**Table D4. Characteristics of studies examining treatment outcomes of mothers and offspring, Key Questions 4 and 5**

| **Author, year**  **Study Design**  **Dates of study**  **Country** | | **Women Enrolled, *n***  **Maternal Age, *mean± SD (yr)***  **BMI, *mean ± SD; median IQR (kg/ms)***  ***Glucose Levels, mean ± SD***  ***Race*** | **Inclusion/**  **Exclusion Criteria** | **Screening and Diagnostic Tests** | **Interventions** | **Outcomes Reported** | **Quality** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Adams, 1998  RCS  Jan 1986 to  Sep 1996  US | 389  **G1:** 31.5 ± 4.6  **G2:** 31.4 ± 4.9  **G3:** 30.2 ± 4.7  **G1:** 30.3 ± 7.2  **G2:** 26.1 ± 6.1  **G3:** 26.6 ± 7.5  NR  **G1**: White: 73  **G2**: White: 277  **G3**: White: 15 | | **Inclusion:** Positive OGCT; meets NDDG criteria (2 plasma glucose values on OGTT) for GDM  **Exclusion:** Multiple gestation; fetal congenital anomalies; delivery before 34 wks; delivery elsewhere; diet or insulin therapy initiated < 4 wks before delivery | **Screen:** 50 g GCT (24–30 wks with 1-h cutoff by NDDG criteria, ≥ 140 mg/dL)  **Diagnostic:**100 g OGTT at 24–30 wks (Fasting: 105 mg/dL;1 h 190 mg/dL; 2 h 165 mg/dL; 3 h 145 mg/dL) | **G1:** Diet with weekly blood glucose monitoring, daily BG self-monitoring and insulin required (n=76)  **G2:** Diet with weekly blood glucose monitoring (n=297)  **G3:** No treatment (n=16) | Weight gain, shoulder dystocia, hypoglycemia, stillbirth or neonatal death, birth trauma, birth weight, bone fracture/clavicular fracture, nerve palsy/brachial plexus injury, LGA, rectal injury, neonatal complications, Horner's syndrome, hemidiaphragm paralysis, unilateral eyelid ptosis from partial cranial nerve palsy | NOS = 9 (good) |
| Bevier, 1999  RCT  NR  US | 83  **G1:** 26.3 ± 6.0  **G2:** 27.4 ± 5.4  NR  NR  **G1**: White: 2  Black: 1  Hispanic: 45  **G2**: White: 2  Black: 0  Hispanic: 33 | | **Inclusion:** Positive OGCT screen and negative OGTT  **Exclusion:** Hypertension; collagen disease; chronic renal disease; cardiac or pulmonary disease; Rh sensitization; Hx of preterm labor or SGA | **Screen:** 50 g GCT (24–30 wks with 1-h cutoff by NDDG criteria, ≥ 140 mg/dL)  **Diagnostic:** 100 g OGTT (24–30 wks with fasting: 105 mg/dL; 1 h 190 mg/dL; 2 h 165 mg/dL; 3 h 145 mg/dL)  HbA1c (28–32 wks) | **G1:** No diet, random glucose checks, and usual care (n=48)  **G2:** Standard euglycemic diet, HBGM, random glucose checks HBGM recorded in a diary and reviewed weekly; 3 meals and 3 snacks: 40% carbohydrates, 20% protein, and 40% fat (n=35) | Preeclampsia, shoulder dystocia, birth weight, APGAR, abnormal fetal heart rate, SGA | RoB = Unclear (fair) |
| Bonomo, 1997  RCS  1989 to 1995  Italy | 112  **G1:** 30.6 ± 3.4  **G2:** 30.7 ± 4.8  **G1:** 23.12 ± 4.4  **G2:** 25.0 ± 5.7  NR  **G1**: NR  **G2**: NR | | **Inclusion:** Screened at diabetic centre; Dx of mild degree of glucose intolerance; OGCT >140 mg/dL and OAV on OGTT  **Exclusion:** NR | **Screen:** 50 g GCT (14–16 wks for at risk and 24–28 wks for women without risk with 1 h cutoff) by CC and NDDG criteria  **Diagnostic:** 100 g OGTT (14–16 wks for at risk and 24–28 wks for women without risk with Fasting, 1 h, 2 h, and 3 h intervals) by CC and NDDG criteria | **G1:** Elevated OGCT and Normal OGTTwith no treatment from 1989 to 1993; from 1994 on patients given dietary advice; 25-30 kcal/kg per day diet; bi-weekly visits, BG monitoring (n=49)  **G2:** 1 elevated OGTT with no treatment from 1989 to 1993; from 1994 on patients given dietary advice; 25-30 kcal/kg per day diet; bi-weekly visits, BG monitoring (n=63) | Caesarean delivery, birth weight, APGAR, LGA | NOS = 8 (good) |
| Bonomo, 2005  RCT  1997 to 2002  Italy | 300  **G1:** 31.1 ± 4.7  **G2:** 30.7 ± 5.1  **G1:** 23.1 ± 4.4  **G2:** 23.0 ± 4.5  **G1:** fasting 4.68 ± 0.45 mmol/L  **G2:** fasting 4.77 ± 0.52 mmol/L | | **Inclusion:** Caucasian; OGCT >140 mg/dL and normal OGTT; singleton pregnancies  **Exclusion:** Normal GCT; one abnormal OGTT value; GDM under CC criteria | **Screen:** 50 g GCT (24–28 wks with 1 h cutoff by Italian Society of Diabetology criteria, plasma glucose 1 h after challenge ≥ 7.8 mmol/L)  **Diagnostic:**100 g OGTT (within 7 d of GCT) assessed by CC criteria  GCT/OGTT repeated at 30–34 wks for complete diagnosis of Borderline Gestational Glucose Intolerance (BGGI) | **G1:** Diet and regular glucose monitoring; dietary counseling; 24–30 kcal/kg per day formal diet; caloric intake divided into 3 meals and 2–3 snacks; distributed as 50–55% carbohydrates, 25–30% protein, and 25% fat (n=150)  **G2:** No special care, diet or treatment (n=150) | Caesarean delivery, weight gain, hypoglycemia, hyperbilirubinemia, admission to NICU, birth weight, weight, length, APGAR, LGA, ponderal index, SGA | RoB = Unclear (fair) |
| Chou, 2010  RCS (1)  Jan 2001 to Sep 2008  Taiwan | 10,990  **G1:** 34.4 ± NR  **G2:** 33.4 ± NR  **G1:** 23.11 ± NR  **G2:** 23.45 ± NR  NR  NR | | **Inclusion:** Singleton pregnancies delivered at Cathay General Hospital  **Exclusion:** Multiple pregnancies, fetal anomalies diagnosed prenatally | **Screen:**  1 h, 50 g OGCT  **Diagnostic:**  3 h, 100 g OGTT (CC, 1982; NDDG, 1979) | **G1:** Consultation  with a dietitian; 2 weeks of diet restriction; fasting  glucose level >105mg/dL, patient referred to endocrinologist, received glucose monitoring  device, and began insulin treatment (n=489)  **G2:** Did not receive further medical control (n=385) | Maternal hypertension, cesarean delivery, maternal birth trauma (postpartum hemorrhage), macrosomia, shoulder dystocia, mortality (intrauterine fetal demise), preterm labour, APGAR scores | NOS = 7  (good) |
| Crowther, 2005  Gillman, 2010 (4-5 year outcomes for children)  Moss, 2007 (economic analysis)  RCT, multi-center  Sept 1993 to June 2003  Australia | 1,000  **G1:** 30.9 ± 5.4  **G2:** 30.1 ± 5.5  **G1:** 26.8 (23.3–31.2)  **G2:** 26.0 (22.9–30.9)  **G1:** 4.8 ± 0.7 mmol/L  **G2:** 4.8 ± 0.6 mmol/L  **G1**: White: 356 Asian: 92  Other: 42  **G2**: White: 396  Asian: 72  Other: 42 | | **Inclusion:** Singleton or twin pregnancy; 16–30 wks gestation; prenatal clinic attendance; ≥1 risk factors for GDM on selective screen (WHO) or positive 50 g GCT and 75 g OGTT at 24–34 wks  **Exclusion:** More severe glucose impairment; Hx of GDM; active chronic systemic disease | **Screen:** 50 g GCT (24–34 wks with 1h cutoff by WHO criteria, 1985) From 1998 onward any glucose level above normal classified as GDM (glucose level 1 h after GCT of at least 7.8 mmol/L)  **Diagnostic:** 75 g OGTT (24–34 wks at fasting and 2-h) assessed by WHO criteria, 1985 From 1998 onward any glucose level above normal classified as GDM (venous plasma glucose level less than 6.1 – 7.0 mmol/L after overnight fast and 7.0–11.0 mmol/L at 2 h) | **G1:** Ongoing care; dietary advice; blood glucose monitoring; pre-prandial blood glucose target 5.5 mmol/L; 2 h 7.0 mmol/L; BG target of under 8.0 mmol/l was set at more than 35 weeks of pregnancy (n=490)  **G2:** Replicated routine clinical care where GDM screening not available (n=510) | Induction of labor, caesarean delivery (elective & emergency), shoulder dystocia, hypoglycemia, hyperbilirubinemia, stillbirth or neonatal death, admission to NICU, birth weight, bone fracture/clavicular fracture, nerve palsy/brachial plexus injury, “Any serious prenatal complication”, APGAR, LGA + SGA, 6 wk + 3 mo. Postpartum physical functioning, general health, vitality, emotional role, health state utility, anxiety, visits with healthcare professionals | RoB = Low (good) |
| Fassett, 2007  Cohort (with historical controls)  Jan 2001 to June 2006  US | 126  **G1:** 28.5 ± 5.8  **G2:** 29.2 ± 5.0  NR  NR  **G1**: White: 23  Black: 2  Hispanic: 39  Asian: 5  Other: 0  **G2**: White: 14  Black: 1  Hispanic: 35  Asian: 6  Other: 1 | | **Inclusion:** Women with ≥1 risk factors:prior GDM; prior macrosomia; first-degree relative with DM; prior stillbirth; prior malformation; 24–28 wks gestation; GDM Dx with CC criteria but not NDDG  **Exclusion:** NR | **Screen:** 50 g GCT (24–28 wks with 1 h cutoff)  **Diagnostic:** 100 g OGTT (24–28 wks at Fasting, 1 h, 2 h, and 3 h intervals) assessed by CC criteria | **G1:** Routine medical nutrition therapy by dietitian; formal diet (20–35 kcal/kg of prepregnancy body weight); BG daily self-monitoring, insulin as needed (n=69)  **G2:** Historical controls before institution of routine medical nutrition therapy (n=57) | Caesarean delivery, unplanned caesarean delivery, weight gain, shoulder dystocia, admission to NICU, birth weight, neonatal metabolic complications, APGAR | NOS = 7 (good) |
| Garner, 1997  Malcolm, 2006 (7-11 yr f-up)  RCT  Sept 1991 to May 1994  Canada | 300  **G1:** 30.7 ± 4.8  **G2:** 30.7 ± 4.6  NR  **G1:** 180.0 ± 25.2  (10.0 ± 1.4 mmol/L)  **G2:** 183.6 ± 32.4 mg/dL (10.2 ± 1.8 mmol/L)  **G1**: NR  **G2**: NR | | **Inclusion:** Women with GDM diagnosed between 24–32 wks gestation; low-risk pregnancy  **Exclusion:** Multiple gestation; maternal-fetal group incompatibility; known congenital anomaly; prior evidence of placenta previa or abruptio placentae; CHT; connective tissue disease; endocrine disorders; chronic hepatic disease; long-term medical therapy affecting glucose metabolism; imminent delivery | **Screen:** 75 g GCT (24–28 wks with 1 h cutoff by O’Sullivan criteria,1 h level of 144 mg/dL  **Diagnostic:** 75 g OGTT (24–28 wks with Fasting ≥140 mg/dL, ≥11.1; 1 h, 2 h, and 3 h intervals) assessed by Hatem et al. criteria | **G1:** Strict glycemic control and tertiary level obstetric monitoring; dietary counseling, calorie-restricted diet, BG daily self-monitoring, insulin as needed (n=149)  **G2:** Routine obstetric care (unrestricted healthy diet) (n=150) | Caesarean delivery, weight gain, hypoglycemia, hyperbilirubinemia, birth trauma, birth weight, child outcomes 7-11 yrs Normal 2 h GTT, at risk for overweight | RoB = High (poor) |
| Landon, 2009  RCT, multi-center  Oct 2002 to Nov 2007  US | 958  **G1:** 29.2 *±* 5.7  **G2:** 28.9 ± 5.6  **G1:** 30.1 ± 5.0  **G2:** 30.2 ± 5.1  **G1**: fasting 86.6 ± 5.7 mg/dL (4.8 ± 0.3 mmol/L); 1 h 191.8 ± 21.9 mg/dL (10.7 ± 1.2 mmol/L); 2 h 173.7 ± 21.8 mg/dL (9.6 ±1.2 mmol/L); 3 h 137.3 ± 29.0 mg/dL (7.6 ±1.6 mmol/L)  **G2:** fasting 86.3 ± 5.7 mg/dL (4.8 ± 0.3 mmol/L); 1 h 193.4 ± 19.3 mg/dL (10.7 ± 1.1 mmol/L ); 2 h173.3 ± 19.6 mg/dL (9.6 ± 1.1 mmol/L ); 3 h 134.1 ± 31.5  **G1**:White: 123  Black: 56  Hispanic: 281  Asian: 22  Other: 3  **G2**: White: 119  Black: 54  Hispanic: 265  Asian: 28  Other: 7 | | **Inclusion:** Women between 24 wks 0 days and 30 wks 6 days; OGCT values between 135 and 200 mg/dL or 7.5 and 11.1 mmol/L; OGTT fasting glucose <95 mg/dL and 2-3 timed measurements exceeded above thresholds at 1, 2, and 3 h.  **Exclusion:** Abnormal result before 24 wks of gestation; preexisting diabetes; prior GDM; Hx of stillbirth; multifetal gestation; asthma; CHT; corticosteroid use; known fetal anomaly; likely preterm delivery | **Screen:** 50 g GCT (1-h cutoff)  **Diagnostic:** 100 g OGTT (Fasting, 1 h, 2 h, and 3 h intervals) assessed by the 4th IWC criteria (1 h 180 mg/dL; 2 h 155 mg/dL; 3 h 140 mg/dL) | **G1:** Nutritional counseling and dietary therapy; daily BG self-monitoring; insulin as needed (n=485)  **G2:** Usual perinatal care (n=473) | Induction of labor, caesarean delivery, preeclampsia, GHT, BMI at delivery, weight gain, shoulder dystocia, hypoglycemia, hyperbilirubinemia, elevated cord-blood c-peptide level, stillbirth or neonatal death, birth trauma, preterm delivery, admission to NICU, primary perinatal outcome, intravenous glucose Tx, respiratory distress syndrome, LGA, SGA, BMI at delivery | RoB = Unclear (fair) |
| Langer 2005  Cohort  Jan 1990 to Sept 1999  US | 2,775  **G1:** 29.1 ± 6  **G2:** 27.6 ± 6  **G1:** NR  **G2:** NR  **G1:** fasting 97 ± 16 mg/dL (5.4 mmol/L); 1 h 199 ± 28 mg/dL (11.1 mmol/L); 2 h 178 ± 30 (9.9 mmol/L);  3 h 136 ± 36 (7.5 mmol/L)  **G2:** fasting 97 ± 15 mg/dL (5.4 mmol/L); 1 hr 199 ± 27 mg/dL (11.1 mmol/L); 2 hr 181 ± 36 mg/dL (10.1 mmol/L); 3 hr 141 ± 32 mg/dL 7.8 mmol/L)  **G1**: White: 144  Black: 56  Hispanic: 910  **G2**: White: 61  Black: 17 Hispanic: 477 | | **Inclusion:** Singleton pregnancies; FPG < 140 mg/dL on OGTT; CASE CONTROL: GDM diagnosed > 37 wks; treated GDM and diabetic matched 2:1 obesity, parity, ethnicity, GA at delivery (within 5 days), and yr of delivery  **Exclusion:** Pregestational DM; substance abusers; multifetal gestation; fetal anomalies | **Screen:** 50 g GCT (1 h >37 wks for G2; G1 underwent universal screening); Plasma glucose < 130 mg/dL  **Diagnostic:** 100 g OGTT (>37 wks for G2; G1 underwent universal screening; Fasting, 1 h, 2 h, and 3 h intervals) assessed by CC criteria | **G1:** Diet alone or insulin and diet; formal diet with caloric restriction: 25 (overweight/obese) to 35 (normal weight) kcal/kg for actual pregnancy weight; 3 meals and 4 snacks; daily BG self-monitoring, insulin therapy if diet not successful in achieving glycemic control after 2 weeks (n=1,110)  **G2:** Standard care until delivery (n=555) | Induction of labor, caesarean delivery, shoulder dystocia, hypoglycemia, stillbirth or neonatal death, birth weight, ponderal index, arterial cord <7.0, composite outcome, overall metabolic complications, erythrocytosis, respiratory complication, LGA, SGA | NOS = 9 (good) |
| Naylor, 1997  RCT  Sept 1989 to Mar 1992  Canada | 3,778  **G1:** 32.7(4.3)  **G2**: 32.1 (4.4)  **G1**: 24.2 (4.8)  **G2:** 24.7(5.8)  NR  **G1:** White: 63  Black: 8  Asian: 27  Other: 45  **G2:** White: 67  Black: 2  Asian: 17  Other: 29 | | **Inclusion:** >24 yrs at time of delivery, no Hx of DM examined by physician before 24 wks gestation, delivery >28 wks ;  **Exclusion:** NR | **Screen:** 50 g GCT (1 h  - Plasma glucose < 130 mg/dL  **Diagnostic:** 100 g OGTT assessed by NDDG criteria | **G1:** Known to have received treatment for GDM (n= 143)  **G2:** Usual perinatal care (n= 115) | Preeclampsia, cesarean delivery, macrosomia, hypoglycemia, hyperbilirubinemia (phototherapy), fetal trauma, congenital anomalies, respiratory distress syndrome, maternal/fetal length of stay | NOS = 9 (good) |

\* ADA = American Diabetes Association; ADIPS = Australian Diabetes in Pregnancy Society; BMI = body mass index; CHT = chronic hypertension; d(s) = day(s); dL = deciliter; DM = diabetes mellitus; Dx = diagnosis/diagnostic; FPG = fasting plasma glucose; GCT = glucose tolerance test; GDM = gestational diabetes mellitus; GLT = glucose load test; g = grams; h = hour; IADPSG = International Association of Diabetes and Pregnancy Study Groups; JSOG = Japan Society of Obstetrics and Gynecology; mg = milligrams; NDDG = National Diabetes Data Group; NR = not reported; NOS = Newcastle-Ottawa Quality Assessment Scale; n = number; OGTT = oral glucose tolerance test; PP= postpartum; PCS = prospective cohort study; RCS = retrospective cohort study; RoB = Collaboration’s tool for assessing risk of bias; SD = standard deviation; tx = treatment; wk(s) = week(s); WHO = World Health Organization; yr(s) = year(s)