

Appendix A. Detailed Methods

Literature Search Strategies for Primary Literature

Sources searched:

Cochrane Central Register of Controlled Clinical Trials, via Wiley

Cochrane Database of Systematic Reviews, via Wiley

Database of Abstracts of Reviews of Effects, via Wiley

Medline, via Ovid

PubMed, publisher-supplied

Key:

* = truncation

\$ = truncation

ab = word in abstract

kf = keyword heading [word not phrase indexed]

kw = keyword

pt = publication type

ti = word in title

MEDLINE: Screening

Database: Ovid MEDLINE(R) <1946 to September Week 1 2018>, Ovid MEDLINE(R) Daily Update <September 14, 2018>

-
- 1 Aortic Aneurysm, Abdominal/ (17370)
 - 2 abdominal aortic aneurysm\$.ti,ab. (15021)
 - 3 1 or 2 (20880)
 - 4 Mass screening/ (95905)
 - 5 (screen\$ or rescreen\$ or re screen\$).ti,ab. (555648)
 - 6 4 or 5 (583442)
 - 7 3 and 6 (1298)
 - 8 limit 7 to (english language and yr="2013 -Current") (293)

MEDLINE: Clinical trials

Database: Ovid MEDLINE(R) <1946 to September Week 1 2018>, Ovid MEDLINE(R) Daily Update <September 14, 2018>

-
- 1 Aortic Aneurysm, Abdominal/ (17370)
 - 2 abdominal aortic aneurysm\$.ti,ab. (15021)
 - 3 1 or 2 (20880)
 - 4 clinical trials as topic/ or controlled clinical trials as topic/ or randomized controlled trials as topic/ or meta-analysis as topic/ (318970)
 - 5 (clinical trial or controlled clinical trial or meta analysis or randomized controlled trial).pt. (896853)
 - 6 random\$.ti,ab. (853765)
 - 7 control groups/ or double-blind method/ or single-blind method/ (178983)
 - 8 clinical trial\$.ti,ab. (271317)
 - 9 controlled trial\$.ti,ab. (160123)
 - 10 (metaanaly\$ or meta analy\$).ti,ab. (100793)
 - 11 or/4-10 (1645301)
 - 12 3 and 11 (2052)
 - 13 limit 12 to (english language and yr="2013 -Current") (518)
 - 14 remove duplicates from 13 (467)

Appendix A. Detailed Methods

MEDLINE: Treatment cohort studies

Database: Ovid MEDLINE(R) <1946 to September Week 1 2018>, Ovid MEDLINE(R) Daily Update <September 14, 2018>

-
- 1 Aortic Aneurysm, Abdominal/co, dt, mo, pc, px, rh, su, th [Complications, Drug Therapy, Mortality, Prevention & Control, Psychology, Rehabilitation, Surgery, Therapy] (13967)
 - 2 cohort studies/ or longitudinal studies/ or follow-up studies/ or prospective studies/ or retrospective studies/ (1761323)
 - 3 Registries/ (73991)
 - 4 cohort\$.ti,ab. (385596)
 - 5 2 or 3 or 4 (1940167)
 - 6 1 and 5 (4757)
 - 7 limit 6 to (english language and yr="2013 -Current") (1114)
 - 8 remove duplicates from 7 (1020)

MEDLINE: All key questions [in-process/non-indexed records]

Database: Ovid MEDLINE(R) Epub Ahead of Print <September 14, 2018>, Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations <September 14, 2018>

-
- 1 abdominal aortic aneurysm\$.ti,ab,kf. (1526)
 - 2 limit 1 to (english language and yr="2013 -Current") (1169)
 - 3 remove duplicates from 2 (1168)

Cochrane (Wiley)

[Cochrane Database of Systematic Reviews : Issue 9 of 12, September 2017](#)

[Database of Abstracts of Reviews of Effects : Issue 2 of 4, April 2015](#)

[Cochrane Central Register of Controlled Trials : Issue 8 of 12, August 2017](#)

- #1 "abdominal aortic aneurysm":ti,ab,kw
- #2 "abdominal aortic aneurysm*":ti,ab,kw
- #3 #1 or #2 Publication Year from 2013 to 2017, in Cochrane Reviews (Reviews and Protocols)
- #4 #1 or #2 Publication Year from 2013 to 2017, in Other Reviews
- #5 #1 or #2 Publication Year from 2013 to 2017 , in Trials

PubMed, publisher-supplied

Search	Query
#5	#4 AND ("2013/01/01"[Date - Publication] : "3000"[Date - Publication]) AND English[Language]
#4	#3 AND publisher[sb]
#3	#1 AND #2
#2	screen*[tiab] OR rescreen*[tiab] OR re screen*[tiab]OR trial[tiab] OR trials[tiab] OR random*[tiab] OR cohort*[tiab] OR longitudinal*[tiab] OR "follow up"[tiab] OR "followed up"[tiab] OR followup*[tiab] OR prospective*[tiab] OR retrospective*[tiab] OR meta analy*[tiab] OR metaanaly*[tiab] OR registry[tiab] OR registries[tiab] OR register[tiab] OR registers[tiab]
#1	abdominal aortic aneurysm*[tiab]

Appendix A. Detailed Methods

Existing Systematic Reviews Search

Sources searched (2014-present)	Number of items retrieved
Agency for Healthcare Research and Quality	0
Canadian Agency for Drugs and Technologies in Health	0
Cochrane Database of Systematic Reviews	13 (file attached)
Database of Abstracts of Reviews of Effects	16 (file attached)
Dynamed	1 (links below)
Health Technology Assessment (Centre for Reviews and Dissemination)	8 (file attached)
Institute of Medicine	0
NHS Health Technology Assessment Programme	6 (links below)
National Institute for Health and Clinical Excellence	2 (links below)
PubMed	187 (file attached)

Cochrane (Wiley)

[Cochrane Database of Systematic Reviews : Issue 2 of 12, February 2017](#)

[Database of Abstracts of Reviews of Effects : Issue 2 of 4, April 2015](#)

[Health Technology Assessment Database : Issue 4 of 4, October 2016](#)

#1	"abdominal aortic aneurysm":ti,ab,kw	642
#2	"abdominal aortic aneurysms":ti,ab,kw	306
#3	#1 or #2 Publication Year from 2014 to 2017, in Cochrane Reviews (Reviews and Protocols)	13
#4	#1 or #2 Publication Year from 2014 to 2017, in Other Reviews	16
#5	#1 or #2 Publication Year from 2014 to 2017, in Technology Assessments	8

Dynamed

Abdominal aortic aneurysm (last updated 12/19/2016)

<http://search.ebscohost.com/login.aspx?direct=true&db=dme&AN=114361&site=dynamed-live&scope=site>

NHS HTA Programme

HTA - 09/91/39: The development of an algorithm to calculate in individual patients with abdominal aortic aneurysm (AAA) when repair is indicated to improve survival , May 2015

<https://www.journalslibrary.nihr.ac.uk/programmes/hta/099139/#/>

Calculating when elective abdominal aortic aneurysm repair improves survival for individual patients: development of the Aneurysm Repair Decision Aid and economic evaluation, May 2015

<https://www.journalslibrary.nihr.ac.uk/hta/hta19320/> - DUPLICATE

Screening women for abdominal aortic aneurysm, in progress

<https://www.journalslibrary.nihr.ac.uk/programmes/hta/1417901/>

Endovascular treatment for ruptured abdominal aortic aneurysm, in progress

Appendix A. Detailed Methods

<https://www.journalslibrary.nihr.ac.uk/programmes/sr/167205/>

Magnetic Resonance Imaging Using Ultrasmall Superparamagnetic Particles of Iron Oxide to Predict Clinical Outcome in Patients Under Surveillance for Abdominal Aortic Aneurysms, in progress

<https://www.journalslibrary.nihr.ac.uk/programmes/eme/112003/>

Surveillance following endovascular aortic aneurysm repair, in progress

<https://www.journalslibrary.nihr.ac.uk/programmes/hta/157801/>

NICE

Endovascular aneurysm sealing for abdominal aortic aneurysm (IPG547), February 2016

<https://www.nice.org.uk/guidance/ipg547>

Abdominal aortic aneurysm: diagnosis and management, in development

<https://www.nice.org.uk/guidance/indevelopment/gid-cgwave0769>

PubMed

Search	Query	Items found
#5	Search ((#4) AND English[Language]) AND ("2014/01/01"[Date - Publication] : "3000"[Date - Publication])	187
#4	Search #3 AND systematic[sb]	618
#3	Search #1 OR #2	18887
#2	Search abdominal aortic aneurysm*[tiab] AND (publisher[sb] OR inprocess[sb] OR pubmednotmedline[sb])	1424
#1	Search "Aortic Aneurysm, Abdominal"[Mesh] OR abdominal aortic aneurysm*[title]	18334

Appendix A. Detailed Methods

Appendix A Table 1. Inclusion and Exclusion Criteria

Category	Included	Excluded
Populations	<p>KQs 1–3: Asymptomatic adult population</p> <p>KQs 4, 5: Asymptomatic adult population with small AAAs (i.e., aortic diameter of 3.0 to 5.4 cm)</p>	<p>KQs 1–3: Patients experiencing symptoms related to AAA</p> <p>KQs 4, 5: Patients experiencing symptoms related to AAA; populations with AAAs with an aortic diameter larger than 5.4 cm or smaller than 3.0 cm</p>
Setting	Studies conducted in primary care or other settings with a comparable population to primary care (e.g., general unselected population for screening [KQs 1, 3])	
Disease/condition	AAA (aortic diameter \geq 3.0 cm)	
Interventions	<p>KQs 1–3: Screening with ultrasound</p> <p>KQs 4, 5: Treatment with pharmacotherapy (e.g., statins, angiotensin converting enzyme inhibitors, antibiotics) or surgical intervention</p>	KQs 1–3: Screening with physical examination, computed tomography, or magnetic resonance imaging
Comparisons	<p>KQs 1, 3: One-time screening vs. no screening</p> <p>KQs 2, 3: Repeat screening vs. no rescreening</p> <p>KQ 4: Pharmacotherapy vs. placebo, surgery vs surveillance alone</p>	<p>KQ 2: Comparison of surveillance interval</p> <p>KQs 4, 5: Comparative effectiveness of treatments</p>
Outcomes	<p>KQs 1, 2: All-cause mortality, aneurysm-related mortality, cardiovascular disease mortality, aneurysm rupture rate, cardiovascular disease events, and quality of life</p> <p>KQ 3: Anxiety and downstream procedures related to false-positive results</p> <p>KQ 4: AAA annual growth rate, all-cause mortality, aneurysm-related mortality, cardiovascular disease mortality, aneurysm rupture rate, cardiovascular disease events, and quality of life</p> <p>KQ 5: Harms (i.e., serious adverse events from pharmacotherapy or surgery)</p>	
Study Designs	<p>KQs 1, 4: Randomized, controlled trials</p> <p>KQs 2, 3: Randomized, controlled trials; large cohort studies (sample size >1,000)</p> <p>KQ 5: Randomized, controlled trials; large cohort studies (sample size >1,000); vascular surgery registries</p>	<p>KQs 1, 4: Case-control, cross-sectional, and cohort studies; editorials, letters, and opinions; cost studies</p> <p>KQs 2, 3: Case-control and cross-sectional studies; editorials, letters, and opinions; cost studies</p>
Countries	Studies conducted in countries categorized as “Very High” on the 2016 Human Development Index (as defined by the United Nations Development Programme)	Studies conducted in countries that are not categorized as “Very High” on the 2016 Human Development Index
Language	English only	Languages other than English
Quality	Fair- and good-quality studies	Poor-quality studies

Abbreviations: KQ = Key Question; USPSTF = U.S. Preventive Services Task Force.

Appendix A. Detailed Methods

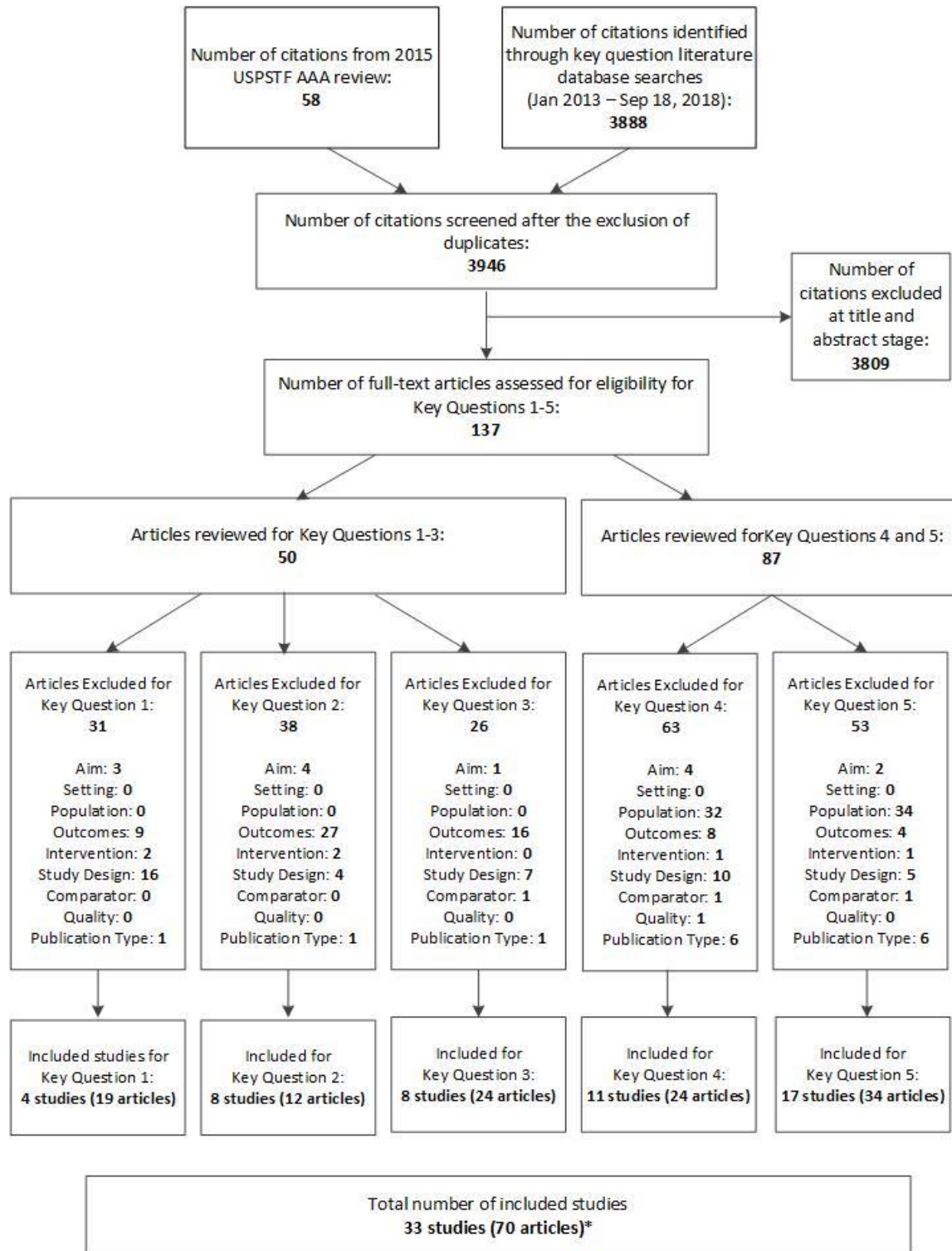
Appendix A Table 2. Quality Assessment Criteria*

Study Design	Adapted Quality Criteria
Randomized and non-randomized controlled trials, adapted from the U.S. Preventive Services Task Force methods ¹⁰⁷	<p>Bias arising in the randomization process or due to confounding</p> <ul style="list-style-type: none"> • Valid random assignment/random sequence generation method used • Allocation concealed • Balance in baseline characteristics <p>Bias in selecting participants into the study</p> <ul style="list-style-type: none"> • CCT only: No evidence of biased selection of sample <p>Bias due to departures from intended interventions</p> <ul style="list-style-type: none"> • Fidelity to the intervention protocol • Low risk of contamination between groups • Participants were analyzed as originally allocated <p>Bias from missing data</p> <ul style="list-style-type: none"> • No, or minimal, post-randomization exclusions • Outcome data are reasonably complete and comparable between groups • Reasons for missing data are similar across groups • Missing data are unlikely to bias results <p>Bias in measurement of outcomes</p> <ul style="list-style-type: none"> • Blinding of outcome assessors • Outcomes are measured using consistent and appropriate procedures and instruments across treatment groups • No evidence of inferential statistics <p>Bias in reporting results selectively</p> <ul style="list-style-type: none"> • No evidence that the measures, analyses, or subgroup analyses are selectively reported
Cohort studies, adapted from the Newcastle-Ottawa Scale ¹⁰⁶	<ul style="list-style-type: none"> • Was there representativeness of the exposed cohort? • Was the non-exposed systematic selected? • Was the ascertainment of exposure reported? • Were eligibility criteria specified? • Were groups similar at baseline? • Was the reading (interpretation) of the pathology results adequate? • Were outcome assessors blinded? • Were measurements equal, valid and reliable? • Was followup long enough for outcomes to occur? • Were the statistical methods acceptable? • Was the handling of missing data appropriate? • Was there adjustment for confounders? • Was there acceptable followup?

* Good quality studies generally meet all quality criteria. Fair quality studies do not meet all the criteria but do not have critical limitations that could invalidate study findings. Poor quality studies have a single fatal flaw or multiple important limitations that could invalidate study findings. Critical appraisal of studies using *a priori* quality criteria are conducted independently by at least two reviewers. Disagreements in final quality assessment are resolved by consensus, and, if needed, consultation with a third independent reviewer.

Appendix A. Detailed Methods

Appendix A Figure 1. Literature Flow Diagram



*Studies may appear under more than one Key Question.