GIG CYMRU NHS WALES | Bwrdd Iechyd Prifysgol Hywel Dda University Health Board

Guideline for Pre-Existing Diabetes in Pregnancy

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Summary of document:
This guideline provides guidance on the management of women with pre existing diabetes during their pre conception care, routine antenatal care, steroid administration for fetal lung maturation, induction of labour and delivery and diabetic ketoacidosis in pregnancy within all locations of Hywel dda University Health board (Please also see Adult diabetic ketoacidosis care bundle).

Scope:
Designed to set out quality care guidelines for the management of women and birthing people who are known to have pre-existing diabetes and covers pre conception care, routine antenatal care, steroid administration for fetal lung maturation, induction of labour and delivery and diabetic ketoacidosis in pregnancy.

Please Note: The guidance below uses the term 'woman' (pronouns she or her) to describe individuals whose sex assigned at birth was female, whether they identify as female, male or non-binary. It is important to acknowledge it is not only people who identify as women for whom it is necessary to access women's health and reproductive services. Therefore, this should include people who do not identify themselves as women but who are pregnant or have recently given birth. Obstetric and Midwifery services and delivery of care must therefore be appropriate, inclusive and sensitive to the needs of those individuals whose gender identify does not align with the sex that they were assigned at birth.

To be read in conjunction with:
Gestational diabetes mellitus guideline
Adult diabetic ketoacidosis care bundle

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Include links to Patient Information Library

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Glossary of terms

Term	Definition
OGTT	oral glucose tolerance test

Key points:
Management of Diabetes in pregnancy, pre-conception

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Scope

Designed to set out quality care guidelines for the management of women and birthing people who are known to have pre-existing diabetes and covers pre conception care, routine antenatal care, steroid administration for fetal lung maturation, induction of labour and delivery and diabetic ketoacidosis in pregnancy.

Please Note: The guidance below uses the term 'woman' (pronouns she or her) to describe individuals whose sex assigned at birth was female, whether they identify as female, male or non-binary. It is important to acknowledge it is not only people who identify as women for whom it is necessary to access women's health and reproductive services. Therefore, this should include people who do not identify themselves as women but who are pregnant or have recently given birth. Obstetric and Midwifery services and delivery of care must therefore be appropriate, inclusive and sensitive to the needs of those individuals whose gender identify does not align with the sex that they were assigned at birth.

Aim

The aim of this document is to:

- Provide consistent care to women who are known to have diabetes in the pre-conception period, during pregnancy, labour and birth and during the postpartum period.

Objectives

The aim of this document will be achieved by the following objectives:

- Providing clear quality care guidelines for the management of women and birthing people who are known to have pre-existing diabetes and covers pre conception care, routine antenatal care, steroid administration for fetal lung maturation, induction of labour and delivery and diabetic ketoacidosis in pregnancy.

Introduction

Diabetes is a metabolic disorder characterised by abnormally raised blood glucose levels due to failure to produce sufficient insulin or utilise effectively the insulin that is produced. Type 1 and type 2 diabetes are the main types recognised, however there are rarer forms including type 3c and monogenic (genetic) diabetes. Type 1 diabetes is always managed with insulin but type 2 diabetes and other types of diabetes may be managed by diet, oral medication or insulin. Insulin therapy may be used temporarily whilst planning pregnancy in Type 2 diabetes and during pregnancy. Gestational diabetes is diagnosed during pregnancy and will usually resolve post delivery. Please see gestational diabetes guideline for further information.

Rationale

Women with pre – existing diabetes are at increased risk of complications during pregnancy, labour and birth, including;

Miscarriage due to congenital anomaly
Premature birth
Hypertension (pre-eclampsia)
Polyhydramnios
Fetal macrosomia

Shoulder dystocia
Induction of labour / caesarean birth
Instrumental birth
Stillbirth
Neonatal hypoglycaemia or jaundice

Pre-Conception Care

Women with pre – existing diabetes who are planning pregnancy should be advised to seek advice from their health care professional in order to optimise their glucose levels (aim for HbA1c < 48 mmol/mol) and have routine medication reviewed to ensure safety for pregnancy. A referral to the specialist diabetes team should be considered by primary care particularly if HbA1c is above target or routine medication needs adjustment.

Most drugs (with the exception of metformin) used in the treatment of type 2 diabetes are not suitable during pregnancy and women should be reviewed by specialist diabetes team prior to pregnancy to consider initiation of insulin as an alternative.

Women should start folic acid 5mg daily and continue to at least 12 weeks gestation.

Pregnancy should be avoided if HbA1c is > 86 mmol/mol

Antenatal Care

Women with pre – existing diabetes who become pregnant should be referred to the specialist diabetes team as soon as possible.

Telephone contact will be made by the specialist team and an initial appointment in the diabetes antenatal clinic arranged.

Community midwife will book women in the usual way and direct referral to the joint diabetes antenatal clinic in Glangwili hospital.

HbA1c level should be measured at first contact with specialist team to determine level of risk for the pregnancy.

Retinal and renal assessment should be offered (if not already performed in last 3 months). Consider referral to a nephrologist if serum creatinine is >120 micromol/litre, urine ACR > 30 mg/mmol or total protein excretion exceeds 0.5 g/day. Consider thromboprophylaxis with nephrotic range proteinuria above 5 g/day (ACR > 220 mg/mmol)

Viability of the pregnancy should be confirmed at 7-9 weeks.

Advise pregnant women with diabetes to maintain their capillary plasma glucose below the following target levels if these are achievable without causing problematic hypoglycaemia:

- Fasting: 5.3 mmol/L
- 1 hour after meals: 7.8 mmol/L
- 2 hours after meals 6.4 mmol/L

Advise women with insulin treated diabetes of the risks of hypoglycaemia and changes in awareness of hypoglycaemia, particularly in the first trimester. Ensure women have fast acting glucose available and consider prescription of glucagon.

Women with type 1 diabetes should have access to blood ketone testing strips and ketone meter. Advice should be provided about ketone testing during pregnancy.

Women with pre – existing diabetes should be offered aspirin 150mg daily from 12 weeks gestation to reduce the risk of pre – eclampsia.

Offer continuous subcutaneous insulin infusion (CSII, insulin pump therapy) to women with type 1 diabetes if they do not achieve target blood glucose levels without significant disabling hypoglycaemia.

Women with type 1 diabetes should be offered real time continuous glucose monitoring (rtCGM).

Intermittently scanned continuous glucose monitoring (isCGM or 'Flash') can be used in those women with type 1 diabetes who are unable to use rtCGM or who express clear preference for isCGM.

Consider rtCGM for pregnant women with other types of diabetes who are on insulin therapy if they have problematic severe hypoglycaemia or unstable blood glucose levels causing concern.

Offer women with pre-existing diabetes an ultrasound scan at 20 weeks to detect fetal structural abnormalities, including examination of the fetal heart.

Offer women with pre-existing diabetes ultrasound monitoring of fetal growth and amniotic fluid volume every 4 weeks from 28 to 36 weeks.

Consider elective birth before 37 weeks for women with pre-existing diabetes if there are metabolic or any other maternal or fetal complication.

Offer induction of labour, or (if indicated) caesarean birth to women with pre-existing diabetes between 37+0 and 38+6 weeks gestation.

Antenatal Corticosteroid Administration

Diabetes should not be considered a contraindication to antenatal corticosteroids for fetal lung maturation.

Corticosteroid administration in women who have pre–existing diabetes will usually be associated with deterioration in maternal glucose levels for 2 – 3 days and can precipitate diabetic ketoacidosis (DKA).

For women with pre-existing diabetes undergoing planned caesarean birth between 37+0 and 38+6 weeks an informed discussion should take place with the woman (and her family members or carers as appropriate) about the potential risks and benefits of a course of corticosteroids. Although antenatal corticosteroids may reduce admission to the neonatal unit (NNU) for respiratory morbidity, it is uncertain if there is any reduction in RDS, transient tachypnoea of the newborn (TTN) or NNU

admission overall, and antenatal corticosteroids may result in harm to the neonate which includes hypoglycaemia and potential developmental delay.

Women with pre-existing diabetes who are receiving corticosteroids should be admitted to the antenatal ward.

If diabetes is managed by insulin pump therapy (CSII) please see section 10 on insulin pump therapy. For all other women:

- Insert a cannula and check urea and electrolytes

- Commence hourly blood glucose monitoring with hospital glucometer following the first dose of corticosteroid.

- Target blood glucose during corticosteroid administration is 5.0 – 8.0 mmol/L

- Metformin, basal and bolus insulin should be continued alongside usual diet.

- If blood glucose >8 mmol/L on 2 consecutive occasions commence variable rate intravenous insulin infusion (VRIII)

- Continue VRIII for a minimum of 12 hours following the second dose of corticosteroids. VRIII may need to continue longer if target blood glucose is not achieved.

- Check capillary blood ketones if blood glucose > 11 mmol/L

Management During Labour

The day prior to induction and during cervical ripening blood glucose monitoring, insulin and oral glucose lowering drugs should continue as usual.

Once in established labour

- Commence hourly blood glucose monitoring with hospital glucometer
- Stop mealtime bolus insulin and metformin if taken
- Continue with long acting basal or intermediate insulin if taken
- Target capillary blood glucose levels 5 – 8 mmol/L
- Check capillary blood ketone if blood glucose > 11 mmol/L or if diabetic ketoacidosis suspected.
- If capillary blood glucose < 4.0 mmol/L, treat hypoglycaemia in accordance with hypoglycaemia protocol.
- Check urea and electrolytes 4-6 hourly if on VRIII to maintain potassium and bicarbonate in target ranges.

Type 1 Diabetes

- Start a VRIII at the time of established labour or active management of labour

Type 2 Diabetes

- Start a VRIII if two consecutive capillary blood glucose levels are > 8 mmol/L. The second blood glucose should be within 30 minutes of the first reading to prevent delay in starting VRII.

Insulin Pump Therapy

- See section 10

Management During Caesarean Birth

- Planned caesarean births typically take place in the morning. Women with diabetes should be early on the list wherever possible.
- The usual dose of basal insulin should be given the night before. Patients will be advised directly by diabetes team if any change to this dose is required.
- Commence hourly blood glucose monitoring with hospital glucometer once patient is nil by mouth. If general anaesthesia is used commence half hourly blood glucose monitoring until baby is born and mother fully conscious
- Stop mealtime bolus insulin and metformin if taken
- Continue with long acting basal or intermediate insulin if taken
- Target capillary blood glucose levels 5 - 8 mmol/L
- Check capillary blood ketone if blood glucose > 11 mmol/L or if diabetic ketoacidosis suspected.
- If capillary blood glucose < 4.0 mmol/L, treat hypoglycaemia in accordance with hypoglycaemia protocol.
- Check urea and electrolytes 4-6 hourly if on VRIII to maintain potassium and bicarbonate in target ranges.

Type 1 Diabetes

- Start a VRIII on admission

Type 2 Diabetes

- Start a VRIII if two consecutive capillary blood glucose levels are > 8 mmol/L. The second blood glucose should be within 30 minutes of the first reading to prevent delay in starting VRII

Insulin Pump Therapy

- See section 10

Variable Rate Intravenous Insulin Infusion

- Use Insulin Actrapid 50 units in 49.5 ml of 0.9% Sodium Chloride via a syringe driver.

- We recommend 0.9% Sodium Chloride with 5% Glucose and 20 mmol/L Potassium Chloride at a rate of 50 ml/hour as substrate fluid to avoid hypoglycaemia, hyponatraemia and hypokalaemia.

- Additional fluid may be needed in some patients as per clinical need.

- Some fluids, particularly glucose may need restriction in the event of hyponatraemia.

- Insulin without substrate fluids may rarely have to be used.

- Particular care relating to fluid management is needed in those with pre eclampsia

Postnatal Management

Type 1 diabetes or insulin treated type 2 diabetes

- Following delivery of the placenta the insulin infusion rate should be reduced by 50% and light meal eg tea and toast provided. Hourly blood glucose monitoring should continue whilst on VRIII.

- Recommence sub-cutaneous insulin regime once the patient is eating and drinking. The VRIII should be stopped 30 - 60 minutes after the first subcutaneous mealtime injection.

- Postnatal insulin doses will have been advised by the diabetes team. If no doses are available the dose reduction should be 50% of late pregnancy doses or a reduction of 25% of the pre-pregnancy doses.

- Monitor blood glucose levels pre-meals, pre-bedtime, and 3am.

- Target capillary blood glucose levels 6 – 10 mmol/L to avoid hypoglycaemia

- If capillary blood glucose < 4.0 mmol/L, treat hypoglycaemia in accordance with hypoglycaemia protocol.

- Check capillary blood ketone if blood glucose > 14 mmol/L or if diabetic ketoacidosis suspected.

- **Diet if breastfeeding / expressing** – encourage healthy eating with increased carbohydrates. Breast feeding and expressing predispose women to hypoglycarmia. Advise women to snack (10 – 15g carbohydrate) and drink each time they feed or express milk (including night feeds). Insulin doses may need reducing if hypoglycaemia is occurring. Consult diabetes team for advice.

Type 2 diabetes not on insulin prior to pregnancy

- Following delivery of the placenta intravenous insulin can be stopped.

- Monitor blood glucose levels every 4 hours until eating and drinking.

- Once eating and drinking check glucose levels pre meal and pre bed.

- Target capillary blood glucose levels 6 – 10 mmol/L

- Once eating normally restart oral glucose lowering medication as advised by diabetes team. Metformin can continue when breastfeeding.

All women with pre-existing diabetes should be referred back to their usual diabetes care arrangements. Women should be reminded of the importance of contraception and the need for preconception care when planning for future pregnancies.

Insulin Pump Therapy

During in-patient admission

- Insulin pump can continue to be used provided that patient is able to self manage the insulin pump and perform the required blood glucose monitoring.
- Capillary blood glucose levels should be checked on hospital glucometer at least pre meals and pre bed as a minimum.
- Check capillary blood ketones if blood glucose > 11 mmol/L
- Diabetes specialist team must be informed of admission

Antenatal Corticosteroid Administration

- Inform the diabetes specialist team as soon as possible about the plan to use steroid therapy. The insulin pump can usually continue but the diabetes team will need to inform patient about appropriate changes to basal rate and bolus doses.

- Glucose should be monitored by the patient every 1-2 hours. This may be done using flash or real time continuous glucose monitor. In addition, blood glucose will need to be checked on hospital glucometer at least pre meals and pre bed as a minimum.

- Target blood glucose during corticosteroid administration is 5.0 – 8.0 mmol/L

- A temporary increase in the basal rate is likely to be needed following corticosteroid administration and typical changes are noted below

    - 6-24 hours Increase basal rate to 125%
    - Day 2-3 Increase basal rate to 140% and increase usual bolus by 40%
    - Day 4 Increase basal rate to 120% and increase usual bolus by 20%
    - Day 5 Increase basal rate to 110% and increase usual bolus by 10%
    - Day 6 – 7 Infusion rate should return to normal

- If blood glucose levels are above target the patient can use a corrective dose of insulin aiming for target values 5 – 8 mmol/L. If corrective dose fails to achieve blood glucose target after 1 – 2 hours then convert to VRIII as per section 5. The insulin pump can remain in place (in manual mode) and continue the programmed basal rate. The woman should continue to administer her bolus insulin at mealtimes.

- Check capillary blood ketones if blood glucose > 11 mmol/L

Management during labour

- Women on insulin pumps may prefer to use them during labour and delivery provided that blood glucose levels remain stable between 5 and 8 mmol/L and patient is able to manage insulin pump and monitoring requirements. The diabetes specialist team must be informed of admission.

- Women on insulin pump therapy may be converted to VRIII during labour and delivery at their request or if problems arise including failure to maintain blood glucose targets between 5 – 8 mmol/L, development of blood ketones > 1.0 or need for general anaesthetic.

- An intravenous cannula should be inserted at the onset of active labour in case IV access is needed.

- Commence hourly blood glucose monitoring with hospital glucometer

- Prompt patient to switch to post delivery basal rate setting at start of second stage of labour

    - **Hyperglycaemia**

- If blood glucose is > 8 mmol/L a correction bolus should be administered aiming for a blood glucose of 5 mmol/L

- After 1 hour if blood glucose is above 8 mmol/L repeat the correction dosage

- If after further 30 minutes blood glucose is still above 8 mmol/L convert to VRIII as per protocol. The insulin pump can remain in place (in manual mode) on programmed basal setting.

- If blood glucose > 11 mmol/L check blood ketones and start VRIII if blood ketones > 1.0. The insulin pump can remain in place (in manual mode) on programmed basal setting.

    - **Hypoglycaemia**

- If blood glucose < 4.0 mmol/L treat hypoglycaemia as per hospital protocol and repeat blood glucose after 15 minutes to ensure resolution.

- If blood glucose remains < 4.0 mmol/L repeat the above until hypoglycaemia is corrected

- If the patient has unexplained hypoglycaemic episode reduce the basal rate by 25 – 50% using a temporary basal rate reduction. This rate should continue for the remainder of the labour. If further unexplained hypoglycaemia occurs then remove insulin pump and start VRIII as per protocol

Management during caesarean birth

- It is anticipated that the duration of time to undergo this procedure is short ie < 2 hours. If diabetes is stable and anaesthetist agreeable the insulin pump can continue during the caesarean birth at the programmed basal rate. The basal rate should be switched to the postnatal basal rate setting once in anaesthetic room.

- Insulin pump cannula site and and CGM sensor should be sited away from the operative site and the diathermy pad(s). Steel infusion sets are not applicable for peri-operative use.

- Monitor blood glucose hourly with hospital glucometer

- If blood glucose < 4.0 mmol/L, treat hypoglycaemia in accordance with hypoglycaemia protocol.

- If blood glucose > 8 mmol/L a correction bolus of insulin should be administered aiming for a blood glucose of 5 mmol/L.

- If blood glucose > 10 mmol/L develops convert to a VRIII as per protocol. The insulin pump can remain in place (in manual mode) on programmed basal setting.

Post natal management

- Check that patient has adjusted pump settings to post natal blood glucose target (typically 6.5 mmol/L) to programmed postnatal basal rate, post natal carbohydrate ratio and postnatal insulin sensitivity factor. If these are not known the pre-pregnancy basal rate can be used with a 20% reduction alongside pre-pregnancy carbohydrate ratio and pre-pregnancy insulin sensitivity factor. If pre-pregnancy settings are unknown consider using basal rate 0.5 units per hour with 1 unit of insulin per 15g of carbohydrate and insulin sensitivity of 1 unit for 4.0 mmol/L.

- Check blood glucose hourly for a minimum of four hours and then pre meals, pre bedtime and 3 am.

- Bolus doses of insulin can restart once eating and drinking

Restarting the insulin pump

- If the insulin pump has been discontinued and replaced with VRIII then the insulin pump should restart when eating and drinking normally. The VRIII should continue for 30 – 60 minutes after the first mealtime bolus dose.

Diabetic Ketoacidosis

Women with type 1 diabetes are provided with a home capillary blood ketone meter and advised to check for blood ketones when blood glucose is > 11 mmol/L or if they are unwell.

All women with diabetes are advised to contact antenatal ward if unwell or vomiting.

Diabetic ketoacidosis (DKA) is a medical emergency requiring prompt recognition and treatment as it is associated with significant maternal and fetal mortality. Women suspected to have DKA should be managed on the labour ward or high dependancy unit where they can receive medical and obstetric care.

In pregnancy DKA can occur at lower levels of hyperglycaemia (> 11.0 mmol/L). Patients in the third trimester are at greatest risk. Intercurrent illness, vomiting, administration of steroid, omission of insulin and insulin pump occlusion/failure can all trigger DKA.

Symptoms include nausea and or vomiting, abdominal pain, polyuria and polydipsia, leg cramps. Later signs include dehydration, blurred eyesight, tachypnoea and tachycardia. DKA should always be considered in a pregnant woman with diabetes who feels unwell. DKA can present as abdominal pain which should be considered as an alternative to pre term labour.

Interpretation of capillary blood ketone levels

0 – 0.6 mmol/L Normal

0.7 – 0.9 mmol/L **Increased ketone production. Action needed to prevent progression to DKA.** Encourage oral fluids. Give corrective dose of insulin using insulin pen. Patients on insulin pump therapy must troubleshoot their pump to exclude line occlusion or cannula site failure. Recheck ketone levels after one hour. If ketone levels increasing start VRIII.

1.0 – 2.9 mmol/L **High level of ketones. Significant risk of progression to DKA.** Start VRIII.

3.0 mmol/L or higher **Potential DKA**

- Venous pH and bicarbonate must be checked urgently if capillary blood ketones are > 3.0 mmol/L

Diagnosis of DKA

- **Presence of diabetes** of any kind. DKA can occur with normal blood glucose levels.
  AND
- **Ketosis –** Blood ketone level > 3.0 mmol/L or urine ketone > 2+
  AND
- **Acidosis –** Bicarbonate < 15 mmol/L and or venous pH < 7.3

Management of DKA

- Consider cause of DKA. Send blood for FBC, Glucose, U&E, LFT, CRP.
- Admit to labour ward
- Seek urgent senior obstetric and diabetes specialist review (medical registrar out of hours)
- Seek anaesthetic support with low threshold for critical care review
- Commence adult diabetic ketoacidosis care bundle – **Fixed rate intravenous insulin infusion**
- These patients require joint obstetric and medical management
- Aim is ‘in utero resuscitation’ with maternal stabilisation, hydration and reversal of hyperglycaemia and metabolic acidosis
- Close maternal monitoring with specific attention to fluid balance
- Continuous fetal monitoring – abnormalities of fetal heart may improve with improvement of maternal condition
- Treat underlying cause eg infection

Hyperglycaemia and ketonaemia (> 1.0 mmol/L) not meeting DKA criteria

- These patients require intravenous fluid and insulin via variable rate intravenous insulin infusion to prevent further rise in ketone levels.
- Long acting basal insulin should be continued
- They should have hourly blood glucose and blood ketone monitoring
- Consider potential cause eg infection and treat as required
- Stop IV fluids and VRIII once blood ketones < 0.6 mmol/L for 2 consecutive hours as long as patient eating and drinking

- They should receive specialist diabetes review (medical registrar out of hours)

Indications for blood ketone monitoring

- Blood glucose > 11 mmol/L
- Urine ketone >2+
- If patient is unwell
- **Report all blood ketone > 1.0 mmol/L to doctor**

References

This guidance has been adapted from:

1. Joint British Diabetes Societies for inpatient care. Managing diabetes and hyperglycaemia during labour and birth. February 2023. https://abcd.care/sites/abcd.care/files/site_uploads/JBDS_Guidelines_Current/JBDS_12_Managing_diabetes_and_hyperglycaemia_during_labour_and_birth_with_diabetes_February_2023.pdf

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3. National Institute for Health and Care Excellence (2015). NG3 Diabetes in Pregnancy: management from preconception to the postnatal period. https://www.nice.org.uk/guidance/ng3

4. Stock SJ, Thomson AJ, Papworth S; the Royal College of Obstetricians and Gynaecologists. Antenatal corticosteroids to reduce neonatal morbidity and mortality. BJOG 2022;

Appendix 1 – Schedule of antenatal care for women with pre-existing diabetes

First Appointment

- Review in joint diabetes and antenatal clinic at the earliest opportunity after the pregnancy is confirmed
- Take a detailed clinical history
- Offer information, advice and support on glycaemic control
- Review diet
- Review medication
- Offer retinal and renal assessment if these have not been performed in the previous 12 months

Booking appointment (ideally by 10 weeks)

- Confirm viability of pregnancy and gestational age
- Discuss information, education and advice about how diabetes will affect pregnancy birth and early parenting such as breast feeding, and initial care of the baby
- Perform the routine booking tests

16 weeks

- Offer retinal assessment for women with pre-existing diabetes if diabetic retinopathy was present at their first antenatal appointment

20 weeks

- Offer ultrasound scan for detecting fetal structural abnormalities, including examination of the fetal heart (4 chambers, outflow tracts and 3 vessels)

28 weeks

- Offer ultrasound monitoring of fetal growth scan and amniotic fluid volume
- Retinal screening for women with pre-existing diabetes
- Repeat Hba1c

32 weeks

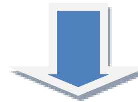
- Offer ultrasound monitoring of fetal growth and amniotic fluid volume.
- Offer routine antenatal investigations

36 weeks

- Offer ultrasound monitoring of fetal growth and amniotic fluid volume
- Offer information and advice about the following-
    - Timing, mode and management of birth
    - Analgesia and anaesthesia (including anaesthetic assessment of women with comorbidities, such as obesity and autonomic neuropathy)
    - Changes to antidiabetic medication during and after birth
    - Initial care of the baby
    - Initiation of breast feeding and the effect of breast feeding on glycaemic control
    - Contraception and follow-up

37+0 to 38 +6 weeks

- Offer induction of labour or caesarean section if indicated
- Offer tests of fetal well being for women waiting for spontaneous labour



39-40-41 weeks

Offer tests of fetal wellbeing for women waiting for spontaneous labour