostone in case of persistent uterine atony, n (%):** **G1b:** 19 (50.0) **G2b:** 18 (56.3) **G1b vs G2b:** p=0.64 **Blood transfusion of one unit or more if**

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	G1c: 143 **G2:** 17,772 **G2a:** 300 **G2b:** 166 **G2c:** 152 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** Main steps of the protocol for prevention and management of PPH 1 Prevention: Systematic intravenous prophylactic injection of 10 IU oxytocin during the third stage of labor 2 Diagnosis: Systematic use of a blood collecting bag after vaginal delivery 3 Management: For PPH after vaginal delivery Immediate manual removal of placenta and/or examination of the uterine cavity; instrumental examination of the vagina and cervix Immediate intravenous administration of oxytocin Intravenous administration of sulprostone in case of persistent PPH because of uterine atony 30 minutes after oxytocin administration Red blood cell transfusion if hematocrit below 28% **Length of follow-up:** NR	**BMI, mean (SD):** **G1a:** 23.7 (5.2) **G1b:** 23.4 (4.8) **G1c:** 23 (3.9) **G2a:** 23.4 (5.0) **G2b:** 23.1 (4.3) **G2c:** 22.9 (4.5) **Baseline hemoglobin:** NR **Mode of birth, n:** Cesarean **G1a:** 20.7 **G1b:** 7.3 **G1c:** 12.6 **G2a:** 14.3 **G2b:** 9.6 **G2c:** 17.8 **Risk factors, %:** Prior PPH **G1a:** 2.4 **G1b:** 4.3 **G1c:** 6.3 **G2a:** 2.0 **G2b:** 4.2 **G2c:** 7.9 **Parity:** NR **Maternal Age:** NR **Obesity:** NR **Multiple gestation:** NR **Macrosomia:** NR **Primary etiology of PPH, (%):** Uterine Atony	**hematocrit was below 28%, n (%):** **G1b:** 6 (28.6) **G2b:** 12 (37.5) **G1b vs G2b:** p=0.56 **Major PPH, n (prevalence):** **G1:** 142 (0.80) **G2:** 153 (0.86) **G1 vs G2:** p=0.54 **PPH with peripartum hemoglobin delta ≥4 g/dl, n (prevalence):** **G1:**124 (0.70) **G2:** 125 (0.71) **G1 vs G2:** p=0.97 **PPH requiring major treatment, n (prevalence):** **G1:** 36 (0.20) **G2:** 63 (0.36) **G1 vs G2:** p=0.01 **Arterial embolization, n (prevalence):** **G1:** 11 (0.06) **G2:** 16 (0.09) **G1 vs G2:** p=0.34 **Hemostatic Surgery, n (prevalence):** **G1:** 10 (0.06) **G2:** 22 (0.12) **G1 vs G2:** p=0.03 **Emergency Hysterectomy, n (%):** **G1b:** 4 (.02) **G2b:** 10 (.06) **G1 vs G2:** p=0.11

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1b: 50.0 **G2b:** 42.8 Retained Placenta **G1b:** 32.9 **G2b:** 35.5 Genital Tract Lesion **G1b:** 5.5 **G2b:** 6.6 Abnormal Placental Implantation **G1b:** 1.2 **G2b:** 3.0	

Table D-52. Evidence table for studies addressing management of PPH (Feigenberg 2009)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Feigenberg et al., 2009[53] **Country:** Israel **Enrollment period:** 1990-2002 **Birth setting:** Hospital **Facility characteristics:** 2 tertiary care hospitals. **Funding:** NR **Design:** Retrospective cohort	**Intervention:** Treatment for secondary PPH **Groups:** **G1:** medically treated **G2:** surgical evacuation of uterus **N at enrollment:** **G1:** 118 **G2:** 50 **N at follow-up:** **G1:** 118 **G2:** 50 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR **Time between delivery and day of admission, days mean:** **G1:** 16.8 **G2:** 27.9 p=0.0003	**Operational definition of PPH:** Secondary PPH: any excessive vaginal bleeding occurring between 24 hours after end of third stage of labor up to 12 weeks later in an amount sufficient to prompt hospitalization **Definition of success of treatment**: Negative primary outcome: any of the following 1) need for blood transfusion for women whose hgb were higher than 80 g/L upon admission and dropped during hospitalization; 2) hysterectomy; 3) perforation of uterus during primary or secondary evacuation; 4) need for broad spectrum antibiotics due to systemic infection. Negative secondary outcome: any of the following 1) need for second evacuation of uterus or any evacuation if one was not initially planned; 2) re-admission to hospital after discharge; 3) hospitalization > 3 days; 4) drop in hemoglobin more than 20 g/L for those who did not receive blood. **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Women identified with late PPH **Exclusion criteria:** NR **Maternal age, yrs, mean:** **G1:** 28.5 **G2:** 29.9 p=NS **Parity, mean:** **G1:** 3 **G2:** 2.7 p=NS **Weeks gestation:** NR	**Blood loss:** NR **Transfusion, n (%):** **G1:** 11 (9.3) **G2:** 10 (20) p= 0.07 **ICU admission:** NR **Anemia:** Hemoglobin drop > 20 g/L **G1:** 16 (13.6) **G2:** 5 (10) p= 0.62 Readmission **G1:** 18 (15.5) **G2:** 4 (8.2) p= 0.32 Length of stay (hospitalization > 2 days) **G1:** 48 (41) **G2:** 22 (44) p= 0.73 **Mortality:** None **Uterine preservation:** Hysterectomy **G1:** 0 **G2:** 1 (2) p= 0.30 Secondary surgical evacuation **G1:** 31 (26.3) **G2:** 4 (8) p= 0.01 **Future fertility:**

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Single pregnancy: NR **Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** NR **Risk factors:** NR **Primary etiology of PPH:** NR	Secondary infertility, (%) **G1:** 8 (12.1) **G2:** 8 (30.8) p= 0.06 **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** Broad spectrum antibiotics **G1:** 10 (8.5) **G2:** 9 (18.4) p= 0.11 Perforation **G1:** 0 **G2:** 2 (4.1) p= 0.09 **Any negative primary outcome:** **G1:** 19 (16.5) **G2:** 18 (37.5) p= 0.01 **Any negative secondary outcome:** **G1:** 68 (59.1) **G2:** 26 (53.1) p= 0.49 **Confounders:** NR **Effect modifiers:** NR **Need for adhesiolysis, n (%):** **G1:** 3 (2.5) **G2:** 8 (16.0) p=0.03

Table D-53. Evidence table for studies addressing management of PPH (Fiori 2009)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Fiori et al., 2009[54] **Country:** France **Enrollment period:** April 1995 to July 2005 **Birth setting:** Hospital **Facility characteristics:** NR **Funding:** NR **Design:** Retrospective case series	**Intervention:** Emergency pelvic angiographic selective artery embolization for severe PPH **Groups:** **G1:** pelvic arterial embolization **N at enrollment:** **G1:** 56 **N at follow-up:** **G1:** 34 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** 1 Vaginal and cervical area is checked for local lesions that are sutures if necessary 2 If uterine atony is observed, empty the bladder inserting a Foley catheter, uterus is explored manually, and an intravenous bolus of 5-10 IU of oxytocin is administered without exceeding 50 IU since delivery 3 If bleeding persists, the uterus is explored again, and perform external uterus massage and administer 1 vial of sulprostone (500 ug) by slow intravenous injection over 30 minutes to 1 hour; 1st vial can be followed by 2nd over 5 hours 4 Arterial embolization procedure could take place during or after the second vile of sulprostone	**Operational definition of PPH:** Severe PPH as PPH with more than 1000 mL blood loss after clinical estimation or after weighing blood bag or more than 500 mL with poor clinical tolerance of blood loss (hypotension, etc) but also if PPH was persistent despite medical treatment or if a persistent PPH induced disseminated intravascular coagulopathy (DIC) or required transfusion. **Definition of success of treatment:** NR **Method of blood loss measurement:** clinical estimation; weighing blood bag **Severity:** >1000 mL or >500 mL with poor clinical tolerance of blood loss **Inclusion criteria:** • Severe PPH (see above) • PAE performed after failure of initial medical treatment **Exclusion criteria:** • Women underwent hysterectomy on post embolization day 25 for secondary endometriosis **Maternal age, median (range):** **G1:** 33 (20-43) **Parity, median (range):** **G1:** 1 (1-4) **Weeks gestation, median (range):** G1: 39 (26-41) **Single pregnancy:** NR **Multiple pregnancy:** NR **Mode of birth, n:** Spontaneous vaginal delivery	**Harms pre-specified:** No **Harms, n (%):** Menstrual disorders **G1:** 3/33 (9%) Hypomenorrhea related to partial corporeal uterine synechiae n=1, metrorrhagia related to diffuse uterine adenomyosis n=1, irregular menstrual bleeding, n=1 Failure to conceive **G1:** 2/15 (13) 19 (56%) women reported no desire for future pregnancy

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	Length of follow-up: Median followup 44.4 months (range, 8.3-118.2)	**G1:** 30 (54.5) Cesarean delivery **G1:** 16 (29) Instrumental vaginal delivery **G1:** 9 (16.5) **Risk factors:** NR **Primary etiology of PPH, n (%):** Uterine atony **G1:** 56 (100) Lower genital tract lacerations **G1:** 4 (7) Placenta accreta **G1:** 4 (7)	

Table D-54. Evidence table for studies addressing management of PPH (Gaia 2009)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Gaia et al., 2009[55] **Country:** France **Enrollment period:** Dec 1999 to August 2006 **Birth setting:** NR **Facility characteristics:** Tertiary care. **Funding:** NR **Design:** Case series	**Intervention:** Embolotherapy for PPH **Groups:** **G1:** intervention **N at enrollment:** **G1:** 113 **N at follow-up:** **G1:** 107 (6 women were unreachable by telephone) **Duration of treatment:** NR **Timing of treatment:** Mean duration of PPH before embolization was 220 min, ranging from 80-360 min. In 5, PPH was delayed & diagnosed at 2,2,5,7, & 10 days. **Order of treatment:** Initial medical treatment consisting of oxytocic agents. 18 had pre-embolization surgery (16%). Primary management d use of oxytocin (& prostaglandin analogues, manual exploration of the uterus & massage, & suturing of the lacerations. Blood transfusions were performed. Once medical & surgical measures were found to not control the bleeding, pts transferred for embolization. **Length of follow-up:** Average follow-up time was 46.4 ± 21.8 months (range 12-84 months).	**Operational definition of PPH:** 500 mL within 24 hours after delivery or delayed PPH 500 mL greater than 24 hours after delivery. **Definition of success of treatment**: control of bleeding **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • PPH • Unresolved bleeding w medical & surgical procedures **Exclusion criteria:** • Severe PPH requiring total hysterectomy (n=6) **Maternal age, yrs, mean ± SD:** **G1:** 31 (range 18-47) **Parity:** NR **Weeks gestation, mean (range):** **G1:** 30 (32-42) **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n (%):** Vaginal **G1:** 46 (40.7)	**Harms pre-specified:** No **Harms, n (%):** Any major perioperative complication, total: **G1:** 9/113 (8) Pulmonary embolism **G1:** 2 (1.7) Acute pulmonary edema **G1:** 1 (1) Myocardial infarction **G1:** 1 (1) Femoral vein thrombosis **G1:** 5 (4) **Long term side effects, n=107:** Urinary disorders **G1:** 8 (7) Vaginal dryness **G1:** 11 (10) Hot flushes **G1:** 13 (12) Dyspaurenia **G1:** 14 (13) Amenorrhea after embolization and diffuse uterine synechiae **G1:** 6/107 (5.6) **Menses, n (%):** Recovery 99 (92.5) Normal 66/107

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Cesarean **G1:** 67 (59.3) **Risk factors:** NR **Primary etiology of PPH, n (%):** Atony **G1:**85 (75) Coagulopathy **G1:** 5 (4) Trauma (vaginal or cervical laceration) **G1:** 11 (10) Placental pathology **G1:** 11 (10) Vascular accident **G1:** 1 (1)	Subjective changes 33/107 Menorrhagia 10/33 Oligomenorrhea 23/33

Table D-55. Evidence table for studies addressing management of PPH (Phillips 2009)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Phillips et al., 2009[56] **Country:** Australia and New Zealand **Enrollment period:** Jan 2002 to July 2008 **Birth setting:** 38 hospitals **Facility characteristics:** NR **Funding:** Novo Nordisk Pharmaceuticals educational grant **Design:** Case series-registry	**Intervention:** Administration of recombinant activated factor VII (rFVIIa) (off-label use) Median dose 92 µg/kg (IQR range 9-139) Received single dose: 82 (78%) **Groups:** **G1:** intervention **N:** **G1:** 110 (5 received as prophylaxis before delivery) **G1a:** 105 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** Step 1: hysterectomy (53% of pts) Step 2: administration of packed red blood cells (PRBCs) (83% of pts) Step 3: administration of rFVIIa Step 4: administration of <6 units PRBCs (76% of pts) **Length of follow-up:** 28 days	**Operational definition of PPH:** NR **Definition of success of treatment:** Reduction or cessation of bleeding **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Women who received rFVIIa as treatment for PPH • Registry report **Exclusion criteria:** • rFVIIa used for prophylaxis **Maternal age, yrs, mean ± SD (range):** **G1:** 32 ± 6 (17 to 48) **Parity, n:** **G1:** NR **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth:** NR **Risk factors:** NR	**Blood loss:** NR **Transfusion** PRBCs, n (%): None **G1a before:** 6 (6) **G1a after:** 29 (28) 1-5 units **G1a before:** 12 (11) **G1a after:** 51 (49) 6-10 units **G1a before:** 28 (27) **G1a after:** 16 (15) 11-15 units **G1a before:** 28 (27) **G1a after:** 4 (4) 16-20 units **G1a before:** 19 (18) **G1a after:** 0 21-25 units **G1a before:** 4 (4) **G1a after:** 3 (3) Over 25 units **G1a before:** 8 (8) **G1a after:** 2 (2) p< 0.001 Fresh Frozen Plasma (FFP): None **G1a before:** 7 (7) **G1a after:** 59 (56) 1-5 units **G1a before:** 29 (28) **G1a after:** 30 (29) 6-10 units **G1a before:** 49 (47) **G1a after:** 9 (9)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Primary etiology of PPH, n (%): Atony **G1a:** 19 (18) Uterine rupture **G1a:** 3 (3) Placenta accrete/percreta **G1a:** 17 (16) Placenta previa **G1a:** 13 (12) Placental abruption **G1a:** 9 (9) Retained placenta **G1a:** 4 (4) Preeclampsia/eclampsia **G1a:** 6 (6) Acute fatty liver of pregnancy **G1a:** 3 (3) Intrauterine fetal death **G1a:** 9 (9) Obstetric injury **G1a:** 4 (4) Amniotic fluid embolism **G1a:** 3 (3) Other (see comment) **G1a:** 10 (10) No identifiable cause **G1a:** 5 (5)	11-15 units **G1a before:** 12 (11) **G1a after:** 5 (5) 16-20 units **G1a before:** 6 (6) **G1a after:** 1 (1) 21-25 units **G1a before:** 1 (1) **G1a after:** 0 Over 25 units **G1a before:** 1 (1) **G1a after:** 1 (1) p< 0.001 Cryoprecipitate, n (%) None **G1a before:** 37 (35) **G1a after:** 70 (67) 1-5 units **G1a before:** 18 (17) **G1a after:** 15 (14) 6-10 units **G1a before:** 32 (31) **G1a after:** 13 (12) 11-15 units **G1a before:** 7 (7) **G1a after:** 1 (1) 16-20 units **G1a before:** 6 (6) **G1a after:** 5 (5) 21-25 units **G1a before:** 4 (4) **G1a after:** 0 Over 25 units **G1a before:** 1 (1) **G1a after:** 1 (1) p< 0.001 Platelet concentrate, n (%)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
			None **G1a before:** 26 (25) **G1a after:** 49 (47) 1-5 units **G1a before:** 65 (62) **G1a after:** 45 (43) 6-10 units **G1a before:** 9 (9) **G1a after:** 8 (8) 11-15 units **G1a before:** 1 (1) **G1a after:** 3 (3) 16-20 units **G1a before:** 3 (3) **G1a after:** 0 21-25 units **G1a before:** 0 **G1a after:** 0 Over 25 units **G1a before:** 1 (1) **G1a after:** 0 p< 0.003 **ICU admission:** NR **Anemia:** NR **Length of stay:** NR **Mortality within 28 days of receiving rFVIIa:** **G1:** 9 Five within 8 hr of rFVII admin of underlying conditions or exsanguination and 4 within the first 17 days of rFVII from multi-system failure after embolectomy, neurological injury following severe disseminated intravascular coagulation, hypoxic cerebral event and secondary to eclampsia and thrombotic thrombocytopenic purpura.

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
			Uterine preservation: NR **Future fertility:** NR **Breastfeeding:** NR Psychological impact: NR Harms of intervention **(Total n=39) within 28 days of receiving rFVIIa** Cerebrovascular accident **G1:** 1 Deep vein thrombosis **G1:** 1 Pulmonary embolism **G1:** 1 Disseminated intravascular coagulopathy **G1:** 8 Multiorgan failure **G1:** 7 Acute respiratory distress syndrome **G1:** 3 Other **G1:** 18, s reactive thrombocytosis (n=1), ileus (n=1), hypodensities of liver and spleen (n=1), pelvic hematoma (n=1), hyperbilirubinemia (n=1), hypertension (n=2), superficial thrombophlebitis (n=1), mild peripheral edema (n=1), rebleeding (n=1), pleural effusion (n=1), abdominal pain (n=1), small troponin rise (n=1), cecal perforation (n=1), peripartum cardiomyopathy (n=1), neurogenic leg pain (n=1), systemic inflammatory response

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
			syndrome (n=1), left lung collapse (n=1) **Confounders:** NR **Effect modifiers:** NR

Table D-56. Evidence table for studies addressing management of PPH (Balki 2008)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Balki et al., 2008[57] **Country:** Canada **Enrollment period:** June 2000 to June 2005 **Birth setting:** Hospital **Facility characteristics:** Tertiary care **Funding:** NR **Design:** Case series, retrospective	**Intervention:** Blood transfusion within 24 hours of delivery **Groups:** **G1:** intervention **N at enrollment:** **G1:** 104 **N at follow-up:** **G1:** 104 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** Blood loss > 500 mL after vaginal delivery, > 1000 Ml after Cesarean, or a 10% change in hematocrit. Other factors d need for blood transfusion, or any amount of blood loss that affected woman's hemodynamic stability. Definition of success of treatment: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** At least 24 weeks gestation and received blood transfusion within 24 hours of delivery **Exclusion criteria:** NR **Maternal age, yrs, mean ± SD:** **G1:** 33.6 ± 4.8 **Parity, n:** Primipara **G1:** 56 (53.8) Multipara **G2:** 48 (46.2) **Weeks gestation, mean ± SD:** **G1:** 35.8 ± 6.1 **Single pregnancy, n (%):** NR **Multiple pregnancy, n (%):** NR **Race/ethnicity:** NR **BMI:** Weight, kg , mean ± SD	**Harms pre-specified:** No **Harms:** Pulmonary complications: 2.8% Cardiac complications: 1% Coagulopathy, including DIC: 20% Required ICU admission: 24%

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 75.9 ± 13.3 **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** Vaginal **G1:** 67 Elective Cesarean **G1:** 12 Cesarean during labor **G1:** 25 **Risk factors, n (%):** Prior PPH **G1:** 5 (4.8) Multiple gestation **G1:** 18 (17.3) Macrosomia **G1:** 17 (16.3) Abnormal placentation **G1:** 17 (16.3) Pregnancy induced hypertension **G1:** 14 (13.5) Chorioamnionitis **G1:** 9 (8.7) Blood disorders/anticoagulation **G1:** 8 (7.7) Antepartum hemorrhage **G1:** 21 (20.1)	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Previous uterine surgery **G1:** 22 (21.1) Prolonged labor first stage **G1:** 12/92 (13) Prolonged second stage **G1:** 6/92 (6.5) Prolonged third stage **G1:** 1/92 (1.1) **Primary etiology of PPH, n (%):** Atony **G1:** 40 (38.5) Coagulopathy **G1:** 7 (6.7) Trauma genital tract **G1:** 13 (12.5) Retained placenta **G1:** 35 (33.7) Undetermined **G1:** 9 (8.7) Placenta previa **G1:** 7 (6.7) Placenta accreta **G1:** 7 (6.7) Placenta percreta **G1:** 3 (2.9) Placenta abruption **G1:** 1 (0.9)	

Table D-57. Evidence table for studies addressing management of PPH (Knight 2007)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Knight, 2007[58] **Country:** UK **Enrollment period:** Feb 2005 to Feb 2006 **Birth setting:** Hospital **Facility characteristics:** Consultant-led maternity units **Funding:** Oxford Deanery public health training program and the National Coordinating Centre for Research Capacity Development of the Department of Health **Design:** Population-based case series	**Intervention:** Peripartum hysterectomy **Groups:** **G1:** Peripartum hysterectomy **G1a:** total hysterectomy **G1b:** subtotal hysterectomy **N:** **G1:** 315 **G1a:** 149 **G1b:** 162 Type unknown for n=4 **G1:** 315 **Duration of treatment:** NR **Timing of treatment:** Within 24 hours of birth: 89% 1-38 days post-birth: 11% **Order of treatment:** Other treatments prior to hysterectomy, n: Syntocinon: 259 Ergometrine: 141 Prostaglandin: 171 Misoprostol: 31 Bimanual compression: 16 Intrauterine balloon: 83 N-lynch or brace suture: 50 Arterial ligation: 34 rFVIIa: 28 Embolization: 9 Uterine packing: 40 Other: 34	**Operational definition of PPH:** NR **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** Women undergoing peripartum hysterectomy for PPH at a UKOSS-participating hospital **Exclusion criteria:** Hysterectomy for malignancy **Maternal age, yrs, mean ± SD:** NR **Parity:** NR **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, %:** Cesarean **G1:** 80 Spontaneous vaginal	**Blood loss:** NR **Transfusion, median units transfused (range):** **G1a:** 10 (0-116) **G1b:** 10 (0-80) **ICU admission:** **G1:** 265 (84) **Anemia:** NR **Length of ICU stay days, median (range):** **G1:** 2 (1-26) **Mortality:** **G1:** 2 (0.6%) (95%CI: 0-1.5%) **Uterine preservation:** None **Future fertility:** NA **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention, n (%):** Bladder damage **G1:** 38 (12.1) Ureter damage **G1:** 18 (5.8) Ovary removal **G1:** 28 (8.9) Any further surgery **G1:** 62 (19.8)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	Length of follow-up: NR	**G1:** 16 Assisted vaginal **G1:** 4 **Risk factors, n (%):** NR **Primary etiology of PPH, n (%):** Uterine Atony **G1:** 167 (53) Placenta accreta/increta/percreta **G1:** 121 (38) Uterine rupture **G1:** 26 (8) Extension of uterine incision at delivery **G1:** 20 (6) Uterine infection **G1:** 16 (5) Fibroids **G1:** 11 (3) Genital tract laceration **G1:** 11 (3) Extension of previous uterine scar at delivery **G1:** 43 (14) Other including placenta praevia, clotting abnormally and placental abruption **G1:** 43 (14)	ORs for surgical damage between women with subtotal and total hysterectomy, not significant Other morbidity **G1:** 53 (17) Need for ventilation **G1:** 23 Cardiac arrest **G1:** 6 Renal failure **G1:** 4 Thromboembolic events **G1:** 4 ARDS acute respiratory distress syndrome **G1:** 2 Multiple organ failure **G1:** 2 **Confounders:** NR **Effect modifiers:** NR

Table D-58. Evidence table for studies addressing management of PPH (Baruah 2008)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Baruah et al., 2008[59] **Country:** US **Enrollment period:** July 2000 to Feb 2005 **Birth setting:** Hospital **Facility characteristics:** Academic, Research and Teaching Hospital **Funding:** NR **Design:** Retrospective cohort	**Intervention:** Rectal misoprostol as second line therapy, dose varied from 800 to 1,000 µg Control group received methylergonovine maleate 0.2 mg IM **Groups:** **G1:** Misoprostol **G2:** Methyergonovine Maleate **N at enrollment:** **G1:** 40 **G2:** 18 **N at follow-up:** **G1:** 40 **G2:** 18 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** Second line therapy **Length of follow-up:** NR	**Operational definition of PPH:** Primary PPH: Bleeding within first 24 hours after delivery and blood loss > 500 mL **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • who were between 37 and 42 weeks gestational age, • who received a clinical diagnosis of PPH following delivery of singleton pregnancy and • Required uterotonics as second-line treatment after failed initial oxytocin therapy **Maternal age, yrs, n:** Under 20 **G1:** 6 **G2:** 1 20-29 **G1:** 14 **G2:** 9 30-39 **G1:** 19 **G2:** 8 ≥ 40 **G1:** 1 **G2:** 0 **Parity, n:** Primparous **G1:** 14 **G2:** 6	**Need for third line (medical/surgical) therapy, n (%):** **G1:** 27 (67.5) **G2:** 14 (77.77) p=0.91 **Medical treatment as third line therapy, n (%):** **G1:** 22 (55) **G2:** 10 (55.5) p=0.96 **Surgical intervention as third or fourth line therapy, n (%):** **G1:** 5 (12.5) **G2:** 4 (22.2) p=0.51 **Dilation and curettage:** **G1:** 8 (30) **G2:** 4 (22) p=0.84 **Uterine packing:** **G1:** 2 (5) **G2:** 0 p=0.92 **Uterine artery embolization:** **G1:** 1 (3) **G2:** 0 p=0.49 **Uterine artery ligation:** **G1:** 1 (3) **G2:** 1 (6) p=0.55

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Multiparous **G1:** 26 **G2:** 12 **Weeks gestation:** NR **Single pregnancy, %:** 100 **Multiple pregnancy, n (%):** 0 **Race/ethnicity, n:** White **G1:** 26 **G2:** 7 Hispanic **G1:** 5 **G2:** 3 Black **G1:** 5 **G2:** 4 Native American **G1:** 4 **G2:** 4 **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth:** NR **Risk factors:** NR **Primary etiology of PPH:** NR	**Blood loss:** NR **Transfusion, needed, n (%):** **G1:** 5 (12.5) **G2:** 0 p=0.11 **ICU admission:** NR **Anemia:** NR **Length of stay:** NR **Mortality:** NR **Uterine preservation, n (%):** Hysterectomy **G1:** 1 (3) **G2:** 1 (6) p=0.55 **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** NR (Side effects listed in discussion) **Confounders:** NR **Effect modifiers:** NR

Comments: Third-line treatments d a medical intervention (e.g., the administration of either carboprost, misoprostol, methylergonovine maleate) and / or surgical intervention (e.g., dilation and curettage, uterine packing, uterine artery ligation, uterine artery embolization and hysterectomy) and/ or blood transfusion.

Table D-59. Evidence table for studies addressing management of PPH (Chauleur 2008a)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Chauleur et al., 2008[60] **Country:** France **Enrollment period:** January 1999 to February 2004 **Birth setting:** Hospital **Facility characteristics:** University **Funding:** NR **Design:** Population-based case series	**Intervention:** Analyze the relationship between severe PPH, its related blood-derived substitutive treatments and the occurrence of venous thromboembolism (VTE) in the following first six weeks post birth **Groups:** **G1:** Women during their first pregnancy **G1a:** Subgroup of women who developed severe PPH **N at enrollment:** **G1:** 32,463 **G1a:** 317 (0.98%) **N at follow-up:** NR **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** 1 As soon as excessive bleeding was observed, manual explorations of the uterus and oxytocin injection were performed 2 Sulprostone was injected IV in the case of persistent hemorrhage: initial 500 ug dose was given over a one hour duration, then a second dose over three to five hours 3 Fluid therapy was used to obtain hemodynamic stability and normovolemia 4 Transfusion of packed RBC units was performed to maintain the	**Operational definition of PPH:** PPH was defines as uterine bleeding occurring in the first 24 hours after delivery, persisting after manual exploration of the uterine cavity and requiring I.V. prostaglandin administration. Severe PPH was defined as peripartum decrease of hemoglobin >40 g/l^{-1} –the reference value taken into consideration was the last hemoglobin concentration before delivery-; or in case of transfusion of at least four packed red blood cell (RBC) units, of hemostatic intervention (surgical uterine sutures, artery litigation, artery embolization, hysterectomy) or of death. **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** See above **Inclusion criteria:** • Women during their first intended pregnancy **Exclusion criteria:** • Previous occurrence of superficial or deep vein thrombosis (DVT) in the patient or in any first degree relative • Chronic treatment during pregnancy interfering with the hemostatic system, including low- or high- dose aspirin • Any missing data on pregnancy loss **Maternal age, yrs, mean (range):** **G1:** 29.2 (21-36) **G1a:** 29 (22-36) **Parity:** NR **Weeks gestation, mean (range):** **G1a:** 39 (22-41)	**Transfusion, n (%):** Red blood cells **G1a:** 317 (100) Platelets **G1a:** 29 (9.1) Fresh frozen plasma **G1a:** 51 (16.1) Fibrinogen concentrates **G1a:** 29 (9.1) **Harms, n:** Lower limb DVT **G1:** 11 Superficial vein thrombosis **G1:** 60 **G1a:** 3 Venous thromboembolism **G1a:** 0 **Mortality, n:** **G1a:** 0 **Confounders:** NR **Effect modifiers:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	hemoglobin level above 70 g/l^{-1} 5 The practitioner in charge of the patient decided to inject 20 ml/kg^{-1} of fresh frozen plasma (FFP) in case of plasma factor V lower than 30% normal values and one unit of platelet (PLT) per 10 kg body weight in case of thrombocytopenia lower than 50 g/l^{-1} **Length of follow-up:** NR	**Single pregnancy:** NR **Multiple pregnancy, n (%):** **G1:** 340 (1) **G1a:** 6 (1.9) **Race/ethnicity, n (%):** European Caucasians **G1:** 26,323 (81.1) Northern Africa Caucasians **G1:** 4,447 (13.7) Africans **G1:** 1,006 (3.1) Asians **G1:** 683 (2.1) **BMI, Mean (range), kg/m^{-2}** **G1:** 24.3 (16.1-33.7) **G1a:** 23.9 (19.1-30.3) **Baseline hemoglobin:** NR **Mode of birth, n, (%):** Cesarean **G1:** 6,957 (21.4) **G1a:** 76 (24) Vaginal delivery **G1:** NR **G1a:** 241 (76) **Risk factors:** NR **Primary etiology of PPH, n (%):** Uterine atony **G1a:** 199 (62.8)	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Birth canal trauma **G1a:** 29 (9.1) Placenta accreta **G1a:** 2 (0.6) Placenta praevia, uterine inversion **G1a:** 1 (0.3) Placenta abruption, uterine atony **G1a:** 23 (7.3) Retained secondines **G1a:** 20 (6.3) Retained secondines, disseminated intravascular coagulation **G1a:** 5 (1.6) Retained secondines, uterine atony **G1a:** 30 (9.5) Retained secondines, uterine inversion 8 **G1a:** 8 (2.5)	

Table D-60. Evidence table for studies addressing management of PPH (Chauleur 2008b)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Chauleur et al., 2008[61] **Country:** France **Enrollment period:** 1996 to 2005 **Birth setting:** Hospital **Facility characteristics:** Tertiary care **Funding:** NR **Design:** Case series	**Intervention:** Women with a primary PPH resistant to medical treatment who underwent uterine artery embolization or hysterectomy. **Groups:** **G1a:** embolization **G1b:** hysterectomy **G1c:** embolization & hysterectomy **N:** **G1a:** 41 **G1b:** 6 **G1c**: 5 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR, follow-up interview in 2007	**Operational definition of PPH:** Greater than 500 mL **Definition of success of treatment**: cessation of external bleeding **Method of blood loss measurement:** collecting bag **Severity: NR** **Inclusion criteria:** • Women with a primary PPH resistant to medical treatment who underwent uterine artery embolization or hysterectomy **Exclusion criteria:** NR **Maternal age, yrs, median (range):** **Overall:** 27.3 (19-41) **G1a:** 29.2 ± 4.65 **G1b:** 30.1 ± 4.11 **G1c:** 36.6 ± 4.56 **Parity, n (%):** Primiparous **G1a:** 9 (21.9) **G1b:** 2 (33) **G1c:** 0 Multiparous **G1a:** 32 (78) **G1b:** 4 (66) **G1c**: 5 (100) **Weeks gestation:** NR **Single pregnancy, n:** **G1a:** 36 **Multiple pregnancy, n:**	**Mortality:** **G1a:** 1 (treated with in situ methotrexate and died 4 months after embolization due to methotrexate-related nephrotoxicity **Uterine preservation:** Embolization successful, n (%) **G1a:** 41/46 (89.1) Five patients underwent additional procedures 1. parametrical dissecting hematoma, embolization completed by the insertion of a coil into the R uterine artery (G1c) 2. Ovarian artery embolization 3. Hypogastric artery catheterized & embolization performed beyond the gluteal artery. 4. Superselective embolization of the internal iliac artery branch 5. Embolization performed after ligation of hypogastric arteries (embolization of the residual stump of hypogastric artery & anastomatic pelvic trats). Future fertility (data for 37/41) No wish for further children: 16 No present wish for another child: 5 Wanted another child: 16 (39%) Became pregnant within 1-11 months: 16/16 (100%) Return of normal menses **G1a:** 41 (100%) More than 1 pregnancy after embolization: 6 Repeat PPH - 1 **Harms of intervention:** Allergy to iodine, n **G1a:** 1

		G1a: 10 **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n (%):** Unassisted vaginal delivery **G1a:** 9 (21.9) **G1b:** 2 (33) **G1c**: 0 Instrumental vaginal **G1a:** 2(4.8) **G1b:** 0 **G1c**: 0 Cesarean **G1a:** 30 (73.1) **G1b:** 4 (66) **G1c:** 5 (100) **Risk factors, n (%):** NR **Primary etiology of PPH, n (%):** Atony **G1a:** 32 (69.5) Placenta accreta or percreta **G1a:** 8 (17.3) Placenta previa **G1a:** 3 (6.5) Placental abruption **G1a:** 1 (2) Myoma and atony **G1a:** 1 (2)	Acute pulmonary edema, n **G1a:** 1 Cardiovascular instability **G1a:** 1 Major hemoperitoneum related to dissection of epigastric artery (re-operated 4 times), n **G1a:** 1 **Confounders:** NR **Effect modifiers:** NR

		Parametrical dissecting hematoma **G1a:** 1 (2) Time between delivery & procedure, min (range) **G1a:** 263 (90-750)	

Table D-61. Evidence table for studies addressing management of PPH (Glaze 2008)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Glaze et al., 2008[62] **Country:** Canada **Enrollment period:** Jan. 1999 to Dec. 2006 (2 study periods:1999-2004 and 1999-2006) **Birth setting:** Calgary Health region hospitals **Facility characteristics:** NR **Funding:** NR **Design:** Case series	**Intervention:** Peripartum hysterectomy **Groups:** **G1:** Peripartum hysterectomy **N:** **G1:** 87 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** NR **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Peripartum hysterectomy- any hysterectomy performed within 24 hours of a birth **Exclusion criteria:** NR **Maternal age, yrs, mean ± SD (range):** **G1:** 34 ± 5 (18-44) **Parity, median, IQR (range):** **G1:** 1, 0 to 2 (1-10) **Weeks gestation:** NR **Single pregnancy, n (%):** **G1:** 82 (94) **Multiple pregnancy, n (%):** **G1:** 5 (6) **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n (%):** Emergency cesarean **G1:** 51 (59) Planned cesarean	**Blood loss:** NR **Transfusion, n (%):** PRBCs **G1:** 65 (75) ICU admission **G1:** 46 (53) Anemia **G1:** 32 (37) Length of stay in days, mean ± SD (range) **G1:** 6 ± 3 (2-16) Mortality, n (%) **G1:** 0 **Uterine preservation:** NA **Future fertility:** NA **Breastfeeding:** NR **Psychological impact:** Harms of intervention, n (%) **G1:** 17 (20) DIC **G1:** 17 (17) Ileus **G1:** 8 (9) Fever **G1:** 7 (8) Depression

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 19 (22) SVD **G1:** 11 (13) Operative delivery **G1:** 6 (7) **Risk factors, n (%):** No recorded complications **G1:** 35 (40) Labor induction/augmentation **G1:** 24 (28) Fibroids **G1:** 6 (7) Pregnancy-induced hypertension **G1:** 15 (17) Diabetes, gestational **G1:** 10 (11) Placenta previa **G1:** 19 (22) Placenta abruption **G1:** 2 (2) HELLP **G1:** 2 (2) Thrombocytopenia **G1:** 1 (1) Other **G1:** 17 (20) Previous cesarean **G1:** 27 (31)	**G1:** 1 (1) Hematoma **G1:** 1 (1) Pneumonia **G1:** 1 (1) No complications **G1:** 31 (36) **Confounders:** NR **Effect modifiers:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Primary etiology of PPH, n (%): Indications for hysterectomy Atony **G1:** 32 (37) Placenta accrete **G1:** 29 (33) Bleeding NOS **G1:** 22 (25) Extension of incision **G1:** 3 (3) Fibroids **G1:** 2 (2) Sepsis **G1:** 2 (2) Uterine rupture **G1:** 1 (1)	

Table D-62. Evidence table for studies addressing management of PPH (McMorrow 2008)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: McMorrow et al., 2008[63] **Country:** Ireland **Enrollment period:** Three year period starting in 2003 **Birth setting:** Hospital **Facility characteristics:** NR **Funding:** NR **Design:** Case-control (retrospective)	**Intervention:** Recombinant factor VII a Both groups received: uterotonics oxytocin i.v., ergometrine i.m., misoprotol (intrauterine and/or PR), haemobate (i.m or intramyometrial) and uterine massage. **Groups:** **G1:** recombinant factor VII a **G2:** control (no rFVIIa) **N at enrollment:** **G1:** 6 **G2:** 6 **N at follow-up:** **G1:** 6 **G2:** 6 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** Massive PPH requires treatment of greater than 5 units red cell concentrate (RCC) within 24 hours **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Massive PPH • Cases received rFVIIa (all had prolonged PTs) • Controls transfused with largest number of RCC and had prolonged PT **Exclusion criteria:** • See above **Maternal age, yrs, mean ± SD:** **G1:** 34 ± 2.8 **G2:** 31 ± 4.6 **Parity, n:** **G1:** 2 ± 0.5 **G2:** 1 ± 0.75 **Gestation, days, mean ± SD:** **G1:** 263 ± 45.7 **G2:** 279 ± 8.7 **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR	**Blood loss:** NR **Transfusion:** RCC units **G1:** 18 ± 11.2 **G2:** 16 ± 6.1 FFP units **G1:** 9 ± 4.5 **G2:** 10 ± 6.9 Pooled platelets **G1:** 4 ± 2.4 **G2:** 2 ± 1.6 Pooled cyroprecipitate **G1:** 4 ± 3 **G2:** 1 ± 1.6 **ICU admission:** NR **Anemia:** NR **Other:** Prothrombin time (PT), worst **G1:** 27 ± 5.7 **G2:** 25 ± 5.9 PT time, best **G1:** 14 ± 3.1 **G2:** 18 ± 3.4 Fibrinogen, lowest g/L **G1:** 1.2 ± 0.8 **G2:** 1.2 ± 0.7 **Length of stay:** NR **Mortality:** No deaths

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		SES: NR **Mode of birth, n (%):** Cesarean **G1:** 5 (83) **G2:** 5 (83) **Risk factors:** NR **Primary etiology of PPH:** NR	**Uterine preservation:** Hysterectomy **G1:** 3/6 (50) **G2:** 4/6 (67) **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** ARDS **G1:** 1/6 **G2:** 0 **Confounders:** NR **Effect modifiers:** NR

Comments: "There were few short-term complications in both groups. All mothers in both groups survived with no long-term sequelae

Table D-63. Evidence table for studies addressing management of PPH (Touboul 2008)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Touboul et al., 2008[64] **Country:** France **Enrollment period:** Jan 1998 to Jan 2002 **Birth setting:** Hospital **Facility characteristics:** University teaching hospital **Funding:** None to report **Design:** Case series	**Intervention:** Selective arterial embolization (SAE) Prior to SAE: Management for vaginal delivery: bimanual uterine exam, removal of retained placental parts, inspection for laceration or tears; surgical tears repaired prior to SAE. For cesarean delivery: abdominal ultrasound to verify absence of retained placenta pieces and rule out hemoperitoneum. Medical management d uterine massage, i.v. oxytocicin up to 55IU, and sulprostone (first injection 500 µg over an hour and second injection 500 µg over 4 hours). 12 (11.7%) at their hospital and 90 (88.3) transferred from other obstetric units **Groups:** **G1:** SAE **N:** **G1:** 102 **Duration of treatment:** NR **Timing of treatment:** Following procedures as listed above. **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** Severe PPH: blod loss > 1500 cc and either hemodynamic shock (defined by need for continuous perfusion of vasopressors) or disseminated intravascular coagulation (platelet count < 50,000 per mm^3 , elevated prothrombin time defined as greater than twice the control values, hypofibrinogenemia, defined as less than 150 mg/dl and a prothrombin rate < 50%) or both. **Definition of success of treatment**: Uterine preservation SAE effective: 73 (71.5%) 14 required second embolization during 1st 24 hours Surgery required: 29 **Method of blood loss measurement:** Collection bag placed at end of delivery. For transfer patients added estimated blood loss evaluated by medical team of hospital of origin. **Severity:** NR **Inclusion criteria:** • Women with life threatening PPH who underwent SAE • Either gave birth at hospital or were transferred from other institutions that did not have ICU or vascular imaging unit **Exclusion criteria:** NR **Maternal age, yrs, mean ± SD:** **G1:** 31.8 ± 5.9 (21-45) **Parity, n:** **G1:** 2.01 ± 1.11 (1-6) **Weeks gestation, n (%):** **G1:** 38.3 ± 2.9 (28-42) **Single pregnancy:** NR	**Harms pre-specified:** No **ICU admission:** 100% post procedure **Mortality:** **G1:** 2 **Harms, n (%):** Cardiogenic pulmonary edemas related to hemorrhage **G1:** 5 Transient renal failure **G1:** 7 (1 patient developed cortical necrosis and end stage renal failure) Myocardial ischemia **G1:** 3 Ischemia of lumbar plexus **G1:** 1 Gluteal pain (4 months) **G1:** 1

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Multiple pregnancy, n (%): **G1:** 4 (3.9) **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** Vaginal **G1:** 82 (79.4) Forceps: 28/81 (34.5) Cesarean **G1:** 22 (20.6) **Risk factors:** NR **Primary etiology of PPH, n (%):** Atony **G1:** 44 (43.1) Cervical or vaginal tears **G1**: 20 (19.6) Abnormal placentation including placenta accrete and percreta) **G1:** 14 (13.6) Vaginal thrombosis **G1:** 11 (10.7) Intrauterine retention **G1:** 7 (6.8) Placental abruption	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G1: 4 (3.9) Repaired uterine rupture **G1:** 2 (1.9)	

Table D-64. Evidence table for studies addressing management of PPH (Sakse 2007)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Sakse et al., 2007[65] **Country:** Denmark **Enrollment period:** 1995-2004 **Birth setting:** Hospital **Facility characteristics:** Multiple Danish hospitals **Funding:** Novo Nordisk, Hvidovre Hospital **Design:** Population-based Case Series (Registry)	**Intervention:** Peripartum hysterectomy **Groups:** **G1a:** Cesarean hysterectomy **G1b:** Postpartum hysterectomy Total: 152 hysterectomies due to bleeding **Duration of treatment:** NA **Timing of treatment:** NA **Order of treatment:** Women received the following treatments, n: Oxytocin: 128 Ergot alkaloid:59 Prostaglandin: 93 Misoprostol: 56 Uterine/vaginal packing: 23 Ligation: 32 b-Lynch: 26 rFVIIa: 3 **Length of follow-up:** NR	**Operational definition of PPH:** NR **Definition of success of treatment:** NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Peripartum hysterectomy **Parity, n:** Nulliparous **G1a:** 23 **G1b:** 13 Multiparous **G1a:** 78 **G1b:** 38 **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy:** NR **Mode of birth, n:** Cesarean: 101 Vaginal: 51 **Risk factors:** NR **Primary etiology of PPH, n (%):**	**Blood loss:** NR **Harms, n (%):** Complications following peripartum hysterectomy Infection: 13 (9) Bladder lesion**:** 10 (7) Ureter lesion**:** 3 (2) Ooforectomy**:** 8 (5) Abscess**:** 3 (2) Lung embolus**:** 1 (1) Death**:** 2 (1) Re-operation**:** 16 (11)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Atony **G1a:** Nulliparous: 14 (61) **G1a:** Multiparous: 14 (18) **G1b:** Nulliparous parae: 6 (46) **G1b:** Multiparous: 12 (32) Placenta previa **G1a:** Nulliparous: 1 (4) **G1b:** Multiparous: 14 (18) Placenta accreta **G1a:** Nulliparous: 2 (9) **G1a:** Multiparous: 36 (46) **G1b:** Multiparous: 3 (8) **DIC** **G1a:** Nulliparous: 4 (17) **G1a:** Multiparous: 4 (5) **G1b:** Nulliparous parae: 3 (23) **G1b:** Multiparous: 5 (13) Laceration **G1a:** Nulliparous: 1 (4) **G1a:** Multiparous: 9 (12) **G1b:** Nulliparous parae 3 (23) **G1b:** Multiparous 17 (44) Unclassified **G1a:** Nulliparous: 1 (4) **G1a:** Multiparous: 1 (1) **G1b:** Nulliparous parae: 1 (8) **G1b:** Multiparous: 1 (3)	

Table D-65. Evidence table for studies addressing management of PPH (Ahonen 2007)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Ahonen et al., 2007[66] **Country:** Finland **Enrollment period:** NR to Nov. 2006 **Birth setting:** Hospital **Facility characteristics:** Tertiary referral **Funding:** NR **Design:** Retrospective cohort	**Intervention:** Recombinant activated factor VIII Dose **G1:** 100 ± 14 (73-122) ug/kg **Groups:** **G1:** rFVIIa **G2:** control **N at enrollment:** **G1:** 26 **G2:** 22 **N at follow-up:** **G1:** 26 **G2:** 22 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** Consider use of rFVIIa when patient has lost about 1.5 times her blood volume **Definition of success of treatment**: Good response if bleeding after administration was 1000 ml or less and no additional interventions needed or only vaginal lacerations sutured. Moderate response if bleeding more than 1000 ml but no additional surgical or radiological procedures required. Poor response if cessation of bleeding necessitated a subsequent selective arterial embolization or surgical interventions (laparotomy for hemostasis and/or arterial ligation) **Method of blood loss measurement:** NR **Severity:** Entire cohort defined as “massive PPH” **Inclusion criteria:** • Cases were women treated with rFVIIa during existence of guidelines • Controls treated for a major PPH during same period without rFVIIa **Exclusion criteria:** NR **Maternal age, yrs, mean ± SD:** **G1:** 33 ± 4 **G2:** 35 ± 4 **Parity, n:** 1st pregnancy **G1:** 12 **G2:** 12 2nd pregnancy **G1:** 5 **G2:** 6 3rd pregnancy **G1:** 6	**Blood loss, mean ± SD (range):** Total bleeding, liters **G1:** 11.3 ± 4.5 (4.4-20.0) **G2:** 8.0 ± 3.1 (5.0-19.0) p=0.005 **Transfusion:** RBC (units) **G1:** 20 ± 8 (7-39) **G2:** 13 ± 6 (6-26) p=0.003 Platelets (units) **G1:** 23 ± 12 (8-54) **G2:** 14 ± 10 (8-48) p=0.014 FFP units **G1:** 12 ± 6 (4-22) **G2:** 10 ± 5 (4-18) **Response to rFVIIA, n:** Good **G1:** 17 Moderate **G1:** 3 Poor **G1:** 6 ICU admission **G1:** 1 **G2:** 0 **Anemia:** Hemoglobin (g/l) **G1:** 56 ±16 (30-95)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G2: 1 4th or more **G1:** 3 **G2:** 3 **Weeks gestation, n (%):** **G1:** 38 ± 3 **G2:** 38 ± 4 **Single pregnancy:** NR **Multiple pregnancy, n (%):** Twin **G1:** 4 (15.4) **G2:** 6 (27.3) **Race/ethnicity:** NR **BMI** Height, cm **G1:** 167 ± 6 **G2:** 165 ± 8 Weight, kg **G1:** 78 ±11 **G2:** 89 ±21 **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** Vaginal **G1:** 15 **G2:** 10 Instrumental **G1:** 1	**G2:** 64 ± 17 (27-92) p=0.126 Length of stay, mean ± SD (range) **G1:** 8 ± 3 (3-18) **G2:** 8 ± 4 (4-16) **Mortality:** None **Uterine preservation:** Hysterectomy **G1:** 8 **G2:** 6 **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** Pulmonary edema **G1:** 1 **G2:** 0 Pulmonary embolism **G1:** 1 **G2:** 0 Plasmapheresis due to pre-eclampsia and HELLP **G1:** 0 **G2:** 1 **Confounders:** NR **Effect modifiers:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G2: 1 Cesarean **G1:** 10 **G2:** 11 **Risk factors, n:** Pre-eclampsia **G1:** 2 **G2:** 3 HELLP **G1:** 0 **G2:** 1 Previous endometriosis **G1:** 4 **G2:** 2 **Primary etiology of PPH, n (%):** Atony **G1:** 9 (34.6) **G2:** 8 (36.4) Abnormal placentation **G1:** 3 (11.5) **G2:** 3 (13.6) Retained placenta **G1:** 5 (19.2) **G2:** 4 (18.2) Uterine or birth canal tear **G1:** 9 (34.6) **G2:** 7 (31.8)	

Table D-66. Evidence table for studies addressing management of PPH (Alfirevic 2007)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Alfirevic et al., 2007[67] **Country:** UK, Denmark, Finland, France, Iceland, Ireland, Netherlands, Norway, Sweden **Enrollment period:** 2000 to 2004 **Birth setting:** Hospitals **Facility characteristics:** Tertiary care, community hospital, etc. – all maternity hospitals in participating countries **Funding:** Novo Nordisk, Bagsvaerd, Denmark. **Design:** Case series (voluntary registry – 54.4% of hospitals did not respond)	**Intervention:** Recombinant activated factor VIIa **Groups:** **G1a:** treated with rFVIIa as primary therapy for PPH **G1b:** treated with rFVII as secondary prophylaxis after or as support for other intervention for PPH that was considered successful on its own **N:** **G1a:** 92 **G1b:** 16 **Medical management of PPH:** None **G1a:** 5 (5) **G1b:** 0 One medical treatment **G1a:** 16 (17) **G1b:** 3 More than 1 medical treatment **G1a:** 71 (77) **G1b:** 13 **Hemostatic interventions:** None reported **G1a:** 12 (13) **G1b:** 2 Manual exploration **G1a:** 44 **G1b:** 12 Uterine packing **G1a:** 25	**Operational definition of PPH:** NR **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Cases of obstetric hemorrhage in which rFVIIa was used **Exclusion criteria:** NR **Maternal age, yrs, mean ± SD:** NR **Parity, primipara n (%):** **G1a:** 38 (45) **G1b:** 7 **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** Spontaneous vaginal **G1a:** 33 (36) **G1b:** 7 Instrumental	**Blood loss, estimated L mean (range):** **G1a:** 5.8 (4.5-9.4) **G1b:** 2.5 (0.6-9) **Transfusion, n (%):** Packed RBCs (range) **G1a:** 13 (8-21) **G1b:** NR None **G1a:** 3 (3) **G1b:** 3 Less than 10 **G1a:** 24 (27) **G1b:** 6 10-14.9 **G1a:** 24 (27) **G1b:** 3 15-19.9 **G1a:** 15 (17) **G1b:** 1 20 or more **G1a:** 24 (27), 2 missing **G1b:** 2, 1 missing Platelets **G1a:** 2 (1-4) **G1b:** NR None **G1a:** 16 (20) **G1b:** 9 Less than 3 **G1a:** 35 (43)

	G1b: 2 Embolization **G1a:** 8 **G1b:** 2 Hysterectomy **G1a:** 33 **G1b:** 1 Vessel ligation **G1a:** 16 **G1b:** 2 Hemostatic sutures **G1a:** 15 **G1b:** 2 Other surgery **G1a:** 16 **G1b:** 2 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR, but all of G1b received rFVIIa after primary treatment for PPH (as prophylaxis after successful initial therapy**)** **Length of follow-up:** NR	**G1a:** 13 (14) **G1b:** 1 Cesarean **G1a:** 46 (50) **G1b:** 8 **Risk factors:** NR **Primary etiology of PPH, n:** Atony **G1a:** 52 **G1b:** 8 Trauma/birth canal tears **G1a:** 27 **G1b:** 4 Placenta previa **G1a:** 15 **G1b:** 3 Placental abruption **G1a:** 6 **G1b:** 0 Retained placenta **G1a:** 17 **G1b:** 3 Infection **G1a:** 5 **G1b:** 1 Other **G1a:** 7 **G1b:** 2	**G1b:** 2 3-4.9 **G1a:** 12 (15) **G1b:** 3 5-6.9 **G1a:** 10 (12) **G1b:** 1 7 or more **G1a:** 9 (11), 10 missing **G1b:** 0, 1 missing Fresh frozen plasma **G1a:** 2 (1.1-3.7) **G1b:** NR None **G1a:** 4 (5) **G1b:** 6 Less than 1 **G1a:** 12 (14) **G1b:** 4 1-2.9 **G1a:** 41 (47) **G1b:** 1 3-4.9 **G1a:** 17 (19) **G1b:** 1 5 or more **G1a:** 14 (16), 4 missing **G1b:** 3, 1 missing **ICU admission:** **G1a:** 71 (78) **G1b:** 10 (1 missing)

			Days on ICU: **G1a:** 2 (1-4), 65 **G1b:** 2 (1-14), 10 **Anemia:** NR **Length of stay:** NR **Mortality:** **G1a:** 5 (5) **G1b:** 0 **Uterine preservation:** Total # with hysterectomy prior to rFVIIa **G1a:** 33 **G1b**: 0 Total # with hysterectomy after rFVIIa **G1a:** 13 **G1b:** 1 **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention, n (%):** DVT or pulmonary embolism, **G1a:** 4 (4) 3 missing **G1b:** 0 Sepsis **G1a:** 6 (7) 3 missing **G1b:** 1 Clinical DIC **G1a:** 21 (26), 10 missing **G1b:** 4, 6 missing HELLP **G1a:** 1 (1), 3 missing

			G1b: 2 Suspected amniotic fluid embolism **G1a:** 0, 3 missing **G1b:** 0 Renal failure requiring dialysis **G1a:** 5 (5), 1 missing **G1b:** 0 Respiratory failure requiring ventilation **G1a:** 23 (25), 1 missing **G1b:** 0 Other organ failure **G1a:** 4 (5), 4 missing **G1b:** 0 Cardiac arrest **G1a:** 7 (8), 3 missing **G1b:** 0 Myocardial infarction: NR Suspected allergic reaction: NR No reported complications **G1a:** 17 (18) **G1b:** 6 **Confounders:** NR **Effect modifiers:** NR

Comments: Thromboembolism: 2 women developed pulmonary embolism within 1 week of birth, one had bilateral ovarian vein thrombosis 4 weeks after primary PPH and 1 woman developed thrombosis involving jugular and subclavian vein right upper arm and axilla not thought to be related to rFVIIa use).
BOTH groups were exposed to FVIIa, so one could potentially attribute any complication in G1a or G1b to exposure to the intervention.

Table D-67. Evidence table for studies addressing management of PPH (Skupski 2006)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Skupski et al., 2006[68] **Country:**US **Enrollment period:** Pre: 2000-2001 Intervention: late 2001 Post: 2002-2005 **Birth setting:** Hospital **Facility characteristics:** Tertiary care academic hospital **Funding:** NR **Design:** Pre-post	**Intervention:** Safety/early intervention program that d 1)formation of obstetric rapid response team, modeled after the cardiac arrest team, including quarterly mock drills on all shifts for various emergency clinical scenarios. 2)development of clinical pathways, guidelines, and protocols designed to provde for early diagnosis of patients at risk for major obstetric hemorrhage and for streamline care in emergency situations. 3) separation of in-house obstetric and gynecologic responsibilities to allow the in-house obstetrician to focus on obstetric emergencies without fear of possibly neglecting gynecologic emergencies. 4) formally revised the duties of the in-house obstetrician to continuous and frequent monitoring of all patients on the Labor and Delivery unit, including those patients who had other private obstetricians. 5)Empowered care providers(including PAs, RNs, residents and the in-house attending physician) to immediately involve senior members of the Department whenever there was disagreement with the patient's attending physician's treatment plan (particularly in cases of hemorrhage and possible delay in recognition of the severity of hemorrhage). A senior member of the department then discussed the issue	**Operational definition of PPH:** 1 or more of the following: estimated blood loss of ≥ 1500 mL, need for blood transfusion, need for uterine packing, performance of uterine artery ligation, and performance of cesarean hysterectomy. => Called this "major obstetric hemorrhage" and differentiated it from regular PPH **Definition of success of treatment**: Changes in patient care and outcomes (maternal mortality, lowest pH, and lowest temperature, occurrence of coagulopathy) **Method of blood loss measurement:** NR **Severity:** per definition, all d cases more severe than typical PPH **Inclusion criteria:** • Identified prospectively through an ongoing Quality Assurance program for the entire patient cohort (2000-2005), and meeting criteria of major obstetric hemorrhage **Exclusion criteria:** • all patients presenting with major obstetric hemorrhage during time period d **Maternal age, yrs, mean ± SD:** **G1:** 36.5 ± 6.0 **G2:** 34.2 ± 5.9 **Parity, n:** **G1:** 1 (0-3) **G2:** 1 (0-5) **Weeks gestation:** NR **Single pregnancy:** NR	**Blood loss (mL):** **G1:** 2725 ± 1289 **G2:** 2429 ± 1214 p=0.46 **Transfusion (mL):** **G1:** 1313 ± 1029 **G2:** 1194 ± 1547 p= 0.8 **ICU admission:** NR **Anemia:** NR **Length of stay:** NR **Mortality:** **G1:** 2 (16.7) **G2:** 0 (0.0) **Uterine preservation:** NR **Future fertility:** NR **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** NR **Confounders:** NR **Effect modifiers:** NR **Harms:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	immediately with the attending physician to avoid delay and address problems earlier. 6) Through weekly didactic sessions, staff were educated to recognize the stages of hemorrhage described in the Advanced Trauma Life Support Manual and disseminated information regarding the new protocols for patient care. 7) Established the role of the Trauma Team that responds to assist in cases of severe obstetric hemorrhage. Additionally, they 1) prepared for major hemorrhage in patients with known placenta previa. 2) Prepared for major hemorrhage in patients with suspected placenta accrete. 3) Obtained peripartum or intraoperative consultation with the Trauma Team as necessary. 4) Counseled patients with suspected placenta accrete about the likely decreased maternal mortality of planned cesarean hysterectomy. 5) Schedule cesarean delivery and cesarean hysterectomy in the main operating room under the direction of senior gynecologic surgeons. **Groups:** **G1:** 2000-2001, pre intervention **G2:** 2002-2005, post intervention **N:** **G1:** 12 **G2:** 49	**Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin** NR **SES:** NR **Mode of birth:** NR **Risk factors, n (%):** Prior PPH: NR Advanced maternal age: NR Multiparity: NR Race/ethnicity: NR History of cesarean: **G1:** 6 (50.0) **G2:** 32 (65.3) Labor induction/augmentation: NR Fibroids: NR Preeclampsia: NR Eclampsia: NR Pregnancy-induced hypertension: NR Pre-existing hypertension: NR Obesity: NR Diabetes: NR	

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	Duration of treatment: NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	Placenta previa: NR Multiple gestation: NR Polyhydramnios: NR Prolonged labor: NR Chorioamnionitis: NR Retained placenta: NR Antepartum hemorrhage: NR **Primary etiology of PPH, n (%):** Atony: NR Coagulopathy: NR Trauma: NR Placenta accrete **G1:** 4 (33.3) **G2:** 11 (22.4) Placenta previa: NR Placental abruption: NR Retained placenta: NR Uterine inversion: NR Subinvolution: NR	

Table D-68. Evidence table for studies addressing management of PPH (Akinbiyi 2004)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Akinbiyi et al., 2004[69] **Country:** Canada **Enrollment period:** Jan 1965 to Dec 1993 **Birth setting:** Hospital **Facility characteristics:** Tertiary care **Funding:** NR **Design:** Case series, retrospective	**Intervention:** Emergency hysterectomy Total hysterectomy n=50 Subtotal hysterectomy n=6 **Groups:** **G1:** intervention **N at enrollment:** **G1:** 56 **N at follow-up:** **G1:** 56 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** NR **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** Underwent emergency hysterectomy within 24 hours of delivery Residents of province of Saskatchewan Retrievable case record **Exclusion criteria:** NR **Maternal age, yrs, mean (range):** **G1:** 29.5 (14-44) **Parity, mean (range):** **G1:** 4.2 (1-10) **Weeks gestation, n (range):** **G1:** 36.6 (28-42) **Single pregnancy, n (%):** NR **Multiple pregnancy, n (%):** NR **Race/ethnicity:** NR **BMI, mean (range):** Height **G1:** 164.2 (145-187) Weight, kg **G1:** 67.5 (42-130) **Baseline hemoglobin:** NR	**Harms of intervention, n (%):** Febrile morbidity **G1:** 31 (55.4) Ureteric injury **G1:** 23 (41.1) Blood transfusion **G1:** 20 (35.7) Renal failure **G1:** 19 (33.9) Pulmonary atelectasis **G1:** 18 (32.1) Wound infection **G1:** 17 (30.4) Septicemia **G1:** 13 (23.2) Psychological disturbance **G1:** 13 (23.2) Hypovolemia **G1:** 12 (21.4) Pelvic abcess **G1:** 9 (16.1) **Confounders:** NR **Effect modifiers:** NR

		SES: NR **Mode of birth, n:** NR **Risk factors associated with hysterectomy, n:** Prior PPH **G1:** 14 Chorioamnionitis **G1:** 8 Previous cesarean **G1:** 27 Grande multiparity **G1:** 21 Oxytocin augmentaiton **G1:** 25 Tocolytic administration **G1:** 5 **Indication for Hysterectomy, n (%):** Atony **G1:** 27 (48.2) Placenta accrete **G1:** 15 (26.8) Uterine rupture **G1:** 6 (10.7) Chorioamnionitis **G1:** 6 (10.7) Extension of uterine incision (cervical) **G1:** 2 (3.6)	

Table D-69. Evidence table for studies addressing management of PPH (Forna 2004)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Forna et al., 2004[70] **Country:** US **Enrollment period:** Jan 1990 to Dec 2002 **Birth setting:** Hospital **Facility characteristics:** Tertiary care, **Funding:** NR **Design:** Case series, retrospective	**Intervention:** Emergency peripartum hysterectomy **Groups:** **G1:** intervention **N at enrollment:** **G1:** 55 **N at follow-up:** **G1:** 55 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** NR **Definition of success of treatment**: NR **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** Had hysterectomy during same hospitalization as delivery **Exclusion criteria:** Peripartum hysterectomies performed for gynecologic reasons (2 for cervical cancer and 1 for leiomyomata) **Maternal age, yrs, mean ± SD:** **G1:** 29.0 ± 6.8 **Parity, n:** **G1:** 3.3 ± 2.8 **Weeks gestation, mean ± SD:** **G1:** 38.2 ± 4.0 **Single pregnancy, n (%):** NR **Multiple pregnancy, n (%):** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** Vaginal	**Blood loss, estimated (mL), mean ± SD** **G1:** 3325.6 ± 1839.2 **Transfusion, units transfused, mean ± SD** **G1:** 6.9 ± 5.3 **ICU admission:** NR **Anemia:** NR **Length of stay, days, n ± SD** **G1:** 11.0 ± 7.9 **Mortality, n (%)** **G1:** 2 (3.6) **Uterine preservation:** NA **Future fertility:** NA **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention, n (%)** Hematologic **G1:** 54 (98.2) Infectious **G1:** 30 (54.6) Pulmonary **G1:** 9 (16.4) Genitourinary **G1:** 6 (10.9) Gastrointestinal **G1:** 2 (3.6)

		G1: 17 Cesarean **G1:** 38 **Risk factors, n (%):** History of cesarean **G1:** 24 (43.6) ≥ 2 previous cesarean deliveries **G1:** 11 (20.0) Placenta previa **G1:** 4 (7.3) Chorioamnionitis **G1:** 12 (21.8) **Primary indication for hysterectomy, n (%):** Atony **G1:** 31 (56.4) Placenta accreta **G1:** 11 (20.0) Infection **G1:** 6 (10.9) Bleeding **G1:** 3 (5.4) Dehiscence/rupture **G1:** 3 (5.4) Other **G1:** 1 (1.8)	Cardiovascular **G1:** 2 (3.6) Psychiatric **G1:** 2 (3.6) Neurologic **G1:** 1 (1.8) Other **G1:** 10 (18.2) **Confounders:** NR **Effect modifiers:** NR

Table D-70. Evidence table for studies addressing management of PPH (Rizvi 2004)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Rizvi et al., 2004 [71] **Country:** Ireland **Baseline period:** Jan 1999 to June 1999 **Evaluation period:** Jan 2002-June 2002 **Birth setting:** Hospital **Facility characteristics:** Unclear **Funding:** NR **Design:** pre-post	**Intervention:** Revised management guidelines distributed to all staff involved with labor and delivery care. Regular training and use of practice drills. Hospital had active management policy for 3rd stage including 1 mL syntometrine im following all vaginal deliveries unless evidence of hypertension (then 5 IU i.v.) At cesarean delivery 5 IU syntocinon i.v. **Groups:** **G1:** pre **G2:** post **Total N deliveries:** **G1:** 3,176 **G2:** 3,300 **N with massive PPH:** **G1:** 54 **G2:** 15 p< 0.001 **Duration of treatment:** NA **Timing of treatment:** NA **Order of treatment, % receiving component:** Oxytotic agent **G1:** 100 Repeat oxytotic **G1:** 18	**Operational definition of PPH:** Primary PPH > 1000 ml **Definition of success of treatment**: NA **Method of blood loss measurement:** Not routine to measure blood loss postpartum for all deliveries. When blood loss considered substantial ascertained by measuring blood from suction containers and weighing of swabs **Severity:** near miss mortality defined as PPH ≥2500 ml blood loss, transfusion ≥ 8 units, development of DIC and admission to ICU **Inclusion criteria:** • Treatment for PPH in hospital under study **Exclusion criteria:** • See inclusion **Maternal age, yrs, mean ± SD:** **G1:** 28.5 ± 6.1 **G2:** 27.6 ± 4.8 **Parity, n (%):** Primiparous **G1:** 27 (50) **G2:** 7 (47) **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR	**Blood loss:** Total > 1500 mL **G1:** 28 (52) **G2:** 5 (33) Total > 2000 mL **G1:** 15 (28) **G2:** 0 Total > 2500 mL **G1:** 10 (19) **G2:** 0 Total > 3000 mL **G1:** 7 (13) **G2:** 1 (6.7) **Transfusion**, **n (%):** Any blood transfusion **G1:** 26 (48) **G2:** 5 (33) Blood transfusion > 6 units **G1:** 9 (17) **G2:** 0 **ICU admission, n (%):** **G1:** 25 (46) **G2:** 2 (13) Required examination under general anesthesia **G1:** 6 (11) **G2:** 5 (33) **Uterine preservation, n (%):** Peripartum hysterectomy **G1:** 3 (5.6)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	Ergot derivative **G1:** 15 Oxytocin infusion **G1:** 85 Misoprostol **G1:** 47 Carboprost **G1:** 7 **Length of follow-up:** NR	**BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:** Spontaneous vaginal **G1:** 13 (24) **G2:** 4 (27) Lower segment c/s elective **G1:** 14 (26) **G2:** 2 (13) Lower segment c/s emergency **G1:** 19 (35) **G2:** 4 (27) Instrumental delivery **G1:** 8 (15) **G2:** 5 (33) **Risk factors, n (%):** Prior PPH **G1:** 2 (3.7) **G2:** 1 (6.7) History of cesarean **G1:** 7 (13) **G2:** 0 Antepartum hemorrhage **G1:** 9 (17) **G2:** 1 (6.7) **Primary etiology of PPH, n (%):** Atony **G1:** 41 (76)	**G2:** 0 Deviation from hospital guidelines, n (%) Spontaneous vaginal delivery **G1:** 10 (77) **G2:** 0 Elective lower segment cesarean **G1:** 3 (21) **G2:** 0 Emergency lower section cesarean **G1:** 2 (11) **G2:** 0 Instrumental delivery **G1:** 5 (63) **G2:** 0 Total **G1:** 20 (37) **G2:** 0 Significant deviation from guidelines **G1:** 7 (13) **G2:** 0 Less need for transfusion, lower ICU admission rate in the post vs. pre period. **Anemia:** NR **Length of stay:** NR **Mortality:** NR **Future fertility:** NR **Breastfeeding:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		G2: 10 (67) Genital tract trauma **G1:** 5 (9.3) **G2:** 2 (13) Others **G1:** 8 (15) **G2:** 5 (33)	**Psychological impact:** NR **Harms of intervention:** NR **Confounders:** NR **Effect modifiers:** NR

Table D-71. Evidence table for studies addressing management of PPH (Hoveyda 2001)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Hoveyda and McKenzie, 2001[72] **Country:** UK **Enrollment period:** January 1996 to December 1998 **Birth setting:** Obstetric unit **Facility characteristics:** Tertiary hospital **Funding:** NR **Design:** Retrospective case series	**Intervention:** Treatment of secondary PPH including uterine evacuation, antibiotic treatment, conservative management (without uterine evacuation) **Groups:** **G1:** women with secondary PPH **G1a:** uterine evacuation **G1b:** conservative management **N at enrollment:** **G1:** 132 **G1a:** 87 total (75 had uterine evacuation at initial admission, 12 were treated conservatively at initial admission, but then had uterine evacuation at a later time) **G1b:** 45 **N at follow-up:** **G1:** 132 **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** 75 had uterine evacuation as first therapy 57 were treated with conservative management as first therapy; 21 (16%) were reviewed in hospital and discharged home with antibiotics. 16 (28%) re-attended unit with continuing symptoms and 12 had uterine evacuation between 1 and 21 days after initial admission for continuing symptoms)	**Operational definition of PPH:** Secondary PPH was defined as excessive vaginal blood loss or heavy lochial discharge occurring at least 24 hours after the end of the third stage of labour and during the following six weeks, and in sufficient quantity to prompt a review by an obstetrician. **Definition of success of treatment**: NR (case series) **Method of blood loss measurement:** NR **Inclusion criteria:** • Women with secondary PPH identified from a computerized maternity data set for an OB unit that served a specific health district • Admitted within 3 year study period **Exclusion criteria:** NR **Maternal age:** NR **Parity, (Nulliparae) n (%):** **G1:** 56 (42.4) **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy, n (%):** **G1:** 3 (2.3) **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n:**	**Harms pre-specified:** No **Harms, n (%):** Uterine perforation during surgical evacuation **G1a:** 3/85 (3%) Hysterectomy One woman underwent hysterectomy after uterine perforation with metal curette 14 days after delivery

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	Ultrasound of uterus for n=51; 47 (92%) had retained placental tissue; 46 underwent uterine curettage; 39 had evacuation without previous ultrasound scanning. **Length of follow-up:** NR	Induced labour n (%): **G1:** 40 (30.3) Spontaneous vaginal delivery, n (%): **G1:** 90 (68.2) Assisted vaginal delivery, n (%): **G1:** 27 (20.4) Cesarean, total, n (%): **G1:** 15 (11.4) Cesarean, prelabour, n, (%): **G1:** 5 (3.8) **Risk factors, n (%):** Primary PPH, n (%) **G1:** 33 (28.2) Retained placenta, n (%) **G1:** 7 (6.0) **Primary etiology of PPH:** NR	

Table D-72. Evidence table for studies addressing management of PPH (Ledee 2001)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Ledee et al., 2001[73] **Country:** France **Enrollment period:** 1983 to 1998 **Birth setting:** Hospital **Facility characteristics:** Tertiary care university hospital **Funding:** Agency/NR **Design:** Retrospective cohort study	**Intervention:** Hospitalization in ICU for intractable PPH Initial treatment: simple bimanual compression, oxytocin followed by prostaglandin (PGE2) IV and maternal resuscitation. Follow-up treatments: embolizing the selective pelvic vessels or ligating the hypogastric arteries **Groups (based on primary second-line attempt to arrest hemorrhage):** **G1:** Bilateral hypogastric artery ligation **G2:** Embolization **G3:** Hysterectomy **N at enrollment:** **G1:** 48 **G2:** 8 **G3:** 5 **Duration of treatment:** NR **Timing of treatment:** Initial treatment: simple bimanual compression, oxytocin followed by prostaglandin (PGE2) IV and maternal resuscitation. Follow-up treatments: embolizing the selective pelvic vessels or ligating the hypogastric arteries **Order of treatment:** **G1:** 4 women required hysterectomy post-ligation **G2:** 1 women required methotrexate,	**Operational definition of PPH:** Intractable PPH: cases that did not respond to usual treatment within 60 minutes or worsening of maternal condition **Definition of success of treatment:** NR **Method of blood loss measurement:** Estimated by volume of blood transfused **Severity:** Intractable PPH **Inclusion criteria:** • Patients hospitalized for intractable PPH between 1983 and 1998 **Exclusion criteria:** NR **Maternal age:** NR **Parity:** NR **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, n (%):** Cesarean **G1+ G2:** 41/56 (73)	**Blood loss:** NR **Transfusion, n:** Received < 4 units RBCs **G1:** 21 **G2:** 1 **G3:** 0 Received 4-7 units **G1:** 10 **G2:** 5 **G3:** 1 Received 8-20 units **G1:** 11 **G2:** 1 **G3:** 1 Received > 20 units **G1:** 6 **G2:** 1 **G3:** 3 **ICU admission:** NR **Anemia:** NR **Length of stay:** NR **Mortality:** Maternal deaths, total **G1+G2+G3:** 7 Maternal deaths post hysterectomy **G3:** 5 Uterine preservation **G1+G2+G3:** 10 total hysterectomies

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
	1 required ligation, 1 required hysterectomy post-embolization **G3:** 1 required embolization **Length of follow-up:** NR	Vaginal **G1+G2:** 15/56 (27) **Risk factors:** NR **Primary etiology of PPH, n (%):** Group 1 Received < 4 units RBCs n=22 Atony: 8/22 Group 2 Received 4-7 units RBCs n=16 Atony: 8/16 Group 3 Received 8-20 units RBCs n=13 Atony: 5/13 Group 4 Received > 20 units RBCs n=10 Atony: 8/22	Future fertility: **G1:** 7 pregnancies among 10 women desiring pregnancy 1-4 years post-ligation **G2:** 1 pregnancy 1 year post-embolization (number desiring pregnancy NR) **Breastfeeding:** NR **Psychological impact:** NR **Harms of intervention:** NR **Confounders:** NR **Effect modifiers:** NR

Comments: Details for each maternal death (n=7) reported separately in the text.

Table D-73. Evidence table for studies addressing management of PPH (Boyd 1995)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Boyd et al., 1995 [74] **Country:** US **Enrollment period:** January 1981 to December 1991 **Birth setting:** hospital **Facility characteristics:** Two tertiary university hospitals **Funding:** NR **Design:** case series	**Intervention:** Interventions for severe delayed postpartum hemorrhage, including curettage, hysterectomy, hypogastic artery ligation, laparotomy, oxytocin and/or antibiotics, **Groups:** **G1:** patients readmitted with delayed hemorrhage **G1a:** patients who received curettage **N:** **G1:** 113 **G1a:** 99 (88%) **Duration of treatment:** NA **Timing of treatment:** NR **Order of treatment:** For patients whose bleeding did not resolve with curettage, 6 were ultimately treated by hysterectomy, one had successful hypogastric artery ligation, one had laparotomy for repair of perforation sustained during curettage **Length of follow-up:** NR	**Operational definition of PPH:** severe delayed postpartum hemorrhage defined as vaginal bleeding occurring after hospital discharge and severe enough to require readmission and/or severe enough to require surgery in the operating room (not including patients evaluated in the emergency room not requiring readmission). Hospital policy required admission for any patients needing blood transfusion or curettage. Definition of success of treatment: NR **Method of blood loss measurement:** NR **Severity:** severe **Inclusion criteria:** • Medical records reviewed using codes for PPH, postpartum complications, delayed PPH, retained products of conception, postpartum complications undefined, and post-partum readmission **Exclusion criteria:** • Patients evaluated in emergency room without readmission **Maternal age, yrs, mean (range):** **G1:** 26 (16-39) **Parity, %:** Multiparous **G1:** 61 **Weeks gestation, man (range):** **G1:** 38 (22-42) **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR	**Harms pre-specified:** No **Harms, n:** Perforation sustained during curettage: **G1:** 1 Asherman's syndrome, n **G1a:** 2

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		BMI: NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, %:** Spontaneous vaginal **G1:** 69 Vacuum extraction **G1:** 12 Forceps **G1:** 8 Cesarean **G1:** 9 Unknown delivery status **G1:** 2 **Risk factors, %:** History of cesarean **G1:** 4 Previous uterine curettage related to pregnancy loss **G1:** 27 **Primary etiology of PPH, n (%):** Retained products of conception **G1a:** 55	

Table D-74. Evidence table for studies addressing management of PPH (O'Leary 1995)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: O'Leary, 1995[75] **Country:** US **Enrollment period:** 1963-1992 **Birth setting:** Hospital **Facility characteristics:** NR **Funding:** NR **Design:** Case series	**Intervention:** Bilateral ligation of uterine vessels **Groups:** **G1:** intervention **N at enrollment:** **G1:** 265 **N by time period:** **G1a:** 124 (1963-1972) **G1b:** 60 (1973-1982) **G1c:** 81 (1983-1992) **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** Patients selected for ligation after usual mechanical techniques and pharmacologic preparations (including oxytocin i.v., methylergonovine maleate and 15-methyl prostaglandin F2α IM) failed **Length of follow-up:** NR	**Operational definition of PPH:** Estimated blood loss > than 1,000 mL **Definition of success of treatment:** Bleeding controlled **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Women who experienced PPH at time of cesarean. Patients selected for ligation after usual mechanical techniques and pharmacologic preparations (including oxytocin i.v., methylergonovine maleate and 15-methyl prostaglandin $F_{2\alpha\ IM)}$ failed. **Exclusion criteria:** NR **Maternal age:** NR **Parity:** NR **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR **Baseline hemoglobin:** NR **SES:** NR **Mode of birth, %:** Cesarean section: 100 **Risk factors:** NR	**Harms pre-specified:** No **Harms, n:** Broad ligament hematomas **G1:** 2 Treatment failures **G1a:** 7 **G1b:** 1 **G1c:** 3 **Management of treatment failures, n:** Hysterectomy **G1a:** 3 **G1b:** 1 **G1c:** 2 Placental site ligation **G1a:** 3 **G1b:** 0 **G1c:** 0 Ovarian artery ligation **G1a:** 1 **G1b:** 0 **G1c:** 1

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Primary etiology of PPH, n: Atony **G1a:** 45 **G1b:** 38 **G1c:** 52 Placenta previa **G1a:** 16 **G1b:** 11 **G1c:** 9 Placental abruption **G1a:** 14 **G1b:** 3 **G1c:** 10 Lacerations **G1a:** 18 **G1b:** 6 **G1c:** 7 Other **G1a:** 31 (24 elective) **G1b:** 2 **G1c:** 3	

Table D-75. Evidence table for studies addressing management of PPH (Oleen 1990)

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
Author: Oleen et al., 1990[76] **Country:**US **Enrollment period:** Jan 1986 to March 1987 **Birth setting:** Hospitals **Facility characteristics:** Multisite- 12 sites **Funding:** Upjohn Company **Design:** Case series	**Intervention:** Carboprost tromethamine sterile solution (125 or 250 ug) intramuscular, intramyometrial, intravenous, intrauterine, or intracervical **Groups:** **G1:** intervention **N at enrollment:** **G1:** 237 (blood loss could not be estimated for 10 cases) **G1a:** 215 success **G1b:** 12 failure **Duration of treatment:** NR **Timing of treatment:** NR **Order of treatment:** NR **Length of follow-up:** NR	**Operational definition of PPH:** NR **Definition of success of treatment**: Control of hemorrhage **Method of blood loss measurement:** NR **Severity:** NR **Inclusion criteria:** • Receipt of carboprost tromethamine at a study hospital • Data accessible in medical record **Exclusion criteria:** • See inclusion **Maternal age, yrs, mean ± SD:** **G1:** 25.3 ± 5.7 **Parity, n:** Primiparous **G1:** 108 Multiparous **G1:** 113 Non-viable offspring **G1:** 15 **Weeks gestation:** NR **Single pregnancy:** NR **Multiple pregnancy:** NR **Race/ethnicity:** NR **BMI:** NR	**Cessation of hemorrhage, immediate, n (%):** **G1:** 208/237 (87.8) **Cessation of hemorrhage, with further oxytocins:** **G1:** 17/237 **Therapy failed:** **G1:** 12/237 (5.1) **Blood loss, ml mean (range):** **G1:** 970 ± 955 (100-9500) **G1a:** 900 ± 748 (100-9500) **G1b:** 2229 ± 2454 (500-9500) **Transfusion:** RBC, n (%) **G1:** 64 (27) FFP, cryoprecipitate, or albumen, n (%) **G1:** 9 (4) **ICU admission:** NR **Anemia:** NR **Length of stay:** NR **Mortality:** NR **Uterine preservation:** Hysterectomy **G1:** 7 **Future fertility:** NR **Breastfeeding:** NR

Study Description	Intervention	Inclusion/Exclusion Criteria & Population	Outcomes
		Baseline hemoglobin: NR **SES:** NR **Mode of birth, n:** Cesarean **G1:** 72 (30.4) **Risk factors, n (%):** Labor induction/augmentation **G1:** 92 (38.8) Fibroids Preeclampsia (magnesium treated) **G1:** 43 (18.1) **Primary etiology of PPH, n (%):** Chorioamnionitis **G1:** 3 (1.3) Retained products of conception **G1:** 27 (11.4) Lacerations **G1:** 35 (14.8) Peripheral coagulopathy **G1:** 4 (1.7)	**Psychological impact:** NR **Confounders:** NR **Effect modifiers:** NR **Harms pre-specified:** No **Harms, n (%):** Diarrhea **G1:** 27 (11.4) Elevated blood pressure **G1:** 16 (6.8) Vomiting **G1:** 16 (6.8) Elevated temperature **G1:** 5 (2.1) Flushing **G1:** 4 (1.7) Tachycardia **G1:** 4 (1.7)

Evidence Table References

1. Cheong JY, Kong TW, Son JH, et al. Outcome of pelvic arterial embolization for postpartum hemorrhage: A retrospective review of 117 cases. Obstet Gynecol Sci 2014 Jan;57(1):17-27. PMID: 24596814.
2. Cowan AD, Miller ES, Grobman WA. Subsequent pregnancy outcome after B-lynch suture placement. Obstet Gynecol 2014 Sep;124(3):558-61. PMID: 25162256.
3. Dupont C, Occelli P, Deneux-Tharaux C, et al. Severe postpartum haemorrhage after vaginal delivery: a statistical process control chart to report seven years of continuous quality improvement. Eur J Obstet Gynecol Reprod Biol 2014 Jul;178:169-75. PMID: 24813084.
4. Dupont C, Deneux-Tharaux C, Touzet S, et al. Clinical audit: a useful tool for reducing severe postpartum haemorrhages? Int J Qual Health Care 2011 Oct;23:583-9. PMID: 21733978.
5. Einerson BD, Miller ES, Grobman WA. Does a postpartum hemorrhage patient safety program result in sustained changes in management and outcomes? Am J Obstet Gynecol 2014 Jul 11PMID: 25019484.
6. Ferrazzani S, Iadarola R, Perrelli A, et al. Use of an intrauterine inflated catheter balloon in massive post-partum hemorrhage: a series of 52 cases. J Obstet Gynaecol Res 2014 Jun;40:1603-10. PMID: 24888923.
7. Inoue S, Masuyama H, Hiramatsu Y. Efficacy of transarterial embolisation in the management of post-partum haemorrhage and its impact on subsequent pregnancies. Aust N Z J Obstet Gynaecol 2014 Oct 28PMID: 25350565.
8. Mallaiah S, Barclay P, Harrod I, et al. Introduction of an algorithm for ROTEM-guided fibrinogen concentrate administration in major obstetric haemorrhage. Anaesthesia 2014 Oct 7PMID: 25289791.
9. Park HS, Shin JH, Yoon HK, et al. Transcatheter Arterial Embolization for Secondary Postpartum Hemorrhage: Outcome in 52 Patients at a Single Tertiary Referral Center. J Vasc Interv Radiol 2014 Jun 27PMID: 24985718.
10. Prick B, Jansen A, Steegers E, et al. Transfusion policy after severe postpartum haemorrhage: a randomised non-inferiority trial. BJOG 2014 Jan 10PMID: 24405687.
11. Prick BW, Duvekot JJ, van der Moer PE, et al. Cost-effectiveness of red blood cell transfusion vs. non-intervention in women with acute anaemia after postpartum haemorrhage. Vox Sang 2014 Jul 31PMID: 25130704.
12. Shields LE, Wiesner S, Fulton J, et al. Comprehensive maternal hemorrhage protocols reduce the use of blood products and improve patient safety. Am J Obstet Gynecol 2014 Jul 12PMID: 25025944.
13. Shields LE, Smalarz K, Reffigee L, et al. Comprehensive maternal hemorrhage protocols improve patient safety and reduce utilization of blood products. Am J Obstet Gynecol 2011 Oct;205:368 e1-8. PMID: 22083059.
14. Teofili L, Bianchi M, Zanfini BA, et al. Acute Lung Injury Complicating Blood Transfusion in Post-Partum Hemorrhage: Incidence and Risk Factors. Mediterr J Hematol Infect Dis 2014;6(1):e2014069. PMID: 25408855.
15. Zatta A, McQuilten Z, Kandane-Rathnayake R, et al. The Australian and New Zealand Haemostasis Registry: ten years of data on off-licence use of recombinant activated factor VII. Blood Transfus 2014 Jun 5:1-14. PMID: 24960661.
16. An GH, Ryu HM, Kim MY, et al. Outcomes of subsequent pregnancies after uterine compression sutures for postpartum hemorrhage. Obstet Gynecol 2013 Sep;122:565-70. PMID: 23921861.
17. Bateman BT, Huybrechts KF, Hernandez-Diaz S, et al. Methylergonovine maleate and the risk of myocardial ischemia and infarction. Am J Obstet Gynecol 2013 Nov;209:459.e1-.e13. PMID: 23850529.
18. Bonnet MP, Deneux-Tharaux C, Dupont C, et al. Transfusion practices in postpartum hemorrhage: a population-based study. Acta Obstet Gynecol Scand 2012 Apr;92:404-13. PMID: 23215892.

19. Deneux-Tharaux C, Dupont C, Colin C, et al. Multifaceted intervention to decrease the rate of severe postpartum haemorrhage: the PITHAGORE6 cluster-randomised controlled trial. BJOG 2010 Sep;117:1278-87. PMID: 20573150.

20. Schmitz T, Tararbit K, Dupont C, et al. Prostaglandin E2 analogue sulprostone for treatment of atonic postpartum hemorrhage. Obstet Gynecol 2011 Aug;118:257-65. PMID: 21775840.

21. Chan LL, Lo TK, Lau WL, et al. Use of second-line therapies for management of massive primary postpartum hemorrhage. Int J Gynaecol Obstet 2013 Sep;122:238-43. PMID: 23806248.

22. Dildy GA, Belfort MA, Adair CD, et al. Initial experience with a dual-balloon catheter for the management of postpartum hemorrhage. Am J Obstet Gynecol 2013 Sep 18PMID: 24055586.

23. Froessler B, Cocchiaro C, Saadat-Gilani K, et al. Intravenous iron sucrose versus oral iron ferrous sulfate for antenatal and postpartum iron deficiency anemia: a randomized trial. J Matern Fetal Neonatal Med 2012 May;26:654-9. PMID: 23130909.

24. Lee HJ, Jeon GS, Kim MD, et al. Usefulness of pelvic artery embolization in cesarean section compared with vaginal delivery in 176 patients. J Vasc Interv Radiol 2013 Jan;24:103-9. PMID: 23273701.

25. Kim TH, Lee HH, Kim JM, et al. Uterine artery embolization for primary postpartum hemorrhage. Iran J Reprod Med 2014 Jun;11:511-8. PMID: 24639786.

26. Kim YJ, Yoon CJ, Seong NJ, et al. Failed pelvic arterial embolization for postpartum hemorrhage: clinical outcomes and predictive factors. J Vasc Interv Radiol 2013 May;24:703-9. PMID: 23622042.

27. Lappen JR, Seidman D, Burke C, et al. Changes in care associated with the introduction of a postpartum hemorrhage patient safety program. Am J Perinatol 2013 Nov;30:833-8. PMID: 23359234.

28. Sohn CH, Kim WY, Kim SR, et al. An increase in initial shock index is associated with the requirement for massive transfusion in emergency department patients with primary postpartum hemorrhage. Shock 2013 Aug;40:101-5. PMID: 23707978.

29. Sugawara J, Suenaga K, Hoshiai T, et al. Efficacy of recombinant human soluble thrombomodulin in severe postpartum hemorrhage with disseminated intravascular coagulation. Clin Appl Thromb Hemost 2012 Sep;19:557-61. PMID: 22496090.

30. Yamasaki Y, Morita H, Miyahara Y, et al. The factors associated with the failure of transcatheter pelvic arterial embolization for intractable postpartum hemorrhage. J Perinat Med 2013 Dec 5:1-4. PMID: 24310770.

31. Blanc J, Courbiere B, Desbriere R, et al. Uterine-sparing surgical management of postpartum hemorrhage: is it always effective? Arch Gynecol Obstet 2011 Apr;285:925-30. PMID: 21932086.

32. Laas E, Bui C, Popowski T, et al. Trends in the rate of invasive procedures after the addition of the intrauterine tamponade test to a protocol for management of severe postpartum hemorrhage. Am J Obstet Gynecol 2012 Oct;207:281 e1-7. PMID: 23021688.

33. Lee HY, Shin JH, Kim J, et al. Primary postpartum hemorrhage: outcome of pelvic arterial embolization in 251 patients at a single institution. Radiology 2012 Sep;264:903-9. PMID: 22829685.

34. Ahmed S, Harrity C, Johnson S, et al. The efficacy of fibrinogen concentrate compared with cryoprecipitate in major obstetric haemorrhage--an observational study. Transfus Med 2012 Oct;22:344-9. PMID: 22994449.

35. Gronvall M, Tikkanen M, Tallberg E, et al. Use of Bakri balloon tamponade in the treatment of postpartum hemorrhage: a series of 50 cases from a tertiary teaching hospital. Acta Obstet Gynecol Scand 2012 Apr;92:433-8. PMID: 22913383.

36. Markova V, Sorensen JL, Holm C, et al. Evaluation of multi-professional obstetric skills training for postpartum hemorrhage. Acta Obstet Gynecol Scand 2011 Mar;91:346-52. PMID: 22171606.

37. Poujade O, Zappa M, Letendre I, et al. Predictive factors for failure of pelvic arterial embolization for postpartum hemorrhage. Int J Gynaecol Obstet 2012 May;117:119-23. PMID: 22361480.

38. Ducloy-Bouthors AS, Jude B, Duhamel A, et al. High-dose tranexamic acid reduces blood loss in postpartum haemorrhage. Crit Care 2011;15:R117. PMID: 21496253.

39. Gayat E, Resche-Rigon M, Morel O, et al. Predictive factors of advanced interventional procedures in a multicentre severe postpartum haemorrhage study. Intensive Care Med 2011 Nov;37:1816-25. PMID: 21805157.

40. Kayem G, Kurinczuk JJ, Alfirevic Z, et al. Specific second-line therapies for postpartum haemorrhage: a national cohort study. BJOG 2011 Jun;118:856-64. PMID: 21392247.

41. Kayem G, Kurinczuk JJ, Alfirevic Z, et al. Uterine compression sutures for the management of severe postpartum hemorrhage. Obstet Gynecol 2011 Jan;117:14-20. PMID: 21213474.

42. Palacios-Jaraquemada JM. Efficacy of surgical techniques to control obstetric hemorrhage: analysis of 539 cases. Acta Obstet Gynecol Scand 2011 Sep;90:1036-42. PMID: 21564024.

43. Sentilhes L, Gromez A, Clavier E, et al. Long-term psychological impact of severe postpartum hemorrhage. Acta Obstet Gynecol Scand 2011 Jun;90:615-20. PMID: 21370999.

44. Sentilhes L, Gromez A, Clavier E, et al. Predictors of failed pelvic arterial embolization for severe postpartum hemorrhage. Obstet Gynecol 2009 May;113:992-9. PMID: 19384113.

45. Sentilhes L, Gromez A, Clavier E, et al. Fertility and pregnancy following pelvic arterial embolisation for postpartum haemorrhage. BJOG 2009 Jan;117:84-93. PMID: 19832826.

46. Ganguli S, Stecker MS, Pyne D, et al. Uterine artery embolization in the treatment of postpartum uterine hemorrhage. J Vasc Interv Radiol 2010 Feb;22:169-76. PMID: 21183360.

47. Lone F, Sultan AH, Thakar R, et al. Risk factors and management patterns for emergency obstetric hysterectomy over 2 decades. Int J Gynaecol Obstet 2009 Apr;109:12-5. PMID: 19951818.

48. Wright JD, Herzog TJ, Shah M, et al. Regionalization of care for obstetric hemorrhage and its effect on maternal mortality. Obstet Gynecol 2010 Jun;115:1194-200. PMID: 20502290.

49. Zwart JJ, Dijk PD, van Roosmalen J. Peripartum hysterectomy and arterial embolization for major obstetric hemorrhage: a 2-year nationwide cohort study in the Netherlands. Am J Obstet Gynecol 2009 Feb;202:150 e1-7. PMID: 19922900.

50. Hardeman S, Decroisette E, Marin B, et al. Fertility after embolization of the uterine arteries to treat obstetrical hemorrhage: a review of 53 cases. Fertil Steril 2010 Dec;94:2574-9. PMID: 20381035.

51. Alexander JM, Sarode R, McIntire DD, et al. Whole blood in the management of hypovolemia due to obstetric hemorrhage. Obstet Gynecol 2009 Jun;113:1320-6. PMID: 19461429.

52. Audureau E, Deneux-Tharaux C, Lefevre P, et al. Practices for prevention, diagnosis and management of postpartum haemorrhage: impact of a regional multifaceted intervention. BJOG 2009 Sep;116:1325-33. PMID: 19538416.

53. Feigenberg T, Eitan Y, Sela HY, et al. Surgical versus medical treatment for secondary post-partum hemorrhage. Acta Obstet Gynecol Scand 2009;88:909-13. PMID: 19565365.

54. Fiori O, Deux JF, Kambale JC, et al. Impact of pelvic arterial embolization for intractable postpartum hemorrhage on fertility. Am J Obstet Gynecol 2009 Apr;200:384 e1-4. PMID: 19217597.

55. Gaia G, Chabrot P, Cassagnes L, et al. Menses recovery and fertility after artery embolization for PPH: a single-center retrospective observational study. Eur Radiol 2008 Feb;19:481-7. PMID: 18766350.

56. Phillips LE, McLintock C, Pollock W, et al. Recombinant activated factor VII in obstetric hemorrhage: experiences from the Australian and New Zealand Haemostasis Registry. Anesth Analg 2009 Dec;109:1908-15. PMID: 19923520.

57. Balki M, Dhumne S, Kasodekar S, et al. Blood transfusion for primary postpartum hemorrhage: a tertiary care hospital review. J Obstet Gynaecol Can 2009 Nov;30:1002-7. PMID: 19126281.

58. Knight M. Peripartum hysterectomy in the UK: management and outcomes of the associated haemorrhage. BJOG 2007 Nov;114:1380-7. PMID: 17877772.

59. Baruah M, Cohn GM. Efficacy of rectal misoprostol as second-line therapy for the treatment of primary postpartum hemorrhage. J Reprod Med 2008 Mar;53:203-6. PMID: 18441726.

60. Chauleur C, Cochery-Nouvellon E, Mercier E, et al. Analysis of the venous thromboembolic risk associated with severe postpartum haemorrhage in the NOHA First cohort. Thromb Haemost 2008 Nov;100:773-9. PMID: 18989520.

61. Chauleur C, Fanget C, Tourne G, et al. Serious primary post-partum hemorrhage, arterial embolization and future fertility: a retrospective study of 46 cases. Hum Reprod 2008 Jul;23:1553-9. PMID: 18460450.

62. Glaze S, Ekwalanga P, Roberts G, et al. Peripartum hysterectomy: 1999 to 2006. Obstet Gynecol 2008 Mar;111:732-8. PMID: 18310378.

63. McMorrow RC, Ryan SM, Blunnie WP, et al. Use of recombinant factor VIIa in massive post-partum haemorrhage. Eur J Anaesthesiol 2008 Apr;25:293-8. PMID: 18177539.

64. Touboul C, Badiou W, Saada J, et al. Efficacy of selective arterial embolisation for the treatment of life-threatening post-partum haemorrhage in a large population. PLoS One 2008;3:e3819. PMID: 19043573.

65. Sakse A, Weber T, Nickelsen C, et al. Peripartum hysterectomy in Denmark 1995-2004. Acta Obstet Gynecol Scand 2007;86:1472-5. PMID: 18027114.

66. Ahonen J, Jokela R, Korttila K. An open non-randomized study of recombinant activated factor VII in major postpartum haemorrhage. Acta Anaesthesiol Scand 2007 Aug;51:929-36. PMID: 17488316.

67. Alfirevic Z, Elbourne D, Pavord S, et al. Use of recombinant activated factor VII in primary postpartum hemorrhage: the Northern European registry 2000-2004. Obstet Gynecol 2007 Dec;110:1270-8. PMID: 18055720.

68. Skupski DW, Lowenwirt IP, Weinbaum FI, et al. Improving hospital systems for the care of women with major obstetric hemorrhage. Obstet Gynecol 2006 May;107:977-83. PMID: 16648399.

69. Akinbiyi AA, Olatunbosun OA. Emergency obstetric hysterectomies (how many are potentially preventable?): A 28-year experience in Saskatoon. Journal of Gynecologic Surgery 2004 Fall;20:81-7.

70. Forna F, Miles AM, Jamieson DJ. Emergency peripartum hysterectomy: a comparison of cesarean and postpartum hysterectomy. Am J Obstet Gynecol 2004 May;190:1440-4. PMID: 15167863.

71. Rizvi F, Mackey R, Barrett T, et al. Successful reduction of massive postpartum haemorrhage by use of guidelines and staff education. BJOG 2004 May;111:495-8. PMID: 15104617.

72. Hoveyda F, MacKenzie IZ. Secondary postpartum haemorrhage: incidence, morbidity and current management. BJOG 2001 Sep;108:927-30. PMID: 11563461.

73. Ledee N, Ville Y, Musset D, et al. Management in intractable obstetric haemorrhage: an audit study on 61 cases. Eur J Obstet Gynecol Reprod Biol 2001 Feb;94:189-96. PMID: 11165724.

74. Boyd BK, Katz VL, Hansen WF. Delayed postpartum hemorrhage: a retrospective analysis. Journal of Maternal-Fetal Medicine 1995 1995 Jan-Feb;4:19-23.

75. O'Leary JA. Uterine artery ligation in the control of postcesarean hemorrhage. J Reprod Med 1995 Mar;40:189-93. PMID: 7776302.

76. Oleen MA, Mariano JP. Controlling refractory atonic postpartum hemorrhage with Hemabate sterile solution. Am J Obstet Gynecol 1990 Jan;162:205-8. PMID: 2405676.

Evidence Table Abbreviations

µg	Micrograms
µg/kg	Micrograms per Kilogram
µg/L	Micrograms per Liter
ACS	Acute Coronary Syndrome
AIP	Advanced Interventional Procedure
AMI	Acute Myocardial Infarction
ARDS	Acute Respiratory Distress Syndrome
AUC	Area Under Curve
BMI	Body Mass Index
BP	Blood Pressure
CH	Complete Hysterectomy
CI	Confidence Interval
DBP	Diastolic Blood Pressure
DIC	Disseminated Intravascular Coagulation
DVT	Deep Vein Thrombosis
DX	Diagnosis
EBL	Estimated Blood Loss
FFP	Fresh Frozen Plasma
FGF	Fibroblast Growth Factor
g/dl	Grams per Deciliter
GAB	Gabexate mesilate
Hb	Hemoglobin
HDU	High-Dependency Unit
HELLP	Hemolysis, Elevated Liver enzymes, Low Platelet count
HR	Heart Rate
ICU	Intensive Care Unit
IQR	Interquartile Range
IU	International Units
kg/m^2	Kilograms per Square Liter
L	Liters
mg	Milligrams
mL	Milliliters

mmHg	Millimeters of Mercury
mmol/L	Millimoles per Liter
mo	Months
NA	Not Applicable
NR	Not Reported
PAE	Pelvic arterial embolization
PC	Post cibum (after a meal)
PPH	Post-Partum Hemorrhage
pRBC	Packed Red Blood Cells
RBC	Red Blood Cells
RCC	Red Cell Concentrate
rTM	Recombinant human soluable Thrombomodulin
SAE	Selective Arterial Embolization
SBP	Systolic Blood Pressure
SD	Standard Deviation
SE	Standard Error
SES	Socioeconomic Status
SI	Shock Index
TAE	Transcatheter pelvic Arterial Embolization
UKOSS	UK Obstetric Surveillance System
VTE	Venous Thromboembolism

Appendix E. Quality/Risk of Bias Ratings

Table E-1. Quality assessment of randomized controlled trials

Outcome Author, Year	Sequence Generation	Allocation Concealment	Selective Reporting	Other Bias	Blinding of Participants/ Personnel	Blinding of Outcome Assessment	Incomplete Outcome Data	Risk of Bias Rating for Outcome
Anemia								
Ducloy-Bouthors 2011[1]	Low	Low	Low	Unclear	High	High	Low	Poor/High RoB
Duration of bleeding								
Ducloy-Bouthors 2011[1]	Low	Low	Low	Unclear	High	High	Low	Poor/High RoB
Ferritin level								
Froessler 2012[2]	High	High	Low	Low	High	High	High	Poor/High RoB
Hemoglobin level								
Froessler 2012[2]	High	High	Low	Low	High	High	High	Poor/High RoB
Need to call for additional help								
Ducloy-Bouthors 2011[1]	Low	Low	Low	Unclear	High	High	Low	Poor/High RoB
Need for Transfusion/ Transfusion practice								
Ducloy-Bouthors 2011[1]	Low	Low	Low	Unclear	High	High	Low	Poor/High RoB

Outcome Author, Year	Sequence Generation	Allocation Concealment	Selective Reporting	Other Bias	Blinding of Participants/ Personnel	Blinding of Outcome Assessment	Incomplete Outcome Data	Risk of Bias Rating for Outcome
Deneux-Tharaux 2010[3]	Low	Low	Low	Low	High	High	Low	Fair/Moderate RoB
Physical fatigue								
Prick 2014[4]	Low	Low	Low	Unclear	High	High	Low	Poor/High RoB
Quality of life								
Prick 2014[4]	Low	Low	Low	Unclear	High	High	Low	Poor/High RoB
Rate of PPH (Overall)								
Deneux-Tharaux 2010[3]	Low	Low	Low	Low	Unclear	Unclear	Low	Fair/Moderate RoB
Rate of severe PPH								
Deneux-Tharaux 2010[3]	Low	Low	Low	Low	Unclear	Unclear	Low	Fair/Moderate RoB
Rate of sulprostone use, use of recommended interventions								
Deneux-Tharaux 2010[3]	Low	Low	Low	Low	High	High	Low	Fair/Moderate RoB

Table E-2. Quality assessment of pre-post studies

Author, Year	Objective clearly stated	Selection criteria prespecified and clearly described	Participants representative of those who would be eligible for the intervention	All eligible participants enrolled	Sample size sufficient	Intervention clearly described and delivered consistently	Outcome measures prespecified, clearly defined, valid, reliable, and assessed consistently	Outcomes assessors blinded	Loss to follow-up after baseline 20% or less and accounted for in analysis	Statistical methods examined changes in outcome measures from pre to post	Outcome measures of interest taken multiple times pre and post	For group level interventions, statistical analysis accounted for use of individual-level data	Rating
Mallaiah, 2014[5]	+	+	+	CD	-	+	+	-	+	+	-	-	Poor
Shields, 2014[6]	+	+	+	+	+	-	+	-	+	+	+	-	Fair
Lappen, 2013[7, 8]	+	+	+	+	+	+	-	-	+	+	+	-	Fair
Laas, 2012[9]	+	+	+	+	-	+	+	-	+	+	-	-	Fair
Markova, 2012[10]	+	+	+	+	-	+	+	-	+	+	-	-	Fair
Shields, 2011[11]	+	+	+	+	-	+	+	-	+	+	-	-	Fair
Dupont, 2011[12, 13]	+	+	+	+	-	-	+	-	+	+	-	-	Poor
Auduraeu, 2009[14]	+	+	+	+	+	+	+	-	+	+	-	-	Fair
Skupski, 2006[15]	+	+	+	-	-	+	+	-	+	+	-	-	Poor
Rizvi, 2004[16]	-	+	+	CD	-	-	-	-	+	-	-	-	Poor

CD-cannot determine

Table E-3. Quality assessment of cohort studies

Author, Year	Representative-ness of exposed cohort	Selection of non-exposed cohort	Ascertain-ment of exposure	Outcome of interest not present at start of study	Compar-ability of cohorts	Assessment of outcome	Duration of follow-up	Adequacy of follow-up of cohorts	Quality Rating
Kim 2014[17]	-	+	+	+	-	+	+	+	Fair
Chan 2013[18]	+	+	+	+	-	+	+	+	Fair
Sohn 2013[19]	-	+	+	+	+	+	-	+	Fair
Bateman 2013[20]	+	+	+	+	+	+	+	+	Good
Ahmed 2012[21]	+	+	+	+	-	+	+	+	Fair
Sugawara 2012[22]	+	+	+	+	+	+	-	+	Fair
Gayat 2011[23]	+	+	+	+	-	+	+	+	Fair
Markova 2011[10]	+	+	+	+	-	+	+	+	Fair
Dupont 2011[12]	+	+	+	+	-	+	+	+	Fair
Kayem 2011[24, 25]	+	+	-	+	-	-	+	+	Fair
Alexander 2009[26]	+	+	+	+	-	+	+	+	Fair
Feigenberg 2009[27]	+	+	+	+	-	+	+	+	Fair
Sentilhes 2009[28]	+	+	+	+	-	+	+	+	Fair
Zwart 2009[29]	+	+	+	+	-	+	+	+	Fair
Baruah	+	+	+	+	-	+	+	+	Fair

Author, Year	Representative-ness of exposed cohort	Selection of non-exposed cohort	Ascertain-ment of exposure	Outcome of interest not present at start of study	Compar-ability of cohorts	Assessment of outcome	Duration of follow-up	Adequacy of follow-up of cohorts	Quality Rating
2008[30]									
Chauleur 2008[31]	+	+	+	+	-	+	+	+	Fair
Ahonen 2007[32]	-	+	+	+	+	+	+	+	Fair
Rizvi 2004[16]	+	+	+	+	-	+	+	+	Fair
Ledee 2001[33]	+	+	+	+	-	+	+	+	Fair

Table E-4. Quality assessment of case-control studies

Author, Year	Case definition adequate	Represent-ativeness of cases	Selection of controls	Definition of controls	Comparability of cases and controls	Ascertainment of exposure	Same method of ascertainment for cases and controls	Non-response rate	Quality Rating
Hardeman 2010[34]	+	+	-	+	-	+	+	-	Poor
McMorrow 2008[35]	+	+	-	+	-	+	+	N/A	Fair

Table E-5. Quality assessment of studies reporting harms

Author, Year	Were the harms predefined using standardized or precise definitions?	Were all pre-specified harms reported?	Did the author(s) use STANDARD scale(s) or checklist(s) for harms collection?	Were the statistical methods used to assess the main harm adequate?	Rating
Cheong 2014[36]	-	unsure	+	+	Poor
Cowan 2014[37]	+	+	+	+	Good
Ferrazzani 2014[38]	-	unsure	+	+	Poor
Inoue 2014[39]	-	unclear	+	+	Poor
Kim 2014[17]	-	unsure	+	+	Poor
Mallaiah 2014[5]	-	unclear	+	+	Poor
Prick 2014[4]	+	+	+	+	Good
Teofili 2014[40]	+	+	+	+	Good
Zatta 2014[41]	-	unsure	+	+	Poor
An 2013[42]	+	+	+	+	Good
Gronvall 2013[43]	-	unsure	+	+	Poor
Kim 2013[44]	+	+	+	+	Good

Author, Year	Were the harms predefined using standardized or precise definitions?	Were all pre-specified harms reported?	Did the author(s) use STANDARD scale(s) or checklist(s) for harms collection?	Were the statistical methods used to assess the main harm adequate?	Rating
Lee 2013[45]	+	+	+	+	Good
Yamasaki 2013[46]	-	unsure	-	+	Poor
Bateman 2013[20]	+	+	+	+	Good
Blanc 2012[47]	-	unclear	+	+	Poor
Laas 2012[9]	-	unsure	+	+	Poor
Lee 2012[48]	-	unsure	+	+	Poor
Poujade 2012[49]	-	unsure	+	+	Poor
Froessler 2012[2]	-	unsure	unsure	unsure	Good
Bonnet 2012[50, 51]	-	unsure	+	+	Poor
Ahmed 2012[21]	-	unsure	+	+	Poor
Ducloy-Bouthors 2011[1]	+	+	+	+	Good
Palacios-Jaraquemada 2011[52]	-	unsure	+	+	Poor

Author, Year	Were the harms predefined using standardized or precise definitions?	Were all pre-specified harms reported?	Did the author(s) use STANDARD scale(s) or checklist(s) for harms collection?	Were the statistical methods used to assess the main harm adequate?	Rating
Sentilhes 2011[53, 54:#1378]	-	unsure	+	+	Poor
Kayem 2011[24, 25]	-	unsure	-	-	Poor
Ganguli 2010[55]	-	unsure	+	+	Poor
Wright 2010[56]	+	+	+	+	Good
Hardeman 2010[34]	-	unsure	unsure	+	Poor
Feigenberg 2009[27]	+	+	+	+	Good
Fiori 2009[57]	-	unsure	+	+	Poor
Lone 2009[58]	-	unsure	+	+	Poor
Phillips 2009[59]	+	+	+	+	Good
Zwart 2009[29]	-	unsure	+	+	Poor
Alexander 2009[26]	-	unsure	+	+	Poor
Balki 2008,[60]	-	unclear	+	+	Poor

Author, Year	Were the harms predefined using standardized or precise definitions?	Were all pre-specified harms reported?	Did the author(s) use STANDARD scale(s) or checklist(s) for harms collection?	Were the statistical methods used to assess the main harm adequate?	Rating
Chauleur 2008[31]	-	unsure	+	+	Poor
Gaia 2008[61]	-	unsure	+	+	Poor
Glaze 2008[62]	-	unsure	unsure	+	Poor
McMorrow 2008[35]	-	-	unsure	-	Poor
Touboul 2008[63]	-	unsure	-	+	Poor
Chauleur 2008[64]	-	unsure	+	+	Poor
Alfirevic 2007[65]	-	unsure	+	+	Poor
Sakse 2007[66]	Unsure	unsure	+	+	Poor
Knight 2007[67]	-	unsure	+	+	Poor
Ahonen 2007[32]	-	unsure	+	+	Poor
Akinbiyi 2004[68]	-	unclear	+	+	Poor
Forna 2004[69]	+	+	+	+	Good

Author, Year	Were the harms predefined using standardized or precise definitions?	Were all pre-specified harms reported?	Did the author(s) use STANDARD scale(s) or checklist(s) for harms collection?	Were the statistical methods used to assess the main harm adequate?	Rating
Hoveyda 2001[70]	-	unsure	+	+	Poor
O'Leary 1995[71]	-	unsure	+	+	Poor
Boyd 1995[72]	-	unsure	+	+	Poor
Oleen 1990[73]	-	unsure	+	+	Poor

Table E-6. Quality assessment of case series

Author, Year	Confounding and modifying variables accounted for	Concurrent intervention/unintended exposure ruled out	Study free from variations from protocol	Low rate (≤20/5) attrition	Attrition did not result in difference in groups baseline & followup	Outcome assessors blinded	Clearly stated inclusion/exclusion criteria	Measures implemented consistently	Appropriate measures for assessing interventions/exposures	Interventions implemented consistently	Clearly described measures for outcome assessment (Outcome: Blood Loss)	Clearly described measures for outcome assessment (Outcome: Transfusion)	Clearly described measures for outcome assessment (Outcome: ICU)	Clearly described measures for outcome assessment (Outcome: Cessation)	Clearly described measures for outcome assessment (Outcome: Success)	Clearly described measures for outcome assessment (Outcome: Fertility)	Clearly described measures for outcome assessment (Outcome: Hemostasis)	Clearly described measures for outcome assessment (Outcome: LOS)	Clearly described measures for outcome assessment (Outcome: Uterine Preservation)	Appropriate measures for outcome assessment (Outcome: Blood Loss)	Appropriate measure for outcome assessment (Outcome: Transfusion)	Appropriate measure for outcome assessment (Outcome: ICU)	Appropriate measure for outcome assessment (Outcome: Cessation)	Appropriate measure for outcome assessment (Outcome: Success)	Appropriate measure for outcome assessment (Outcome: Fertility)	Appropriate measure for outcome assessment (Outcome: Hemostasis)	Appropriate measure for outcome assessment (Outcome: LOS)	Appropriate measure for outcome assessment (Outcome: Uterine Preservation)	Consistent implementation of outcome assessment	Appropriate measures for confounding variables assessment	Consistent assessment of confounding variables	Secular trends and regression to the mean accounted for	Pre-specified potential outcomes	Reporting of all pre-specified outcomes
Cheong, 2014[36]	+	NA	NR	+	NA	-	+	+	+	NA	/	/	/	/	+	/	/	/	/	/	/	/	/	/	/	/	/	/	/	+	+	+	-	+	+
Ferrazzani, 2014[38]	+	-	NR	+	NA	-	+	+	+	NA	/	/	/	/	+	/	/	/	/	/	/	/	/	/	/	/	/	/	/	+	+	+	-	+	+

Author, Year	Inoue, 2014[39]	Park, 2014[74]
Confounding and modifying variables accounted for	-	+
Concurrent intervention/unintended exposure ruled out	-	-
Study free from variations from protocol	NR	NR
Low rate (≤20/5) attrition	+	+
Attrition did not result in difference in groups baseline & followup	NA	NA
Outcome assessors blinded	-	-
Clearly stated inclusion/exclusion criteria	+	+
Measures implemented consistently	+	+
Appropriate measures for assessing interventions/exposures	+	+
Interventions implemented consistently	NA	NA
Clearly described measures for outcome assessment (Outcome: Blood Loss)	/	/
Clearly described measures for outcome assessment (Outcome: Transfusion)	/	/
Clearly described measures for outcome assessment (Outcome: ICU)	/	/
Clearly described measures for outcome assessment (Outcome: Cessation)	/	/
Clearly described measures for outcome assessment (Outcome: Success)	+	+
Clearly described measures for outcome assessment (Outcome: Fertility)	/	/
Clearly described measures for outcome assessment (Outcome: Hemostasis)	/	/
Clearly described measures for outcome assessment (Outcome: LOS)	/	/
Clearly described measures for outcome assessment (Outcome: Uterine Preservation)	/	/
Appropriate measures for outcome assessment (Outcome: Blood Loss)	/	/
Appropriate measure for outcome assessment (Outcome: Transfusion)	/	/
Appropriate measure for outcome assessment (Outcome: ICU)	/	/
Appropriate measure for outcome assessment (Outcome: Cessation)	/	/
Appropriate measure for outcome assessment (Outcome: Success)	+	+
Appropriate measure for outcome assessment (Outcome: Fertility)	/	/
Appropriate measure for outcome assessment (Outcome: Hemostasis)	/	/
Appropriate measure for outcome assessment (Outcome: LOS)	/	/
Appropriate measure for outcome assessment (Outcome: Uterine Preservation)	/	/
Consistent implementation of outcome assessment	+	+
Appropriate measures for confounding variables assessment	-	+
Consistent assessment of confounding variables	-	+
Secular trends and regression to the mean accounted for	-	-
Pre-specified potential outcomes	+	+
Reporting of all pre-specified outcomes	+	+

Author, Year	Zatta, 2014[41]	Dildy, 2013[75]
Confounding and modifying variables accounted for	NA	+
Concurrent intervention/unintended exposure ruled out	-	-
Study free from variations from protocol	NR	NR
Low rate (≤20/5) attrition	NA	NA
Attrition did not result in difference in groups baseline & followup	NA	NA
Outcome assessors blinded	NA	-
Clearly stated inclusion/exclusion criteria	+	+
Measures implemented consistently	NR	+
Appropriate measures for assessing interventions/exposures	+	+
Interventions implemented consistently	NA	-
Clearly described measures for outcome assessment (Outcome: Blood Loss)	/	-
Clearly described measures for outcome assessment (Outcome: Transfusion)	/	-
Clearly described measures for outcome assessment (Outcome: ICU)	/	+
Clearly described measures for outcome assessment (Outcome: Cessation)	-	+
Clearly described measures for outcome assessment (Outcome: Success)	/	/
Clearly described measures for outcome assessment (Outcome: Fertility)	/	/
Clearly described measures for outcome assessment (Outcome: Hemostasis)	/	/
Clearly described measures for outcome assessment (Outcome: LOS)	/	/
Clearly described measures for outcome assessment (Outcome: Uterine Preservation)	/	/
Appropriate measures for outcome assessment (Outcome: Blood Loss)	/	-
Appropriate measure for outcome assessment (Outcome: Transfusion)	/	+
Appropriate measure for outcome assessment (Outcome: ICU)	/	+
Appropriate measure for outcome assessment (Outcome: Cessation)	+	+
Appropriate measure for outcome assessment (Outcome: Success)	/	/
Appropriate measure for outcome assessment (Outcome: Fertility)	/	/
Appropriate measure for outcome assessment (Outcome: Hemostasis)	/	/
Appropriate measure for outcome assessment (Outcome: LOS)	/	/
Appropriate measure for outcome assessment (Outcome: Uterine Preservation)	/	/
Consistent implementation of outcome assessment	+	+
Appropriate measures for confounding variables assessment	-	-
Consistent assessment of confounding variables	-	NR
Secular trends and regression to the mean accounted for	-	NA
Pre-specified potential outcomes	+	+
Reporting of all pre-specified outcomes	+	+

Author, Year	Gronvall, 2013[43]	Lee, 2013[45]
Confounding and modifying variables accounted for	-	+
Concurrent intervention/unintended exposure ruled out	-	-
Study free from variations from protocol	NR	NR
Low rate (≤20/5) attrition	+	+
Attrition did not result in difference in groups baseline & followup	NA	NA
Outcome assessors blinded	-	-
Clearly stated inclusion/exclusion criteria	+	+
Measures implemented consistently	+	+
Appropriate measures for assessing interventions/exposures	+	+
Interventions implemented consistently	NA	NA
Clearly described measures for outcome assessment (Outcome: Blood Loss)	/	/
Clearly described measures for outcome assessment (Outcome: Transfusion)	/	/
Clearly described measures for outcome assessment (Outcome: ICU)	/	/
Clearly described measures for outcome assessment (Outcome: Cessation)	/	/
Clearly described measures for outcome assessment (Outcome: Success)	+	+
Clearly described measures for outcome assessment (Outcome: Fertility)	/	/
Clearly described measures for outcome assessment (Outcome: Hemostasis)	/	/
Clearly described measures for outcome assessment (Outcome: LOS)	/	/
Clearly described measures for outcome assessment (Outcome: Uterine Preservation)	/	/
Appropriate measures for outcome assessment (Outcome: Blood Loss)	/	/
Appropriate measure for outcome assessment (Outcome: Transfusion)	/	/
Appropriate measure for outcome assessment (Outcome: ICU)	/	/
Appropriate measure for outcome assessment (Outcome: Cessation)	/	/
Appropriate measure for outcome assessment (Outcome: Success)	+	+
Appropriate measure for outcome assessment (Outcome: Fertility)	/	/
Appropriate measure for outcome assessment (Outcome: Hemostasis)	/	/
Appropriate measure for outcome assessment (Outcome: LOS)	/	/
Appropriate measure for outcome assessment (Outcome: Uterine Preservation)	/	/
Consistent implementation of outcome assessment	+	+
Appropriate measures for confounding variables assessment	-	+
Consistent assessment of confounding variables	-	+
Secular trends and regression to the mean accounted for	-	-
Pre-specified potential outcomes	+	+
Reporting of all pre-specified outcomes	+	+

Yamasaki, 2013[46]	Kim, 2013[44]	Author, Year
+	+	Confounding and modifying variables accounted for
-	-	Concurrent intervention/unintended exposure ruled out
NR	NR	Study free from variations from protocol
+	+	Low rate (≤20/5) attrition
NA	NA	Attrition did not result in difference in groups baseline & followup
-	-	Outcome assessors blinded
+	+	Clearly stated inclusion/exclusion criteria
+	+	Measures implemented consistently
+	+	Appropriate measures for assessing interventions/exposures
NA	NA	Interventions implemented consistently
/	/	Clearly described measures for outcome assessment (Outcome: Blood Loss)
/	/	Clearly described measures for outcome assessment (Outcome: Transfusion)
/	/	Clearly described measures for outcome assessment (Outcome: ICU)
/	/	Clearly described measures for outcome assessment (Outcome: Cessation)
+	+	Clearly described measures for outcome assessment (Outcome: Success)
/	/	Clearly described measures for outcome assessment (Outcome: Fertility)
/	/	Clearly described measures for outcome assessment (Outcome: Hemostasis)
/	/	Clearly described measures for outcome assessment (Outcome: LOS)
/	/	Clearly described measures for outcome assessment (Outcome: Uterine Preservation)
/	/	Appropriate measures for outcome assessment (Outcome: Blood Loss)
/	/	Appropriate measure for outcome assessment (Outcome: Transfusion)
/	/	Appropriate measure for outcome assessment (Outcome: ICU)
/	/	Appropriate measure for outcome assessment (Outcome: Cessation)
+	+	Appropriate measure for outcome assessment (Outcome: Success)
/	/	Appropriate measure for outcome assessment (Outcome: Fertility)
/	/	Appropriate measure for outcome assessment (Outcome: Hemostasis)
/	/	Appropriate measure for outcome assessment (Outcome: LOS)
/	/	Appropriate measure for outcome assessment (Outcome: Uterine Preservation)
+	+	Consistent implementation of outcome assessment
+	+	Appropriate measures for confounding variables assessment
+	+	Consistent assessment of confounding variables
-	-	Secular trends and regression to the mean accounted for
+	+	Pre-specified potential outcomes
+	+	Reporting of all pre-specified outcomes

Author, Year	Blanc, 2012[47]	Lee, 2012[48]
Confounding and modifying variables accounted for	+	+
Concurrent intervention/unintended exposure ruled out	-	-
Study free from variations from protocol	NR	NR
Low rate (≤20/5) attrition	+	-
Attrition did not result in difference in groups baseline & followup	+	NR
Outcome assessors blinded	-	-
Clearly stated inclusion/exclusion criteria	+	+
Measures implemented consistently	+	+
Appropriate measures for assessing interventions/exposures	+	+
Interventions implemented consistently	NA	NA
Clearly described measures for outcome assessment (Outcome: Blood Loss)	/	/
Clearly described measures for outcome assessment (Outcome: Transfusion)	/	+
Clearly described measures for outcome assessment (Outcome: ICU)	/	/
Clearly described measures for outcome assessment (Outcome: Cessation)	/	/
Clearly described measures for outcome assessment (Outcome: Success)	+	+
Clearly described measures for outcome assessment (Outcome: Fertility)	/	-
Clearly described measures for outcome assessment (Outcome: Hemostasis)	/	/
Clearly described measures for outcome assessment (Outcome: LOS)	/	/
Clearly described measures for outcome assessment (Outcome: Uterine Preservation)	/	/
Appropriate measures for outcome assessment (Outcome: Blood Loss)	/	/
Appropriate measure for outcome assessment (Outcome: Transfusion)	/	+
Appropriate measure for outcome assessment (Outcome: ICU)	/	/
Appropriate measure for outcome assessment (Outcome: Cessation)	/	/
Appropriate measure for outcome assessment (Outcome: Success)	+	+
Appropriate measure for outcome assessment (Outcome: Fertility)	/	+
Appropriate measure for outcome assessment (Outcome: Hemostasis)	/	/
Appropriate measure for outcome assessment (Outcome: LOS)	/	/
Appropriate measure for outcome assessment (Outcome: Uterine Preservation)	/	/
Consistent implementation of outcome assessment	+	-
Appropriate measures for confounding variables assessment	+	+
Consistent assessment of confounding variables	+	+
Secular trends and regression to the mean accounted for	-	-
Pre-specified potential outcomes	+	+
Reporting of all pre-specified outcomes	+	+

Author, Year	Poujade, 2012[49]	Ganguli, 2011[55]
Confounding and modifying variables accounted for	+	+
Concurrent intervention/unintended exposure ruled out	-	-
Study free from variations from protocol	NR	NR
Low rate (≤20/5) attrition	+	+
Attrition did not result in difference in groups baseline & followup	NA	NA
Outcome assessors blinded	-	-
Clearly stated inclusion/exclusion criteria	+	+
Measures implemented consistently	+	+
Appropriate measures for assessing interventions/exposures	+	+
Interventions implemented consistently	NA	NA
Clearly described measures for outcome assessment (Outcome: Blood Loss)	/	/
Clearly described measures for outcome assessment (Outcome: Transfusion)	/	/
Clearly described measures for outcome assessment (Outcome: ICU)	/	/
Clearly described measures for outcome assessment (Outcome: Cessation)	/	/
Clearly described measures for outcome assessment (Outcome: Success)	+	+
Clearly described measures for outcome assessment (Outcome: Fertility)	/	/
Clearly described measures for outcome assessment (Outcome: Hemostasis)	/	/
Clearly described measures for outcome assessment (Outcome: LOS)	/	/
Clearly described measures for outcome assessment (Outcome: Uterine Preservation)	/	/
Appropriate measures for outcome assessment (Outcome: Blood Loss)	/	/
Appropriate measure for outcome assessment (Outcome: Transfusion)	/	/
Appropriate measure for outcome assessment (Outcome: ICU)	/	/
Appropriate measure for outcome assessment (Outcome: Cessation)	/	/
Appropriate measure for outcome assessment (Outcome: Success)	+	+
Appropriate measure for outcome assessment (Outcome: Fertility)	/	/
Appropriate measure for outcome assessment (Outcome: Hemostasis)	/	/
Appropriate measure for outcome assessment (Outcome: LOS)	/	/
Appropriate measure for outcome assessment (Outcome: Uterine Preservation)	/	/
Consistent implementation of outcome assessment	+	+
Appropriate measures for confounding variables assessment	+	+
Consistent assessment of confounding variables	+	+
Secular trends and regression to the mean accounted for	NA	-
Pre-specified potential outcomes	+	+
Reporting of all pre-specified outcomes	+	+

Author, Year	Palacios-Jaraquemada, 2011[52]	Wright, 2010[56]
Confounding and modifying variables accounted for	-	+
Concurrent intervention/unintended exposure ruled out	-	-
Study free from variations from protocol	NR	NR
Low rate (≤20/5) attrition	+	+
Attrition did not result in difference in groups baseline & followup	NA	+
Outcome assessors blinded	-	-
Clearly stated inclusion/exclusion criteria	-	+
Measures implemented consistently	NR	+
Appropriate measures for assessing interventions/exposures	+	+
Interventions implemented consistently	NA	NA
Clearly described measures for outcome assessment (Outcome: Blood Loss)	/	/
Clearly described measures for outcome assessment (Outcome: Transfusion)	/	+
Clearly described measures for outcome assessment (Outcome: ICU)	/	+
Clearly described measures for outcome assessment (Outcome: Cessation)	/	/
Clearly described measures for outcome assessment (Outcome: Success)	+	/
Clearly described measures for outcome assessment (Outcome: Fertility)	/	/
Clearly described measures for outcome assessment (Outcome: Hemostasis)	/	/
Clearly described measures for outcome assessment (Outcome: LOS)	/	+
Clearly described measures for outcome assessment (Outcome: Uterine Preservation)	/	/
Appropriate measures for outcome assessment (Outcome: Blood Loss)	/	/
Appropriate measure for outcome assessment (Outcome: Transfusion)	/	+
Appropriate measure for outcome assessment (Outcome: ICU)	/	+
Appropriate measure for outcome assessment (Outcome: Cessation)	/	/
Appropriate measure for outcome assessment (Outcome: Success)	+	/
Appropriate measure for outcome assessment (Outcome: Fertility)	/	/
Appropriate measure for outcome assessment (Outcome: Hemostasis)	/	/
Appropriate measure for outcome assessment (Outcome: LOS)	/	+
Appropriate measure for outcome assessment (Outcome: Uterine Preservation)	/	/
Consistent implementation of outcome assessment	+	+
Appropriate measures for confounding variables assessment	-	+
Consistent assessment of confounding variables	-	+
Secular trends and regression to the mean accounted for	-	-
Pre-specified potential outcomes	+	+
Reporting of all pre-specified outcomes	+	+

Author, Year	Lone, 2010[58]	Phillips, 2009[59]
Confounding and modifying variables accounted for	+	-
Concurrent intervention/unintended exposure ruled out	-	-
Study free from variations from protocol	NR	NR
Low rate (≤20/5) attrition	+	NA
Attrition did not result in difference in groups baseline & followup	NA	NA
Outcome assessors blinded	-	-
Clearly stated inclusion/exclusion criteria	+	+
Measures implemented consistently	+	+
Appropriate measures for assessing interventions/exposures	+	+
Interventions implemented consistently	NA	NA
Clearly described measures for outcome assessment (Outcome: Blood Loss)	/	/
Clearly described measures for outcome assessment (Outcome: Transfusion)	/	+
Clearly described measures for outcome assessment (Outcome: ICU)	/	/
Clearly described measures for outcome assessment (Outcome: Cessation)	/	+
Clearly described measures for outcome assessment (Outcome: Success)	/	/
Clearly described measures for outcome assessment (Outcome: Fertility)	/	/
Clearly described measures for outcome assessment (Outcome: Hemostasis)	/	/
Clearly described measures for outcome assessment (Outcome: LOS)	/	/
Clearly described measures for outcome assessment (Outcome: Uterine Preservation)	/	/
Appropriate measures for outcome assessment (Outcome: Blood Loss)	/	/
Appropriate measure for outcome assessment (Outcome: Transfusion)	/	+
Appropriate measure for outcome assessment (Outcome: ICU)	/	/
Appropriate measure for outcome assessment (Outcome: Cessation)	/	+
Appropriate measure for outcome assessment (Outcome: Success)	/	/
Appropriate measure for outcome assessment (Outcome: Fertility)	/	/
Appropriate measure for outcome assessment (Outcome: Hemostasis)	/	/
Appropriate measure for outcome assessment (Outcome: LOS)	/	/
Appropriate measure for outcome assessment (Outcome: Uterine Preservation)	/	/
Consistent implementation of outcome assessment	+	+
Appropriate measures for confounding variables assessment	+	-
Consistent assessment of confounding variables	+	NR
Secular trends and regression to the mean accounted for	+	-
Pre-specified potential outcomes	+	+
Reporting of all pre-specified outcomes	+	+

Author, Year	Gaia, 2009[61]	Fiori, 2009[57]
Confounding and modifying variables accounted for	-	-
Concurrent intervention/unintended exposure ruled out	-	-
Study free from variations from protocol	NR	NR
Low rate (≤20/5) attrition	+	-
Attrition did not result in difference in groups baseline & followup	NA	NR
Outcome assessors blinded	-	-
Clearly stated inclusion/exclusion criteria	+	+
Measures implemented consistently	+	+
Appropriate measures for assessing interventions/exposures	+	+
Interventions implemented consistently	NA	NA
Clearly described measures for outcome assessment (Outcome: Blood Loss)	/	/
Clearly described measures for outcome assessment (Outcome: Transfusion)	/	/
Clearly described measures for outcome assessment (Outcome: ICU)	/	/
Clearly described measures for outcome assessment (Outcome: Cessation)	/	/
Clearly described measures for outcome assessment (Outcome: Success)	+	+
Clearly described measures for outcome assessment (Outcome: Fertility)	+	+
Clearly described measures for outcome assessment (Outcome: Hemostasis)	/	/
Clearly described measures for outcome assessment (Outcome: LOS)	/	/
Clearly described measures for outcome assessment (Outcome: Uterine Preservation)	/	/
Appropriate measures for outcome assessment (Outcome: Blood Loss)	/	/
Appropriate measure for outcome assessment (Outcome: Transfusion)	/	/
Appropriate measure for outcome assessment (Outcome: ICU)	/	/
Appropriate measure for outcome assessment (Outcome: Cessation)	/	/
Appropriate measure for outcome assessment (Outcome: Success)	+	+
Appropriate measure for outcome assessment (Outcome: Fertility)	+	+
Appropriate measure for outcome assessment (Outcome: Hemostasis)	/	/
Appropriate measure for outcome assessment (Outcome: LOS)	/	/
Appropriate measure for outcome assessment (Outcome: Uterine Preservation)	/	/
Consistent implementation of outcome assessment	+	+
Appropriate measures for confounding variables assessment	-	+
Consistent assessment of confounding variables	-	+
Secular trends and regression to the mean accounted for	-	-
Pre-specified potential outcomes	+	+
Reporting of all pre-specified outcomes	+	+

Author, Year	Glaze, 2008[62]	Knight, 2008[67]
Confounding and modifying variables accounted for	-	+
Concurrent intervention/unintended exposure ruled out	-	-
Study free from variations from protocol	NR	NR
Low rate (≤20/5) attrition	NA	+
Attrition did not result in difference in groups baseline & followup	NA	NA
Outcome assessors blinded	-	-
Clearly stated inclusion/exclusion criteria	+	+
Measures implemented consistently	+	+
Appropriate measures for assessing interventions/exposures	+	+
Interventions implemented consistently	NA	NA
Clearly described measures for outcome assessment (Outcome: Blood Loss)	/	/
Clearly described measures for outcome assessment (Outcome: Transfusion)	+	/
Clearly described measures for outcome assessment (Outcome: ICU)	+	/
Clearly described measures for outcome assessment (Outcome: Cessation)	/	/
Clearly described measures for outcome assessment (Outcome: Success)	+	+
Clearly described measures for outcome assessment (Outcome: Fertility)	/	/
Clearly described measures for outcome assessment (Outcome: Hemostasis)	/	/
Clearly described measures for outcome assessment (Outcome: LOS)	/	/
Clearly described measures for outcome assessment (Outcome: Uterine Preservation)	/	/
Appropriate measures for outcome assessment (Outcome: Blood Loss)	/	/
Appropriate measure for outcome assessment (Outcome: Transfusion)	+	/
Appropriate measure for outcome assessment (Outcome: ICU)	+	/
Appropriate measure for outcome assessment (Outcome: Cessation)	/	/
Appropriate measure for outcome assessment (Outcome: Success)	+	+
Appropriate measure for outcome assessment (Outcome: Fertility)	/	/
Appropriate measure for outcome assessment (Outcome: Hemostasis)	/	/
Appropriate measure for outcome assessment (Outcome: LOS)	/	/
Appropriate measure for outcome assessment (Outcome: Uterine Preservation)	/	/
Consistent implementation of outcome assessment	+	+
Appropriate measures for confounding variables assessment	-	+
Consistent assessment of confounding variables	NA	+
Secular trends and regression to the mean accounted for	-	NA
Pre-specified potential outcomes	+	+
Reporting of all pre-specified outcomes	+	+

Author, Year	Touboul, 2008[63]	Chauleur, 2008[64]
Confounding and modifying variables accounted for	+	+
Concurrent intervention/unintended exposure ruled out	-	-
Study free from variations from protocol	NR	NR
Low rate (≤20/5) attrition	+	+
Attrition did not result in difference in groups baseline & followup	NA	NA
Outcome assessors blinded	-	-
Clearly stated inclusion/exclusion criteria	+	+
Measures implemented consistently	+	+
Appropriate measures for assessing interventions/exposures	+	+
Interventions implemented consistently	NA	NA
Clearly described measures for outcome assessment (Outcome: Blood Loss)	/	/
Clearly described measures for outcome assessment (Outcome: Transfusion)	/	+
Clearly described measures for outcome assessment (Outcome: ICU)	/	+
Clearly described measures for outcome assessment (Outcome: Cessation)	/	/
Clearly described measures for outcome assessment (Outcome: Success)	/	/
Clearly described measures for outcome assessment (Outcome: Fertility)	/	/
Clearly described measures for outcome assessment (Outcome: Hemostasis)	+	/
Clearly described measures for outcome assessment (Outcome: LOS)	/	/
Clearly described measures for outcome assessment (Outcome: Uterine Preservation)	/	-
Appropriate measures for outcome assessment (Outcome: Blood Loss)	/	/
Appropriate measure for outcome assessment (Outcome: Transfusion)	/	+
Appropriate measure for outcome assessment (Outcome: ICU)	/	+
Appropriate measure for outcome assessment (Outcome: Cessation)	/	/
Appropriate measure for outcome assessment (Outcome: Success)	/	/
Appropriate measure for outcome assessment (Outcome: Fertility)	/	/
Appropriate measure for outcome assessment (Outcome: Hemostasis)	+	/
Appropriate measure for outcome assessment (Outcome: LOS)	/	/
Appropriate measure for outcome assessment (Outcome: Uterine Preservation)	/	+
Consistent implementation of outcome assessment	+	+
Appropriate measures for confounding variables assessment	+	-
Consistent assessment of confounding variables	+	-
Secular trends and regression to the mean accounted for	-	-
Pre-specified potential outcomes	+	+
Reporting of all pre-specified outcomes	+	+

Author, Year	Alfirevic, 2007[65]	Sakse, 2007[66]
Confounding and modifying variables accounted for	-	-
Concurrent intervention/unintended exposure ruled out	-	-
Study free from variations from protocol	NR	NR
Low rate (≤20/5) attrition	NA	+
Attrition did not result in difference in groups baseline & followup	NA	+
Outcome assessors blinded	-	-
Clearly stated inclusion/exclusion criteria	+	+
Measures implemented consistently	+	+
Appropriate measures for assessing interventions/exposures	+	+
Interventions implemented consistently	NA	NA
Clearly described measures for outcome assessment (Outcome: Blood Loss)	-	-
Clearly described measures for outcome assessment (Outcome: Transfusion)	+	-
Clearly described measures for outcome assessment (Outcome: ICU)	+	/
Clearly described measures for outcome assessment (Outcome: Cessation)	+	/
Clearly described measures for outcome assessment (Outcome: Success)	/	/
Clearly described measures for outcome assessment (Outcome: Fertility)	/	/
Clearly described measures for outcome assessment (Outcome: Hemostasis)	/	/
Clearly described measures for outcome assessment (Outcome: LOS)	/	/
Clearly described measures for outcome assessment (Outcome: Uterine Preservation)	/	/
Appropriate measures for outcome assessment (Outcome: Blood Loss)	NR	NR
Appropriate measure for outcome assessment (Outcome: Transfusion)	+	NR
Appropriate measure for outcome assessment (Outcome: ICU)	+	/
Appropriate measure for outcome assessment (Outcome: Cessation)	+	/
Appropriate measure for outcome assessment (Outcome: Success)	/	/
Appropriate measure for outcome assessment (Outcome: Fertility)	/	/
Appropriate measure for outcome assessment (Outcome: Hemostasis)	/	/
Appropriate measure for outcome assessment (Outcome: LOS)	/	/
Appropriate measure for outcome assessment (Outcome: Uterine Preservation)	/	/
Consistent implementation of outcome assessment	-	NR
Appropriate measures for confounding variables assessment	+	-
Consistent assessment of confounding variables	+	-
Secular trends and regression to the mean accounted for	-	-
Pre-specified potential outcomes	+	+
Reporting of all pre-specified outcomes	+	+

Author, Year	Forna, 2004[69]	Hoveyda, 2001[70]
Confounding and modifying variables accounted for	+	+
Concurrent intervention/unintended exposure ruled out	NA	-
Study free from variations from protocol	NR	NR
Low rate (≤20/5) attrition	+	+
Attrition did not result in difference in groups baseline & followup	NA	NA
Outcome assessors blinded	-	-
Clearly stated inclusion/exclusion criteria	+	+
Measures implemented consistently	+	+
Appropriate measures for assessing interventions/exposures	+	+
Interventions implemented consistently	+	NA
Clearly described measures for outcome assessment (Outcome: Blood Loss)	/	/
Clearly described measures for outcome assessment (Outcome: Transfusion)	/	/
Clearly described measures for outcome assessment (Outcome: ICU)	/	/
Clearly described measures for outcome assessment (Outcome: Cessation)	/	/
Clearly described measures for outcome assessment (Outcome: Success)	+	/
Clearly described measures for outcome assessment (Outcome: Fertility)	/	/
Clearly described measures for outcome assessment (Outcome: Hemostasis)	/	/
Clearly described measures for outcome assessment (Outcome: LOS)	/	/
Clearly described measures for outcome assessment (Outcome: Uterine Preservation)	/	/
Appropriate measures for outcome assessment (Outcome: Blood Loss)	/	/
Appropriate measure for outcome assessment (Outcome: Transfusion)	/	/
Appropriate measure for outcome assessment (Outcome: ICU)	/	/
Appropriate measure for outcome assessment (Outcome: Cessation)	/	/
Appropriate measure for outcome assessment (Outcome: Success)	+	/
Appropriate measure for outcome assessment (Outcome: Fertility)	/	/
Appropriate measure for outcome assessment (Outcome: Hemostasis)	/	/
Appropriate measure for outcome assessment (Outcome: LOS)	/	/
Appropriate measure for outcome assessment (Outcome: Uterine Preservation)	/	/
Consistent implementation of outcome assessment	+	+
Appropriate measures for confounding variables assessment	+	+
Consistent assessment of confounding variables	+	+
Secular trends and regression to the mean accounted for	-	NA
Pre-specified potential outcomes	+	+
Reporting of all pre-specified outcomes	+	+

Author, Year	Boyd, 1995[72]	O'Leary, 1995[71]
Confounding and modifying variables accounted for	-	-
Concurrent intervention/unintended exposure ruled out	-	-
Study free from variations from protocol	NR	NR
Low rate (≤20/5) attrition	+	+
Attrition did not result in difference in groups baseline & followup	NA	NA
Outcome assessors blinded	-	-
Clearly stated inclusion/exclusion criteria	+	+
Measures implemented consistently	+	+
Appropriate measures for assessing interventions/exposures	+	+
Interventions implemented consistently	NA	NA
Clearly described measures for outcome assessment (Outcome: Blood Loss)	/	/
Clearly described measures for outcome assessment (Outcome: Transfusion)	/	/
Clearly described measures for outcome assessment (Outcome: ICU)	/	/
Clearly described measures for outcome assessment (Outcome: Cessation)	/	/
Clearly described measures for outcome assessment (Outcome: Success)	+	+
Clearly described measures for outcome assessment (Outcome: Fertility)	/	/
Clearly described measures for outcome assessment (Outcome: Hemostasis)	/	/
Clearly described measures for outcome assessment (Outcome: LOS)	/	/
Clearly described measures for outcome assessment (Outcome: Uterine Preservation)	/	/
Appropriate measures for outcome assessment (Outcome: Blood Loss)	/	/
Appropriate measure for outcome assessment (Outcome: Transfusion)	/	/
Appropriate measure for outcome assessment (Outcome: ICU)	/	/
Appropriate measure for outcome assessment (Outcome: Cessation)	/	/
Appropriate measure for outcome assessment (Outcome: Success)	+	+
Appropriate measure for outcome assessment (Outcome: Fertility)	/	/
Appropriate measure for outcome assessment (Outcome: Hemostasis)	/	/
Appropriate measure for outcome assessment (Outcome: LOS)	/	/
Appropriate measure for outcome assessment (Outcome: Uterine Preservation)	/	/
Consistent implementation of outcome assessment	+	+
Appropriate measures for confounding variables assessment	-	-
Consistent assessment of confounding variables	-	-
Secular trends and regression to the mean accounted for	-	+
Pre-specified potential outcomes	+	+
Reporting of all pre-specified outcomes	+	+

Author, Year	Confounding and modifying variables accounted for	Concurrent intervention/unintended exposure ruled out	Study free from variations from protocol	Low rate (≤20/5) attrition	Attrition did not result in difference in groups baseline & followup	Outcome assessors blinded	Clearly stated inclusion/exclusion criteria	Measures implemented consistently	Appropriate measures for assessing interventions/exposures	Interventions implemented consistently	Clearly described measures for outcome assessment (Outcome: Blood Loss)	Clearly described measures for outcome assessment (Outcome: Transfusion)	Clearly described measures for outcome assessment (Outcome: ICU)	Clearly described measures for outcome assessment (Outcome: Cessation)	Clearly described measures for outcome assessment (Outcome: Success)	Clearly described measures for outcome assessment (Outcome: Fertility)	Clearly described measures for outcome assessment (Outcome: Hemostasis)	Clearly described measures for outcome assessment (Outcome: LOS)	Clearly described measures for outcome assessment (Outcome: Uterine Preservation)	Appropriate measures for outcome assessment (Outcome: Blood Loss)	Appropriate measure for outcome assessment (Outcome: Transfusion)	Appropriate measure for outcome assessment (Outcome: ICU)	Appropriate measure for outcome assessment (Outcome: Cessation)	Appropriate measure for outcome assessment (Outcome: Success)	Appropriate measure for outcome assessment (Outcome: Fertility)	Appropriate measure for outcome assessment (Outcome: Hemostasis)	Appropriate measure for outcome assessment (Outcome: LOS)	Appropriate measure for outcome assessment (Outcome: Uterine Preservation)	Consistent implementation of outcome assessment	Appropriate measures for confounding variables assessment	Consistent assessment of confounding variables	Secular trends and regression to the mean accounted for	Pre-specified potential outcomes	Reporting of all pre-specified outcomes
Oleen, 1990[73]	+	-	NR	+	NA	-	+	+	+	NA	-	+	/	/	/	/	/	/	/	+	+	/	/	/	/	/	/	/	/	+	+	+	NA	+	+

NA=not applicable, NR=not reported, / =outcome not rated for this study

Quality References

1. Ducloy-Bouthors AS, Jude B, Duhamel A, et al. High-dose tranexamic acid reduces blood loss in postpartum haemorrhage. Crit Care 2011;15:R117. PMID: 21496253.
2. Froessler B, Cocchiaro C, Saadat-Gilani K, et al. Intravenous iron sucrose versus oral iron ferrous sulfate for antenatal and postpartum iron deficiency anemia: a randomized trial. J Matern Fetal Neonatal Med 2012 May;26:654-9. PMID: 23130909.
3. Deneux-Tharaux C, Dupont C, Colin C, et al. Multifaceted intervention to decrease the rate of severe postpartum haemorrhage: the PITHAGORE6 cluster-randomised controlled trial. BJOG 2010 Sep;117:1278-87. PMID: 20573150.
4. Prick B, Jansen A, Steegers E, et al. Transfusion policy after severe postpartum haemorrhage: a randomised non-inferiority trial. BJOG 2014 Jan 10PMID: 24405687.
5. Mallaiah S, Barclay P, Harrod I, et al. Introduction of an algorithm for ROTEM-guided fibrinogen concentrate administration in major obstetric haemorrhage. Anaesthesia 2014 Oct 7PMID: 25289791.
6. Shields LE, Wiesner S, Fulton J, et al. Comprehensive maternal hemorrhage protocols reduce the use of blood products and improve patient safety. Am J Obstet Gynecol 2014 Jul 12PMID: 25025944.
7. Lappen JR, Seidman D, Burke C, et al. Changes in care associated with the introduction of a postpartum hemorrhage patient safety program. Am J Perinatol 2013 Nov;30:833-8. PMID: 23359234.
8. Einerson BD, Miller ES, Grobman WA. Does a postpartum hemorrhage patient safety program result in sustained changes in management and outcomes? Am J Obstet Gynecol 2014 Jul 11PMID: 25019484.
9. Laas E, Bui C, Popowski T, et al. Trends in the rate of invasive procedures after the addition of the intrauterine tamponade test to a protocol for management of severe postpartum hemorrhage. Am J Obstet Gynecol 2012 Oct;207:281 e1-7. PMID: 23021688.
10. Markova V, Sorensen JL, Holm C, et al. Evaluation of multi-professional obstetric skills training for postpartum hemorrhage. Acta Obstet Gynecol Scand 2011 Mar;91:346-52. PMID: 22171606.
11. Shields LE, Smalarz K, Reffigee L, et al. Comprehensive maternal hemorrhage protocols improve patient safety and reduce utilization of blood products. Am J Obstet Gynecol 2011 Oct;205:368 e1-8. PMID: 22083059.
12. Dupont C, Deneux-Tharaux C, Touzet S, et al. Clinical audit: a useful tool for reducing severe postpartum haemorrhages? Int J Qual Health Care 2011 Oct;23:583-9. PMID: 21733978.
13. Dupont C, Occelli P, Deneux-Tharaux C, et al. Severe postpartum haemorrhage after vaginal delivery: a statistical process control chart to report seven years of continuous quality improvement. Eur J Obstet Gynecol Reprod Biol 2014 Jul;178:169-75. PMID: 24813084.
14. Audureau E, Deneux-Tharaux C, Lefevre P, et al. Practices for prevention, diagnosis and management of postpartum haemorrhage: impact of a regional multifaceted intervention. BJOG 2009 Sep;116:1325-33. PMID: 19538416.
15. Skupski DW, Lowenwirt IP, Weinbaum FI, et al. Improving hospital systems for the care of women with major obstetric hemorrhage. Obstet Gynecol 2006 May;107:977-83. PMID: 16648399.
16. Rizvi F, Mackey R, Barrett T, et al. Successful reduction of massive postpartum haemorrhage by use of guidelines and staff education. BJOG 2004 May;111:495-8. PMID: 15104617.

17. Kim TH, Lee HH, Kim JM, et al. Uterine artery embolization for primary postpartum hemorrhage. Iran J Reprod Med 2014 Jun;11:511-8. PMID: 24639786.

18. Chan LL, Lo TK, Lau WL, et al. Use of second-line therapies for management of massive primary postpartum hemorrhage. Int J Gynaecol Obstet 2013 Sep;122:238-43. PMID: 23806248.

19. Sohn CH, Kim WY, Kim SR, et al. An increase in initial shock index is associated with the requirement for massive transfusion in emergency department patients with primary postpartum hemorrhage. Shock 2013 Aug;40:101-5. PMID: 23707978.

20. Bateman BT, Huybrechts KF, Hernandez-Diaz S, et al. Methylergonovine maleate and the risk of myocardial ischemia and infarction. Am J Obstet Gynecol 2013 Nov;209:459.e1-.e13. PMID: 23850529.

21. Ahmed S, Harrity C, Johnson S, et al. The efficacy of fibrinogen concentrate compared with cryoprecipitate in major obstetric haemorrhage--an observational study. Transfus Med 2012 Oct;22:344-9. PMID: 22994449.

22. Sugawara J, Suenaga K, Hoshiai T, et al. Efficacy of recombinant human soluble thrombomodulin in severe postpartum hemorrhage with disseminated intravascular coagulation. Clin Appl Thromb Hemost 2012 Sep;19:557-61. PMID: 22496090.

23. Gayat E, Resche-Rigon M, Morel O, et al. Predictive factors of advanced interventional procedures in a multicentre severe postpartum haemorrhage study. Intensive Care Med 2011 Nov;37:1816-25. PMID: 21805157.

24. Kayem G, Kurinczuk JJ, Alfirevic Z, et al. Specific second-line therapies for postpartum haemorrhage: a national cohort study. BJOG 2011 Jun;118:856-64. PMID: 21392247.

25. Kayem G, Kurinczuk JJ, Alfirevic Z, et al. Uterine compression sutures for the management of severe postpartum hemorrhage. Obstet Gynecol 2011 Jan;117:14-20. PMID: 21213474.

26. Alexander JM, Sarode R, McIntire DD, et al. Whole blood in the management of hypovolemia due to obstetric hemorrhage. Obstet Gynecol 2009 Jun;113:1320-6. PMID: 19461429.

27. Feigenberg T, Eitan Y, Sela HY, et al. Surgical versus medical treatment for secondary post-partum hemorrhage. Acta Obstet Gynecol Scand 2009;88:909-13. PMID: 19565365.

28. Sentilhes L, Gromez A, Clavier E, et al. Fertility and pregnancy following pelvic arterial embolisation for postpartum haemorrhage. BJOG 2009 Jan;117:84-93. PMID: 19832826.

29. Zwart JJ, Dijk PD, van Roosmalen J. Peripartum hysterectomy and arterial embolization for major obstetric hemorrhage: a 2-year nationwide cohort study in the Netherlands. Am J Obstet Gynecol 2009 Feb;202:150 e1-7. PMID: 19922900.

30. Baruah M, Cohn GM. Efficacy of rectal misoprostol as second-line therapy for the treatment of primary postpartum hemorrhage. J Reprod Med 2008 Mar;53:203-6. PMID: 18441726.

31. Chauleur C, Fanget C, Tourne G, et al. Serious primary post-partum hemorrhage, arterial embolization and future fertility: a retrospective study of 46 cases. Hum Reprod 2008 Jul;23:1553-9. PMID: 18460450.

32. Ahonen J, Jokela R, Korttila K. An open non-randomized study of recombinant activated factor VII in major postpartum haemorrhage. Acta Anaesthesiol Scand 2007 Aug;51:929-36. PMID: 17488316.

33. Ledee N, Ville Y, Musset D, et al. Management in intractable obstetric haemorrhage: an audit study on 61 cases. Eur J Obstet Gynecol Reprod Biol 2001 Feb;94:189-96. PMID: 11165724.

34. Hardeman S, Decroisette E, Marin B, et al. Fertility after embolization of the uterine arteries to treat obstetrical hemorrhage: a review of 53 cases. Fertil Steril 2010 Dec;94:2574-9. PMID: 20381035.

35. McMorrow RC, Ryan SM, Blunnie WP, et al. Use of recombinant factor VIIa in massive post-partum haemorrhage. Eur J Anaesthesiol 2008 Apr;25:293-8. PMID: 18177539.

36. Cheong JY, Kong TW, Son JH, et al. Outcome of pelvic arterial embolization for postpartum hemorrhage: A retrospective review of 117 cases. Obstet Gynecol Sci 2014 Jan;57(1):17-27. PMID: 24596814.

37. Cowan AD, Miller ES, Grobman WA. Subsequent pregnancy outcome after B-lynch suture placement. Obstet Gynecol 2014 Sep;124(3):558-61. PMID: 25162256.

38. Ferrazzani S, Iadarola R, Perrelli A, et al. Use of an intrauterine inflated catheter balloon in massive post-partum hemorrhage: a series of 52 cases. J Obstet Gynaecol Res 2014 Jun;40:1603-10. PMID: 24888923.

39. Inoue S, Masuyama H, Hiramatsu Y. Efficacy of transarterial embolisation in the management of post-partum haemorrhage and its impact on subsequent pregnancies. Aust N Z J Obstet Gynaecol 2014 Oct 28PMID: 25350565.

40. Teofili L, Bianchi M, Zanfini BA, et al. Acute Lung Injury Complicating Blood Transfusion in Post-Partum Hemorrhage: Incidence and Risk Factors. Mediterr J Hematol Infect Dis 2014;6(1):e2014069. PMID: 25408855.

41. Zatta A, McQuilten Z, Kandane-Rathnayake R, et al. The Australian and New Zealand Haemostasis Registry: ten years of data on off-licence use of recombinant activated factor VII. Blood Transfus 2014 Jun 5:1-14. PMID: 24960661.

42. An GH, Ryu HM, Kim MY, et al. Outcomes of subsequent pregnancies after uterine compression sutures for postpartum hemorrhage. Obstet Gynecol 2013 Sep;122:565-70. PMID: 23921861.

43. Gronvall M, Tikkanen M, Tallberg E, et al. Use of Bakri balloon tamponade in the treatment of postpartum hemorrhage: a series of 50 cases from a tertiary teaching hospital. Acta Obstet Gynecol Scand 2012 Apr;92:433-8. PMID: 22913383.

44. Kim YJ, Yoon CJ, Seong NJ, et al. Failed pelvic arterial embolization for postpartum hemorrhage: clinical outcomes and predictive factors. J Vasc Interv Radiol 2013 May;24:703-9. PMID: 23622042.

45. Lee HJ, Jeon GS, Kim MD, et al. Usefulness of pelvic artery embolization in cesarean section compared with vaginal delivery in 176 patients. J Vasc Interv Radiol 2013 Jan;24:103-9. PMID: 23273701.

46. Yamasaki Y, Morita H, Miyahara Y, et al. The factors associated with the failure of transcatheter pelvic arterial embolization for intractable postpartum hemorrhage. J Perinat Med 2013 Dec 5:1-4. PMID: 24310770.

47. Blanc J, Courbiere B, Desbriere R, et al. Uterine-sparing surgical management of postpartum hemorrhage: is it always effective? Arch Gynecol Obstet 2011 Apr;285:925-30. PMID: 21932086.

48. Lee HY, Shin JH, Kim J, et al. Primary postpartum hemorrhage: outcome of pelvic arterial embolization in 251 patients at a single institution. Radiology 2012 Sep;264:903-9. PMID: 22829685.

49. Poujade O, Zappa M, Letendre I, et al. Predictive factors for failure of pelvic arterial embolization for postpartum hemorrhage. Int J Gynaecol Obstet 2012 May;117:119-23. PMID: 22361480.

50. Bonnet MP, Deneux-Tharaux C, Dupont C, et al. Transfusion practices in postpartum hemorrhage: a population-based study. Acta Obstet Gynecol Scand 2012 Apr;92:404-13. PMID: 23215892.

51. Schmitz T, Tararbit K, Dupont C, et al. Prostaglandin E2 analogue sulprostone for treatment of atonic postpartum hemorrhage. Obstet Gynecol 2011 Aug;118:257-65. PMID: 21775840.

52. Palacios-Jaraquemada JM. Efficacy of surgical techniques to control obstetric hemorrhage: analysis of 539 cases. Acta Obstet Gynecol Scand 2011 Sep;90:1036-42. PMID: 21564024.

53. Sentilhes L, Gromez A, Clavier E, et al. Long-term psychological impact of severe postpartum hemorrhage. Acta Obstet Gynecol Scand 2011 Jun;90:615-20. PMID: 21370999.

54. Sentilhes L, Gromez A, Clavier E, et al. Predictors of failed pelvic arterial embolization for severe postpartum hemorrhage. Obstet Gynecol 2009 May;113:992-9. PMID: 19384113.

55. Ganguli S, Stecker MS, Pyne D, et al. Uterine artery embolization in the treatment of postpartum uterine hemorrhage. J Vasc Interv Radiol 2010 Feb;22:169-76. PMID: 21183360.

56. Wright JD, Herzog TJ, Shah M, et al. Regionalization of care for obstetric hemorrhage and its effect on maternal mortality. Obstet Gynecol 2010 Jun;115:1194-200. PMID: 20502290.

57. Fiori O, Deux JF, Kambale JC, et al. Impact of pelvic arterial embolization for intractable postpartum hemorrhage on fertility. Am J Obstet Gynecol 2009 Apr;200:384 e1-4. PMID: 19217597.

58. Lone F, Sultan AH, Thakar R, et al. Risk factors and management patterns for emergency obstetric hysterectomy over 2 decades. Int J Gynaecol Obstet 2009 Apr;109:12-5. PMID: 19951818.

59. Phillips LE, McLintock C, Pollock W, et al. Recombinant activated factor VII in obstetric hemorrhage: experiences from the Australian and New Zealand Haemostasis Registry. Anesth Analg 2009 Dec;109:1908-15. PMID: 19923520.

60. Balki M, Dhumne S, Kasodekar S, et al. Blood transfusion for primary postpartum hemorrhage: a tertiary care hospital review. J Obstet Gynaecol Can 2009 Nov;30:1002-7. PMID: 19126281.

61. Gaia G, Chabrot P, Cassagnes L, et al. Menses recovery and fertility after artery embolization for PPH: a single-center retrospective observational study. Eur Radiol 2008 Feb;19:481-7. PMID: 18766350.

62. Glaze S, Ekwalanga P, Roberts G, et al. Peripartum hysterectomy: 1999 to 2006. Obstet Gynecol 2008 Mar;111:732-8. PMID: 18310378.

63. Touboul C, Badiou W, Saada J, et al. Efficacy of selective arterial embolisation for the treatment of life-threatening post-partum haemorrhage in a large population. PLoS One 2008;3:e3819. PMID: 19043573.

64. Chauleur C, Cochery-Nouvellon E, Mercier E, et al. Analysis of the venous thromboembolic risk associated with severe postpartum haemorrhage in the NOHA First cohort. Thromb Haemost 2008 Nov;100:773-9. PMID: 18989520.

65. Alfirevic Z, Elbourne D, Pavord S, et al. Use of recombinant activated factor VII in primary postpartum hemorrhage: the Northern European registry 2000-2004. Obstet Gynecol 2007 Dec;110:1270-8. PMID: 18055720.

66. Sakse A, Weber T, Nickelsen C, et al. Peripartum hysterectomy in Denmark 1995-2004. Acta Obstet Gynecol Scand 2007;86:1472-5. PMID: 18027114.

67. Knight M. Peripartum hysterectomy in the UK: management and outcomes of the associated haemorrhage. BJOG 2007 Nov;114:1380-7. PMID: 17877772.

68. Akinbiyi AA, Olatunbosun OA. Emergency obstetric hysterectomies (how many are potentially preventable?): A 28-year experience in Saskatoon. Journal of Gynecologic Surgery 2004 Fall;20:81-7.

69. Forna F, Miles AM, Jamieson DJ. Emergency peripartum hysterectomy: a comparison of cesarean and postpartum hysterectomy. Am J Obstet Gynecol 2004 May;190:1440-4. PMID: 15167863.

70. Hoveyda F, MacKenzie IZ. Secondary postpartum haemorrhage: incidence, morbidity and current management. BJOG 2001 Sep;108:927-30. PMID: 11563461.

71. O'Leary JA. Uterine artery ligation in the control of postcesarean hemorrhage. J Reprod Med 1995 Mar;40:189-93. PMID: 7776302.

72. Boyd BK, Katz VL, Hansen WF. Delayed postpartum hemorrhage: a retrospective analysis. Journal of Maternal-Fetal Medicine 1995 1995 Jan-Feb;4:19-23.

73. Oleen MA, Mariano JP. Controlling refractory atonic postpartum hemorrhage with Hemabate sterile solution. Am J Obstet Gynecol 1990 Jan;162:205-8. PMID: 2405676.

74. Park HS, Shin JH, Yoon HK, et al. Transcatheter Arterial Embolization for Secondary Postpartum Hemorrhage: Outcome in 52 Patients at a Single Tertiary Referral Center. J Vasc Interv Radiol 2014 Jun 27PMID: 24985718.

75. Dildy GA, Belfort MA, Adair CD, et al. Initial experience with a dual-balloon catheter for the management of postpartum hemorrhage. Am J Obstet Gynecol 2013 Sep 18PMID: 24055586.

Appendix F. Applicability Tables

Pharmacologic Interventions

Table F-1. Applicability for tranexamic acid studies

Domain	**Description of applicability of evidence compared to question**
Population	Study population similar to women with mild-moderate PPH
Intervention	Drug is available, but use for PPH is off-label in the U.S.A. and therefore should be part of a clinical trial with IRB approval
Comparators	Comparisons were standard
Outcomes	Outcomes assessed were those of clinical importance
Setting	Study conducted in a tertiary care hospitals in France

Table F-2. Applicability for oxytocin and misoprostol studies

Domain	**Description of applicability of evidence compared to question**
Population	Study population similar to women with mild-moderate PPH
Intervention	Drugs are widely available in the USA and approved for use in the treatment of PPH
Comparators	Comparisons were standard
Outcomes	Outcomes assessed were those of clinical importance
Setting	Study conducted in large medical centers in the USA and Hong Kong

Table F-3. Applicability for recombinant human soluble thrombomodulin (rTM) studies

Domain	**Description of applicability of evidence compared to question**
Population	Study population similar only to women with DIC as a complication of severe PPH
Intervention	Intervention may not be available at many sites in the USA, exact intervention in this study was created in Japan
Comparators	Comparisons were standard
Outcomes	Outcomes assessed were those of clinical importance
Setting	Study conducted in Japan

Table F-4. Applicability for carboprost tromethamine studies

Domain	**Description of applicability of evidence compared to question**
Population	Study population similar to women with mild-moderate PPH
Intervention	Drug is available in the USA and approved for use in the treatment of PPH
Comparators	Comparisons were standard
Outcomes	Outcomes assessed were those of clinical importance
Setting	Study conducted in a medical center in the USA

Table F-5. Applicability for recombinant activated FVII (rFVIIa) studies

Domain	**Description of applicability of evidence compared to question**
Population	Registry study populations included women from any obstetric population within nine European countries or Australia and New Zealand, and two other retrospective studies included women from academic centers in Finland and Ireland. Women included in the studies had post-partum hemorrhage treated with rFVIIa and were identified retrospectively through medical charts or through physician and pharmacist response to mailed surveys. There were no specific inclusion/exclusion criteria other than use of rFVIIa in the post-partum period in women without a history of hemophilia.
Intervention	Use of rFVIIa for post-partum hemorrhage.
Comparators	Comparators included placebo and other methods to control PPH (prophylactic rFVIIa, procedures, surgeries)
Outcomes	Outcomes included transfusion and uterine preservation rates, rates of anemia and length of stay. All studies reported harms associated with treatment with rFVIIa (thromboembolic events and adult respiratory distress syndrome (ARDS) were most common) and rates of maternal death. Harms outcomes were not pre-defined in the methods section. There are no reported long term outcomes.
Setting	Studies were conducted in Australia, New Zealand, Finland, Ireland, Denmark, France,

	Iceland, the Netherlands, Norway, Sweden, and the United Kingdom and included women from any hospital setting (academic and community). The registry studies attempted to be inclusive of all populations, but ultimately included a sample of hospitals in the regions. Generalization of these study findings to general clinical practice may be limited as many hospitals in the regions assessed did not participate in data collection.

Table F-6. Applicability for transfusion studies

Population	The populations from studies examining the efficacy and harms of transfusion of various blood products after post-partum hemorrhage included women with PPH. PPH was defined differently in each study. In one retrospective cohort study women included in the study had PPH (volume not defined) with clinical symptoms of hypovolemia (hypotension, tachycardia, positive "tilt" test, or oliguria)
Intervention	The transfusion studies studied different interventions. Transfusion with whole blood versus packed red blood cells only versus combinations of blood products or transfusion of cryoprecipitate versus fibrinogen concentrates, or massive transfusion (≥ 10 units of blood) versus standard transfusion (< 10 units of blood), transfusion versus no transfusion, and transfusion with fibrinogen
Comparators	Comparators are as above
Outcomes	Outcomes assessed included ICU admission, length of stay, uterine preservation, and volume of transfusion
Setting	All studies were performed at academic hospitals in Korea, Ireland, the Netherlands and the US. Generalization of these study findings to community settings may be limited as they were single center studies at large institutions.

Table F-7. Applicability for studies of uterine tamponade

Domain	**Description of applicability of evidence**
Population	The study population was women with PPH
Intervention	Uterine balloon tamponade, including Bakri, Belfort-Dildy, Sengstaken-Blakemore, and Rusch balloons. In one pre-post study all comparisons were done between women who reached the 4th step in the protocol (treated with sulprostone) before and after the implementation of a new protocol. Therefore changes in these outcomes do not reflect the impact of the intervention itself (uterine balloon tamponade) but the influence of a new protocol implementation in the overall management of PPH
Comparators	In one pre-post study, controls (before) were identified by searching electronic medical records while data for the study period (after) were collected prospectively.
Outcomes	Outcomes measured were successful control of bleeding, blood loss, transfusion, and hysterectomy. One study also reported rates of invasive surgical procedures before and after protocol implementation.
Setting	Studies were conducted in France, Finland, Italy, the US, and Hong Kong . Studies were conducted in a tertiary care centers or large hospitals and may not be applicable to other birth settings.

Table F-8. Applicability for studies of uterine artery embolization

Domain	**Description of applicability of evidence**
Population	Women at larger or tertiary care hospitals receiving embolization for PPH treatment, typically after failure of first-line interventions. More cesarean births when reported
Intervention	Arterial embolization using agents such as gelfoam, microparticles, coils, or a combination. The number of arteries and areteries embolized varied across studies. Embolization may not be widely available in smaller community hospitals, thus applicability is somewhat limited.
Comparators	Comparators were no embolization or use of another intervention. Most studies were case series.
Outcomes	Outcomes measured were typically success of intervention, fertility, resumption of menses, and harms. Loss to followup for fertility outcomes was high.
Setting	Studies were conducted in Europe, Korea, United States, Japan, UK, Hong Kong. Eight of 19 studies were conducted in France and 6 in Korea. Hospital settings applicable to tertiary care centers or centers with interventional radiology available in the U.S.

Table F-9. Applicability for studies of uterine and other pelvic artery ligation

Domain	**Description of applicability of evidence**

Population	Women receiving arterial ligation for PPH treatment, typically after failure of first-line interventions.
Intervention	Ligation sites varied across studies and included uterine, ovarian, and hypogastric arteries. Ligation availability may depend on availability of skilled providers and may not be widely available in smaller community hospitals, thus applicability is somewhat limited.
Comparators	Comparators were no ligation or use of another intervention.
Outcomes	Outcomes measured were typically success of intervention, fertility, resumption of menses, and harms. Loss to followup for fertility outcomes was high.
Setting	Studies were conducted in Europe, United States, and Argentina.

Table F-10. Applicability for studies of uterine compression sutures

Domain	Description of applicability of evidence
Population	The study population was 811 women receiving sutures for PPH treatment, typically after failure of first-line interventions. 230 cesarean and 42 vaginal births in the one study reporting mode.
Intervention	Typres of sutures varied across studies. Skilled personnel may not be widely available in smaller community hospitals, thus applicability is somewhat limited.
Comparators	Comparators were no suture or use of another intervention. Most studies were case series.
Outcomes	Outcomes measured were typically success of intervention, fertility, resumption of menses, and harms. Loss to followup for fertility outcomes was high.
Setting	Studies were conducted in France, the UK and Argentina .

Table F-11. Applicability for studies of hysterectomy

Domain	Description of applicability of evidence
Population	Over 3000 women receiving hysterectomy, preceded by a combination of interventions including uterotonics, ligation, embolization, and sutures
Intervention	Total and subtotal hysterectomy; prior interventions differed across studies, which aligns with typical care as hysterectomy generally the intervention of last resort when possible
Comparators	Most studies were case series
Outcomes	Outcomes measured were typically success of intervention, transfusion rates, ICU stay, and harms
Setting	Studies were conducted Europe, Canada, US, Denmark, Korea, in a variety of hospitals. Some case series/registry studies reported data from across a country or region.

Table F-12. Applicability for studies of combined interventions

Domain	Description of applicability of evidence
Population	Women with primary and secondary PPH (3 studies) receiving interventions including medical, procedural, and surgical approaches.
Intervention	Medical and surgical approaches including curettage, embolization, hysterectomy, surgical evacuation.
Comparators	Comparator was medical/conservative vs. surgical. procedural treatment. Two studies were case series.
Outcomes	Clinically appropriate outcomes including cessation of bleeding, transfusion rates, complications/harms.
Setting	Studies were conducted Europe, Canada, US, Korea, typically in tertiary care hospitals. Some case series/registry studies reported data from varied hospitals across a country or region

Table F-13. Applicability of studies addressing interventions for anemia

Domain	Description of applicability of evidence compared to question
Population	One RCT included women with iron deficiency anemia (Hb <110 g/L and ferritin < 12 µg/L) who were hemodynamically stable after PPH of ≥ 500 mL blood loss. Another RCT included women with PPH and hemoglobin between 4.8-7.9 g/dl post-birth
Intervention	400 mg of intravenous iron sucrose divided into two 200 mg infusions given a minimum of 24 hours apart or two iron tablets totaling 160 mg elemental iron daily for six weeks following delivery in one study and transfusion vs. no transfusion
Comparators	Intravenous iron supplementation was compared with oral iron supplementation; no transfusion
Outcomes	Outcomes included blood hemoglobin and ferritin levels performed on days 1, 14, and 42 post-partum, quality of life, fatigue

Setting	Studies were conducted in Australia and the Netherlands in a single hospital and in multiple Dutch hospitals. One RCT was conducted at a single hospital outside of a city in Australia. The catchment area of the hospital predominantly included the local neighborhood composed predominantly of women of low educational attainment and socio-economic status, with high levels of unemployment and teen pregnancy.

Table F-14. Applicability of systems-level interventions

Domain	Description of applicability of evidence compared to question
Population	Populations both in the United States and Europe reflect those typical of similar size and type (rural, academic, etc.) obstetric units in current labor and delivery environments in the United States. Overall the systems-level interventions assessed have good applicability to current practice in the United States.
Intervention	Interventions were informed by processes of identifying evidence and crafting guidance that conforms to typical quality improvement and outcomes based research. The content of the interventions is feasible to implement across a full range of settings and the approaches to measuring outcomes are applicable to practice
Comparators	Most studies used pre-post designs.
Outcomes	Outcomes were clinically relevant and included change in PPH incidence, changes in procedures and interventions.
Setting	Studies were conducted in Europe and the United States and reflect settings typical of similar size and type (rural, academic, etc.) obstetric units in current labor and delivery environments in the United States.

Appendix G. Study Design Classification Algorithm

Figure G-1. Study design classification