The Dudley Group
NHS Foundation Trust

A guide to gestational diabetes mellitus (GDM)

Maternity Department

Patient Information Leaflet

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Introduction

If you have recently been for a glucose tolerance test (GTT) and have been told you now have gestational diabetes mellitus (GDM), firstly, do not worry. We have a specialist team of diabetes and obstetric consultants, diabetes nurses, dieticians and a team of midwives dedicated in supporting women with diabetes throughout their pregnancy, birth and postnatal period. This means you will see a health professional regularly, so please do not hesitate to approach us with any questions or concerns you may have.

I have been diagnosed with GDM - what is it?

You may have been referred for the test to detect GDM because it is more likely to occur when:

- There is a close family history of diabetes (if your mother, father, siblings or other children have diabetes).
- Your midwife in clinic has noted there is persistent glucose in your urine sample.
- Women originate anywhere in the world outside of Europe.
- Women have had GDM before.
- Women have more water around their baby than normal.
- Your body mass index (BMI) is 30 or above.
- Women have previously had a baby with a birthweight of 4.5kgs or more, or if your baby in your current pregnancy is plotting above the 90th centile on your individualised growth chart after a scan of your baby.

Very rarely, it may be that you had diabetes before you became pregnant; meaning you have either type 1 or type 2 diabetes, but this may only have been detected during pregnancy.

GDM is a form of diabetes that presents during pregnancy, usually going away after your baby is born. This means that the levels of sugar (glucose) in your blood are too high.

A hormone called insulin, which is naturally produced by your body usually helps to lower this glucose level within the blood. However, with GDM, your body's own insulin may not be enough or you become more resistant to it, so your body is less able to control your high blood glucose levels.

Are there any risks to me and my baby?

Whilst being told you have diabetes can be an anxious time for you and your family, please be aware that with a healthy, balanced diet, light exercise, attendance of all clinic appointments and good control of your blood glucose levels, most women and babies remain healthy.

However, having gestational diabetes does require more medical intervention to minimise the risks to yourself and your baby. Therefore, you may be offered an induction of labour or elective caesarean section around your due date. This is dependent on numerous factors, including your baby's predicted birth weight, whether any previous children were born via caesarean section or vaginal delivery; along with balanced, individualised medical advice between both your diabetes and obstetric team.

Some of the risks to you and your baby can include:

- Premature birth (less than 37 weeks of pregnancy).
- Greater risk of developing gestational diabetes in future pregnancies.
- Greater risk of you developing type 2 diabetes later in life.
- Your baby may have unstable blood glucose levels for a while after birth (we monitor these on every baby and ensure they are stable before discharging you and your baby home).
- Your baby could be born either larger or smaller than expected.

Will my pregnancy experience be any different?

As a pregnant woman with GDM, you will be considered at greater risk and will be regularly invited to a joint clinic run by diabetes and obstetric doctors to look at the whole picture from both a diabetes and pregnancy point of view.

During these appointments, doctors will look at your pregnancy generally and the growth of your baby, alongside your blood glucose levels (which you will write down in a diary given to you at your initial appointment). This appointment is to determine when you require any further scans for your baby, further appointments in the hospital or further medication to control your blood glucose levels.

How do I treat my gestational diabetes?

Once you have been diagnosed with gestational diabetes, you will be invited to a clinic appointment with specialist diabetes nurses and dieticians to discuss helpful changes to your diet and activity levels, in order to help you control your blood glucose levels.

You will also be taught how to monitor your blood glucose levels at home and be provided with a diary to record your blood glucose readings, a blood glucose meter and test strips; which you should carry with you at all times and use as instructed.

There are four ways in which gestational diabetes can be controlled:

Diet controlled: whereby positive changes to your diet and the introduction of light, regular exercise can be enough to control your blood glucose levels within the target range.

Metformin: if your blood glucose remains above your target range after changes to your diet, you may be given a tablet called metformin to take at certain mealtimes, which can further help to control your blood glucose levels alongside your diet.

Insulin: if, with both the above two measures, your blood glucose remains outside the target range, then you may be advised to start insulin either on its own or alongside metformin.

If you require insulin to control your diabetes, again, do not worry. You will be taught how to store and safely inject your insulin at home.

There are two types of insulin that we can use - 'short-acting' insulin and 'long-acting' insulin. You may require one or both of these.

'Short-acting' insulin is given at some or all mealtimes. 'Long-acting' insulin helps to control your blood glucose over a longer period of time, and therefore may only be given before bed, for example.

I am packing my hospital bag, what do I need?

Top tip: when you are packing your bag, it may be useful to use the checklist below so you know you have everything you need.

Generally, for anyone with GDM, you will remain in hospital for at least 24 hours after your baby is born. This is to ensure that both you and your baby are well, and that both of your blood glucose levels are stable. Therefore, it is important to bring along:

- Any pregnancy notes ☐
- Your blood glucose meter and test strips ☐
- Any medication you are currently taking (whether this is diabetes related or not) ☐
- Toiletries eg towel, toothbrush, toothpaste, body wash, shampoo, deodorant etc ☐
- Any expressed breast milk you have at home (see the 'Information on feeding your baby for pregnant women with diabetes' leaflet for further information) ☐
- Ready-made milk with teats for your baby, if bottle-feeding (starter packs are very popular and allow for easy and immediate access to milk when your baby is hungry) ☐
- Several items of nightwear for yourself ☐

- Comfortable underwear ☐
- Slippers ☐
- Maternity pads ☐
- Any healthy snacks for before or after birth ☐
- Magazines/ books/ iPad (if desired) ☐
- Comfortable ‘going-home’ clothes ☐
- Nappies ☐
- Cotton wool ☐
- Hats for baby ☐
- Mittens ☐
- Several baby vests ☐
- Several baby grows ☐
- A baby cardigan ☐
- Two baby blankets ☐
- A car seat that can be detached from the mount fixed in your car and brought up to the ward ☐

If you are planning to have a vaginal delivery, when you are in active labour you may choose two people to stay and support you throughout your labour and delivery. This can be subject to change so please ask the midwife who is looking after you for the current visiting times and information on birth attendants. In these cases, it may be useful to ensure that they have a little bag with some of their essentials, such as:

- A spare change of clothes ☐
- Slippers ☐
- Snacks ☐
- Books/ magazines/ iPad (if desired) ☐
- Change for parking ☐

I am booked to have an elective caesarean section

Women who are booked for an elective caesarean section to deliver their baby and are treated with insulin may be invited into hospital the **night before** their planned caesarean section date.

It will depend on the amount of insulin you are being treated with. If you are treated with diet and/or metformin or smaller amounts of insulin, you will attend at 7.30am on the morning of your caesarean section.

Upon being admitted to the ward, the midwife looking after you will complete:

- Your observations (blood pressure, pulse, temperature, oxygen saturations, respiration rate and a carbon monoxide reading).
- A monitoring of baby's heart rate for 40 minutes.
- A urine sample test.
- An insertion of a cannula to allow for a drip (if needed) before surgery.
- A blood test to look at your iron levels, your blood glucose levels, your blood potassium levels, maintaining a store of blood in your individual blood group (in case needed during surgery), and to look at your liver and kidney function before surgery.
- A blood glucose reading.
- Four hourly observations, along with a listen to your baby's heart rate overnight (if admitted to hospital the night before surgery).

If you were admitted the night before, from 6am on the morning of your surgery the midwife looking after you will start taking a blood glucose reading every hour to ensure your levels remain within the target range of **4.0mmols/L - 7.8mmols/L**.

If you are admitted on the morning of your caesarean section, you will have your blood glucose checked when admitted, and then hourly until you have your baby.

If you were admitted the night before, your midwife will start an insulin drip through your cannula at 6am (a variable rate insulin infusion – see separate section below). This is to help control your blood glucose levels before and during surgery.

However, even if you do not usually take insulin to control your blood glucose levels, this drip may also be needed in cases where your blood sugar is persistently outside of the normal target range.

Starting this drip to control your blood glucose levels is necessary to help you and your baby remain stable throughout the surgery. This drip will be stopped after surgery.

I am booked to have an induction of labour

The date for your induction of labour will usually be discussed with you at about 36 weeks of pregnancy. The date offered will be when you are around 38-40 weeks pregnant.

On the day of your booked induction of labour, you should call the delivery suite at 10am on:

01384 456111 ext. 3430

Please speak to the lead midwife who will give you a time to attend the unit to be admitted for your induction of labour. Your birthing partner can be with you from 9am until 10pm, but if your labour has not started, we recommend they go home to return the next day or sooner if it is necessary.

Upon being admitted to the delivery suite to start your induction of labour, the midwife looking after you will:

- Monitor your observations (blood pressure, pulse, temperature, oxygen saturations, respiratory rate and carbon monoxide reading).

- Undertake a monitoring of your baby's heart rate.
- Test a sample of your urine.
- Insert a cannula for any drips you may need for your labour, e.g. a variable rate intravenous insulin (VRII) in active labour (if needed), or if you become dehydrated and need fluids through your drip.
- Take bloods to observe your iron level, blood glucose level, blood potassium level and liver and kidney function, as well as to keep a store of blood in your individual blood group in case you need blood in an emergency.
- Ask to take a random blood glucose reading, and then continue with pre-meal, post-meal and pre-bed glucose readings until active labour starts.
- Monitor your observations every four hours, along with a listen-in to your baby's heart rate.

During this time and until active labour starts, you should continue your regular medications, including any insulin you may be on.

When the lead midwife has given the go-ahead to start your induction of labour (this can sometimes be in the middle of the night, when it is considered safest to start your induction), then the midwife looking after you will:

- Complete another monitoring of your baby's heart rate.
- Offer you a vaginal examination to determine how far dilated your cervix is.

The method of inducing your labour will depend of several factors. Below are some examples, but in some cases, you may be offered induction of labour using Dilipan. This will be discussed during the antenatal period.

If your cervix is dilated, anterior and thin:	If your cervix is closed/ posterior and thick:
-The midwife may break your waters artificially. -The monitoring of your baby's heart rate will continue. -You will usually be given some time to see if your body can produce contractions naturally (a doctor will make an individualised plan). -After two to four hours (or sooner if this is part of your individualised plan), if there are no contractions or your cervix has not dilated any more, you may be given a drip to artificially enhance your contractions.	-The midwife will insert a drug called a Propess into the vagina (or a drug called Prostin gel if you have had surgery on your uterus before, or if this is your fifth baby or more). -These drugs are designed to soften your cervix, bring it forward, thin, and dilate it enough so that your waters may then be broken artificially (please note, this can take up to 32 hours). -The monitoring of your baby's heart rate will continue for a further forty minutes after the drug is inserted. -The Propess will remain in place for 24 hours, and then you will be offered another vaginal examination after this time. This is to assess if your cervix is dilated enough to break your waters. If not, you may be offered some Prostin gel. -If you were given the Prostin gel, you will be offered a vaginal examination again after six hours to assess its effectiveness; whereby a further gel may then be offered to help induce your labour. A third gel can then be used after 24 hours, after discussing with the consultant on call, if your waters cannot be broken after the first two Prostin gels.

Top tip: spend time considering your pain relief options before coming to hospital – we have numerous options available both before and during active labour. Before active labour starts, we recommend Paracetamol, Codeine or a dose of Pethidine as the most appropriate forms of pain relief for these early stages. When active labour starts however, we then have other forms of pain relief, including Entonox (gas and air), further Pethidine or an Epidural.

Active labour

When in active labour (when the cervix is 4cm dilated and you are experiencing strong, regular contractions):

- Your baby will be continuously monitored to ensure your baby's heart rate remains stable.
- You will be advised to drink clear fluids (such as water) and to not eat large meals.
- The midwife looking after you will check your blood glucose levels every hour to ensure they remain stable.
- You may have a drip started called a 'variable rate insulin infusion' (see separate section below) – this is designed to stabilise your blood glucose levels, particularly as your body will be using a lot of energy during labour and you will not be eating and drinking as much as usual.

Hint: this drip will be started on some women who use insulin to control their diabetes at the beginning of active labour. However, it may also be needed for women who control their diabetes with diet and/or metformin, if their blood glucose levels become unstable.

What is a variable rate insulin infusion (VRII)?

As mentioned, VRII may be needed if you are having a caesarean section or a vaginal birth. It may also be needed for some women who control their diabetes with insulin, and in some cases, those that do not.

A variable rate insulin infusion (also known as ‘sliding scale’) is a continuous drip that is delivered into the blood circulation via a cannula. It is made up of one part insulin, and another part fluid containing potassium chloride mixed with either dextrose (a form of sugar), or sodium chloride (salt), dependant on how high your blood glucose is. If your blood glucose reading is <10mmols/L, the fluid will contain dextrose.

Hint: during the time that this drip is in place, you should not inject any short-acting insulin you may be on. However, any long-acting insulin may be continued as normal.

The VRII is designed to stabilise your blood glucose levels in cases where your body may be using a lot of energy (for example, in labour), or because you are not taking your current medications that you usually use to control your blood glucose (for example, in cases of surgery).

The midwife looking after you will ask to take a blood glucose reading from you every hour. This is to ensure that your levels are stable and to help adjust the rate of the scale as needed, to ensure your blood glucose levels remain within the optimum levels of between **4.0mmols/L and 7.8mmols/L.**

If a VRII is started for you, then the midwife will also ask to take a blood sample every twelve hours. This is to check your blood potassium levels, to ensure they are not getting too low or high, in which case a different concentration of the fluid may be needed within the VRII.

When will the VRII be stopped?

When your baby is delivered.

Top tip: it is a good idea, regardless of how your baby was born, to try to eat and drink something after birth. This will help to build your energy stores back up and stabilise your blood glucose levels after birth.

Tea and toast will always be offered post-birth to any new mums who wish to have some.

What happens to me after my baby is born?

After delivery, all medications used to control your blood glucose in pregnancy are stopped. However, it is important to ensure your blood glucose levels remain stable for a minimum of twelve hours post-birth, and before you are discharged home. We do this by asking to check your blood glucose level before meals and before bed.

After this, if your blood glucose levels remain stable, we will then stop checking them and you will receive a follow-up appointment (usually arranged in pregnancy) for a repeat blood test in around six weeks' time. This is a fasting blood glucose test, meaning you should not eat after 10pm the night before the blood test.

In some rare cases, it can take a little longer to fully stabilise your blood glucose levels, but do not worry, because we can involve the specialist diabetes nurses and doctors in these cases to review your individual blood glucose readings and create a plan for you.

What happens to my baby after birth?

After birth, it is important to make sure your baby's blood glucose levels are stable before being discharged home, along with their other observations, including general colour, heart rate, temperature and respiratory rate.

We do this by monitoring your baby for a total of 24 hours. These observations are designed to regularly measure your baby's wellbeing and can promptly and easily alert us if there are any issues which need a paediatrician's input. We also ask to measure your baby's blood glucose levels from the heel of their foot:

- We normally measure your baby's blood glucose level at around two to four hours before their second feed and again before their third feed.

- **A normal blood glucose level for a newborn baby is usually 2.0 mmols/L or above.**

This means that your baby should have both of their blood glucose readings at or above this level. If not, we will need to monitor your baby more often to ensure your baby is safe and able to stabilise their own blood glucose levels before going home.

However, do not panic, as there can be numerous, correctable, reasons why your baby may have a low blood glucose level, for example:

- If your baby is cold, this means they may be using their energy stores to keep warm, so their blood glucose levels may drop.
- Your baby has not fed, meaning their intake of milk has not been sufficient to maintain a normal glucose reading.
- Your baby may have needed a little extra help after delivery with their breathing and regulating their heart rate, which can reduce their blood glucose levels.
- If your baby is pre-term.

Top Tips:

1. In order to for you to help your baby, it is important to ensure you have plenty of clothes, a hat, blankets and a cardigan for your baby to make sure they keep warm.
2. Skin-to-skin can also be particularly good for your baby to enhance their temperature and reduce the risk of a low blood glucose reading.
3. If you are bottle-feeding your baby, it can be handy to bring a pack of the ready-made bottles for ease whilst in hospital, whereby your baby could be offered a feed soon after birth, to increase their glucose stores before the first level is measured.

4. If you are breast-feeding your baby, it can be useful to start expressing any colostrum you may have from 36 weeks of pregnancy, labelling this with the date you expressed and placing it in your freezer. **This can then be used for up to six months.** Bring this into hospital when you are admitted, and we can use this to help to feed your baby soon after delivery, or if you feel you are having trouble latching your baby to the breast.

Please speak to your community midwife or a midwife at the hospital if you would like any information about expressing breast milk in pregnancy.

If these blood glucose readings and observations are all stable after 24 hours, then your baby will have the hearing screen and the full top-to-toe examination before being considered fit for discharge home.

Important contacts

It is completely normal to feel a little overwhelmed if reading this guide in one sitting. We instead advise you to keep it with you during your pregnancy, and refer to it as much as you need; to help direct you through your journey into meeting your new baby. However, if you do have any questions, please do not hesitate to approach your community midwife, the clinic midwives or the diabetes antenatal team.

Alternatively, if there are any further pressing matters, or if you have any worries/ concerns, for example:

- You have any general problems/concerns
- You have not felt your baby move as normal
- You think your waters may have broken
- You are bleeding
- You are experiencing abdominal pain

Then please call triage immediately on 01384456111 ext. 3053.

We really hope this guide is useful in guiding you through what to expect during your pregnancy with gestational diabetes.

If you have any questions, or if there is anything you do not understand about this leaflet, please contact:

The antenatal clinic on 01384 244312 (9am to 5pm, Monday to Friday) or your community midwife.

Russells Hall Hospital switchboard number: 01384 456111

This leaflet can be downloaded or printed from:
http://www.dgft.nhs.uk/services-and-wards/maternity/

If you have any feedback on this patient information leaflet, please email dgft.patient.information@nhs.net

This leaflet can be made available in large print, audio version and in other languages, please call 0800 073 0510.

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Aceasta brosura poate fi pusa la dispozitie tiparita cu caractere mari, versiune audio sau in alte limbi, pentru acest lucru va rugam sunati la 0800 073 0510.

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Originator: Amy Brookes. Reviewed by: Emma Paul. Date reviewed: December 2022. Next review due: September 2025. Version: 2. DGH ref: DGH/PIL/02081.