Maternity Unit
Frimley Park & Wexham Park Hospitals

NHS
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Managing your diabetes in pregnancy Type 1 & Type 2

Information for women, relatives and carers

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Your health care team during your pregnancy

You will be cared for by a team that has specialist knowledge and experience of diabetes in pregnancy.

The team includes:

- A diabetologist
- An obstetrician
- A diabetes specialist nurse
- A diabetes specialist midwife
- A dietitian

Most of your visits will be at the hospital diabetic antenatal clinic to coordinate the medical and obstetric advice during your pregnancy; however it is advisable to stay in contact with your community midwifery team and GP.

Why is tight control of your blood glucose important?

Blood glucose control is crucial not only to your health but to the health of your unborn baby.

Women with diabetes are more likely to miscarry or have a baby with problems such as spina bifida and heart abnormalities. During the first six to eight weeks of your pregnancy when your baby's heart, lungs, kidneys and brain are being formed, good control reduces the chance of birth defects and miscarriages.

You should take folic acid 5mg each day up to 12weeks to reduce the risk of spina bifida, which you can get on prescription from your GP.

Later in pregnancy if your blood glucose levels are high, the glucose will be transferred across the placenta to your baby. To cope with the raised blood glucose level your baby will make more insulin. This increased insulin will promote growth and will convert the extra glucose to stored fat, making your baby larger than normal (macrosomia). The other way your baby copes with high blood glucose levels is to pass more urine, which makes extra fluid around the baby (polyhydramnios). Good glucose control with diet, and insulin if required, will help prevent this.

It is very uncommon for a baby to die in the womb during pregnancy but it is more likely in women with diabetes. Good diabetes care/glucose control will reduce this risk as much as possible.

Possible risks to your health

- **Eyes**

Pregnancy can place extra pressure on the small vessels in your eyes causing damage to the eye. To detect any problems you need to have your eyes checked, around 11 weeks, and 28 weeks. If you already have diabetic retinopathy (eye disease) before your pregnancy you must see your ophthalmologist regularly (at least every 3 months) as you may need treatment during pregnancy.

- **Kidneys**

Your kidney function will be checked at the beginning of you pregnancy to check for protein leakage from your kidneys (nephropathy). If you have diabetic nephropathy before pregnancy, the extra physical demands of pregnancy could worsen the condition. A urine test called an albumin creatinine ratio (ACR) will be done at each trimester to monitor any changes in your kidneys.
It is important to have normal blood pressure as raised blood pressure can cause deterioration in kidney function. You may require medication to control this. If you take medication for your blood pressure before pregnancy this may need to be changed to tablets that we know are safe in pregnancy.

- **Pre-eclampsia**

This is when you may have high blood pressure, protein in your urine and/or abnormal blood results; it is screened for at every antenatal visit. This condition may harm you and your baby and needs to be closely monitored. You may need to be admitted to the ante-natal ward for observations.
The risk of pre-eclampsia increases if you have poor diabetic control or diabetic nephropathy. You may be treated with aspirin to help prevent this problem.

How to achieve tight control of your blood glucose

During your pregnancy your goal is to keep your blood glucose within given targets. This means keeping your blood glucose as close to normal as possible.
The diabetic team can help you achieve this by:

- Changing your diet
- Frequently monitoring your blood glucose levels
- Using different types of insulin
- Adjusting your insulin dosage based on blood glucose levels, diet and activity

Target blood glucose levels

Before a meal	3.5- 5.3 mmol/l
1 hour after meals	5.5- 7.8 mmol/l
2 hours after meals	below 6.4mmol/L

Individualised glucose targets will be set to avoid hypoglycaemia as discussed with your team.

Metformin

Metformin is a tablet which helps regulate blood glucose levels by allowing the insulin produced by the body to work more effectively. It improves insulin resistance and does not cause low blood sugars. It is helpful if blood sugars are high after a meal but may not be useful for those with fasting high readings. It is started at a small dose and slowly increased depending on blood sugar readings. Sometimes it can cause side-effects such as bloating, nausea or flatulence. If this is a problem then please let your diabetes team know.
Although not licenced in pregnancy, it is safe to use, effective and recommended by NICE (National) guidelines.

Insulin therapy

Women with type 2 diabetes may need to take insulin as well as oral medication to manage blood glucose before and during your pregnancy. It is recommended you switch to insulin as the safety of some oral diabetic medication except metformin, for pregnant women and unborn babies is unknown and intensive insulin therapy can give you better control of your blood glucose levels.

You may require an insulin injection with each meal (short acting insulin) to keep your 1 hour post meal glucose below 7.8 mmol/l or 2 hours below 6.4mmol/L and long acting insulin at bedtime to ensure your pre breakfast glucose is below 5.3 mmol/l. You will be guided by the specialist team.

Women with type 1 diabetes will probably require insulin injections at least 4 times a day.

What to watch out for:

- **Hypoglycaemia**

Good blood glucose control can improve your chances of having a healthy pregnancy but tight control also puts you at risk of low blood glucose or hypoglycaemia (hypo).

Blood glucose below 4 mmol/l is a hypo in pregnancy.

The first 12 weeks of pregnancy, is the most likely time for women with diabetes to have hypos. Your warning signs of a hypo may decrease during pregnancy, when this occurs hypos can become more severe. It is vital to keep some type of fast acting glucose with you at all times.

If your blood glucose is below 3.5mmol/l you may need 15-20 grams of fast acting sugar e.g. 3 dextrose sweets, 3-6 jelly babies or 200mls of Lucozade containing 20g of fast acting carbohydrate.

Once you have eaten the fast acting sugar you should recheck your blood glucose in 10-15minutes. If it is still low, have some faster acting sugar every 10-15 minutes until blood glucose returns to normal. If you are not due a meal within an hour you should then eat a slow release carbohydrate e.g. digestive biscuit, piece of fruit.

Some women develop hypoglycaemic unawareness in pregnancy. This means that you don't feel hypo when your blood glucose is 3 or below. This can be dangerous as your blood glucose can fall even lower without you noticing, sometimes this can even cause you to pass out. Please inform your diabetes team urgently if this starts to happen.
We can help you to get your symptoms of hypos back. It is a good idea to keep an injection of glucagon at home to be given to treat a severe hypo. Instructions on how to use this can be given to your next of kin by

the Diabetes Specialist Nurse. You may find it beneficial to inform people you have regular contact with about hypos and how to treat them. Frequent hypoglycaemia is unlikely to harm your baby.

- **Driving and Hypoglycaemia**

You should check your blood glucose level before driving. It should be 5 mmol/l or above before you drive. On a long journey you should not drive if you are having hypos.

Your ability to recognise and treat hypoglycaemia may affect your ability to drive safely.

By law, you must inform the DVLA if you have suffered from more than one episode of significant hypoglycaemia (needing help from another person) within the last 12 months.

- **Hyperglycaemia**

High blood glucose will occur if your body does not have enough insulin. This may happen if you:

- Eat more or have a “treat”
- Do less exercise than planned
- Are stressed
- During illness

From approximately 12 weeks of pregnancy to around 36 weeks your body becomes more insulin resistant so unless you make adjustments, your blood glucose will probably increase.

If your blood glucose is too high you need to increase your regular insulin doses. You can also correct unexpected high blood glucose by taking an extra dose of your fast acting insulin. You will be shown how to do this by the diabetes specialist nurse/midwife.

- **Diabetic Ketoacidosis**

Diabetic Ketoacidosis happens when your body doesn’t have enough insulin to transport glucose to the cells of the body for energy. If this happens the body has to use fat instead of glucose. When fat is broken down to give energy, acidic chemicals called ketones are also produced. High levels of ketones alter the chemistry of your body and

endanger your health and that of your baby. It can occur more easily in pregnancy.
It is preventable and all pregnant women with type 1 and type 2 diabetes should test their urine or blood for ketones if:

- Blood glucose is above 12 mmol/l
- If you are ill for any reason
- You are vomiting for any reason

If you have 2+ ketones or more in your urine and blood ketones of more than 1.5 mmol/l you should come into hospital to be checked.

Diet

You will be given advice about your diet to achieve optimal nutrition for you and your baby. This will help you eat enough to gain a healthy amount of weight during your pregnancy whilst maintaining good control of your blood glucose.

The principles of the healthy diet for diabetes don't change in pregnancy.

It is recommended that alcohol is avoided completely during pregnancy.

Exercise

Regular exercise can help blood glucose control and general good health during pregnancy.
Before you start any new exercise program you should talk to your healthcare team.

Tests performed during pregnancy

- **HbA1c**

You will have a glycosylated haemoglobin (HbA1c) blood test each trimester. This will show your overall blood glucose control over the previous 6 weeks. This level should be < 48 for women with type 1 or type 2 diabetes or as near as possible to avoid hypoglycaemia.

- **Ultrasound**

At approximately 7 weeks you will have a dating ultrasound scan to determine how many weeks pregnant you are, your due date will be confirmed at your 12 week ultrasound scan.
Between 12 – 13 weeks you will be offered the combined screening test – this involves an ultrasound scan and a blood test. Together these results calculate the risk of the unborn baby having Down's Syndrome, Edwards Syndrome and Pataus Syndrome.
Between 20 – 22 weeks you will be offered a detailed anomaly scan – this scan will examine the baby carefully and check for any abnormalities.
From 28 weeks you will be offered monthly scans to monitor your baby's growth and the amount of water around the baby. If there are concerns over the baby's growth then these will be repeated every fortnight.

- **CTG**

You may be asked to have a fetal heart monitoring of your baby using a cardiotocograph (CTG). This will be done in the Day Assessment unit. This may be needed if, for example, the baby's movements are reduced.

When will my baby be born?

Women with type 1 and type 2 diabetes usually have their baby between 37 and 38+6 weeks. This is to reduce the small chance of any complications occurring at the end of pregnancy.
The exact timing depends on your blood glucose levels, your insulin requirements and the growth of the baby. This will all be assessed in the diabetic antenatal clinic.
If the baby needs to be born before 36 weeks you may be given a steroid injection before labour to help the baby's lungs to mature. You may experience difficulties achieving good diabetic control following the steroid injection therefore it is recommended you stay in hospital for 24-48 hours to monitor your blood glucose carefully. You may require an insulin infusion during this period to keep your blood glucose under control.

How is labour induced?

You are usually admitted to the labour ward on the morning of your induction. You will be induced with the help of a prostaglandin

(hormone), which is inserted into the vagina and will “soften” the cervix (get it ready for labour). If you receive prostaglandin your baby will be monitored by a CTG (heart trace) for approximately one hour.
There is a separate leaflet all about induction of labour (available online: Induction of Labour Leaflet - Frimley Health and Care

The obstetrician, diabetes team and midwife will be able to talk to you about any concerns you may have.

Controlling blood glucose during delivery

Whenever you are admitted to hospital please bring your insulin, blood glucose meter, test strips and hypo treatment. While you are not in established labour, you are probably the best person to manage your diabetes unless advised otherwise.
To control your blood glucose during established labour or a caesarean birth you will be connected to an intravenous infusion of dextrose and insulin, the rate of the insulin will change depending on your blood glucose, this will be checked hourly. Once the placenta has been delivered the rate of the insulin infusion will be halved.
When you are able to eat and drink the infusion can be stopped but you must have your sub-cutaneous insulin before the insulin drip is stopped if you were taking insulin pre-pregnancy. You will now return to your pre-pregnancy doses of insulin, therefore it is important to write these down at the beginning of your pregnancy.

Possible problems after the birth of your baby

In addition to normal neonatal concerns babies of women with diabetes are at increased risk of:

- **Transient tachypnoea**

Occasionally your baby may be breathing too fast and start to make a grunting sound. This is due to the baby having too much fluid in the lungs, which has not been completely absorbed. It usually gets better by itself within 24hours.

- **Hypoglycaemia**

This may occur in the baby shortly after birth. During pregnancy, your baby’s insulin production may have been increased. After birth, your baby no longer has access to your glucose, which has been transferred via the placenta. This means the baby’s increased level of insulin will

start to work on its own blood glucose and cause levels to drop below normal, resulting in hypoglycaemia.
You will be advised to feed your baby as early as possible (within the first hour of birth) to help prevent their blood glucose from dropping.
Your baby will be closely monitored until it is able to maintain its own blood glucose.
Your baby does not have diabetes.

Breastfeeding my baby

Breast milk is encouraged for all babies and will help maintain your baby's blood glucose levels. It is the best form of nutrition and has been shown to reduce the risk of developing diabetes in childhood. It has many health benefits for you and your baby.
You should reduce your pre-pregnancy doses of insulin by 20-30% if breastfeeding, as there is a risk of hypoglycaemia. To avoid hypos you will need to snack on starchy foods while you are breastfeeding.

Colostrum Harvesting:

Colostrum, the milk first available when your baby is born, is the best food for your baby and will maintain your baby's blood sugar at a normal level.
From 36 weeks of pregnancy you may wish to begin to hand express and store some colostrum; this is called colostrum harvesting. Any stored colostrum can be given to your baby if they are unable to breastfeed at the time of birth or their blood sugar level is low and they require extra food. The midwife will talk to you about this during one of your clinic visits around 34 weeks.

Although many potential complications exist, with good control women who have diabetes can have healthy pregnancies and healthy babies.

Questions

If you have any questions during your pregnancy you should write them down in order that you remember to ask them and they can be answered in the antenatal clinic by one of the team.
No questions are thought to be too small or insignificant to ask. If it is worrying you it has probably worried someone before you.

By working with you to control your blood glucose through diet, exercise and glucose monitoring we can make this pregnancy a safe, happy and successful time for you and your family.

Contact details

Park Hospital
Diabetes specialist midwife 0300 613 4880
Diabetes specialist nurses 0300 613 4701

Wexham Park Hospital
Diabetes Specialist Midwife 0300 615 4512

Further Information

Diabetes UK – Managing your Diabetes through pregnancy – https://www.diabetes.org.uk/guide-to-diabetes/life-with-diabetes/pregnancy/during-pregnancy

NICE 2015, Diabetes in Pregnancy Guideline – www.nice.org.uk

For a translation of this leaflet or for accessing this information in another format:

Please contact (PALS) the Patient Advice and Liaison Service on:

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Please remember that this leaflet is intended as general information only. We aim to make the information as up to date and accurate as possible. Please therefore always check specific advice or any concerns you may have with your doctor.