

Gestational diabetes mellitus

Recommendations

Recommendation	Reference	Grade*
In the first trimester, all women should be assessed for risk of hyperglycaemia (Box 1), and those at high risk should have glycaemic assessment	1 NHMRC, 2019	Consensus
Between 24 and 28 weeks' gestation, recommend testing for gestational diabetes mellitus (GDM) to all women who have not previously been tested in the current pregnancy. Recommend repeat testing to women who were tested early in pregnancy due to risk factors and who had a normal result on an initial test	1 NHMRC, 2019	Consensus
Pregnant women with GDM should be offered dietary advice and blood glucose monitoring, and be treated with glucose-lowering therapy depending on target values for fasting and postprandial targets	2 Scottish Intercollegiate Guidelines Network, 2017	A
Postprandial glucose monitoring should be carried out in pregnant women with GDM	2 Scottish Intercollegiate Guidelines Network, 2017	C
Postnatal education and support are important in preventing or delaying the onset of diabetes in the future, and women should be encouraged to attend postnatal testing	1 NHMRC, 2019	Consensus
Women diagnosed with GDM should have a 75 g two-hour oral glucose tolerance test, preferably at 6–12 weeks postpartum, with classification according to World Health Organization criteria	3 ADIPS, 2014	Consensus
Advise women that physical activity and healthy eating during pregnancy help reduce excessive weight gain but do not appear to directly reduce the risk of developing GDM	1 NHMRC, 2019	Qualified evidence-based recommendation (QEBR)

*Refer to 'Explanation and source of recommendations' for explanations of the levels and grades of evidence.

Clinical context

Gestational diabetes mellitus (GDM) is defined as glucose intolerance that begins, or is first diagnosed, during pregnancy. It may appear in the first half of pregnancy, particularly in women at high risk for GDM.

Diabetes mellitus in pregnancy (DMiP) is defined by the Australasian Diabetes in Pregnancy Society (ADIPS) and the World Health Organization as pregnant women whose blood glucose levels in pregnancy meet the criteria used for diagnosing diabetes outside pregnancy.⁴ Some of these women may have previously undiagnosed diabetes (usually type 2).

Most published data that report on GDM include both DMiP and GDM, and indeed most women will fit the specific criteria for GDM.

Note that not all of these women will continue to have diabetes following delivery. One Australian study reported that 41% of women with DMiP returned to normal glucose tolerance by 6–8 weeks postpartum.⁵

The 2008 Hyperglycemia and Adverse Pregnancy Outcome (HAPO) study reported a correlation between increasing maternal glucose levels at 24–32 weeks' gestation and a range of adverse maternal and fetal outcomes.⁶ The study suggested that the relationship between increasing blood glucose levels and adverse effects was continuous, with no threshold or inflection point at which lower levels confer protection.

In response to the HAPO study, the International Association of the Diabetes and Pregnancy Study Groups developed new consensus guidelines for the testing and diagnosis of GDM. Although the Royal Australian and New Zealand College of Obstetricians and Gynaecologists and the ADIPS³ have recommended that these consensus guidelines be implemented, there has been controversy nationally and internationally.⁷ Important differences in these guidelines are universal testing of all women (not already diagnosed with diabetes) in pregnancy, and a one-step diagnostic framework with a changed glucose threshold (versus the previous two-step process).

A comparison of current clinical guidelines for GDM can be found in a paper by [Wilkinson et al.](#)

It is important that each general practitioner (GP) be aware of their local obstetric service's diagnostic criteria, and support and manage patients in a manner congruent with their specialist team guidelines, to avoid conflict and patient confusion.

In practice

Identifying GDM

Identifying women at risk of GDM, or who have previously undetected hyperglycaemia, enables the GP to advise women appropriately on risk minimisation and provide support and treatment. Hyperglycaemia is increasing in pregnancy parallel to rising rates of diabetes and obesity. Of women giving birth in 2015–16, approximately 15% were diagnosed with GDM.⁸

Australian clinical guidelines for care during pregnancy recommend that women who are at risk of hyperglycaemia, including GDM (Box 1), are tested in the first trimester of pregnancy.¹ Women tested in the first trimester of pregnancy but who have a normal test result should be advised to re-test between 24 and 28 weeks' gestation.¹

All pregnant women not already tested should be advised to have testing for hyperglycaemia between 24 and 28 weeks' gestation.¹

Discussion to inform a woman's decision making about testing for hyperglycaemia should take place before testing.

Box 1. Identifying women at risk of gestational diabetes mellitus

The following are risk factors for GDM:¹

- Obstetric history of GDM
- Increased age
- Increased body mass index (risk threshold varies by ethnic group)
- Excessive weight gain early in pregnancy
- Polycystic ovary syndrome
- Obstetric history of high birth-weight baby
- Obstetric history of pregnancy loss
- A family history of diabetes
- Belonging to an ethnic group with a high prevalence of type 2 diabetes (eg Aboriginal and Torres Strait Islander, Hispanic, African, South or East Asian and Pacific Islander peoples)
- Being a migrant to a country

Diagnosing GDM

Diagnostic criteria for GDM are shown in Box 2. Glycated haemoglobin (HbA1c) is not recommended to test for GDM due to lack of sensitivity.¹

At present there are limited data demonstrating clinical benefit for women identified by the changed screening criteria compared with those identified by the 1991 ADIPS consensus criteria, which then became the National Health and Medical Research Council recommendations.^{9–12} Therefore, these remain the preferred Royal Australian College of General Practitioners (RACGP) criteria until evidence of such benefit is forthcoming, including the health economic costs of any such consensus for change.

Acknowledging that in Australian general practice there are alternative diagnostic criteria for GDM, the RACGP (preferred) and ADIPS (alternative) diagnostic criteria are both presented below. Furthermore, it is important that each GP be aware of their local obstetric service diagnostic criteria, and support and manage patients in a manner confluent with their specialist team guidelines to avoid conflict and patient confusion.

Box 2. Screening and diagnosis of gestational diabetes mellitus

RACGP criteria (preferred criteria):

- fasting plasma glucose ≥ 5.5 mmol/L, or
- two-hour plasma glucose ≥ 8.0 mmol/L (75 g oral glucose tolerance test [OGTT]).

ADIPS criteria (alternative criteria):

- fasting plasma glucose 5.1–6.9 mmol/L, or
- one-hour plasma glucose (75 g OGTT) ≥ 10.0 mmol/L, or
- two-hour plasma glucose (75 g OGTT) 8.5–11.0 mmol/L

Oral glucose tolerance testing in pregnancy

The correct procedure for a 75 g OGTT is as follows:

- 8–12-hour overnight fast
- start test before 9.30 am
- patients should consume the glucose drink within five minutes, remaining seated throughout the two-hour test period
- ideally, the drink should be chilled to improve tolerance.

The OGTT should be postponed if the woman has an acute illness.

Some women may vomit during the OGTT. In such cases, if the recorded fasting glucose meets the criteria for GDM, the woman should be referred to start GDM management. If her fasting glucose level is normal, repeat the OGTT with the woman taking metoclopramide beforehand. Metoclopramide does not appear to alter glucose absorption, but ondansetron may lead to falsely lower post-load glucose levels. Recliner chairs can also reduce the tendency to vomit.

Women who have had metabolic surgery should not be sent for an OGTT as they might not be able to tolerate the test due to dumping syndrome.¹³ Seek specialist advice from your local diabetes-in-pregnancy service regarding alternative testing options.

Although none will exactly equate to an OGTT, alternatives include giving a different source of 75 g carbohydrate, measuring blood glucose concentrations using continuous glucose monitoring, measuring fasting and postprandial blood glucose concentrations with capillary (finger-prick) blood testing, measuring HbA1c, or using a combination of these methods.

Women who have had metabolic surgery also need particular assessment throughout pregnancy regarding nutritional status, need for higher multivitamin dosages and close obstetric monitoring.¹³ Referral to appropriate specialty services is strongly advised prior to and during pregnancy, even for women in this group who do not have diabetes or GDM.

Management of GDM

Lifestyle interventions and insulin remain the mainstay of treatment for GDM.

All women with GDM should be offered individualised management, including education, appropriate blood glucose monitoring and dietary advice.

Education

In most cases, GDM responds positively to lifestyle management, and women should be referred to an accredited practising dietitian and a credentialled diabetes educator, if these are not provided by their obstetric service.

All women with GDM who qualify for Medicare access should be registered with the National Diabetes Services Scheme on the [National Gestational Diabetes Register](#).

If diabetes is diagnosed during pregnancy, points for discussion include:¹

- the role of diet, physical activity and pregnancy/gestational weight gain in managing diabetes
- the role of insulin or oral hypoglycaemic agents in the management of diabetes (ie if diet and physical activity do not adequately control blood glucose levels)
- the importance of monitoring and controlling blood glucose levels during pregnancy, labour, birth and early feeding of the baby to reduce the likelihood of the baby having macrosomia and associated risks (eg fractures, shoulder dystocia, jaundice)

- the possibility of the baby requiring admission to a special care nursery/neonatal intensive care unit to manage possible hypoglycaemia or respiratory distress
- the woman's increased risk of developing type 2 diabetes, and the importance of reviewing glucose tolerance postpartum and maintaining a healthy weight
- the benefits of registering with the National Gestational Diabetes Register (eg reminders for glucose tolerance assessment)
- the benefits of breastfeeding in reducing the risk of the woman developing type 2 diabetes in the future
- the risk of the baby developing obesity, heart disease and/or diabetes in the future.

Follow-up of patients with a history of GDM

Women diagnosed with GDM have approximately a 40% risk of a recurrence of GDM in a subsequent pregnancy and an increased risk of developing future type 2 diabetes.¹⁴ Regular ongoing surveillance is required.³ Box 3 provides the RACGP criteria for follow-up of patients with a history of GDM.

Box 3. Follow-up of patients with a history of gestational diabetes mellitus

- Conduct a 75 g two-hour oral glucose tolerance test (OGTT) at 6–12 weeks postpartum
- If results are normal, conduct a fasting blood glucose and glycated haemoglobin (HbA1c) test every three years. Screening and diagnostic criteria for type 2 diabetes follow those set out in the section 'Defining and diagnosing type 2 diabetes'
- Women with HbA1c $\geq 6.0\%$ (42 mmol/mol) may require further investigation and advice before another pregnancy occurs
- Women contemplating another pregnancy should have an OGTT annually³

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