Supplementary Table 1. Maternal characteristics, prevalence of risk-factors, and early HbA_{1c} and glucose investigations for hyperglycemia in pregnancy in 466 ORCHID participants with early HbA_{1c} who delivered >30-weeks gestation, stratified by ethnicity

	Aboriginal (*N* = 174)	non-Aboriginal* (*N* = 292)	*P*-value
Maternal characteristic			
Age (years)	26.3 ± 5.3	30.5 ± 5.2	<0.001
BMI at first antenatal presentation (kg/m^2)†	28.6 ± 7.4	26.1 ± 5.8	<0.001
Parity (prior delivery ≥20 weeks) ≥1 at enrolment	124 (71.3%)	203 (69.5%)	0.691
Any antenatal smoking	77 (44.2%)	38 (13.0%)	<0.001
Length of gestation at first presentation (weeks)	8.5 ± 3.6	8.1 ± 2.9	0.231
Risk-factor‡ for hyperglycemia in pregnancy			
Age ≥40 years	2 (1.2%)	6 (2.0%)	0.467
Obesity (BMI ≥30.0 kg/m^2)‡	66 (37.9%)	65 (22.3%)	<0.001
Previous GDM§	18 (14.5%)	26 (12.8%)	0.661
Previous macrosomia (birthweight >4,500 g)§	7 (5.6%)	8 (3.9%)	0.475
Family history of diabetes	77 (44.2%)	70 (24.0%)	<0.001
Polycystic ovarian syndrome	2 (1.2%)	23 (7.9%)	0.002
Use of corticosteroid or antipsychotic medication	5 (2.9%)	2 (0.7%)	0.060
Total number of risk-factors excluding ethnicity:			0.003
No risk-factors	83 (47.7%)	184 (63.0%)	
One risk-factor	74 (42.5%)	82 (28.1%)	
Two or more risk-factors	17 (9.8%)	26 (8.9%)	
Early HbA_{1c}			
Number with HbA_{1c}	174 (100%)	292 (100%)	-
Gestational age at HbA_{1c} (weeks)	9.0 ± 3.8	11.0 ± 2.8	<0.001
HbA_{1c} (%)	5.3 ± 0.3	5.2 ± 0.2	0.006
HbA_{1c} (mmol/mol)	34.4 ± 3.0	33.7 ± 2.4	0.004
HbA_{1c} ≥5.6% (≥38 mmol/mol)	26 (14.9%)	16 (5.5%)	0.001
HbA_{1c} ≥5.9% (≥38 mmol/mol)	6 (3.5%)	0	0.001
Early glucose investigation			
Number with FPG or OGTT‖	62 (35.6%)	68 (23.2%)	0.004
Gestational age at FPG/OGTT (weeks) ¶	11.5 ± 3.9	10.9 ± 3.6	0.390
FPG (mmol/L)‖	4.2 ± 0.3	4.5 ± 0.5	<0.001
1-h PG (mmol/L)#	7.3 ± 1.6	7.1 ± 2.0	0.569
2-h PG (mmol/L)#	6.2 ± 1.2	5.9 ± 1.7	0.338
Number with RPG	93 (52.5%)	77 (26.3%)	<0.001
Gestational age at RPG (weeks)	8.2 ± 3.2	9.4 ± 3.5	0.040
RPG (mmol/L)	4.5 ± 0.9	4.6 ± 0.9	0.431
Total number with glucose investigation**	133 (76.4%)	140 (48.0%)	<0.001
Diabetes mellitus in pregnancy††	0	1 (0.71%)	0.329
GDM††	3 (2.3%)	7 (5.0%)	0.228

Data are mean ± standard deviation for continuous variables. For categorical variables, data are number (%) of ethnic group. Two-sided t-test P-value reported for comparison between groups for continuous data. Pearson Chi-square test P-value reported for comparison between groups for categorical data. ORCHID = Optimisation of Rural Clinical and Haematological Indicators for Diabetes in pregnancy study; FPG = fasting plasma glucose; OGTT = 75 g oral glucose tolerance test; PG = plasma glucose; RPG = random plasma glucose; GDM = gestational diabetes mellitus. Data include 466 participants with early HbA_{1c} (<20-weeks gestation).

*The non-Aboriginal group was predominantly Caucasian (89.1%), with the remainder of high-risk ethnicity (Maori and Pacific Islander, 5.1%; Asian, 3.8%; Other 2.0%).

†BMI calculated as maternal weight in kilograms at first antenatal visit divided by the square of maternal height in meters.

‡Risk-factors for hyperglycemia in pregnancy according to Australasian Diabetes in Pregnancy Society guidelines (2014).

§Denominator excludes nulliparous women.

‖Includes 91 women with complete OGTT (42 Aboriginal; 49 non-Aboriginal), six women with incomplete OGTT (5 Aboriginal; 1 non-Aboriginal) and 36 women with FPG requested as a single test and not part of an OGTT (17 Aboriginal; 19 non-Aboriginal).

¶Excludes data for one Aboriginal women with unknown date of collection for FPG.

#Due to incompletion of OGTT 1-h PG includes data for 44 Aboriginal and 49 non-Aboriginal women, and 2-h PG includes data for 42 Aboriginal and 49 non-Aboriginal women.

**Includes women with at least one glucose investigation including: FPG; OGTT (complete or incomplete); or RPG.

††Denominator excludes women without a glucose investigation. GDM diagnosed by FPG (3); 1-h PG (6) and 2-h PG (1). One case of diabetes mellitus in pregnancy diagnosed by 2-h PG 12.9 mmol/L following 75 g glucose load; FPG (4.8 mmol/L) and early HbA_{1c} (5.7%, 39 mmol/mol) were equivocal and post-partum follow-up OGTT was not completed.

Supplementary Table 2. Early HbA_{1c}, Hb and ferritin, and routine OGTT (corrected for glycolysis) for 396 ORCHID participants with early HbA_{1c} and routine OGTT, stratified by ethnicity

Investigation	Aboriginal (*N* = 129)	non-Aboriginal (*N* = 267)	*P*-value
Early investigation <20-weeks gestation			
Gestational age at HbA_{1c} (weeks)	8.9 ± 3.7	11.0 ± 2.8	<0.001
HbA_{1c} (%)	5.3 ± 0.3	5.2 ± 0.2	0.001
HbA_{1c} (mmol/mol)	35 ± 3.0	34 ± 2.4	<0.001
Total Hb (g/L)*	127 ± 10.2	130 ± 9.7	0.005
Ferritin (μg/L)†	54 (34 – 93)	58 (38 – 85)	0.634
Hb and ferritin status:‡			0.022
Normal	95 (77.2%)	207 (84.8%)	
Iron deficiency	19 (15.4%)	31 (12.7%)	
Mild anaemia	3 (2.4%)	5 (2.0%)	
Mild anaemia with iron deficiency	6 (4.9%)	1 (0.4%)	
Routine OGTT ≥24-weeks gestation§			
Gestational age at OGTT (weeks)	28.8 ± 2.3	27.2 ± 1.4	<0.001
FPG (mmol/L)	4.7 ± 0.5	4.8 ± 0.4	0.209
1-h PG (mmol/L)‖	7.7 ± 1.7	7.4 ± 1.7	0.098
2-h PG (mmol/L)‖	6.6 ± 1.5	6.2 ± 1.3	0.022

Data are mean ± standard deviation for continuous variables or number (%) of ethnic group for categorical variables, except for ferritin which is reported as median and interquartile range. Two-sided t-test P-value reported for comparison between groups for continuous data, except for ferritin where Wilcoxon rank-sum test P-value is reported. Pearson Chi-square test P-value reported for comparison between groups for categorical data.

OGTT = 75 g oral glucose tolerance test; ORCHID = Optimisation of Rural Clinical and Haematological Indicators for Diabetes in pregnancy study; FPG = fasting plasma glucose; PG = plasma glucose; GDM = gestational diabetes mellitus. Data include 396 participants with results for early HbA_{1c} (<20 weeks gestation) and routine OGTT (≥24 weeks gestation).

*Hb only available for 367 participants: 123 Aboriginal; 244 non-Aboriginal.

†Ferritin only available for 325 participants: 117 Aboriginal; 208 non-Aboriginal.

‡Hb and ferritin was stratified according to Western Australian Women and Newborn Health Service guidelines for anaemia and iron deficiency:(39) Normal (Hb >110 g/L and ferritin >30 μg/L (*n*=241) or ferritin not measured (*n*=61); Iron deficient (Hb >110 g/L and ferritin ≤30 μg/L); Mild anaemia (Hb 71-110 g/L and ferritin >30 μg/L); Mild anaemia with iron deficiency (Hb 71-110 g/L and ferritin ≤30 μg/L). No participants had severe anaemia (Hb ≤70 g/L).

§OGTT PG corrected to predicted results had glycolysis been minimised according to International Association for the Diabetes and Pregnancy Study Groups (IADPSG)

recommendations: fluoride-oxalate (FLOX) tube immediately stored on crushed ice and processed within 1 h; correction by FLOX^{ICE} algorithm.(28)

‖1-h and 2-h PG missing for two participants with GDM by incomplete OGTT (1 Aboriginal; 1 non-Aboriginal).

Supplementary Table 3. Performance of early HbA_{1c} for detecting gestational diabetes mellitus (GDM) at ≥24 weeks after correction for glycolysis in Aboriginal ORCHID participants (*N* = 129)

HbA_{1c} Threshold % (mmol/mol)	No GDM (*n*)	GDM (*n*)	Sensitivity % (95%CI)	Specificity % (95% CI)	Positive Predictive Value % (95% CI)	Negative Predictive Value % (95% CI)
4.7 (28)	0	1	100 (88.8-100)	0.0 (0.0-3.7)	24.0 (17.0-32.3)	-
4.9 (30)	3	1	**96.8 (83.3-99.9)**	0.0 (0.0-3.7)	23.4 (16.4-31.7)	0.0 (0.0-97.5)
5.0 (31)	16	1	93.6 (78.6-99.2)	3.1 (0.6-8.7)	23.4 (16.3-31.8)	60.0 (14.7-94.7)
5.1 (32)	9	1	90.3 (74.2-98.0)	19.4 (12.1-28.6)	26.2 (18.2-35.6)	86.4 (65.1-97.1)
5.2 (33)	24	1	87.1 (70.2-96.4)	28.6 (19.9-38.6)	27.8 (19.2-37.9)	87.5 (71.0-96.5)
5.3 (34)	20	4	83.9 (66.3-94.6)	53.1 (42.7-63.2)	36.1 (25.1-48.3)	91.2 (80.7-97.1)
5.4 (36)	11	2	71.0 (52.0-85.8)	73.5 (63.6-81.9)	45.8 (31.4-60.8)	88.9 (80.0-94.8)
5.5 (37)	9	5	64.5 (45.4-80.8)	84.7 (76.0-91.2)	57.1 (39.4-73.7)	88.3 (80.0-94.0)
5.6 (38)	3	4	48.4 (30.2-67.0)	**93.9 (87.2-97.7)**	71.4 (47.8-88.7)	85.2 (77.1-91.3)
5.7 (39)	0	5	35.5 (19.2-54.6)	96.9 (91.3-99.4)	78.6 (49.2-95.3)	82.6 (74.4-89.0)
5.8 (40)	2	2	19.4 (7.4-37.5)	96.9 (91.3-99.4)	66.7 (29.9-92.5)	79.2 (70.8-86.0)
5.9 (41)	1	1	12.9 (3.6-29.8)	99.0 (94.4-100)	80.0 (28.4-99.5)	78.2 (69.9-85.1)
6.1 (43)	0	2	9.7 (2.0-25.8)	100 (96.3-100)	100 (29.2-100)	77.8 (69.5-84.7)
6.4 (46)	0	1	3.2 (0.1-16.7)	100 (96.3-100)	100 (2.5-100)	76.6 (68.3-83.6)

Bold typeface indicates *a priori* criteria used to select low-risk (sensitivity) and high-risk (specificity) cut points.

OGTT plasma glucose (PG) corrected to predicted results, had glycolysis been minimised according to International Association for the Diabetes and Pregnancy Study Groups (IADPSG) recommendations: fluoride-oxalate (FLOX) tube immediately stored on crushed ice and processed within 1 h; correction by $FLOX^{ICE}$ algorithm.(28) GDM diagnosed by Australasian Diabetes in Pregnancy Society (2014) endorsed IADPSG diagnostic criteria: one or more routine OGTT PG meeting the following thresholds: fasting PG 5.1-6.9 mmol/L; 1-h PG ≥10.0 mmol/L; 2-h PG 8.5-11.0 mmol/L. Includes two participants with GDM by incomplete OGTT.

Supplementary Table 4. Performance of early HbA_{1c} for detecting gestational diabetes mellitus (GDM) at ≥24 weeks after correction for glycolysis in non-Aboriginal ORCHID participants (*N* = 267)

HbA_{1c} Threshold % (mmol/mol)	No GDM (*n*)	GDM (*n*)	Sensitivity % (95%CI)	Specificity % (95% CI)	Positive Predictive Value % (95% CI)	Negative Predictive Value % (95% CI)
4.3 (23)	0	1	100 (95.6-100)	0.0 (0.0-2.0)	31.1 (25.6-37.0)	-
4.4 (25)	1	0	98.8 (93.5-100)	0.0 (0.0-2.0)	30.8 (25.3-36.8)	0.0 (0.0-97.5)
4.5 (26)	0	0	98.8 (93.5-100)	0.0 (0.0-2.0)	30.8 (25.3-36.8)	0.0 (0.0-97.5)
4.6 (27)	0	1	98.8 (93.5-100)	0.5 (0.0-3.0)	30.9 (25.4-36.9)	50.0 (1.3-98.7)
4.7 (28)	1	0	97.6 (91.6-99.7)	0.5 (0.0-3.0)	30.7 (25.2-36.6)	33.3 (0.8-90.6)
4.8 (29)	6	1	97.6 (91.6-99.7)	1.1 (0.1-3.9)	30.8 (25.3-36.8)	50.0 (6.8-93.2)
4.9 (30)	9	1	96.4 (89.8-99.2)	4.3 (1.9-8.4)	31.2 (25.6-37.3)	72.7 (39.0-94.0)
5.0 (31)	18	11	**95.2 (88.1-98.7)**	9.2 (5.5-14.4)	32.1 (26.3-38.3)	81.0 (58.1-94.6)
5.1 (32)	32	13	81.9 (72.0-89.5)	19.0 (13.6-25.4)	31.3 (25.2-38.0)	70.0 (55.4-82.1)
5.2 (33)	27	11	66.3 (55.0-76.3)	36.4 (29.5-43.8)	32.0 (25.1-39.5)	70.5 (60.3-79.4)
5.3 (34)	34	16	53.0 (41.7-64.1)	51.1 (43.6-58.5)	32.8 (25.0-41.5)	70.7 (62.2-78.2)
5.4 (36)	29	9	33.7 (23.7-45.0)	69.6 (62.4-76.1)	33.3 (23.4-44.5)	70.0 (62.7-76.5)
5.5 (37)	17	15	22.9 (14.4-33.4)	85.3 (79.4-90.1)	41.3 (27.0-56.8)	71.0 (64.6-76.9)
5.6 (38)	8	4	4.8 (1.3-11.9)	**94.6 (90.2-97.4)**	28.6 (8.4-58.1)	68.8 (62.7-74.4)
5.7 (39)	2	0	0.0 (0.0-4.4)	98.9 (96.1-99.9)	0.0 (0.0-84.2)	68.7 (62.7-74.2)

Bold typeface indicates *a priori* criteria used to select low-risk (sensitivity) and high-risk (specificity) cut points.

OGTT plasma glucose (PG) corrected to predicted results, had glycolysis been minimised according to International Association for the Diabetes and Pregnancy Study Groups (IADPSG) recommendations: fluoride-oxalate (FLOX) tube immediately stored on crushed ice and processed within 1 h; correction by $FLOX^{ICE}$ algorithm.(28) GDM diagnosed by Australasian Diabetes in Pregnancy Society (2014) endorsed IADPSG diagnostic criteria: one or more routine OGTT PG meeting the following thresholds: fasting PG 5.1-6.9 mmol/L; 1-h PG ≥10.0 mmol/L; 2-h PG 8.5-11.0 mmol/L. Includes two participants with GDM by incomplete OGTT.

Supplementary Table 5: The regional clinical investigators responsible for engagement of clinical sites and recruitment for the ORCHID study within the state of Western Australia.

Region	Clinical Investigators
Kimberley	Professor David Atkinson (Principal Investigator - region) Dr Emma Griffiths Dr Chevaun Howard Associate Professor Julia Marley (Principal Investigator - state) Dr Sally Singleton
Goldfields	Dr Kylie Sterry (Principal Investigator - region)
Great Southern	Dr Carly Roxburgh (Principal Investigator - region)
Mid West	Dr Cynthia Porter (Principal Investigator - region)
Southwest	Dr Andrew Kirke (Principal Investigator - region) Dr Sarah Moore

ORCHID = Optimisation of Rural Clinical and Haematological Indicators for Diabetes in pregnancy study. The regional and state principal investigators are indicated in brackets.