

# fact file 23

## Gestational diabetes

Gestational diabetes can have important implications for the health of a woman and her child, both during and after pregnancy. **Douglas Twenefour**, Clinical Advisor at Diabetes UK, summarises the most recent clinical guidelines for management of the condition

Gestational diabetes (GDM) is diabetes that is first recognised during pregnancy in women who have no previous history of the condition. It happens when increased levels of reproductive hormones contribute to insulin resistance and limit the woman's ability to produce enough insulin to compensate for this resistance<sup>1</sup>. The end result is a state of hyperglycaemia which requires careful management in order to reduce the risk of possible complications to mother and baby.

Risk factors for GDM are similar to those for Type 2 diabetes, and include:

- obesity
- history of macrosomic baby (defined as birth weight of 4.5kg or above)
- previous GDM
- close family history of diabetes
- ethnic background with high prevalence of diabetes, eg South Asian, Black African and African Caribbean, or Middle Eastern.

Some studies have also shown that risk of GDM is also linked to socioeconomic status, with women on lower incomes having more than twice the risk of developing the condition<sup>2</sup>.

### NICE guidance and diagnosis

The current National Institute for Care and Health Excellence (NICE) guidance<sup>3</sup> recommends that any pregnant woman without existing diabetes, who has any of the above risk factors, should be tested for gestational diabetes. Risk assessment should be done at booking, ideally by 10 weeks.

Women should be informed of the implications of risk assessment and testing. These include the fact that diagnosis may lead to taking medications, as well as increased monitoring and interventions during pregnancy and labour. They should also be informed of the possible risk of complications associated with undetected and undiagnosed GDM, such as shoulder dystonia. Hopefully, this conversation will help empower the woman to make an informed decision about screening and testing.

Testing for GDM involves a 75g 2-hour oral glucose tolerance test (OGTT) and this should be offered at 24–28 weeks. However, women with a previous history of gestational diabetes should be offered early self-monitoring of glucose or an OGTT as soon as possible after booking, and a repeat of the OGTT at 24–28 weeks if the results of the first OGTT are normal.

Diagnosis of gestational diabetes is confirmed if:

- fasting plasma glucose is 5.6mmol/l or above OR
- 2-hour plasma glucose level is 7.8mmol/l or above.

Once diagnosed, all women with GDM should be offered a review with a joint diabetes and antenatal clinic within one week. HbA1c should be measured to identify those who are at risk of developing Type 2 diabetes. There should also be a discussion about changes to diet and physical activity levels. All women should also be referred to a dietitian.

### Treatment options

All women diagnosed with GDM should be provided with testing kits for self-monitoring. It is important to explain that, in some cases, GDM will respond to dietary changes and physical activity, but the majority of women will require medication to manage the condition. The offer of medication should be based on the individual patient, taking into account her personal preference and blood glucose profile.

Dietary advice usually focuses on carbohydrate awareness since carbohydrates are the main nutrient with a direct impact on glycaemic control<sup>4</sup>. This discussion may involve:

- reducing portion sizes
- choosing better options, such as fruit and vegetables, pulses and wholegrains, which have a lower glycaemic index
- spreading intake throughout the day.

Weight loss during pregnancy is not recommended, as it may not be safe for foetal development. There is a risk that restrictive dieting may lead to raised maternal blood ketone levels, which can affect the neurocognitive development of the foetus<sup>5</sup>. The priority for women who had a high body mass index before pregnancy is to avoid excessive weight gain during pregnancy. However, this can be difficult in practice, as there is currently no clear national guidance on the recommended weight gain during pregnancy. However, a healthy, balanced diet with portion control and regular physical activity can help prevent excessive weight gain.

### Medications

For women whose fasting glucose is below 7mmol/l at diagnosis, offer a trial of dietary and lifestyle changes, if they do not have any complications. Review after 1–2 weeks and offer medication if levels are above target. Metformin\* is the first medication to be considered. Offer insulin where metformin is contraindicated or unacceptable. For those women who do use metformin, offer insulin in addition, if blood glucose targets are not met.

For women whose fasting blood glucose is between 6 and 6.9mmol/l at diagnosis and who have complications such as macrosomia or hydramnios, consider immediate

insulin, with or without metformin, as well as changes to diet and physical activity. For women whose fasting blood glucose is 7mmol/l or above at diagnosis, offer immediate insulin, with or without metformin, as well as changes to diet and physical activity.

Finally, glibenclamide\* should be considered for women with GDM who either do not tolerate metformin or are not able to meet blood glucose targets with metformin, but decline insulin.

### Treatment targets

Treatment targets for women with GDM are the same as they are for women with pre-existing diabetes. The recommendation is for pregnant women with diabetes to test fasting blood glucose levels and at either 1 hour or 2 hours postprandial. Women should aim to maintain the following:

- fasting – 5.3mmol/l and either
- 1 hour after meals – 7.8mmol/l OR
- 2 hours after meals – 6.4mmol/l.

Women should be supported to achieve and maintain individualised targets, taking into account the risk of hypoglycaemia. For those using insulin or glibenclamide, blood glucose levels should be maintained above 4mmol/l. Women should be informed that achieving good glycaemic control reduces the risk of:

- foetal macrosomia
- trauma during birth
- induction of labour and/or caesarean section
- neonatal hypoglycaemia
- perinatal death.

### Labour, delivery and after

The effects of GDM persist beyond pregnancy. For example, women who have had the condition have a seven times higher risk of developing Type 2 diabetes later in life<sup>6</sup>. They are also at increased risk of developing GDM in subsequent pregnancies. There is also a risk of children born to GDM mothers being overweight/obese, having raised fasting glucose levels, as well as an increased risk of developing Type 2 diabetes later in life<sup>7</sup>.

It is important to discuss timing, and mode, of birth with women, especially during the third trimester. Having GDM should not, in itself, preclude attempting vaginal birth. However, women should give birth not later than 40<sup>+6</sup> weeks. For those who do not give birth by this time, consider elective birth by induction of labour or caesarean, if appropriate. For women with complications, such as ultrasound-diagnosed macrosomic foetus, elective birth should be considered even before 40<sup>+6</sup> weeks.

Tight maternal glycaemic control is extremely important during labour and delivery. Capillary blood glucose should be kept between 4 and 7mmol/l, with the use of intravenous dextrose and insulin infusion if this becomes difficult to maintain. To prevent neonatal hypoglycaemia, babies should be fed as soon as possible and certainly

within 30 minutes after birth. Blood glucose levels should be checked every 2–3 hours and a protocol should be in place for treatment of hypoglycaemia. Babies who experience a hypo should be treated with intravenous dextrose as soon as possible. Mother and baby should be closely monitored and only transferred to the community after 24 hours.

Women who have been diagnosed with GDM should discontinue all blood glucose-lowering medications immediately after birth. Their blood glucose level should be checked before they leave hospital to ensure that hyperglycaemia has not persisted postpartum. As these women are at risk of GDM in future pregnancies, and Type 2 diabetes in later life, it is important to encourage them to manage their weight and adopt a healthy lifestyle in order to reduce their risk. Arrangements should be made for fasting blood glucose testing 6–13 weeks after birth, and an annual HbA1c for those who have normal results.

All women should be aware of the symptoms of diabetes so that they can take a proactive step to request testing if they experience any symptoms. This will help with early diagnosis, which is important for diabetes management to reduce risk of associated complications.

**[i] The Diabetes UK guide *Gestational Diabetes* is out now. Copies are available from [www.diabetes.org.uk](http://www.diabetes.org.uk)**

### References

- 1 Metzger BE, Buchanan TA, Coustan DR et al (2007). Summary and recommendations of the Fifth International Workshop-Conference on Gestational Diabetes Mellitus. *Diabetes Care* 30 (S2); S251–260
- 2 Sampson L et al (2014). The association between socio-demographic marginalization and plasma glucose levels at diagnosis of gestational diabetes. *Diabetic Medicine* 31 (12); 1563–1567
- 3 NICE Guidelines NG3 (2015). Diabetes in pregnancy: management of diabetes and its complications from preconception to the postnatal period
- 4 Diabetes UK (2011). Evidence-based nutritional guidelines
- 5 NICE Public Health Guidance PH27 (2010). Weight management before, during and after pregnancy
- 6 Kim, C (2014). Maternal outcomes and follow-up after gestational diabetes mellitus. *Diabetic Medicine* 31 (3); 292–301
- 7 Fraser, A and Lawlor, DA (2014). Long-term health outcomes in offspring born to women with diabetes in pregnancy. *Current Diabetes Reports* 14 (5); 489

\*It is important to explain that, although metformin is commonly used in UK clinical practice in the management of diabetes in pregnancy and lactation, and there is strong evidence for its effectiveness and safety, metformin does not have a UK marketing authorisation for this indication. Also, glibenclamide is contraindicated for use up to gestational week 11 and does not have UK marketing authorisation for use during the second and third trimesters of pregnancy in women with GDM. The patient information leaflet also states that metformin and glibenclamide should not be used during pregnancy. As the prescriber, it is important to follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented.