NICE National Institute for Health and Care Excellence

NICE Pathways

Diabetes in pregnancy overview

NICE Pathways bring together everything NICE says on a topic in an interactive flowchart. NICE Pathways are interactive and designed to be used online.

They are updated regularly as new NICE guidance is published. To view the latest version of this NICE Pathway see:

http://pathways.nice.org.uk/pathways/diabetes-in-pregnancy
NICE Pathway last updated: 28 August 2018

This document contains a single flowchart and uses numbering to link the boxes to the associated recommendations.

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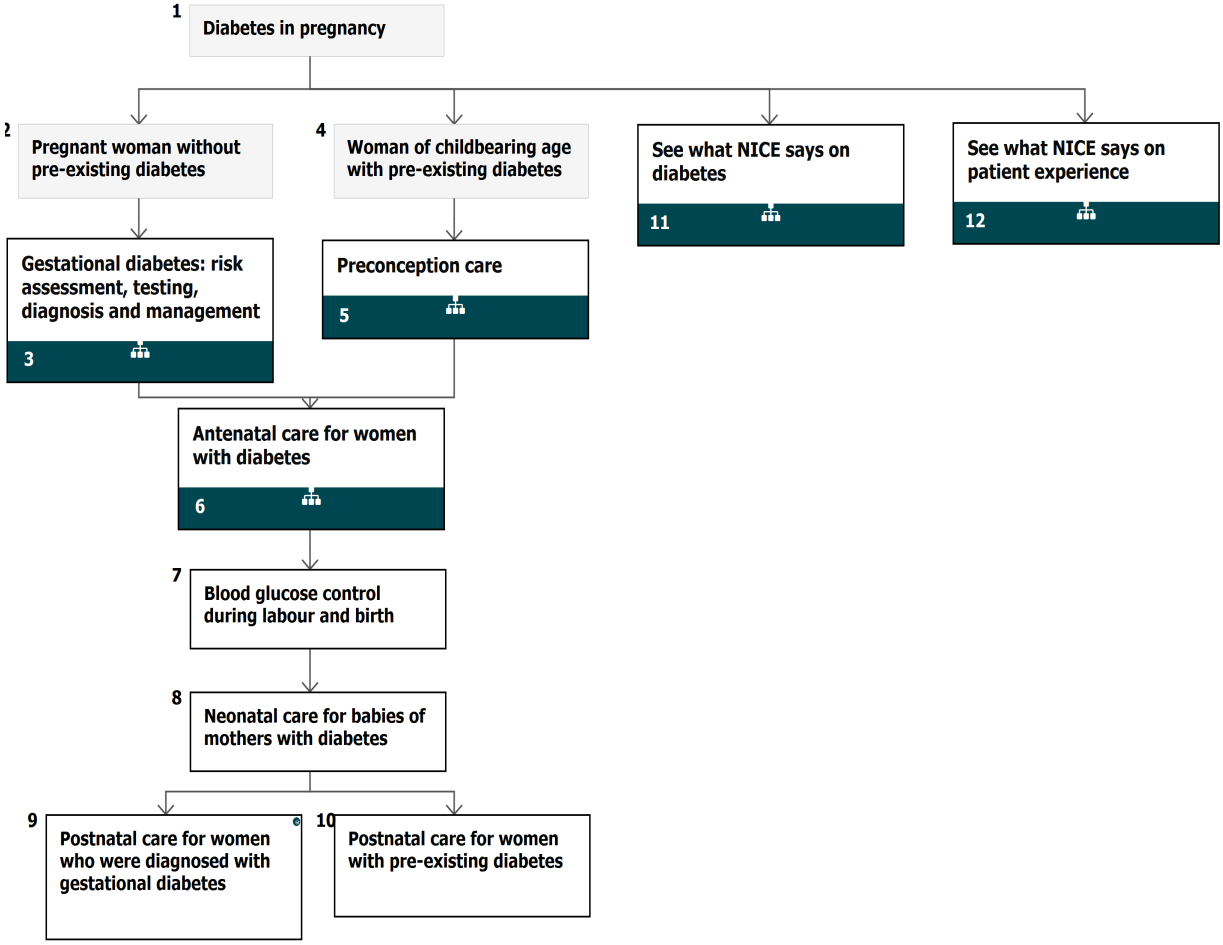

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1 Diabetes in pregnancy

No additional information

2 Pregnant woman without pre-existing diabetes

No additional information

3 Gestational diabetes: risk assessment, testing, diagnosis and management

See Diabetes in pregnancy / Gestational diabetes: risk assessment, testing, diagnosis and management

4 Woman of childbearing age with pre-existing diabetes

No additional information

5 Preconception care

See Diabetes in pregnancy / Preconception care for women with diabetes

6 Antenatal care for women with diabetes

See Diabetes in pregnancy / Antenatal care for women with diabetes

7 Blood glucose control during labour and birth

For recommendations about timing and mode of birth, and preterm labour see planning birth.

Monitor capillary plasma glucose every hour during labour and birth in women with diabetes, and ensure that it is maintained between 4 and 7 mmol/litre.

If general anaesthesia is used for the birth in women with diabetes, monitor blood glucose every

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30 minutes from induction of general anaesthesia until after the baby is born and the woman is fully conscious.

Intravenous dextrose and insulin infusion should be considered for women with type 1 diabetes from the onset of established labour.

Use intravenous dextrose and insulin infusion during labour and birth for women with diabetes whose capillary plasma glucose is not maintained between 4 and 7 mmol/litre.

See what NICE says on intrapartum care, induction of labour and caesarean section.

8 Neonatal care for babies of mothers with diabetes

Initial assessment and criteria for admission to intensive or special care

Advise women with diabetes to give birth in hospitals where advanced neonatal resuscitation skills are available 24 hours a day.

Babies of women with diabetes should stay with their mothers unless there is a clinical complication or there are abnormal clinical signs that warrant admission for intensive or special care.

Carry out blood glucose testing routinely in babies of women with diabetes at 2–4 hours after birth. Carry out blood tests for polycythaemia, hyperbilirubinaemia, hypocalcaemia and hypomagnesaemia for babies with clinical signs.

Perform an echocardiogram for babies of women with diabetes if they show clinical signs associated with congenital heart disease or cardiomyopathy, including heart murmur. The timing of the examination will depend on the clinical circumstances.

Admit babies of women with diabetes to the neonatal unit if they have:

- hypoglycaemia associated with abnormal clinical signs
- respiratory distress
- signs of cardiac decompensation from congenital heart disease or cardiomyopathy
- signs of neonatal encephalopathy
- signs of polycythaemia and are likely to need partial exchange transfusion
- need for intravenous fluids
- need for tube feeding (unless adequate support is available on the postnatal ward)

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- jaundice requiring intense phototherapy and frequent monitoring of bilirubinaemia (see what NICE says on neonatal jaundice)
- been born before 34 weeks (or between 34 and 36 weeks if dictated clinically by the initial assessment of the baby and feeding on the labour ward).

Preventing and assessing neonatal hypoglycaemia

All maternity units should have a written policy for the prevention, detection and management of hypoglycaemia in babies of women with diabetes.

Test the blood glucose of babies of women with diabetes using a quality-assured method validated for neonatal use (ward-based glucose electrode or laboratory analysis).

Women with diabetes should feed their babies as soon as possible after birth (within 30 minutes) and then at frequent intervals (every 2–3 hours) until feeding maintains pre-feed capillary plasma glucose levels at a minimum of 2.0 mmol/litre.

If capillary plasma glucose values are below 2.0 mmol/litre on 2 consecutive readings despite maximal support for feeding, if there are abnormal clinical signs or if the baby will not feed orally effectively, use additional measures such as tube feeding or intravenous dextrose. Only implement additional measures if one or more of these criteria are met.

Test blood glucose levels in babies of women with diabetes who present with clinical signs of hypoglycaemia, and treat those who are hypoglycaemic with intravenous dextrose as soon as possible.

Transfer to community care

Do not transfer babies of women with diabetes to community care until they are at least 24 hours old, and not before you are satisfied that the baby is maintaining blood glucose levels and is feeding well.

9 Postnatal care for women who were diagnosed with gestational diabetes

Stopping medication

Women who have been diagnosed with gestational diabetes should discontinue blood glucose-lowering therapy immediately after birth.

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Information, advice and postnatal testing

Test blood glucose in women who were diagnosed with gestational diabetes to exclude persisting hyperglycaemia before they are transferred to community care.

Remind women who were diagnosed with gestational diabetes of the symptoms of hyperglycaemia.

Explain to women who were diagnosed with gestational diabetes about the risks of gestational diabetes in future pregnancies, and offer them testing for diabetes[1] when planning future pregnancies.

For women who were diagnosed with gestational diabetes and whose blood glucose levels returned to normal after the birth:

- Offer lifestyle advice (including weight control, diet and exercise).
- Offer a fasting plasma glucose test 6–13 weeks after the birth to exclude diabetes (for practical reasons this might take place at the 6-week postnatal check).
- If a fasting plasma glucose test has not been performed by 13 weeks, offer a fasting plasma glucose test, or an HbA1c test if a fasting plasma glucose test is not possible, after 13 weeks.
- Do not routinely offer a 75 g 2-hour OGTT.

For women having a fasting plasma glucose test as the postnatal test:

- Advise women with a fasting plasma glucose level below 6.0 mmol/litre that:
  - they have a low probability of having diabetes at present
  - they should continue to follow the lifestyle advice (including weight control, diet and exercise) given after the birth
  - they will need an annual test to check that their blood glucose levels are normal
  - they have a moderate risk of developing type 2 diabetes, and offer them advice and guidance in line with NICE's recommendations on preventing type 2 diabetes. Note that the threshold for defining a moderate and high risk of developing type 2 diabetes postnatally for women who have had gestational diabetes is different from that given in NICE's recommendations on preventing type 2 diabetes, because of the different populations.
- Advise women with a fasting plasma glucose level between 6.0 and 6.9 mmol/litre that they are at high risk of developing type 2 diabetes, and offer them advice, guidance and interventions in line with NICE's recommendations on preventing type 2 diabetes. Note that the threshold for defining a moderate and high risk of developing type 2 diabetes postnatally for women who have had gestational diabetes is different from that given in NICE's recommendations on preventing type 2 diabetes, because of the different

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[1] See Use of glycated haemoglobin (HbA1c) in the diagnosis of diabetes mellitus: abbreviated report of a WHO consultation (2011).

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- populations
- Advise women with a fasting plasma glucose level of 7.0 mmol/litre or above that they are likely to have type 2 diabetes, and offer them a diagnostic test to confirm diabetes.

For women having an HbA1c test as the postnatal test:

- Advise women with an HbA1c level below 39 mmol/mol (5.7%) that:
  - they have a low probability of having diabetes at present
  - they should continue to follow the lifestyle advice (including weight control, diet and exercise) given after the birth
  - they will need an annual test to check that their blood glucose levels are normal
  - they have a moderate risk of developing type 2 diabetes, and offer them advice and guidance in line with NICE's recommendations on preventing type 2 diabetes. Note that the threshold for defining a moderate and high risk of developing type 2 diabetes postnatally for women who have had gestational diabetes is different from that given in NICE's recommendations on preventing type 2 diabetes, because of the different populations
- Advise women with an HbA1c level between 39 and 47 mmol/mol (5.7% and 6.4%) that they are at high risk of developing type 2 diabetes, and offer them advice, guidance and interventions in line with NICE's recommendations on preventing type 2 diabetes. Note that the threshold for defining a moderate and high risk of developing type 2 diabetes postnatally for women who have had gestational diabetes is different from that given in NICE's recommendations on preventing type 2 diabetes, because of the different populations
- Advise women with an HbA1c level of 48 mmol/mol (6.5%) or above that they have type 2 diabetes and refer them for further care.

Offer an annual HbA1c test to women who were diagnosed with gestational diabetes who have a negative postnatal test for diabetes.

Offer women who were diagnosed with gestational diabetes early self-monitoring of blood glucose or an OGTT in future pregnancies. Offer a subsequent OGTT if the first OGTT results in early pregnancy are normal (see testing for women with risk factors).

See what NICE says on antenatal and postnatal mental health and postnatal care.

Quality standards

The following quality statement is relevant to this part of the interactive flowchart.

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Diabetes in pregnancy

7. Annual HbA1c testing after gestational diabetes

10 Postnatal care for women with pre-existing diabetes

Blood glucose control, medicines and breastfeeding

Women with insulin-treated pre-existing diabetes should reduce their insulin immediately after birth and monitor their blood glucose levels carefully to establish the appropriate dose.

Explain to women with insulin-treated pre-existing diabetes that they are at increased risk of hypoglycaemia in the postnatal period, especially when breastfeeding, and advise them to have a meal or snack available before or during feeds.

Women with pre-existing type 2 diabetes who are breastfeeding can resume or continue to take metformin[1] and glibenclamide[2] immediately after birth, but should avoid other oral blood glucose-lowering agents while breastfeeding.

Women with diabetes who are breastfeeding should continue to avoid any medicines for the treatment of diabetes complications that were discontinued for safety reasons in the preconception period.

Information and follow-up after birth

Refer women with pre-existing diabetes back to their routine diabetes care arrangements.

Remind women with diabetes of the importance of contraception and the need for preconception care when planning future pregnancies.

Ensure that women who have preproliferative diabetic retinopathy or any form of referable retinopathy diagnosed during pregnancy have ophthalmological follow-up for at least 6 months after the birth of the baby.

See what NICE says on antenatal and postnatal mental health and postnatal care.

11 See what NICE says on diabetes

See Diabetes

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12 See what NICE says on patient experience

See Patient experience in adult NHS services

[1] Although metformin is commonly used in UK clinical practice in the management of diabetes in pregnancy and lactation, and there is strong evidence for its effectiveness and safety (presented in the full version of the guideline), at the time of publication (February 2015) metformin did not have a UK marketing authorisation for this indication. The summary of product characteristics advises that when a patient plans to become pregnant and during pregnancy, diabetes should not be treated with metformin but insulin should be used to maintain blood glucose levels. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Good practice in prescribing and managing medicines and devices for further information.

[2] At the time of surveillance review (April 2018) the UK marketing authorisation for glibenclamide varied between different brands with regards to use in pregnancy. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Good practice in prescribing and managing medicines and devices for further information.

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Glossary

Disabling hypoglycaemia

means the repeated and unpredicted occurrence of hypoglycaemia requiring third-party assistance that results in continuing anxiety about recurrence and is associated with significant adverse effect on quality of life

eGFR

estimated glomerular filtration rate

HbA1c

glycated haemoglobin

Level 2 critical care

care for patients requiring detailed observation or intervention, including support for a single failing organ system or postoperative care and those 'stepping down' from higher levels of care

OGTT

oral glucose tolerance test

Sources

Diabetes in pregnancy: management from preconception to the postnatal period (2015) NICE guideline NG3

Your responsibility

Guidelines

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual

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needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Technology appraisals

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, health professionals are expected to take these recommendations fully into account, alongside the individual needs, preferences and values of their patients. The application of the recommendations in this interactive flowchart is at the discretion of health professionals and their individual patients and do not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian.

Commissioners and/or providers have a responsibility to provide the funding required to enable the recommendations to be applied when individual health professionals and their patients wish to use it, in accordance with the NHS Constitution. They should do so in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

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Medical technologies guidance, diagnostics guidance and interventional procedures guidance

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take these recommendations fully into account. However, the interactive flowchart does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Commissioners and/or providers have a responsibility to implement the recommendations, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this interactive flowchart should be interpreted in a way that would be inconsistent with compliance with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

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