In the consultation room

Gestational diabetes

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About this series

The aim of the "In the consultation room" series is to provide readers with brief, practical reviews of key aspects of diabetes care that should be covered in the clinic setting. A brief set of questions at the end allows readers to test their knowledge.

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Authors' introduction

The prevalence of gestational diabetes is increasing, owing to the obesity epidemic and increasing maternal age, and is a significant burden on both primary and secondary services, with 5% of pregnancies affected (World Health Organization, 2005; Inkster et al, 2006). Gestational diabetes is a significant complication of pregnancy which can lead to pre-eclampsia, is associated with an increased rate of caesarean or instrumental deliveries, and may cause neonatal morbidity. It is essential that primary care providers are up to date with current NICE guidance for managing the condition in affected women in order to reduce adverse outcomes (NICE, 2015). Additionally, women with gestational diabetes have a 7% lifetime risk of developing type 2 diabetes, as pregnancy exposes susceptibilities to insulin resistance (Bellamy et al, 2009). Early identification and follow-up can help to modify preventable risks and reduce the longer-term complications.

Gestational diabetes can be broadly defined as "any degree of glucose intolerance with onset or first recognition during pregnancy" (American Diabetes Association, 2014). There is no definitive international consensus regarding glucose levels for diagnosis of gestational diabetes; however, there is a move towards lowered glucose levels after the Hyperglycaemia and Adverse Pregnancy Outcome (HAPO) study showed increased rates of adverse outcomes occurring with only modest hyperglycaemia (HAPO Study Cooperative Research Group et al, 2008). The International Association of Diabetes Pregnancy Study Groups (IADPSG) used these data to recommend standardised diagnostic criteria for gestational diabetes, which resulted in an increase in the prevalence of the condition to 16% of pregnancies (IADPSG Consensus Panel et al, 2010).

NICE (2015) has recently updated its own advice in the guideline titled *Diabetes in pregnancy: management of diabetes and its complications from preconception to the postnatal period* (this is reviewed in detail by Platts and Agarwal [2015]). Diagnosis is now recommended on the basis of a patient having either:

- A fasting plasma glucose level of 5.6 mmol/L or above.

OR

- A 2-hour plasma glucose level of 7.8 mmol/L or above after a 75-g oral glucose tolerance test (OGTT).

People who have one or more of the risk factors presented in *Box 1* should be offered testing at 24–28 weeks' gestation with a 2-hour, 75-g OGTT.

Box 1. Risk factors for gestational diabetes.

- BMI >30 kg/m^2
- Previous macrosomic (large) baby weighing 4.5 kg or above
- Previous gestational diabetes*
- Family history of diabetes (first-degree relative with diabetes)
- Minority ethnic family origin with a high prevalence of diabetes (e.g. South Asian, Black Caribbean or Middle Eastern)
- Urinalyis results as follows:
  - Glycosuria of 2+ or above on one occasion
    OR
  - Glycosuria of 1+ or above on two occasions

*Either early self-monitoring of blood glucose (to start on first booking) OR a 75-g 2-hour oral glucose tolerance test (OGTT) as soon as possible after booking and a further 75g 2-hour OGTT at 24–28 weeks if the results of the first are normal.

Any woman diagnosed with gestational diabetes should be offered a joint diabetes and antenatal clinic within 1 week and the primary care team should be informed.

Management of gestational diabetes

Counselling women for gestational diabetes testing is important to inform them of strict blood glucose monitoring and potential introduction of oral hypoglycaemic or insulin therapies. Additionally, the increased antenatal monitoring may lead to earlier intervention such as caesarean or instrumental delivery.

The mainstay of treatment is blood glucose control and the initial treatment offered is dependent on the fasting glucose level (*Table 1*).

Lifestyle changes

Simple lifestyle changes can control glucose levels, and all women should be referred to a specialist dietitian. Exercise will lower postprandial blood glucose and reduce the need for insulin (NICE, 2015).

If lifestyle changes are not successful in maintaining glucose levels in 1–2 weeks, hypoglycaemic medications should be added.

Metformin

Metformin should be offered primarily to women who have uncontrolled hyperglycaemia, unless contraindicated, as there is no increased benefit of insulin in reducing outcomes such as shoulder dystocia or infants born large for gestational age (NICE, 2015). The modified-release formulation of the drug may be needed if gastrointestinal side effects persist.

Glibenclamide

There are no significant differences between the use of insulin and metformin compared with glibenclamide in the prevention of shoulder dystocia or admission to neonatal intensive care unit. However, there are conflicting results on whether glibenclamide causes an increase in large-for-gestational-age infants when compared with insulin treatment. There are no long-term data for the effects of glibenclamide in pregnancy and, therefore, metformin and insulin are used preferentially (NICE, 2015).

Table 1. Recommended initial treatment for gestational diabetes, depending on the fasting glucose level (NICE, 2015).

Fasting glucose	Initial therapy
<7 mmol/L WITHOUT complications	Lifestyle advice
6.0–6.9 mmol/L WITH complications (e.g. macrosomia or hydramnios)	Insulin ± metformin
≥7 mmol/l	Insulin ± metformin

Insulin

Exogenous insulin is used in conjunction with diet, exercise and metformin, if required, for glucose control. Insulins that are used preferentially are isophane insulin and insulin lispro or aspart, as long-acting and short-acting insulins respectively (NICE, 2015). In addition, women must be made aware of DVLA guidelines, and it is also important to discuss hypoglycaemia.

Blood glucose targets

Women will need to monitor their blood glucose multiple times daily (*Table 2*) and seek medical advice to adjust their management if hyperglycaemia persists.

Aim for blood glucose levels as follows (NICE, 2015):

- Fasting: 5.3 mmol/L.
  AND
  – 1 hour after meals: 7.8 mmol/L.
  OR
  – 2 hour after meals: 6.4 mmol/L.

Table 2. Recommended timings for blood glucose monitoring in women with gestational diabetes.

If the person is on multiple daily insulin injections*	If the person is on diet and exercise OR oral therapy OR single-dose intermediate-acting insulin
Fasting (first thing in the morning)	Fasting (first thing in the morning)
Pre-meals	1-hour post-meals
1-hour post-meals	
Bedtime	

*Advice on when to test may vary from centre to centre, depending on whether diet, oral therapy or insulin is indicated. It is important that both fasting or pre-meal and 1-hour post-meal monitoring takes place because women may have raised fasting and normal postprandial readings – or vice versa.

Questions to test your knowledge

The answers are not necessarily found in this article.

1. Pregnant women should aim to keep their blood glucose <6.4 mmol/L 1-hour after eating.
   True or false?
2. The IADPSG study showed there was an increase in prevalence of gestational diabetes from 7% to 16% under the new diagnostic criteria set for gestational diabetes.
   True or false?
3. Women with gestational diabetes should have an OGTT 6 weeks post-delivery to monitor for ongoing diabetes, according to NICE guidelines.
   True or false?
4. Those with gestational diabetes in a previous pregnancy should have both an OGTT as soon as possible after booking for their next pregnancy and a further OGTT at 24–28 weeks.
   True or false?
5. Babies born to mothers with gestational diabetes must stay in hospital for 24 hours in order to ensure the baby does not have complications in feeding or with maintaining blood glucose levels.
   True or false?

Answers: 1 – false; 2 – true; 3 – false; 4 – false; 5 – true.

Table 3. Post-partum assessment of ongoing risk of diabetes (NICE, 2015).

Test	Ongoing risk of diabetes		
	Low probability of diabetes – continue with diet and lifestyle changes	High risk of type 2 diabetes – offer advice on prevention	Likely to have type 2 diabetes – offer repeat diagnostic test to confirm
Fasting blood glucose at 6–13 weeks post-partum	<6.0 mmol/L	6–6.9 mmol/L	≥7.0 mmol/L
HbA_{1c} test at least 13 weeks post-partum	<39 mmol/mol	39–47 mmol/mol	≥48 mmol/mol

Delivery and post-partum

At 36 weeks, women with gestational diabetes will attend an obstetric antenatal clinic to discuss the timing, mode and management of birth, including the analgesia and management of blood glucose during labour. Labour should take place no later than 40 weeks' gestation. A sudden drop in insulin requirements may suggest placental failure, necessitating closer monitoring of the baby and earlier delivery.

Babies of mothers with diabetes will need to have their blood glucose tested at 2–4 hours post-delivery to ensure they are not hypoglycaemic. Some may need extra monitoring in special care if they are exhibiting signs of hyperinsulinaemia, resulting in low blood glucose, or if additional help with feeding or treatment for jaundice is required. All babies will be monitored for 24 hours prior to being discharged to the community to allow for stabilisation of blood glucose and monitoring of feeding.

Women with gestational diabetes should discontinue their blood glucose-lowering therapy immediately after birth as they are at risk of hypoglycaemia at this time.

Ongoing community care

Women with gestational diabetes have a 7% lifetime risk of type 2 diabetes, and, therefore, follow-up is essential to provide ongoing risk factor modification. At 6–13 weeks post-partum, fasting plasma glucose should be offered to exclude diabetes; after this, HbA_{1c} testing should be done yearly to test for emerging type 2 diabetes (*Table 3*). ■

Authors' conclusion

Gestational diabetes is increasing alongside obesity and maternal age; however, a lowered threshold for diagnosis from NICE guidance has caused an overnight increase in prevalence of gestational diabetes. It is vital for community teams to be educated and involved in management of gestational diabetes to aid secondary care services. The long-term annual follow-up of this cumulative group of patients with gestational diabetes will be difficult to monitor yearly, as previously shown by McGovern et al (2014), and, ideally, patient-led monitoring may be more practical.

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