

Approvals:
Specialist Group: Miss F Ashworth, Dr I Gallen, Dr J Ahmed
Maternity Guidelines Group: V1 Dec 2012, V2 May 2016
Directorate Board: V1 Jan 2013, O&G SDU V2 Aug 2016
Clinical Guidelines Subgroup: V1 Jul 2011, V2 Aug 2016
MSLC: V1 Nov 2012, User Rep Feb 2017
Equality Impact Assessment: V1 Jul 2011
Patient Experience Group: V1 Feb 2013, V2 not required as minor changes

Women & Children's Division

How can I help to reduce healthcare associated infections?

Infection control is important to the well-being of our patients and for that reason we have infection control procedures in place. Keeping your hands clean is an effective way of preventing the spread of infections. We ask that you, and anyone visiting you, use the hand sanitiser available at the entrance to every ward before coming into and after leaving the ward. In some situations hands may need to be washed at the sink using soap and water rather than using the hand sanitiser. Staff will let you know if this is the case.

www.buckshealthcare.nhs.uk
Follow us on Twitter @buckshealthcare

Author: D Bett
Issue date: February 2017
Review date: February 2020

Leaflet code:
Version: 2

Insulin Pump Therapy during Pregnancy and Birth

Patient information leaflet

If you require a translation of this leaflet please call the
Diabetes Specialist Midwife

Safe & compassionate care,

every time

Treatment regimes, insulin dosages and all other aspects of care for people with diabetes must be prescribed by the physician or the physician's representative responsible for the patient's care. Careful follow-up and continual monitoring by both the patient and the patient's health care team are required.

Diabetes and pregnancy

Maintaining near normal blood glucose levels before and during pregnancy has been shown to reduce the risk of complications for both mother and baby. However, improved control is associated with an increased risk of hypoglycaemia (a low blood glucose level). In the early stages of pregnancy hypoglycaemia is also caused by glucose passing across the placenta from the mother to the baby and the complicated hormonal processes occurring during pregnancy.

Your pump is an effective way of improving control whilst minimising the risk of hypoglycaemia. Pump therapy allows insulin to be delivered in a way that closely mimics the normal insulin delivery of the pancreas. The pump delivers precise amounts of fast acting insulin every few minutes, called the basal insulin. Additional insulin, known as bolus insulin, is required to cover meals and snacks and to correct high blood glucose levels.

During pregnancy blood glucose levels can rapidly change. There is an increased risk of hypoglycaemia during the early stages. However, as the pregnancy progresses, blood glucose levels can rise resulting in the need for more insulin. The increased insulin demand could be related to weight gain, inactivity, dietary intake and the action of hormones.

During labour and after the birth lower insulin requirements are due to the effect of increased exertion and a reduction in the hormonal response.

Your pump enables easy adjustment of insulin requirements to match these variable and changing needs. It also offers the

advantage of being able to administer insulin after the meal, safely delaying or missing meals and snacks. This is particularly beneficial in pregnancy when nausea or sickness is experienced.

What does it involve / Your commitment

- Training and practice in the advanced functions of your pump.
- Understanding guidelines on the prevention and treatment of hypoglycaemia, hyperglycaemia and diabetic ketoacidosis.
- Careful glucose monitoring at least 6 times across the day and night.
- Wearing the pump continuously during the day and night.
- Carbohydrate counting.
- Attending antenatal appointments with the diabetes and obstetric team

During Pregnancy

Tight glucose control

At least 6 blood glucose tests are required across the day and night, for example, before and after meals, bedtime and at least once during the night between 2-3.00am.

High blood glucose levels can increase the risk of harming the baby. Testing allows insulin to be adjusted appropriately to compensate for the increased insulin demand, thus maintaining near to normal levels without causing hypoglycaemia. Individual targets should be agreed between the patient and diabetes health care professional team. As a guide, NICE suggest a target range of:

- Before meals: less than 5.3 mmol/L

- After meals: less than 7.8 mmol/L (target level 1 hour after meal).

Severe hypos

Severe hypoglycaemia can occur especially in early pregnancy. It is therefore important that the woman's partner/ relative knows how to deal with this situation.

Severe hypoglycaemia (woman unrousable) should be treated by glucagon injection given by your partner/ relative. Paramedics should be called. The pump should be disconnected and paramedics must be informed that the pump needs to be reattached when you are stable. It is important that you receive insulin within an hour or two (under medical supervision) either subcutaneously (under the skin), by reattaching the pump or via sliding scale insulin infusion. You should take subcutaneous insulin to hospital.

Insulin adjustments

Meal management and insulin bolus adjustment may be required to prevent hypoglycaemia, if unable to eat due to nausea, especially in the first trimester. Insulin requirements may reduce in the first trimester.

Insulin requirements can rise significantly as the pregnancy progresses, especially in the second and third trimester.

To ensure glucose levels remain within target range appropriate adjustments to insulin should be made with the assistance of the diabetologist, diabetes nurse/ midwife (pump specialist) and appropriately trained dietician.

Infusion sets and sites

As the pregnancy progresses it may be more comfortable to move sites away from the abdomen and use an infusion set that can be inserted at an angle.

Change infusion sets and rotate sites every 24-48 hours to reduce the risk of blockages and therefore prevent high blood glucose levels and to reduce the risk of site infection.

Useful Contact Numbers

Diabetes Specialist Midwife (office hours) 07798581108

Delivery Suite (24 hours) 01296316103/4

Day Assessment Unit 01296316106

Stoke Mandeville Hospital

Mr Siraj's Secretary 01296 316548

Miss Annamraju's Secretary 01296 316163

Dr Kadiyala's Secretary 01296 315533

Wycombe Hospital

Dr Brain's Secretary 01494 425349

We continually strive to improve the quality of information given to patients. If you have any comments or suggestions regarding this information booklet, please contact:

Head of Midwifery
Buckinghamshire Healthcare NHS Trust
Stoke Mandeville Hospital
Mandeville Road
Aylesbury
Buckinghamshire
HP21 8AL

After delivery

Continue on pump therapy if able to self manage. Change to agreed postnatal basal rates and ratios (based on pre pregnancy rates).

Upon delivery and because placental hormones are no longer present, insulin requirements will rapidly drop and pre-pregnancy insulin doses are often required immediately. Sometimes even lower doses are necessary. Frequent blood glucose monitoring is essential to allow appropriate adjustment of the pump's settings to avoid hypoglycaemia.

Breastfeeding

If breastfeeding, insulin requirements are often lower than pre-pregnancy dose because glucose is needed for breast milk. Regular testing will help determine appropriate insulin requirements, thus avoiding hypoglycaemia

Please Note:

This leaflet explains some of the most common issues that some people may experience. However, it is not comprehensive. If you experience other issues and want to ask anything else related to your treatment please speak to your consultant or the Diabetes Specialist Midwife.

Assistance may be required to insert the infusion set, as the baby grows and the stomach gets bigger. Teach your partner, a friend or relative to change the infusion set.

The pump should not be disconnected for more than one hour without taking extra insulin. The insulin used for pump therapy has a short action and duration: disconnecting from the pump for more than one hour will cause a rapid rise in the blood glucose level.

Diabetic ketoacidosis

In pregnancy diabetic ketoacidosis (DKA) can occur at much lower blood glucose levels than outside of pregnancy. The increased risk of DKA in pregnancy is due to the larger insulin demands and increased level of hormones. Taking prompt corrective measures to treat high blood glucose levels can reduce the risk of DKA.

Consider changing the reservoir and infusion set whenever the blood glucose is unexpectedly above the pregnancy glucose target. A correction bolus of fast acting insulin should be given using a syringe or pen (not the pump). Always take an insulin pen (fast acting insulin such as NovoRapid®) when you go out for the day or away on holiday.

Check blood ketones levels when the blood glucose level is above 15 mmol/L or if feeling unwell /vomiting. If your ketone level is 1.0 or above you should go to your local accident and emergency department. Ask for your diabetes team to be informed of your admission.

Ensure your blood ketone testing equipment is not out of date.

Antenatal steroids

Antenatal steroids may be required if pregnancy complications occur. Your diabetes consultant will need to supervise this as antenatal steroids can significantly raise your glucose levels for several days.

Preparing for delivery

Self management of the pump is possible during labour, providing the diabetes is stable and the individual or birth partner can manage the pump. The suitability of continuing with pump therapy during labour and the options available if the pump is removed should be discussed with the diabetes and obstetric team, as well as the anaesthetic team, prior to the delivery date.

Some teams may not have the necessary expertise and confidence with insulin pump therapy. Where pump therapy cannot be continued the diabetes health care professional team will revert to local hospital protocols to promote safe diabetes management.

You will be asked to sign a patient agreement form.

What to pack for delivery

- ◇ Bring subcutaneous insulin supplies; short acting and long acting.
- ◇ Bring plenty of carbohydrate snacks to the hospital and your hypo treatment of choice. When nil by mouth only Glucotabs® or Hypostop®/ GlucoGel® can be used.
- ◇ In addition to having the standard kit for glucose monitoring and injection therapy, ensure the pump has new batteries and a full reservoir. You should also have spare batteries, infusion sets and reservoirs.
- ◇ Check you have written down or input your second basal rate (based on pre-pregnancy basal rates). You need to change to this as soon as the baby is delivered.

During Labour

Insert a new infusion set with the cannula sited in the upper arm or just beneath the lower rib, near the back. If the cannula is inserted in the upper arm it can be easily seen and completely out of the way avoiding a potential caesarean section site, the area to be cleansed or covered under drapes.

A small cannula may be inserted into the back of the hand this is a precautionary measure to allow extra fluids or medication to be given.

You or your midwife should measure glucose levels hourly. Midwives must record your blood glucose levels. This is to ensure accuracy and close observation of your diabetes while you are in hospital. This is in line with Department of Health standards that require us to keep records of your blood glucose readings.

Blood glucose levels above the target pregnancy range will stimulate the foetal pancreas to produce insulin, which can result in the baby having a low blood glucose level after the birth. You may need to give bolus correction doses via the pump accordingly.

At the start of the second stage of labour consider reducing the basal rate. This may prevent hypoglycaemia as insulin requirements will reduce.

Bolus correction dose

You should have an individualised correction dose as agreed between herself and the diabetologist.

- If blood glucose greater than 7.8mmol/l consider giving a correction bolus dose.
- After 1 hour if that correction bolus is ineffective i.e. blood glucose not less than 7.8mmol/L, give another correction bolus dose.

After a further ½ hour if blood glucose not below 7.8mmol/l then switch to intravenous insulin. Remember to disconnect pump.

If a problem arises with the management of the pump or glucose levels are unsatisfactory then it is required that you revert to local protocols for managing diabetes in labour, such as giving intravenous insulin using a sliding scale.