Midwives diabetes training programme

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- Project Name: E learning Modules for Diabetes in Pregnancy, Basic (module 1) and advanced (module 2)
- Start Date: June 2018
- Planned completion date Dec 2018
- Time line/Progress update points 6 weekly telephone conferences
- Name of RCM Lead: Gail Johnson
- Collaboration: DCT (ABCD), RSM

Key messages for midwives training programme

- Level 1: General diabetes training – for all midwives
- Level 2: Extended diabetes training – for those midwives wanting more depth or who wish to become a DSM.
- Level 3: Specialist DSM diabetes training – in depth specialist training for those who are DSMs or have completed level 2, and would like to supervise diabetes management including insulin initiation and titration.
- Each of these may require a different approach to provision, with Level 1 potentially offered as a set of accredited e-learning modules, Level 2 training potentially offered as a mix of face to face course and e-learning and Level 3 being university accredited require attendance and a local mentor/ supervisor. The DCT should work with the RCM to ensure that all courses fulfil the requirements for RCM accreditation.
- Each level of the training could be provided by a different education provider - the DCT, The RCM, existing training organisations or universities all of which will have different benefits and financial implications and will need to be explored in detail.

Key messages for level 1 training

Level 1: General diabetes training – for all midwives

1. General understanding of various types of diabetes in pregnancy
2. The impact of diabetes on the mother and baby
3. The risk factors and diagnosis of gestational diabetes
4. The role of midwives in improving outcomes for diabetic pregnancies by active involvement before during and after pregnancy

Introduction to the module

- The purpose of this document is to create an outline syllabus for Module 1 for Mid wives who provide care for women with diabetes during their pregnancy. The background to this project is based on the National Survey of Midwives which clearly showed a need for this kind of educational material. This was a joint venture between Diabetes Care Trust (ABCD ltd) and the Royal College of Mid wives
- This will provide midwives with a thorough understanding of all aspects of diabetes in pregnancy from preconception counselling to post-partum care. The module will provide students with a thorough understanding of real issues within their practice at a basic level. This project started in May 2018 following a Collaboration among ABCD and RCM and is intended to finish by end of December 2018. After beta testing this modules will be made available to all Members of RCM

Learning outcome

By the end of doing this course you would understand

- different type of diabetes and the associated significance
- how best to prepare for pregnancy when a person has diabetes
- how to manage diabetes during pregnancy and its implications
- how to manage delivery in diabetic pregnancies and why
- what information is useful after delivery and why

The course will not cover

- detailed theoretic aspects for which links will be provided
- procedural and technical details of diabetes treatment which will be covered in a future module 2

Chapter 1: Introduction to module 1

This chapter will cover the following aspects

- 1.1 How common is diabetes in pregnancy
- 1.2 How good is the quality of service for these women based on the standards of care defined by NICE guidance

https://www.nice.org.uk/guidance/ng3

- 1.3 How good is the care received by women with type 1 diabetes
- 1.4 How good is the care received by women with type 2 diabetes
- 1.5 How can midwives improve the care of women with all types of diabetes and what are their needs

Chapter 1.1
Diabetes in pregnancy

- There are 700,000 births in England & Wales per year
- 2-5% women have diabetes which can be either gestational (87.5%) or pre-existing type 1 (7.5%) or type 2 (5%) diabetes and the rate is increasing every year

https://www.nice.org.uk/guidance/ng3

- National Pregnancy in Diabetes audit 2016 recorded 3304 pregnancies in women with diabetes in the UK
- 1608 women had type 2 diabetes and half of them were from black and ethnic minority groups

https://digital.nhs.uk/data-and-information/publications/statistical/national-pregnancy-in-diabetes-audit/national-pregnancy-in-diabetes-annual-report-2016

Chapter 1.2

The quality of the service for women with diabetes

- The last national diabetes in pregnancy audit showed that only 8% of women were adequately prepared for pregnancy (criteria: HbA_{1c} <48mmol/mol, use of folic acid for the first 3 months of pregnancy and avoidance of harmful drugs like statins and ACE inhibitors in pregnancy)

https://digital.nhs.uk/data-and-information/publications/statistical/national-pregnancy-in-diabetes-audit/national-pregnancy-in-diabetes-annual-report-2016

- There is considerable variations in the quality of care received by these women nationally with unacceptable levels of neonatal hypoglycaemia and excess weight babies

https://onlinelibrary.wiley.com/doi/full/10.1111/dme.13579

Chapter 1.3

Care of pregnant women with type 1 diabetes

NPID audit showed that only 24% of women with type 1 diabetes presented to the joint diabetes antenatal teams before 10 weeks of pregnancy

1.8% continued harmful medications

10% had at least one episode of hypoglycaemia and

2.7% had one episode of DKA in pregnancy

47.6% had large babies for gestational age

43.3% had pre-term delivery

4.76% had congenital anomaly

Still birth rate was double and neonatal death rate was 4 times the general population

Chapter 1.4

Care of pregnant women with type 2 diabetes

- NPID audit showed that 42% of women with type 2 diabetes did not present to joint diabetes antenatal service before 10 weeks
- 13.0% continued harmful medications
- 22.9% had large babies for gestational age
- 4.48% had congenital anomalies

Chapter 1.5
The potential role and needs of midwives caring for women with diabetes

- Midwives regularly come in contact with pregnant women with diabetes as well as women who deliver or have adverse pregnancy outcome. They can therefore influence care which can improve obstetric outcomes of the current as well as future pregnancies
- Lead midwives may be able to take more extended roles which can be locally agreed based on the existing needs and desires

https://www.rcm.org.uk/sites/default/files/NHSDAKC_0002_A4Midwivesbrochure_5.pdf

- A national survey has shown that over 85% of midwives would like further knowledge and education about various aspects of diabetes in pregnancy

http://www.diabetologists-abcd.org.uk/Research/DCT_report_final_05012018.pdf

Quiz

- How common is diabetes in pregnancy in the UK

A 1% B 5% C10% D20% of pregnancies

Answer 5%

- What proportion of women with diabetes are prepared for pregnancy when they conceive

A4% B8% C16% D32%

Answer 8%

Chapter 2
Types of diabetes in pregnancy

This chapter will cover the following aspects

2.1 What are the different types of diabetes seen in pregnant women with diabetes and what is the importance of knowing these types

2.2 How are these different types of diabetes diagnosed

Chapter 2.1

Main types of diabetes and their significance

- Type 1 diabetes: people with Type 1 diabetes need insulin for survival. Insulin should never be stopped as the women will develop ketoacidosis which can be life threatening
- Type 2 diabetes: this is initially treated with life style advice on diet/ exercise and oral medications like metformin, sulphonylurea, gliptins and sodium glucose co-transporter 2 (SGLT-2) inhibitors. Injectable treatment like glucagon like peptide -1 (GLP-1) analogues and insulin to control diabetes is needed in many patients. Only metformin, glibenclamide and some insulins are considered safe in pregnancy
- Gestational diabetes (GDM): this type of diabetes is diagnosed first time in pregnancy and is usually related to hormonal changes of pregnancy but some times might be the new discovery of a pre-existing diabetes. GDM typically resolves after delivery. Women with GDM are at high risk to develop diabetes in later life
- Maturity Onset Diabetes of the Young (MODY): These women are lean but may respond better to sulphonylurea like glibenclamide

Chapter 2.2
How is diabetes diagnosed?

- Type 1 and type 2 diabetes is diagnosed when a fasting plasma glucose is more than 7 mmol/L or HbA_{1c} is above 48 mmol/mol in the presence of symptoms like polydipsia, polyuria and weight loss. In the absence of symptoms a repeat test, on a separate day, must be performed.
- Gestational diabetes is diagnosed with oral glucose tolerance test (OGTT) which is usually done between 24-28 week of pregnancy in high risk patients
- High risk patients include those with BMI>30 Kg/m^2, previous babies >4.5 kg, previous GDM, first degree relative with diabetes and high risk ethnicity i.e. south asian, black caribbean and middle eastern populations
- In women with previous history of GDM, OGTT is done as soon as possible after 12 weeks. Alternatively self monitoring can be offered
- The diagnostic levels are fasting plasma glucose above 5.6 mmol/L or 2 hour post 75 g plasma glucose 7.8 mmol/L
- Suspect MODY when there is diabetes in three generations in the family, the woman is lean but responds to sulphonylurea. Refer to diabetes team

Quiz: Match the two columns

A Type 1 diabetes

B Type 2 diabetes

C Gestational diabetes

D MODY

1 Results due to obesity

2 Results from insulin deficiency

3 Has strong family history

4 Does not require treatment after delivery

Answer

A2, B2, C4, D3

Match the most appropriate diagnostic test

A Type 1 and Type 2 diabetes

B Gestational diabetes

C MODY

- Fasting glucose >5.6 and or 2 hour post glucose >7.8 mmol/L in glucose tolerance test
- HbA_{1c}>48 mmol/mol
- Positive genetic marker

Answer

Answer: A2, B1, C3

Quiz

Which of the following is not a risk factor for GDM

1 BMI >30 Kg/m^2

2 Previous babies with with weight >4.5 Kg

3 Previous GDM

4 Family history of GDM

5 Glucosuria

Answer

Answer 5 (Glucosuria is common in pregnancy due to reduced renal resorption of glucose)

Chapter 3
Impact of diabetes on the baby

NDIP audit showed that

- Higher first trimester HbA_{1c} is associated with neurologic, gastrointestinal, cardiovascular, genitourinary, skeletal and other congenital anomalies

https://www.uptodate.com/contents/image?imageKey=PEDS%2F62158&topicKey=PEDS%2F5058&source=see_link

- HbA_{1c} >48 mmol/mol after 24 weeks was associated with pre-term delivery, large for gestational age (LGA) babies and neonatal complications like hypoglycaemia

Chapter 4
Impact of Diabetes on Mother

Maternal implications of Diabetes

- Diabetes control can become difficult
- Diabetic eye complications can get worse
- Diabetic kidney complications can get worse

Quiz

Diabetes in pregnancy can cause all the following except

A deterioration in kidney complications in mother

B deterioration in eye complications in mother

C congestive cardiac failure in mother

D congenital malformations in baby

E neonatal hypoglycaemia

Answer

C

Chapter 5
Before pregnancy

This chapter will cover the following aspects

- 5.1 How well should diabetes be controlled and which diabetes complications need to be assessed before pregnancy
- 5.2 Which medications need to be started and which need to be reviewed and stopped for women trying to conceive

Chapter 5.1

How best to prepare for pregnancy in women with diabetes

For the best outcome of pregnancy:

Diabetes in mother should be well controlled as evidenced by an HbA_{1c} (a blood test which reflects diabetes control over the previous 3 months) as close to 42 mmol/mol as possible. This may require intensive support from a diabetes team including dietician, a mixture of CBG monitoring before and 1 hour after each meal and regular adjustment of treatment

Target CBG 4-7 before meal and 5-7 on waking

Supply ketone strips to women with type 1 diabetes to check when unwell and having high glucose levels >11mmol/L to help diagnose ketoacidosis promptly

Check HbA_{1c} every month (target <48 mmol/L, avoid pregnancy if >86 mmol/L with contraceptives of choice)

Ensure retinal assessment (by retinal screening or fundoscopy) unless done in previous 6 months and then repeat it yearly

Ensure renal assessment including microalbuminuria unless done in previous 6 months and then repeat yearly. Consider referral to a nephrologist before stopping contraception if creatinine >120micmol/L, GFR45/ml/mt/1.73 m^2 or urine ACR 30mg/mmol

Do not control diabetes rapidly until retinal assessment and treatment completed as rapid control of diabetes can worsen eye damage

Chapter 5.2
Review medications

Women with diabetes should start 5 mg folic acid from at least three months before pregnancy to protect babies from any possible nerve damage

https://www.nice.org.uk/guidance/QS109/chapter/Quality-statement-1-Highdose-folic-acid

Medications need to be reviewed in mothers trying to conceive and harmful medications should be stopped (ACE inhibitors and angiotension–II receptor antagonists, statins, all antidiabetic medications except metfomin and insulin) and replaced with safer medications

Quiz

- Women with diabetes planning pregnancy should ensure that their HbA_{1c} before conception is
- A <42 mmol/mol
- B <48 mmol/mol
- C <52 mmol/mol
- D <86 mmol/mol

Answer

B

Chapter 6
Antenatal care

- This chapter will cover the following aspects

6.1 What information to discuss with the pregnant woman with pre-existing diabetes

6.2 How to monitor kidneys and eyes in pregnancy with pre-existing diabetes

6.3 How to advise on diet and when to start treatment in GDM

6.4 How to monitor diabetes during pregnancy

6.5 How to provide ongoing support during pregnancy

6.6 How to control diabetes in pregnancy with oral drugs

6.7 How to use which insulin in pregnancy

Chapter 6.1
Explain to mother the potential risks of diabetes to the baby

Discuss the impact of type 1 and type 2 diabetes on pregnancy (big baby, birth trauma to mother and baby, induction of labour or caesarean section, excess fluid around baby, miscarriage, congenital anomalies, stillbirth, neonatal death, obesity and or diabetes in the offspring, low sugar reactions in baby and some other uncommon neonatal complications (low calcium, low magnesium, high bilirubin etc)

Explain the risk of hypoglycemia with heperemesis and breast feeding and discuss impaired warning symptoms of hypoglycaemia (a condition when the person does not recognise hypoglycaemia to a varying degree and can come to harm as a result)

Gestational diabetes is also associated with many of these risks particularly if insulin treated

Billionnet, Cécile. *et al* (2016). Gestational diabetes and adverse perinatal outcomes from from 716,152 births in France in 2012. *Diabetologia*. DOI: 10.1007/s00125-017-4206-6

Chapter 6.2
Renal and retinal monitoring

- Organise retinal assessment: As soon as possible after the first antenatal contact and then at 28 weeks if the first assessment normal and also at 16-20 weeks if any retinopathy detected (refer to eye specialist if significant retinopathy and ensure eye-follow upto 6months after delivery in those with proliferative retinopathy)
- Organise renal Assessment: At first contact and then 2-3 times in pregnancy (Refer if creatinine >120 micromol/L, ACR 30 mg/mmol or total protein excretion 0.5 g/day. Thromboprophylaxis if proteinuria exceeding 5g/day or ACR 220 mg/mmol))

Chapter 6.3

Dietary advice and when to start treatment

- All pregnant ladies with diabetes should have access to a dietician
- A personalised plan including diet, exercise and weight loss should be agreed if BMI >27
- Dietary changes can help achieve target CBG levels
- Aspirin 75 mg daily should be prescribed from 12 weeks to delivery in women with type 1 and type 2 diabetes

https://www.nice.org.uk/guidance/cg107/chapter/1-Guidance#reducing-the-risk-of-hypertensive-disorders-in-pregnancy

- In newly diagnosed GDM, dietary modification can be attempted for 1-2 weeks before starting medications (oral if fasting is <7 mmol/L and basal insulin if fasting is >7 without or >6 with complications
- Start medications along with diet if baby abdominal circumference >70th percentile
- The presence of retinopathy should not prevent rapid optimisation of glucose control in women in early pregnancy with high HbA_{1c}

Chapter 6.4
Monitoring diabetes in GDM

- Once GDM is diagnosed, please teach the woman how to do finger prick blood tests for glucose
- Supply the woman with a monitor, pricking device and some strips to check capillary blood glucose (CBG) and write to GP to ensure regular on going supplies
- Monitor CBG fasting and 1 hour after meal if the treatment is diet, metformin, glibenclamide or single basal insulin injection
- Monitor CBG fasting, pre meal and 1 hour post meal in patients on multiple dose insulin therapy
- Agree individualised target CBG (4.0-5.3 fasting and pre-meal and 4-7.8 mmol/L 1 hour after meal)
- Organise HbA_{1c} at booking to pick up pre-existing diabetes
- Repeat HbA_{1c} test in each subsequent trimester to assess the risk to mother and baby
- Target HbA_{1c} <48 mmol/mol without hypoglycaemia although any reduction is useful

Chapter 6.5
Ongoing antenatal care

- Review the patient in joint antenatal clinics every 1-2 weeks
- Confirm viability and gestational age at 7-9 weeks
- Discuss the impact of diabetes on pregnancy (big baby, excess fluid around baby, low sugar reactions in baby) if not done already
- Discuss the importance of good diabetes control during pregnancy by regularly testing CBG by finger prick
- Teach self monitoring of blood glucose, ensure supplies from GP to facilitate home testing and treatment and offer a contact number to all patients if not done already

Chapter 6.6

Oral anti-diabetic drugs in pregnancy

- Many women with pre-existing diabetes and some women with gestational diabetes take metformin to control diabetes
- Metformin has tummy side effects (indigestion and loose stools) and may have to be started on a smaller dose i.e.500 mg once a day after food for a week followed by twice a day for a week followed by three times a day. A maximum of 2.5 G can be given.
- Glibenclamide is considered safe in pregnancy and can be used if the patient refuses to take insulin

Chapter 6.7
Insulin use in antenatal clinic

- Some pregnant ladies with diabetes will be on or will require to start insulin if their CBG levels are above the level recommended by NICE on two occasions at the same time line (fasting and before meal: 5.3 and 1 hour after meal 7.8) without any explanation e.g. unusual meal
- The choice of type of insulin depends upon the glucose profile of the woman. For high fasting and pre-meal levels a basal insulin is chosen while to control the meal related rise (which may last until next meal) a short acting insulin is more appropriate. Some women will need both

Chapter 6.7.1

Types of insulin commonly used in pregnancy

- Basal insulins which work for 12 to 24 hours and is titrated according to fasting (when given at bed time) and pre-evening meal (when given in the morning) CBGs: NPH (insulatard, humulin I and insuman basal), levemir, lantus, toujeo and degludec. Only the first two are generally used in pregnancy
- Quick acting insulins which work for up to 6 hours and control meal related glucose and are titrated according to the next pre meal glucose: Humulin S, Actrapid, Novorapid, Humalog, Fiasp. The first three are generally used in pregnancy

Chapter 6.7.2
How to prescribe insulins

- Include the name of insulin, device and needle when you prescribe e.g.
- Inj Levemir (FlexPen) …… units before bed
- Inj Novorapid (FlexPen)…..units before meal
- Inj Lantus (SoloStar) …….before bed
- Inj Humalog (KwikPen)…..units before meal
- Inj Insulatard (Innolet)…..units before bed
- Novofine/ Tricare pen needles 30G 4 mm
- You may have to prescribe (or get it prescribed) in clinic to save time

Chapter 6.7.3
When and how to give insulin

- Basal insulins are usually injected before bed and the dose is increased if the fasting CBG remain higher than 5.3 mmol/L. The doses can be adjusted every 3 to 6 days.
- Quick acting insulins are injected before meal (humulin S 20 minutes before and novorapid/lispro immediately before) and the doses are adjusted if the CBG remains higher than 7.8 1 hour after meal or 5.3 before next meal. The doses are reduced if CBG are below 4 mmol/L
- Download of meters may be needed to confirm the recorded CBG levels in some cases
- Consider insulin pump in patients not adequately controlled on multiple insulin doses

Chapter 6.7.4

Insulin pump or continuous subcutaneous insulin infusion (CSII)

- Some women with type 1 diabetes may be using insulin pump
- These women are trained to and can change their basal insulin infusion rate and insulin to carbohydrate ratio to control their glucose levels
- Liaise regularly with the diabetes team to support these women
- These women may prefer to continue to use insulin pump during labour and birth with support and guidance from the diabetes team

Chapter 6.8

Support women with pre-existing diabetes

- Provide glucagon to women with type 1 diabetes and teach her and her partner/family how to use it
- Some women with type 1 diabetes may be using continuous glucose monitoring to improve obstetric outcomes including lower neonatal hypoglycaemia, large for gestational age babies, intensive care admissions and hospital stay

https://www.ncbi.nlm.nih.gov/pubmed/28923465

Chapter 6.9
Monitoring the baby and the woman

- Organise US scans at 18-20 weeks for fetal heart and outflow tract
- Organise US scans at 28, 32 and 36 week for fetal growth and amniotic fluid
- Individualise monitoring for women with high risk e.g. those with macrovascular disease and nephropathy
- Organise all blood tests normally done at 31-32 weeks for any pregnancy
- Offer advise and information regarding timing mode and management of birth, analgesia and anaesthesia, care of baby after birth, breast feeding, risk of hypoglycaemia with breast feeding, contraception and follow-up at 36 weeks
- Discuss induction/ caesarean in pre-existing diabetes if indicated at 37 plus weeks
- Offer tests of fetal well being at 38 and 39 week and deliver before 41 weeks

Quiz

True or False

A Aspirin should be started from 3rd month in all pre-existing patients with diabetes

B Dietary advise should be given to patients diagnosed with GDM for 1-2 weeks before starting treatment in all cases

C Metformin and Glibenclamide are safe in pregnancy

D GLP-1 analogues and SGLT-2 inhibitors are used in pregnancy

E Novorapid, humulin I, lantus and levemir are all commonly used insulins in pregnancy

Answers

- Answer B (treatment is started along with dietary advice in presence of macrosomia) and D False

Find the best match

A Glibenclamide

B Metformin

C Basal insulin (e.g.Humulin I, Lantus, Levemir)

D Rapid acting insulin (e.g. Novorapid, Humalog, Humulin S)

1 Used as a first line oral drug in GDM if CBG are above target level (>5.3 before meal and >7.5 1 hour after meal)

2 Generally used to control diabetes when patient cant or wont take insulin

3 Used to control meal related hyperglycaemia

4 Used when fasting glucose levels are above target

Answers

- Answer: A2, B1, C4, D3

Chapter 7

This chapter will cover the following aspects

7.1 When should the pregnant women with diabetes deliver

7.2 What additional treatment will be required if they deliver before term

7.3 What treatment is required during delivery and birth

7.4 What are the implications for anaesthesia and caesarean section

7.5 What support should be available on the labour ward

Chapter 7.1
Timing of delivery

- Women with pre-existing diabetes with metabolic, fetal or maternal complications can have elective delivery before 37 week
- All women with pre-existing diabetes should have induction of labour or caesarean section between 37 and 38^{+6} weeks
- All women with gestational diabetes should have induction or caesarean section at 40^{+6} weeks if not already delivered or earlier if any complications

Chapter 7.2
Pre-term labour

- Steroids should be used if labour is induced before 35^{+6} weeks
- VRIII can be used with the first dose of steroids and continued until 12 hours after the last dose to control steroid related hypergycaemia
- Basal insulin should be continued but meal time insulin can be stopped to simplify insulin regimen
- https://abcd.care/sites/abcd.care/files/resources/Appendix_1_Management_of_steroid_hyperglycaemia_during_pregnancy_Feb2018_v2.pdf

Chapter 7.3

Diabetes control during delivery and birth

- All women with diabetes should have CBG between 4 and 7 during delivery and birth
- Monitor hourly CBG in established labour or on admission for elective caesarean in type 1 diabetes
- Write a pre-printed prescription chart for VRIII
- Start VRIII if two consecutive readings are above 7 mmol/L (you can use your hospital prescription chart or download one from JBDS guidelines)

https://abcd.care/sites/abcd.care/files/resources/Appendix_2_VRIII_and_fluid_protocol_during_labour_and_birth_Feb2018_V2.pdf

Chapter 7.4
Anaesthesia

- Women with co-morbidities like obesity and autonomic neuropathy should have anaesthetic assessment in the third trimester
- Women undergoing caesarean section under GA should have CBG monitoring every 30 minutes and VRIII should be started or continued to maintain CBG levels between 4 and 7 until baby is delivered and mum awake
- http://www.diabetologists-abcd.org.uk/JBDS/JBDS_Pregnancy_final_18082017.pdf

Chapter 7.5
Support on the labour wards

- All pregnant women with diabetes in established labour should have one to one support from a midwife
- All pregnant women with diabetes should have access to diabetes team 7 days a week
- CBG should be monitored every hour once the woman is in established labour or at least once if she is admitted for elective caesarian section
- VRIII should be started using the pre-printed prescription chart if two consecutive CBG levels are above 7 mmol/L or if the woman has type 1 diabetes and is in labour
- All women on VRIII should have hourly CBG monitoring
- If subsequent monitoring does not show improvement, change the VRIII to a higher scale
- Patients on VRIII should be managed on labour ward or in close proximity with expertise available for diabetes input

Quiz

True or False

A All women who are delivered pre-term should have steroids

B All women having steroids should have VRIII to maintain CBG between 4-7.8

C All women having steroids and having VRIII should stop their basal insulins

D All women receiving steroids for pre-maturity should continue VRIII upto 12 hours after the last injection of steroid

Answers

- All true except C (women should continue with basal insulin but should stop meal time insulin to keep the regimen simple. If meal time glucose levels can not be controlled by adjusting VRIII, meal time insulin may also be needed in addition to VRIII)

Quiz

- What is to best time to deliver pregnant women with diabetes (select the best answer)
- A 35 weeks
- B 37-41 weeks
- C 42 Weeks
- D 43 weeks

Answer

- B

Chapter 8
After delivery

- Ensure additional snacks or food for mother when breast feeding to avoid the risk of hypoglycaemia in mother
- Women with pre-existing diabetes on metformin or glibenclamide can continue them while breast feeding
- In women with pre-existing diabetes VRIII (if needed) may need to be reduced by 50% and subcutaneous insulin dose should be reduced to 25% less than that required in early pregnancy to avoid the risk of hypoglycaemia especially when breast feeding
- Stop all anti-diabetic treatment in GDM and monitor CBG for up to 24 hours to pick up any pre-existing diabetes in patients with GDM
- Fasting >7 mmol/L or post prandial >11.1 may be an indicator of diabetes and would require fasting plasma glucose to confirm
- Do not re-start any medications that were stopped in pregnancy due to safety reasons when breast feeding

Quiz

True or False

A After delivery women with diabetes are at risk of high glucose levels

B After delivery women with GDM should have their CBG monitored for upto 24 hours to pick up any pre-existing diabetes

C After delivery women with pre-existing diabetes may need to reduce their insulin dose to 25% less than early pregnancy requirement

D After deliver women with GDM should stop all treatment for diabetes

Quiz

All are true except A (The women are at risk of low glucose because of low intake an breast feeding)

Chapter 9

This chapter will cover the following aspects

A How to care for neonates born to women with diabetes

B What is the risk of neonatal hypoglycaemia in the babies born to women with diabetes and how can we prevent and manage it

Chapter 9.1

General care of the neonate born to women with diabetes

- Test for polycythaemia, high bilirubin, low calcium and low Mg in babies with clinical signs
- Organise echocardiogram for babies with heart murmur or signs of congenital heart disease or cardiomyopathy
- Admit to neonatal unit if: hypoglycaemia, respiratory distress, cardiac decompensation, encephalopathy, polycythaemia or likely to require partial exchange transfusion, need for intravenous fluids or feeding that can not be adequately supported on the post natal ward, jaundice requiring phototherapy and monitoring, birth before 34 weeks or before 36 weeks but requiring support for feeding
- Transfer into community only after 24 hours and maintaining feeding and blood glucose

Chapter 9.2
Neonatal hypoglycaemia

- All units should develop a policy to prevent and treat neonatal hypoglycaemia
- Neonate's blood glucose should be tested at 2-4 hours by a validated method for babies
- Women with diabetes should feed their babies within 30 minutes and then every 2-3 hours to maintain pre-feed CBG of 2 mmol/L or more
- Arrange tube feeding or intravenous dextrose if any of the criteria are met: CBG below 2 mmol/L on two consecutive occasions, signs of hypoglycaemia or inability of the baby to feed adequately
- https://www.nice.org.uk/Guidance/NG3

Quiz

True or False

A Neonates born to women with diabetes should have their CBG checked at 6 hours

B Neonates born to women with diabetes are at risk of hyperglycaemia

C Neonates born to women with diabetes should be checked for any signs of jaundice, low ca and low Mg

D Neonates born to women with diabetes should not be transferred into community before 24 hours

Answers

All are true except B (The babies are at higher risk of hypoglycaemia)

Chapter 10

This chapter will cover the following aspects

A What information to provide to women with diabetes who are being discharged after delivery

B What tests they should have after delivery to check for progression to diabetes

C How should they prepare for any possible future pregnancies

Chapter 10.1
Information and actions on discharge to women with pre-existing diabetes

- Organise transfer of care to the routine management of diabetes at GP surgery or hospital clinics
- Explain the importance of contraception which the women can discuss with their GP
- Explain the need for good control of diabetes before any planned subsequent pregnancies

Chapter 10.2
Information at discharge for GDM women

- Advise on diet, weight control, exercise and symptoms of hyperglycaemia
- Organise a fasting glucose at 6 weeks after delivery to ensure euglycaemia and explain the results (<6 mmol/L: low risk of developing diabetes, 6-7 mmol/L: high risk of developing diabetes, >7mmol/L likely to be having diabetes which needs to be confirmed with an HbA_{1c} at 13 week)
- HbA_{1c} can be an alternative post natal test for women who miss a fasting test until 13 weeks. Explain results (<39 indicates low risk of diabetes, 39-47 indicates high risk of diabetes, >48 mmol/mol signifies presence of diabetes and requires referral for care)
- Advise on higher risk of type 2 diabetes in life, healthy diet, exercise and annual HbA_{1c} test and screening for diabetes before any subsequent pregnancy
- Explain to the woman that in any subsequent pregnancies CBG monitoring or an oral glucose tolerance test will be helpful as soon as possible after pregnancy and if negative another OGTT test will be done at 28 weeks

Quiz

True or False

A Women with GDM should have fasting glucose test after 13 weeks of delivery to check for diabetes

B Women with GDM should have a fasting glucose or HbA_{1c} every year to check for diabetes

C Women with GDM should have an OGTT as soon as possible in future pregnancies

Answer

All true except A (After delivery women with GDM should have a fasting glucose at 6 weeks)

Resources
Chapter 1 Introduction

- *https://www.nice.org.uk/guidance/ng3*
- https://digital.nhs.uk/data-and-information/publications/statistical/national-pregnancy-in-diabetes-audit/national-pregnancy-in-diabetes-annual-report-2016
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