GESTATIONAL DIABETES:
Diabetes with onset or first recognition during pregnancy. Diagnosed on 75g OGTT with (1) fasting blood glucose level > 5.5 mmol/L AND / OR (2) 2 hour glucose level > 8mmol/L

PRE-EXISTING DIABETES:
Diabetes already diagnosed in a woman prior to pregnancy. Diabetes may pre-exist but be undiagnosed before pregnancy - generally, if diagnosed within the first 12 weeks of pregnancy, this can be considered to have been pre-existing but undiagnosed diabetes

Screening
Any woman may be tested for diabetes at any time in pregnancy if there is clinical suspicion based on symptoms or other factors, such as heavy glycosuria, obesity, macrosomia, hydramnios.

If you suspect PRE-EXISTING DIABETES due to presence of risk factors below, screen with a fasting or random BSL at the FIRST ANTENATAL CHECK. Repeat at each antenatal visit if glycosuria present.

If BSL >6, proceed to OGTT.

Risk factors include: Aboriginal and/or Torres Strait Islander women; obesity, strong family history of type II diabetes, history of gestational diabetes, impaired glucose tolerance (IGT) or impaired fasting glucose (IFG), and history in previous pregnancy of unexplained IUGR or macrosomia (birth weight >4500g), stillbirth, or congenital abnormality

Women who have a history of GESTATIONAL DIABETES should be screened with OGTT at 18 weeks.

ALL WOMEN must be screened for GESTATIONAL DIABETES at 26-28 weeks.

How to screen: See “Screening for Diabetes in Pregnancy” flow-chart on p. 5

Principles of Management

- Untreated diabetes in pregnancy is associated with increased perinatal morbidity and mortality. Good control of blood sugar levels throughout pregnancy significantly reduces the risk of complications. Early diagnosis, careful monitoring and prompt intervention if blood sugar levels are not controlled are essential.

- Diet and exercise are the mainstay of gestational diabetes management and are often sufficient. Education must be provided at every opportunity.

Education

It is important that women with diabetes in pregnancy understand the risks to themselves and their unborn baby, as well as how to prevent complications through good glucose control and regular antenatal care. Useful handouts can be found at:


GESTATIONAL DIABETES

- Risk to woman of developing type 2 diabetes later in life
- Increased risk of obstetric complications such as macrosomia, polyhydramnios, shoulder dystocia, instrumental delivery and/or emergency Caesarean section, fetal death
- Risk to baby of childhood obesity and type 2 diabetes later in life

PRE-EXISTING DIABETES

- Risk to woman of complications of diabetes eg renal disease, diabetic retinopathy, heart disease, peripheral neuropathy
- Increased risk of obstetric complications such as congenital deformities, macrosomia, polyhydramnios, shoulder dystocia, instrumental delivery and/or emergency Caesarean section, fetal death
- Risk to baby of childhood obesity and type 2 diabetes later in life

Baseline Assessment & Advice

(1) MEDICATIONS IN PREGNANCY

REVIEW all medications

- Almost all medications in category C and D will need to be ceased. Category C and D Medicines include ACE-inhibitors, ARBs, calcium channel blockers, beta blockers, diuretics, statins, warfarin, and sulfonylureas

- Some will need to be replaced with a suitable substitute during pregnancy e.g. ACEIs and ARBs used for hypertension may need to be replaced with methyldopa. See “Women of Child Bearing Age” section in each relevant Kimberley Chronic Disease Therapeutic Protocol

- Others such as anti-depressants and anti-psychotics may need to be continued under close supervision. Discuss with relevant specialist e.g. Physician, Psychiatrist, Obstetrician

(2) PRE-EXISTING DIABETES

Women with pre-existing diabetes require the following:

- At booking: HbA1c, urine ACR, thyroid function tests, maternal ECG
- First trimester screen
- Ophthalmology review

(3) DIETARY ADVICE

Refer to Dietician at time of diagnosis, for assessment and review as soon as practicable. If not available, discuss individualised assessment and management plan by phone / video-teleconference. Meanwhile offer dietary education and advice at every visit.

A healthy diet is the mainstay of treatment.

Advice should be:

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DIABETES IN PREGNANCY

• Individualised for each woman according to factors such as BMI and nutritional status
• Tailored to meet cultural needs, including e.g. requirements for specific food avoidance, and environmental needs, including local food availability

(4) EXERCISE ADVICE
• Remember, any physical activity is exercise.
• Recommend that women choose an activity that fits in well with their lifestyle.
• Encourage them to vary their activities so they remain motivated.
• Suitable activities during pregnancy include walking, swimming, walking in a pool, stationary bicycle riding (not “cycling”)
• Maximum benefit is gained from exercising 3-5 times a week for 30 minutes each time, at a pace that makes you puff slightly
• Avoid injury by warming up and stretching for 5-10 minutes before and after exercise

Tips for exercising safely
• Avoid activities involving balance as this increases the risk of falling (eg tennis, cycling, basketball, volleyball)
• Avoid exercise that involves lying on your back after the first 16 weeks of pregnancy
• Avoid administering insulin in an area that will be exercised as it can affect absorption time
• Carry out blood glucose monitoring before, during and after activity
• Don’t exercise if blood glucose levels are >15mmol/L
• If on insulin, have a carbohydrate snack before, during and after prolonged exercise and drink plenty of water
• Reduce the dose of insulin and eat more carbohydrate when exercising. 30 minutes of exercise for every 10-15g carbohydrate.
• When on insulin, always carry some form of glucose for potential episodes of hypoglycemia

• Avoid exercise of high intensity and long duration >60 minutes.
• Avoid exercise that involves lying on your back after the first 16 weeks of pregnancy

(5) ASSIST to register with National Diabetes Services Scheme (NDSS) - go to:

Monitoring

GLUCOSE MONITORING:
• Ideally: Daily home blood sugar level (BSL) monitoring - Morning fasting, and 2 hours after each meal. If sugars are well controlled, BSLs can be checked every 2nd or 3rd day. This must continue throughout pregnancy as BSL control will change with increasing gestation, necessitating a change in OHA and/or insulin dose.
• If home monitoring not possible, monitor in the health clinic - daily if possible, otherwise as a minimum twice weekly. Do fasting and 2 hour postprandial BSL.
• Check HbA1c every 8 weeks from time of diagnosis - this is not a substitute for regular glucose monitoring but (a) can support impressions from home BSL recordings and (b) is useful where regular BSL monitoring is not occurring

GOALS OF MANAGEMENT:
• Fasting BSL < 5.5 mmol/L AND
• 2 hr post prandial BSL < 7mmol/L.
• HbA1c < 7%.

ANTENATAL CHECKS:
• If well controlled: review every 2-4 weeks till 36 weeks, then weekly
• If uncontrolled diabetes - at least every week until well controlled or transferred. Liaison with the diabetes team at KEMH is important.

OBSTETRIC ULTRASOUND:
• All women with type 2 diabetes, especially if HbA1c >8% at booking, should be referred for first trimester screen and anatomy scan at KEMH.
• In addition to usual scans during pregnancy, all women with diabetes in pregnancy are recommended to have a scan to assess growth and well-being at 34 weeks
• More frequent ultrasound monitoring may be required if there is suspicion from clinical monitoring of abnormal growth, or other concerns regarding fetal wellbeing. Discuss with OBSTETRICIAN

CTG MONITORING:
• KEMH recommends twice weekly CTGs from 32 weeks if: BSLs uncontrolled, IUGR or hypertensive on treatment.

Therapeutic Protocols

PRE-EXISTING DIABETES:
Commence folic acid 5 mg daily from 3 month prior to conception and continue until 14 weeks gestation
If already on medication:
(a) continue metformin. If taking Metformin XR (extended release), change to regular metformin unless there are concerns that this may adversely affect compliance - in this case, discuss with physician.
(b) cease all other oral hypoglycaemic medications
(b) continue Isophane insulin and monitor BSLs frequently, particularly during second trimester when risk of hypoglycaemia increases
(d) continue glargine insulin - early data from KEMH suggests this is safe for use in pregnancy. Continue and monitor BSLs frequently, particularly during second trimester when risk of hypoglycaemia increases.

THEN:
If blood glucose goals are exceeded > /2 times over a 1 - 2 week interval and:
1. On metformin alone, start isophane insulin. See Diabetes Type II protocol, and refer / discuss with Physician and Diabetes Educator
2. Not yet on medication: follow guidelines for Gestational Diabetes below.
Gестационный диабет:
Если уровни глюкозы в крови превышают ≥ 2 раза в течение 1-2 недель, начните лечение.
1. Идеально, начните инсулин в качестве первой линии терапии (см. протокол по Type II Diabetes Protocol re starting insulin; refer / discuss с диабетологом)
2. Если женщина отказывается от инсулина или не подходит для него: начните метформин 500 мг 2 раза в день, увеличивая дозу до 1 г 2 раза в день, если уровень глюкозы остается вне целевого диапазона
См. раздел “Monitoring” для частоты контроля уровня глюкозы и HbA1C в период беременности.

Рекомендуется обсудить:
• Время и место рождения
1. Женщины с диабетом, не принимающие лекарств
   - Цель — роды в 38-40 недель. Если уровень глюкозы в крови находится в пределах рекомендуемых, HbA1C <7% и нет осложнений, продолжайте до родов в соответствии с рекомендациями.
2. Женщины с диабетом, принимающие инсулин или гипогликемические средства
   - Необходимо обсудить с специалистом по родам лучшее место для родов.
   - Женщины с плохо контролируемым диабетом и/или осложнениями при родах должны быть роды в центре реферальной помощи с установленным местом родов.
   - Место и время родов — рассмотрите план качественного родоразрешения при ожидаемой массе новорожденного >4250 г или порция 40 мм больше головы.
   - Время родов — планируйте план назначения рода в 38-39 недель или раньше, если это необходимо.

Следите за здоровьем:
• Беременность с диабетом, не принимающие лекарств
• Диабет с предшествующими заболеваниями, включая гипертонию, сердечно-сосудистые заболевания

Предшествующий диабет:
• Восстановите преднизоль, поставленный до родов. Если на ACEI до родов, используйте enalapril 5-20 мг в день как первостепенную терапию при грудном вскармливании
• Обсудите контрацепцию
Flow chart 1: Screening for pre-existing diabetes in women < 12 weeks gestation

DIABETES IN PREGNANCY
Flow chart 2: Screening for gestational diabetes in women at (1) 18 weeks (previous GDM) and at (2) 28 weeks (ALL)

75g oral Glucose Tolerance Test (OGTT) is the screening test of choice, with screening and diagnosis done as a one-step rather than 2 step process. However, if attending the clinic fasted poses a significant barrier to screening, a second-line option is to proceed with a screening test alone - the 50g oral Glucose Challenge Test, though follow up may still be required with a GTT to confirm the diagnosis.