SLHD Diagnostic Process for Hyperglycaemia in Pregnancy (including GDM)

Define risk: **High risk** for hyperglycaemia in pregnancy is **one or more high risk factors**, **OR two or more moderate risk factors**

High risk factors (1 or more = HIGH RISK)

- Previous GDM
- Maternal age ≥ 40 years
- Family history of diabetes mellitus (1st degree relative with diabetes including sister with GDM)
- South Asian (Indian subcontinent) ethnicity
- BMI > 35 kg/m² (Class 2/3 obesity)
- Previous macrosomia (baby with birth weight > 4000 g or > 90th centile)
- Polycystic ovarian syndrome with hyperandrogenism (biochemical or clinical e.g., hirsutism)
- Medications: corticosteroids, antipsychotics

Moderate risk factors (2 or more = HIGH RISK)

- Maternal age 35 to 39 years
- Ethnicity: Asian, Aboriginal, Torres Strait Islander, Maori, Pacific Islander, Middle Eastern, non-white African
- BMI 25 - 35 kg/m² (overweight/Class 1 obesity)
- Polycystic ovarian syndrome (androgens not elevated)

Arrange tests for detection of hyperglycaemia

	If not already known to have diabetes:	*If not already known to have diabetes:*	*If not already known to have diabetes:*
	1st Trimester (<12 weeks gestation) HbA1c or fasting blood glucose level (BGL)	16 to 20 weeks gestation organise 75g oGTT	26 to 28 weeks gestation organise 75g oGTT
HIGH Risk	☑	☑	☑
LOW Risk	☒	☒	☑

Notes:

- The 1-hour 50g glucose challenge test (GCT) is no longer to be requested.
- Before a 75g oral Glucose Tolerance Test (oGTT) the patient must fast for 8 to 12 hours. A 3 day high carbohydrate diet preparation is *no longer needed* for 75g oGTT.
- Women on metformin for PCOS/'insulin resistance' should CEASE the metformin 2 weeks before the oGTT.
- Ensure request form states that the patient is pregnant (POGTT= pregnancy oGTT) and note how many weeks gestation or Expected Date of Birth (EDB)
- Once there is a positive result, refer for management to the 'Interpreting the results' section
- Unless already diagnosed with GDM or diabetes, an additional 75g oGTT should be done at any time in pregnancy if there is clinical concern. (eg: excessive weight gain, acanthosis nigricans, polyhydramnios, estimated fetal weight, fetal abdominal circumference > 90th% or accelerating fetal growth)

Target weight gain in pregnancy

Counsel all pregnant women regarding their personal target weight gain in pregnancy (stratified as per pre-pregnancy BMI). Consider dietitian referral if obese/excessive weight gain.

Institute of Medicine weight gain during pregnancy suggested guidelines

BMI (kg/m2) (WHO)	Classification	Singleton pregnancy total weight gain range	Rates of weight gain in 2nd and 3rd Trimester (Kg/wk)
<18.5	Underweight	12.5-18 kg	0.51 (0.44- 0.58)
18.5-24.9	Normal	11.5-16 kg	0.42 (0.35- 0.50)
25-29.9	Overweight	7-11.5 kg	0.28 (0.23-0.33)
≥30	Obese (includes all Obesity classes 1, 2 & 3); Obesity Class 1: BMI 30-34.9 Obesity Class 2: BMI 35-39.9 Obesity Class 3: BMI ≥40	5-9 kg	0.22 (0.17-0.27)

Footnote to table:

The above calculations for rates of weight gain assume a 0.5-2kg weight gain only during the first trimester, and presume a linear gestational weight gain throughout the 2nd and 3rd trimesters.

- The above-recommended ranges are suggested to be used in combination with 'good clinical judgment' and a discussion with each woman and her health care provider regarding diet and exercise.
- The BMI figures in the above table are derived from the World Health Organization's "The International Classification of adult underweight, overweight and obesity according to BMI"

Reference: RANZCOG College statement C-Obs 49 : Management of Obesity in Pregnancy

Interpreting the results

First trimester testing <12 weeks gestation

Gestational Diabetes (GDM):

Diagnose Gestational Diabetes (GDM) if:

Fasting BGL	6.1 - 6.9 mmol/L	**OR**
HbA1c	40 - 47 mmol/mol (5.9– 6.4%)	

(i.e only one abnormal value needed)

If early pregnancy fasting BGL 5.1-6.0 mmol/L:

- repeat fasting BGL at 12 weeks (refer to 'Second and Third trimester testing' re fasting BGL criteria to diagnose GDM/DM in pregnancy).
- If **repeat** fasting BGL at 12 weeks < 5.1 mmol/L, organise 75g oGTT at 16-20 weeks

Prompt referral of women diagnosed with GDM :
These women should be seen **within 2 weeks of referral,** as far as possible.

RPA Women and Babies : RPAH Diabetes Centre
Ph. 9515 5888 Fax results : 9515 5820
Canterbury Hospital
Ph. 9787 0250 Fax referral & results : 9787 0431

"Diabetes Mellitus (DM) in pregnancy": (as per ADIPS and WHO)

Diagnose "Diabetes Mellitus in pregnancy" if:

Fasting BGL	≥ 7.0 mmol/L	**OR**
HbA1c	≥ 48 mmol/mol (6.5%)	

(i.e only one abnormal value needed)

Prompt referral of women diagnosed with "Diabetes Mellitus in Pregnancy"
These women should be **assessed within 3 days** and may need admission

RPA Women and Babies: RPAH Diabetes Centre
Ph. 9515 5888 Fax results : 9515 5820
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Second and Third trimester testing (>12 weeks) – 75g oGTT

Gestational Diabetes (GDM):

Diagnosed if blood glucose level (BGL) elevated at any timepoint: (i.e only one abnormal value needed)

Fasting BGL	5.1 - 6.9 mmol/L
1-hour BGL	≥ 10.0 mmol/L
2-hour BGL	8.5 -11.0 mmoll/L

Prompt referral of women diagnosed with GDM :
These women should be seen **within 2 weeks of referral,** as far as possible.

RPA Women and Babies: RPAH Diabetes Centre Ph. 9515 5888 Fax results: 9515 5820

Canterbury Hospital Ph. 9787 0250 Fax referral & results: 9787 0431

"Diabetes Mellitus (DM) in pregnancy": (as per ADIPS and WHO)

Diagnosed if ANY of the following criteria are met:

Fasting BGL	≥ 7.0 mmol/L
HbA1c	≥ 48 mmol/mol (6.5%)
2-hour BGL	≥ 11.1 mmol/L
Random BGL	≥ 11.0 mmol/L and symptoms of hyperglycaemia

If BGL over 14 mmol/L, ketones should be also checked: If > 1.5 for blood ketones or > 1+ for urinary ketones:
Contact RPAH Diabetes Centre ph. 9515 5888 or Endocrinology Registrar for more urgent assessment as Type 1 diabetes presenting in pregnancy needs to be considered.

Prompt referral of women diagnosed with "Diabetes Mellitus in Pregnancy"
These women should be **assessed within 3 days** and may need admission

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Additional Assessments

Postnatal follow-up

All women who have had GDM are at high risk of future diabetes and require long term follow-up and support to maintain a healthy lifestyle. This includes regular exercise, healthy eating patterns and weight optimisation.

If the woman had:

- **GDM**, arrange 75 g oGTT at 3 to 4 months postnatally.
- "**DM in pregnancy**", the woman should continue to monitor her blood glucose in the immediate postnatal period and be reviewed prior to discharge as to whether any ongoing self blood glucose monitoring is needed.
  If so, the frequency will depend on the blood glucose levels. Arrange **venous fasting BGL** (fBGL) 4 to 6 weeks postnatally:

  ⇒ if fBGL ≥ 7.0 mmol/L OR HbA1c ≥ 48mmol/mol [6.5%], diagnostic of diabetes, likely Type 2.

*NB: Diagnosis of diabetes does need **further confirmation** with a subsequent fasting BGL or HbA1c or 75g oGTT 6-12 months later.*

  ⇒ if fBGL < 7.0 mmol/L and HbA1c < 48mmol/mol [6.5%], arrange 75g oGTT at 3 to 4 months postnatally.

Arrange recalls for ongoing testing. Frequency of GTT will depend mainly on the previous GTT results.

	Frequency of 75g oGTT
Postpartum 75g oGTT indicates prediabetes (IFG/IGT)	Yearly
Postpartum 75g oGTT normal	2 yearly

References and further information:

- **Healthpathways Sydney :** https://sydney.healthpathways.org.au/
- **Australasian Diabetes In Pregnancy Society** (A.D.I.P.S): www.adips.org
- **RANZCOG:** www.ranzcog.edu.au/college-statements-guidelines.html

Dr Glynis Ross RPAH Diabetes Centre April 2016

Pre–pregnancy assessment

As part of pre-pregnancy assessment for ALL women, assess their diabetes risk and organise appropriate screening.

Ensure effective contraception and appropriate pre-pregnancy planning.
This is especially important for :

(1) women confirmed to have ongoing diabetes – refer for pre-pregnancy counselling (see Healthpathways Sydney below in 'References and further information')
(2) women who have had gestational diabetes – ideally their glucose tolerance status should be known pre-pregnancy

2-hour 75g oGTT is the appropriate test– see table below for interpretation

Limitations of other testing processes:

(a) HbA1c (Medicare rebate requirements allow for funding for diagnosis in high risk people annually only) - if ≥ 48 mmol/mol (6.5%) it is consistent with diabetes, however it is NOT a sensitive test and diabetes or pre-diabetes may be present with much lower HbA1c levels (ie 5.7-6.5%)

(b) fasting BGL - this is not a sensitive test and will miss many women who just have postprandial /post-glucose load hyperglycaemia which may be at the level of diabetes

If women do have abnormal glucose tolerance prior to pregnancy they should be referred for further pre-pregnancy diabetes counselling.

A pre-pregnancy counselling service is offered at both hospitals.

75g oGTT Interpretation outside pregnancy

	Fasting (0hrs) BGL	2hour BGL
Normal	< 6.1 mmol/L	< 7.8 mmol/L
Impaired Fasting Glucose (IFG)	6.1-6.9 mmol/L	< 7.8 mmol/L
Impaired Glucose Tolerance (IGT)	< 6.1 mmol/L	7.8-11.0 mmol/L
Diabetes	7.0 mmol/L or more	11.1 mmol/L or more