NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Guideline

Diabetes in pregnancy: management from preconception to the postnatal period

Draft for consultation, June 2026

This guideline covers managing diabetes and reducing risk of its complications in women, trans men and non-binary people who are planning a pregnancy, are already pregnant or have just given birth. It aims to improve the diagnosis of gestational diabetes and help women, trans men and non-binary people with diabetes to manage their blood glucose levels before, during and immediately after pregnancy.

This guideline will update NICE guideline NG3 (published February 2015).

Who is it for?

- Healthcare professionals
- Commissioners and providers
- Women, trans men and non-binary people with diabetes who are planning a pregnancy or are pregnant and women and people at risk of, or diagnosed with, gestational diabetes

What does it include?

- the recommendations
- recommendations for research
- rationale and impact sections that explain why the committee made the 2026 recommendations and how they might affect practice.

Information about how the guideline was developed is on the guideline's webpage. This includes the evidence reviews, the scope, details of the committee and any declarations of interest.

New and updated recommendations

We have reviewed the evidence on hybrid closed loop systems for women, trans men and non-binary people with type 1 diabetes. You are invited to comment on the new and updated recommendations. These are marked as **[2026], [2008, amended 2026], [2015, amended 2026] and [2020, amended 2026].**

You are also invited to comment on recommendations that we propose to delete from the 2008, 2015 and 2020 guideline.

We have not reviewed the evidence for the recommendations shaded in grey, and cannot accept comments on them. In some cases, we have made minor wording changes for clarification.

See update information for a full explanation of what is being updated.

Full details of the evidence and the committee's discussion on the 2026 recommendations are in the 2026 evidence reviews. Evidence for the 2015 recommendations is in the full version of the 2015 guideline and evidence for the 2020 recommendations is in the 2020 evidence reviews.

Contents

Using this guideline

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information about shared decision making. Parents and carers have the right to be involved in planning and making decisions about their baby's health and care, and to be given information and support to enable them to do this, as set out in the NHS Constitution and summarised in NICE's information about shared decision making.

Health and social care professionals should follow our general guidelines for people delivering care:

- Babies, children and young people's experience of healthcare
- Decision making and mental capacity
- Medicines adherence
- Medicines optimisation
- Multimorbidity
- Patient experience in adult NHS services
- Shared decision making.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

Before a pregnancy with type 1 or type 2 diabetes

See:

- information and support
- blood glucose management when planning a pregnancy
- lowering risks

Before pregnancy: information and support

Blood glucose and plasma glucose:

‘Blood glucose’ is the more commonly used term. However, a lot of the evidence this guideline is based on uses ‘plasma’ rather than ‘blood’ or ‘interstitial’ glucose, and patient held glucose meters and monitoring systems are calibrated to plasma glucose equivalents. Because of this, in this guideline we use the term ‘blood glucose’, except when referring to specific concentration values.

1.1 Making it easier to access preconception care

1.1.1 From adolescence onwards, at every contact with women, trans men and non-binary people registered female at birth with diabetes:

- healthcare professionals (including the diabetes care team) should explain the benefits of optimal preconception glucose levels
- the diabetes care team should record the person’s plans for pregnancy and conception. **[2008]**

1.1.2 Provide preconception care for women and people with diabetes in a supportive environment, and encourage partners or other family members to attend. **[2008, amended 2015]**

1.2 Education and advice

1.2.1 Offer preconception care and advice before stopping contraception for women and people with diabetes who are planning a pregnancy. **[2008]**

1.2.2 As early as possible, offer a structured diabetes education programme to women and people with diabetes who are planning a pregnancy (if they have not already attended one). It should cover:

- how pregnancy affects blood glucose levels, and how that changes as the pregnancy progresses (including the risks of hypoglycaemia and impaired awareness of hypoglycaemia)
- the importance of managing glucose levels before and during pregnancy, including achieving and maintaining glucose and HbA1c targets
- the complications of diabetes in pregnancy for the person and their baby, and how to reduce their risk
- that some medications may not be suitable for women during pregnancy and will need to be changed
- how diet, body weight, physical activity and intercurrent illness affect blood glucose levels and their management in pregnancy
- how nausea and vomiting in pregnancy can affect blood glucose levels
- managing intercurrent illness in pregnancy ('sick-day rules', including monitoring of blood ketones [beta-hydroxybutyrate])
- detecting and managing hypoglycaemia, hyperglycaemia and ketosis in pregnancy (see also the sections on risk of hypoglycaemia with insulin-treated diabetes and on ketone testing and diabetic ketoacidosis)
- the importance of good oral hygiene and regular oral health reviews in pregnancy for preventing periodontitis
- when to take capillary blood glucose measurements. **[2008, amended 2026]**

1.2.3 Offer information on hybrid closed loop (HCL) systems to women and people with type 1 diabetes who are planning a pregnancy. Do this as soon as the diabetes or antenatal care team are aware of the person's planned or ongoing pregnancy. Cover:

- how insulin therapy works when using an HCL system
- the benefits and risks of moving onto an HCL system for their diabetes management

- which HCL systems they can use, and the advantages and disadvantages of each one
- the differences between pregnancy-specific and non-pregnancy-specific HCL systems.

For guidance on how to tailor the information to each person, taking their needs and preferences into account, see the sections on knowing the patient as an individual and tailoring healthcare services for each patient, in NICE's guideline on patient experience in adult NHS services. **[2026]**

For a short explanation of why the committee made this 2026 recommendation and how it might affect practice, see the rationale and impact section on preconception care for those with type 1 diabetes: education and advice.

Full details of the evidence and the committee's discussion are in evidence review B: managing type 1 diabetes using hybrid closed loop systems.

1.3 Information about outcomes

1.3.1 Provide information, advice and support, to enable a positive experience of pregnancy and to reduce the risks of adverse pregnancy outcomes for women, trans men and non-binary people and their baby. **[2008]**

1.3.2 Explain to women and people with diabetes who are planning a pregnancy that:

- if they maintain optimal glucose levels before conception and throughout their pregnancy, this will reduce the risk of miscarriage, congenital malformation, stillbirth and neonatal death **but**
- the risks can be reduced but not eliminated. **[2008]**

1.3.3 When a woman, trans man or non-binary person with diabetes is planning a pregnancy, provide them and their families with information about how diabetes can affect pregnancy outcomes. The information should cover:

- the role of diet, body weight and exercise
- the risks of hypoglycaemia and impaired awareness of hypoglycaemia during pregnancy
- how nausea and vomiting in pregnancy can affect blood glucose control
- the increased risk of having a baby who is large for gestational age, which increases the likelihood of birth trauma, induction of labour, and instrumental and caesarean section deliveries
- the need to assess for diabetic retinopathy before and during pregnancy
- the need to assess for diabetic nephropathy before and during pregnancy
- the importance of maintaining optimal blood glucose levels for the person when they are in labour and giving birth, and the need for them to feed the baby early, in order to reduce the risk of neonatal hypoglycaemia
- the possibility that the baby may have health problems in the first 28 days, and may need admitting to a neonatal unit
- the risk of the baby developing obesity, diabetes, other health problems, or a combination of these, in later life. **[2008, amended 2026]**

1.4 The importance of planning pregnancy and the role of contraception

1.4.1 Emphasise the importance of planning for pregnancy, as part of diabetes education from adolescence for women, trans men and non-binary people registered female at birth who have diabetes. **[2008, amended 2015]**

1.4.2 Explain to women and people with diabetes that their choice of contraception should be based on their own preferences and any risk factors (covered in the Faculty of Sexual and Reproductive Healthcare UK medical eligibility criteria for contraceptive use). **[2015]**

1.4.3 Advise women and people with diabetes that they can use oral contraceptives. **[2015]**

1.4.4 Advise women and people with diabetes who are planning a pregnancy:

- that the risks associated with diabetes in pregnancy will increase the longer they have had diabetes
- to use contraception until they can safely achieve and maintain their individually agreed HbA1c target level (see recommendation 1.7.3)
- that glucose targets, glucose monitoring, medicines for treating diabetes (including insulin regimens) and medicines for complications of diabetes will need to be reviewed before and during pregnancy
- that extra time and effort is needed to manage diabetes during pregnancy, and that more frequent contact is needed with healthcare professionals. **[2015]**

1.4.5 For women and people with diabetes who are planning a pregnancy, provide information about the local arrangements for support, including emergency contact numbers. **[2015]**

1.4.6 Work with women and people with diabetes who are planning a pregnancy to update their individualised diabetes management plan, taking into account their needs and preferences. **[2026]**

For a short explanation of why the committee made this 2026 recommendation and how it might affect practice, see the rationale and

impact section on preconception care for all those with pre-existing diabetes.

1.5 Diet, dietary supplements and body weight

1.5.1 Offer individualised dietary advice to women, trans men and non-binary people with diabetes who are planning a pregnancy. **[2008]**

1.5.2 For women and people with diabetes who are planning a pregnancy and are living with overweight or obesity, offer advice on how to lose weight, in line with NICE's guideline on overweight and obesity management. **[2008, amended 2026]**

1.5.3 Advise women and people with diabetes who are planning a pregnancy or in the first 12 weeks of pregnancy to take folic acid (5 mg a day), in line with recommendations on folic acid before and during pregnancy in NICE's guideline on maternal and child nutrition, to reduce the risk of having a baby with a neural tube defect. **[2008]**

Before pregnancy: blood glucose management when planning a pregnancy

1.6 Monitoring blood glucose levels and ketones before pregnancy

1.6.1 Offer up to monthly measurement of HbA1c levels for women, trans men and non-binary people with diabetes who are planning a pregnancy. **[2008, amended 2020]**

1.6.2 Offer blood glucose meters for self-monitoring to women and people with diabetes who are planning a pregnancy if they do not already have one. **[2008, amended 2026]**

1.6.3 If a woman, trans man or non-binary person with diabetes who is planning a pregnancy needs to intensify blood glucose lowering therapy, advise them to monitor their blood glucose levels more often, to include fasting levels and a mixture of pre-meal and post-meal levels. **[2008]**

1.6.4 Offer blood ketone testing strips and a meter to women and people with type 1 diabetes who are planning a pregnancy, and advise them to test for ketonaemia if they become hyperglycaemic or unwell. **[2015]**

1.7 Target blood glucose and HbA1c levels before pregnancy

1.7.1 Agree individualised targets for self-monitoring of blood glucose levels with women, trans men and non-binary people who have diabetes and are planning a pregnancy, taking into account the risk of hypoglycaemia. **[2008]**

1.7.2 Advise women and people with type 1 diabetes who are planning a pregnancy to aim for:

- a fasting plasma glucose level of 5 mmol/litre to 7 mmol/litre on waking **and**
- a plasma glucose level of 4 mmol/litre to 7 mmol/litre before meals at other times of the day.

For more information, see the section on blood glucose targets in the NICE guideline on type1 diabetes in adults. **[2015]**

1.7.3 Advise women and people with diabetes who are planning a pregnancy to aim to keep their HbA1c level below 48 mmol/mol (6.5%), if this is achievable without causing problematic hypoglycaemia. **[2015]**

1.7.4 Reassure women and people that any reduction in HbA1c level towards the target is likely to reduce the risk of congenital malformations in the baby. **[2015]**

1.7.5 Strongly advise women and people with diabetes whose HbA1c level is above 86 mmol/mol (10%) not to get pregnant until their HbA1c level is lower, because of the associated risks (see recommendation 1.3.2). **[2015]**

1.8 Safety of medicines for diabetes

1.8.1 Women, trans men and non-binary people with diabetes may be advised to use metformin as an adjunct or alternative to insulin in the preconception period and during pregnancy, when the likely benefits from improved blood glucose levels outweigh the potential for harm. Stop all other blood glucose-lowering agents before pregnancy. **[2008 amended 2026]**

1.8.2 Use isophane insulin (also known as NPH insulin) as the first choice for women and people who are using an intermediate or long-acting insulin during pregnancy. If someone has been maintaining optimal blood glucose levels with a long-acting insulin analogue before pregnancy, consider continuing their treatment with that analogue during pregnancy. **[2008, amended 2026]**

1.8.3 Advise women and people with insulin-treated diabetes to rotate insulin injection or infusion sites (including rotating within the same body area) to avoid skin reactions (for example lipodystrophy). **[2026]**

1.9 Offering a hybrid closed loop system to manage type 1 diabetes when planning a pregnancy

Hybrid closed loop (HCL) systems are recommended as an option for managing blood glucose levels in type 1 diabetes for women,

trans men and non-binary people who are planning a pregnancy. For full details, see NICE's technology appraisal guidance on hybrid closed loop systems (TA943, 2023).

1.9.1 Offer a pregnancy-specific HCL system for managing glucose levels to all women, trans men and non-binary people who have type 1 diabetes and are planning a pregnancy. **[2026]**

1.9.2 Offer training on how to use an HCL system to women and people who have type 1 diabetes and are about to start using such a system. This should cover what to do in case of HCL system failure. Ensure the training is accessible for the person, and their carer if appropriate.

For guidance on how to tailor the training to each person, taking their needs and preferences into account, see the sections on knowing the patient as an individual and tailoring healthcare services for each patient, in NICE's guideline on patient experience in adult NHS services. **[2026]**

1.9.3 Offer individualised support from a multidisciplinary team experienced in using HCL systems to women and people with type 1 diabetes using such a system. The multidisciplinary team should include a dietician. **[2026]**

1.9.4 If a woman, trans man or non-binary person with type 1 diabetes is pregnant or planning a pregnancy and has declined the offer to use a pregnancy-specific HCL system, regularly give them the opportunity to rediscuss the option to use one. This includes people using an HCL system that is licensed for use in pregnancy but not pregnancy-specific. **[2026]**

For a short explanation of why the committee made the 2026 recommendations and how they might affect practice, see the rationale and impact section on preconception care for those with type 1 diabetes: hybrid closed loop systems.

Full details of the evidence and the committee's discussion are in evidence review B: managing type 1 diabetes using hybrid closed loop systems.

Before pregnancy: lowering risks

1.10 Safety of medicines for complications of diabetes

1.10.1 Stop angiotensin-converting enzyme inhibitors and angiotensin-II receptor antagonists before conception, or as soon as pregnancy is confirmed. Use alternative antihypertensive agents that are suitable in pregnancy. **[2008]**

1.10.2 Stop statins before pregnancy, or as soon as pregnancy is confirmed. **[2008]**

1.11 Retinal assessment before pregnancy

1.11.1 For women, trans men and non-binary people with diabetes who are seeking preconception care, offer a retinal assessment at their first appointment (unless they have had a retinal assessment in the last 6 months). **[2008, amended 2020]**

1.11.2 Advise women and people with diabetes who are planning a pregnancy to defer rapid optimisation of blood glucose levels until after they have had retinal assessment and treatment. See also the section on effects of a rapid reduction in HbA1c in NICE's guideline on diabetic retinopathy. **[2008]**

1.12 Renal assessment before pregnancy

1.12.1 Offer women, trans men and non-binary people with diabetes a renal assessment (including a measure of albuminuria) before stopping contraception. **[2008, amended 2015]**

1.12.2 Consider referring women and people with diabetes to a nephrologist before stopping contraception if:

- serum creatinine is 120 micromole/L or more **or**
- the urinary albumin:creatinine ratio is greater than 30 mg/mmol **or**
- the estimated glomerular filtration rate (eGFR) is less than 45 ml/minute/1.73 m^2. **[2008, amended 2015]**

During pregnancy

See the recommendations on:

- gestational diabetes: identification and initial care
- managing diabetes during pregnancy
- antenatal baby care
- organisation of antenatal care
- planning birth, neonatal and postnatal care.

During pregnancy: gestational diabetes

1.13 Risk assessment, testing and diagnosis

Blood glucose and plasma glucose:

‘Blood glucose’ is the more commonly used term. However, a lot of the evidence this guideline is based on uses ‘plasma’ rather than ‘blood’ or ‘interstitial’ glucose, and patient-held glucose meters and monitoring systems are calibrated to plasma

glucose equivalents. Because of this, in this guideline we use the term ‘blood glucose’, except when referring to specific concentration values.

Risk assessment

1.13.1 To help women, trans men and non-binary people make an informed decision about risk assessment and testing for gestational diabetes, explain that:

- some people find that gestational diabetes can be managed with changes in diet and exercise
- most people with gestational diabetes will need metformin or insulin
- if gestational diabetes is not detected and managed, there is a small increase in the risk of serious adverse birth complications such as shoulder dystocia
- people with gestational diabetes will need more monitoring, and may need more interventions during pregnancy and labour.

[2015]

1.13.2 Assess the risk of gestational diabetes using risk factors in a healthy population. At the booking appointment, check for the following risk factors:

- body mass index (BMI) of 30 kg/m^2 or over
- previous macrosomic baby weighing 4.5 kg or more
- previous gestational diabetes
- family history of diabetes (first-degree relative with diabetes)
- an ethnicity with a high prevalence of diabetes.

Offer women and people with any of these risk factors testing for gestational diabetes (see recommendations 1.13.5 to 1.13.6).

[2008, amended 2015]

1.13.3 Do not use fasting plasma glucose, random blood glucose, HbA1c, glucose challenge test or urinalysis for glucose to assess the risk of developing gestational diabetes. **[2015]**

Glycosuria detected by routine antenatal testing

1.13.4 Consider further testing to exclude gestational diabetes in women and people who have the following reagent strip test results during routine antenatal care:

- glycosuria of 2+ or above on 1 occasion
- glycosuria of 1+ or above on 2 or more occasions. **[2015]**

Testing

1.13.5 Use the 75-g 2-hour oral glucose tolerance test (OGTT) to test for gestational diabetes in women and people with risk factors (see recommendation 1.13.2). **[2015]**

1.13.6 For women and people who have had gestational diabetes in a previous pregnancy, offer:

- early self-monitoring of blood glucose levels **or**
- a 75-g 2-hour OGTT as soon as possible after booking (whether in the first or second trimester), and a further 75-g 2-hour OGTT at 24 to 28 weeks if the results of the first OGTT are normal. **[2015]**

1.13.7 Offer women and people with any of the other risk factors for gestational diabetes (see recommendation 1.13.2) a 75-g 2-hour OGTT at 24 to 28 weeks. **[2015]**

Diagnosis

1.13.8 Diagnose gestational diabetes in women and people with either:

- a fasting plasma glucose level of 5.6 mmol/litre or above **or**
- a 2-hour plasma glucose level of 7.8 mmol/litre or above. **[2015]**

1.13.9 When a woman, trans man or non-binary person is diagnosed with gestational diabetes:

- offer a review with the joint diabetes and antenatal clinic within 1 week.
- tell their primary healthcare team (see also the section on continuity of care in the NICE guideline on patient experience in adult NHS services). **[2015]**

1.14 Interventions at diagnosis

1.14.1 Explain to women, trans men and non-binary people with gestational diabetes:

- the implications (both short and long term) of the diagnosis for them and their baby (including UK government advice on driving with diabetes)
- that maintaining optimal blood glucose levels throughout pregnancy will reduce the risk of fetal macrosomia, trauma during birth (for them and their baby), induction of labour, caesarean section, neonatal hypoglycaemia, and perinatal death
- that treatment includes changes in diet and exercise, and could involve medicines. **[2015]**

1.14.2 Teach women and people with gestational diabetes how to self-monitor their blood glucose levels. **[2015]**

1.14.3 Use the same capillary plasma glucose target levels for women and people with gestational diabetes as for those with pre-existing type 2 diabetes (see recommendations 1.15.8). **[2015, amended 2026]**

1.14.4 Tailor blood glucose -lowering therapy to the blood glucose profile and personal preferences of the woman, trans man or non-binary person with gestational diabetes. **[2015]**

1.14.5 Discuss and agree an individualised diabetes management plan with the person. **[2026]**

For a short explanation of why the committee made this 2026 recommendation and how it might affect practice, see the rationale and impact section on gestational diabetes: agreeing a management plan.

1.14.6 When diagnosing gestational diabetes, offer advice about changes in diet and exercise (see the section on gestational diabetes in NICE's guideline on maternal and child nutrition). **[2015]**

1.14.7 Refer all women and people with gestational diabetes to a dietitian. **[2015]**

1.14.8 Advise women and people with gestational diabetes to exercise regularly (for example, walking for 30 minutes after a meal) **[2015]**

1.14.9 For women and people with gestational diabetes who have a fasting plasma glucose level below 7 mmol/litre at diagnosis, offer a trial of diet and exercise changes. **[2015]**

1.14.10 If blood glucose targets are not met with diet and exercise changes within 1 to 2 weeks, offer metformin. **[2015]**

1.14.11 If metformin is contraindicated or unacceptable, offer insulin. **[2015]**

1.14.12 If blood glucose targets are not met with diet and exercise changes plus metformin, offer insulin as well. **[2015]**

1.14.13 For women and people with gestational diabetes who have a fasting plasma glucose level of 7.0 mmol/litre or above at diagnosis, offer:

- immediate treatment with insulin, with or without metformin **and**
- diet and exercise changes. **[2015]**

1.14.14 For women and people with gestational diabetes who have a fasting plasma glucose level of between 6.0 and 6.9 mmol/litre and complications such as macrosomia or hydramnios, consider:

- immediate treatment with insulin, with or without metformin **and**
- diet and exercise changes. **[2015]**

During pregnancy: ongoing diabetes management

Blood glucose and plasma glucose:

'Blood glucose' is the more commonly used term. However, a lot of the evidence this guideline is based on uses 'plasma' rather than 'blood' or 'interstitial' glucose, and patient-held glucose meters and monitoring systems are calibrated to plasma glucose equivalents. Because of this, in this guideline we use the term 'blood glucose', except when referring to specific concentration values.

1.15 Managing diabetes during pregnancy

Type 1 diabetes

HCL systems

For consultation only

As part of the guideline update, we are revising NICE's quality standard on diabetes in pregnancy (QS109). We propose to replace current quality statement 3 on continuous glucose monitoring with a new quality statement on pregnancy-specific hybrid closed loop (HCL) systems, based on new draft recommendations. We invite you to also provide feedback on this draft quality statement as part of this guideline consultation:

- Women, trans men and non-binary people who have type 1 diabetes and are pregnant are provided with a pregnancy-specific hybrid closed-loop system for managing their glucose levels.

Current quality statements 1, 2, 4 and 5 will have minor amendments, if necessary, in line with updates to the guideline.

Hybrid closed loop (HCL) systems are recommended as an option for managing blood glucose levels in type 1 diabetes for women, trans men and non-binary people who are pregnant. For full details, see NICE's technology appraisal guidance on hybrid closed loop systems (TA943, 2023).

1.15.1 Offer information and advice as per recommendations 1.2.2 and 1.2.3 to women, trans men and non-binary people who have type 1 diabetes, are pregnant and have not already had these discussions with their care team in the preconception period. **[2026]**

1.15.2 Offer a pregnancy-specific HCL system for managing glucose levels to women and people who have type 1 diabetes, are pregnant and have not already been given one in the preconception period. Offer them the same training, support and encouragement as when offering an HCL system in the preconception period: see the section on offering an HCL system to manage type 1 diabetes when planning a pregnancy **[2026].**

For a short explanation of why the committee made the 2026 recommendations and how they might affect practice, see the rationale and impact section on managing diabetes during pregnancy for those with type 1 diabetes.

Full details of the evidence and the committee's discussion are in evidence review B: managing type 1 diabetes using hybrid closed loop systems.

Target blood glucose levels

1.15.3 Agree individualised blood glucose targets with pregnant women, trans men and non-binary people with diabetes, taking into account the risk of hypoglycaemia. **[2008]**

1.15.4 Advise pregnant women and pregnant people with type 1 diabetes to:

- maintain their plasma glucose level in range (that is, from 3.5 mmol/L to less than 7.8 mmol/L) for 70% of the time or more
- aim for their plasma glucose level to be under 3.5 mmol/L for less than 4% of the time (that is, less than 1 hour per day). **[2026]**

1.15.5 Advise pregnant women and pregnant people that if their capillary plasma glucose level is below 3.5 mmol/L, this is hypoglycaemia and they should treat it. **[2026]**

1.15.6 Advise pregnant women and pregnant people that if their capillary plasma glucose level is 4 mmol/L and falling they should make a decision about whether to treat this as an episode of hypoglycaemia. **[2026]**

For a short explanation of why the committee made the 2026 recommendations and how they might affect practice, see the rationale and impact section on managing diabetes during pregnancy for those with type 1 diabetes.

Full details of the evidence and the committee's discussion are in evidence review B: managing type 1 diabetes using hybrid closed loop systems.

Type 2 and gestational diabetes

Target blood glucose levels

1.15.7 Agree individualised targets for self-monitoring of blood glucose levels with pregnant women, trans men and non-binary people with diabetes, taking into account the risk of hypoglycaemia. **[2008]**

1.15.8 Advise pregnant women and pregnant people with type 2 or gestational diabetes to maintain their capillary plasma glucose below the following target levels, if these are achievable without causing problematic hypoglycaemia:

- fasting: 5.3 mmol/litre
  and
- 1 hour after meals: 7.8 mmol/litre **or**
- 2 hours after meals: 6.4 mmol/litre. **[2015, amended 2026]**

1.15.9 Advise pregnant women and pregnant people with type 2 or gestational diabetes who are taking insulin to maintain their capillary plasma glucose level above 4 mmol/L. **[2015, amended 2026]**

When to monitor glucose levels if using a glucose meter

1.15.10 Advise women, trans men and non-binary people with type 2 diabetes or gestational diabetes who are pregnant and on a multiple daily insulin injection regimen to monitor their blood glucose levels daily as follows:

- fasting
- pre-meal
- 1-hour post-meal and
- at bedtime. **[2015]**

1.15.11 Advise pregnant women, pregnant trans men and pregnant non-binary people with type 2 diabetes or gestational diabetes to test their fasting and 1 hour post-meal blood glucose levels daily if they are:

- managing their diabetes with diet and exercise changes alone **or**
- taking metformin (with or without diet and exercise changes) or single-dose intermediate-acting or long-acting insulin. **[2015]**

Continuous glucose monitoring for people with severe hypoglycaemia or unstable glucose levels

1.15.12 Offer continuous glucose monitoring (CGM) to women, trans men and non-binary people who are pregnant, have type 2 diabetes and are on multiple daily insulin injections if any of the following apply:

- they have recurrent hypoglycaemia or severe hypoglycaemia
- they have impaired hypoglycaemia awareness
- they have a condition or disability (including a learning disability or cognitive impairment) that means they cannot self-monitor their blood glucose by capillary blood glucose monitoring but could use a CGM device
- they would otherwise be advised to self-measure at least 8 times a day. **[2026]**

1.15.13 Consider CGM for pregnant women and pregnant people who have gestational diabetes and are on insulin therapy, if they have:

- problematic severe hypoglycaemia (with or without impaired awareness of hypoglycaemia) **or**
- unstable blood glucose levels that are causing concern despite efforts to optimise them. **[2015, amended 2026]**

1.15.14 For those using CGM, a member of the joint diabetes and antenatal care team with expertise in these systems should provide

education and support (including advice about sources of out-of-hours support). **[2020]**

For a short explanation of why the committee made the 2026 recommendation and how it might affect practice, see the rationale and impact section on managing diabetes during pregnancy for those with type 2 diabetes or gestational diabetes.

Any type of diabetes

Avoiding skin reactions

See the recommendation on rotating injection or infusion sites.

Risks of hypoglycaemia with insulin treatment

1.15.15 Advise women and people with insulin-treated diabetes of the risks of hypoglycaemia and impaired awareness of hypoglycaemia in pregnancy, particularly in the first trimester. **[2008]**

1.15.16 Advise pregnant women and pregnant people with insulin-treated diabetes to always have a fast-acting form of glucose available (for example, dextrose tablets or glucose-containing drinks). **[2008, amended 2015]**

1.15.17 Provide glucagon to pregnant women and pregnant people with type1 diabetes, for use if needed. Explain to the person and their partner or other family members how to use it. **[2008, amended 2015]**

Ketone testing and diabetic ketoacidosis

1.15.18 Offer blood ketone testing strips and a meter to pregnant women, pregnant trans men and pregnant non-binary people with type 1 diabetes. Advise them to test for ketonaemia and to seek urgent medical advice if they become hyperglycaemic or unwell. **[2015]**

1.15.19 Advise pregnant women and pregnant people with type 2 diabetes or gestational diabetes to seek urgent medical advice if they become hyperglycaemic or unwell. **[2015]**

1.15.20 Test urgently for ketonaemia if a woman, trans man or non-binary person who is pregnant and has any form of diabetes presents with hyperglycaemia or is unwell. **[2015]**

1.15.21 Immediately admit pregnant women and pregnant people with suspected diabetic ketoacidosis for level 2 critical care, where they can receive both medical and obstetric care. **[2008]**

1.16 Monitoring HbA1c

1.16.1 Measure HbA1c levels at the booking appointment to determine the level of risk of adverse pregnancy outcomes for all women, trans men and non-binary people who are pregnant and have:

- pre-existing diabetes or
- previously had gestational diabetes. **[2015, amended 2026]**

1.16.2 Consider measuring HbA1c levels in the second and third trimesters of pregnancy for women and people with pre-existing diabetes, to assess the level of risk of adverse pregnancy outcomes. **[2015]**

1.16.3 Be aware that the level of risk of adverse pregnancy outcomes for women and people with pre-existing diabetes increases with an HbA1c level above 48 mmol/mol (6.5%). **[2015]**

1.16.4 Measure HbA1c levels when women and people are diagnosed with gestational diabetes, to identify those who may have pre-existing type 2 diabetes. **[2015]**

1.16.5 Do not solely use HbA1c levels to assess how well a woman, trans man or non-binary person is maintaining their blood glucose targets

in the second and third trimesters of pregnancy. **[2008, amended 2026]**

1.17 Lowering and managing risks

Retinal assessment during pregnancy

1.17.1 After pregnant women, pregnant trans men and pregnant non-binary people with pre-existing diabetes have had their first antenatal clinic appointment:

- offer retinal assessment by digital imaging with mydriasis using tropicamide (unless they have had a retinal assessment in the last 3 months)
- if they have diabetic retinopathy, offer an additional retinal assessment at 16 to 20 weeks
- offer another retinal assessment at 28 weeks. **[2008, amended 2015]**

1.17.2 Diabetic retinopathy should not be considered a contraindication to rapid optimisation of blood glucose levels in women and people who present with a high HbA1c in early pregnancy. **[2008]**

1.17.3 Diabetic retinopathy should not be considered a contraindication to vaginal birth. **[2008]**

Renal assessment during pregnancy

1.17.4 Arrange a renal assessment at first contact during the pregnancy for women, trans men and non-binary people with pre-existing diabetes, if they have not had 1 in the last 3 months. **[2008, amended 2015]**

1.17.5 Consider referring pregnant women and pregnant people with diabetes to a nephrologist if:

- their serum creatinine is 120 micromol/litre or more **or**

- the urinary albumin:creatinine ratio is greater than 30 mg/mmol **or**
- total protein excretion exceeds 0.5 g/day. **[2008, amended 2015]**

1.17.6 Do not use eGFR to measure kidney function in pregnant women and pregnant people. **[2008, amended 2015]**

1.17.7 Consider thromboprophylaxis for pregnant women and pregnant people with nephrotic range proteinuria above 5 g/day (albumin:creatinine ratio greater than 220 mg/mmol). **[2008, amended 2015]**

Preventing pre-eclampsia

1.17.8 For guidance on using antiplatelet agents to reduce the risk of pre-eclampsia in pregnant women and pregnant people with diabetes, see the section on antiplatelet agents in NICE's guideline on hypertension in pregnancy. **[2015]**

During pregnancy: antenatal baby care

1.18 Detecting congenital malformations

1.18.1 Offer women, trans men and non-binary people with diabetes an ultrasound scan at 20 weeks to detect fetal structural abnormalities, including examination of the fetal heart (4 chambers, outflow tracts and 3 vessels). See also the NHS fetal anomaly screening programme. **[2008, amended 2015]**

1.19 Monitoring fetal growth and wellbeing

1.19.1 Offer pregnant women, pregnant trans men and pregnant non-binary people with diabetes ultrasound monitoring of fetal growth and amniotic fluid volume every 4 weeks from 28 to 36 weeks. **[2008]**

1.19.2 Routine monitoring of fetal wellbeing before 38 weeks is not recommended in pregnant women and pregnant people with diabetes, unless there is a risk of fetal growth restriction. This includes methods such as fetal umbilical artery doppler recording, fetal heart rate recording and biophysical profile testing. **[2008, amended 2015]**

1.19.3 Provide an individualised approach to monitoring fetal growth and wellbeing for women and people with diabetes and a risk of fetal growth restriction (macrovascular disease or nephropathy). **[2008, amended 2015]**

During pregnancy: organisation of antenatal care

1.20 Organisation of antenatal care

1.20.1 Offer immediate contact with a joint diabetes and antenatal clinic to pregnant women, pregnant trans men and pregnant non-binary people with diabetes. **[2008]**

1.20.2 Joint diabetes and antenatal clinics should be in contact with women and people with diabetes every 1 to 2 weeks throughout pregnancy, to assess how well they are maintaining their individualised blood glucose targets. **[2008, amended 2015]**

1.20.3 At antenatal appointments, provide care specifically for women and people with diabetes, in addition to providing the same routine pregnancy care as for those who do not have diabetes (see the NICE guideline on antenatal care). Table 1 describes how care for women and people with diabetes differs from routine antenatal care. **[2008, amended 2015]**

1.20.4 At each appointment, offer pregnant women and pregnant people with diabetes ongoing opportunities for information and education. **[2008, amended 2015]**

1.20.5 At each appointment, update the person's individualised diabetes management plan to reflect relevant targets and any decision made. **[2026]**

For a short explanation of why the committee made this 2026 recommendation and how it might affect practice, see the rationale and impact section on organisation of antenatal care: updating diabetes management plans.

See also the section on continuity of care and relationships in NICE's guideline on patient experience in adult NHS services and the section on continuity and coordination of care in NICE's guideline on babies, children and young people's experience of healthcare.

Table 1 Timetable of antenatal appointments: additional care for those with diabetes

Appointment	Care for women and people with diabetes during pregnancy
Booking appointment (joint diabetes and antenatal care) – ideally by 10 weeks	Discuss how diabetes will affect the pregnancy, birth and early parenting (such as breastfeeding and initial care of the baby). If the woman, trans man or non-binary person has not had preconception care: • give information, education and advice • take a clinical history to establish the extent of diabetes-related complications (including neuropathy and vascular disease), and review medicines for diabetes and its complications • if they have type 1 diabetes, discuss and offer a pregnancy-specific HCL system, and the associated training and multidisciplinary team support. If the woman, trans man or non-binary person has had preconception care, continue to provide information, education and advice on achieving optimal blood glucose levels (including dietary advice, and what blood glucose targets should be used during pregnancy). Offer retinal assessment for women and people with pre-existing diabetes unless they have been assessed in the last 3 months. Offer a renal assessment for women and people with pre-existing diabetes, if they have not had 1 in the last 3 months.

Appointment	Care for women and people with diabetes during pregnancy
	Arrange contact with the joint diabetes and antenatal clinic every 1 to 2 weeks throughout pregnancy for all women and people with diabetes. Measure HbA1c levels for women and people with pre-existing diabetes or previous gestational diabetes to determine the level of risk for the pregnancy. Offer self-monitoring of blood glucose levels or a 75-g 2-hour oral glucose tolerance test (OGTT) as soon as possible for women and people with previous gestational diabetes who book in the first trimester. Confirm the viability of the pregnancy and gestational age at 7 to 9 weeks. Update the person's individualised diabetes management plan as needed.
At every appointment after the booking appointment	Update the woman, trans man or non-binary person's individualised diabetes management plan in line with discussions taking place in the appointment.
16 weeks	Offer retinal assessment at 16 to 20 weeks to women and people with pre-existing diabetes who had diabetic retinopathy at their first antenatal clinic visit. Offer self-monitoring of blood glucose levels or a 75-g 2-hour OGTT as soon as possible for women and people with previous gestational diabetes who book in the second trimester.
20 weeks	Offer an ultrasound scan to detect fetal structural abnormalities, including examination of the fetal heart (4 chambers, outflow tracts and 3 vessels).
28 weeks	Offer ultrasound monitoring of fetal growth and amniotic fluid volume. Offer retinal assessment to all women and people with pre-existing diabetes. Women and people diagnosed with gestational diabetes as a result of routine antenatal testing at 24 to 28 weeks enter the care pathway.
32 weeks	Offer ultrasound monitoring of fetal growth and amniotic fluid volume. Offer nulliparous women and people all routine investigations normally scheduled for 31 weeks in routine antenatal care.
34 weeks	No differences in care for women and people with diabetes.
36 weeks	Offer ultrasound monitoring of fetal growth and amniotic fluid volume. Provide information and advice about: • timing, mode and management of birth • analgesia and anaesthesia

Appointment	Care for women and people with diabetes during pregnancy
	• changes to blood glucose-lowering therapy during and after birth (including HCL settings for those with type 1 diabetes) • care of the baby after birth • starting to breastfeed and the effect of breastfeeding on blood glucose levels • contraception and follow-up.
37 weeks to 38 weeks plus 6 days	Offer induction of labour or (if indicated) caesarean section to women and people with type 1 or type 2 diabetes. Await spontaneous labour for other women and people.
38 weeks	Offer tests of fetal wellbeing.
39 weeks	Offer tests of fetal wellbeing. Advise women and people with uncomplicated gestational diabetes to give birth no later than 40 weeks plus 6 days.

During pregnancy: planning birth, neonatal and postnatal care

1.21 Timing and mode of birth

Any type of diabetes

1.21.1 Discuss the timing and mode of birth during antenatal appointments with women, trans men and non-binary people who are pregnant and have diabetes, especially during the third trimester. **[2015]**

1.21.2 Diabetes should not be considered a contraindication to vaginal birth after a previous caesarean section. **[2008]**

1.21.3 For pregnant women and pregnant people with diabetes who have an ultrasound diagnosed macrosomic fetus, explain the risks and benefits of vaginal birth, induction of labour and caesarean section. **[2008]**

Type 1 and type 2 diabetes

1.21.4 Advise pregnant women and pregnant people with type 1 or type 2 diabetes and no other complications to have an elective birth by

induced labour or (if indicated) caesarean section, between 37 weeks and 38 weeks plus 6 days of pregnancy. **[2015]**

1.21.5 Consider elective birth before 37 weeks for women and people with type 1 or type 2 diabetes who have metabolic or other maternal or fetal complications. **[2015]**

Gestational diabetes

1.21.6 Advise women and people with gestational diabetes to give birth no later than 40 weeks plus 6 days. Offer elective birth by induced labour or (if indicated) by caesarean section to those who have not given birth by this time. **[2015]**

1.21.7 Consider elective birth before 40 weeks plus 6 days for women and people with gestational diabetes who have maternal or fetal complications. **[2015]**

1.22 Agreeing glucose targets and management for labour, birth and immediately after birth

1.22.1 By 36 weeks at the latest, discuss with women, trans men and non-binary people with type 1 diabetes using an HCL system whether they want to use their HCL system during labour, and how to manage it in case of caesarean birth. Update their individualised diabetes management plan to reflect these decisions. **[2026]**

1.22.2 By 36 weeks at the latest, if a woman, trans man or non-binary person with type 1 diabetes uses an HCL system, discuss and agree with them the different HCL settings they will use to maintain their blood glucose in optimal target ranges, as defined for after birth, until they are discharged with their baby.

Update their individualised diabetes management plan to reflect these decisions. **[2026]**

For a short explanation of why the committee made the 2026 recommendations and how they might affect practice, see the rationale and impact section on antenatal care for those with type 1 diabetes: planning for labour, birth and the postnatal period.

Full details of the evidence and the committee's discussion are in evidence review B: managing type 1 diabetes using hybrid closed loop systems.

1.23 Anaesthesia assessment

1.23.1 For women, trans men and non-binary people with diabetes and comorbidities such as obesity or autonomic neuropathy, offer an anaesthetic assessment in the third trimester of pregnancy. **[2008]**

Labour and birth

Blood glucose and plasma glucose:

'Blood glucose' is the more commonly used term. However, a lot of the evidence this guideline is based on uses 'plasma' rather than 'blood' or 'interstitial' glucose, and patient-held glucose meters and monitoring systems are calibrated to plasma glucose equivalents. Because of this, in this guideline we use the term 'blood glucose', except when referring to specific concentration values.

1.24 Managing blood glucose levels and insulin needs during labour and birth

Target ranges

1.24.1 Monitor capillary plasma glucose every hour during labour and birth for women, trans men and non-binary people with diabetes, and support them to maintain it between 4 mmol/litre and 7 mmol/litre. **[2008, amended 2015]**

Insulin needs

Type 1 diabetes

1.24.2 For women and people with type 1 diabetes using a hybrid closed loop (HCL) system, keep using the HCL system:

- during labour and birth, if that is what they and their diabetes care team discussed and documented in their individualised diabetes management plan (see recommendations 1.22.1) and
- after birth (see recommendation 1.22.2, recommendations 1.29.1, and recommendation 1.30.1). **[2026]**

1.24.3 Use intravenous dextrose and insulin infusion during labour and birth if the woman, trans man or non-binary person's plasma glucose is not maintained between 4 mmol/litre and 7 mmol/litre. If the HCL system is disconnected or the closed loop is interrupted, work with the person to ensure that their HCL system is reconnected, if needed, and the closed loop is restarted as soon as possible. **[2008, amended 2015 and 2026]**

> For a short explanation of why the committee made the 2026 recommendations and how they might affect practice, see the rationale and impact section on intrapartum care for those with type 1 diabetes: hybrid closed loop systems.
>
> Full details of the evidence and the committee's discussion are in evidence review B: managing type 1 diabetes using hybrid closed loop systems.

Type 2 and gestational diabetes

1.24.4 Use intravenous dextrose and insulin infusion during labour and birth if capillary plasma glucose is not maintained between 4 mmol/litre and 7 mmol/litre. **[2008, amended 2015]**

1.25 Anaesthesia

1.25.1 If the woman, trans man or non-binary person has general anaesthesia for the birth, monitor blood glucose levels every 30 minutes from induction of general anaesthesia until after the baby is born and the woman or person is fully conscious. **[2008]**

1.25.2 If the woman, trans man or non-binary person has general anaesthesia for the birth and has been using an HCL system to manage their diabetes during pregnancy, use clinical judgement to decide whether to disconnect the HCL system or not during general anaesthesia. If it is disconnected:

- use an alternative source of insulin until the pump is reconnected, to avoid diabetic ketoacidosis, and
- work with the person to ensure that the HCL system is reconnected as soon as possible. **[2026]**

For a short explanation of why the committee made this 2026 recommendation and how it might affect practice, see the rationale and impact section on intrapartum care for those with type 1 diabetes: anaesthesia and hybrid closed loop systems.

Full details of the evidence and the committee's discussion are in evidence review B: managing type 1 diabetes using hybrid closed loop systems.

1.26 Managing preterm birth

1.26.1 Diabetes should not be considered a contraindication to tocolysis or to antenatal steroids for fetal lung maturation. **[2008]**

1.26.2 For women, trans men and non-binary people with insulin-treated diabetes who are taking steroids for fetal lung maturation, give additional insulin according to an agreed protocol and monitor the person closely. **[2008, amended 2015]**

1.26.3 Do not use betamimetic medicines for tocolysis in women or people with diabetes. **[2008]**

Neonatal care

Blood glucose and plasma glucose:

'Blood glucose' is the more commonly used term. However, a lot of the evidence this guideline is based on uses 'plasma' rather than 'blood' or 'interstitial' glucose, and patient-held glucose meters and monitoring systems are calibrated to plasma glucose equivalents. Because of this, in this guideline we use the term 'blood glucose', except when referring to specific concentration values.

1.27 Initial assessment and criteria for admission to intensive or special care

1.27.1 Advise women, trans men and non-binary people with diabetes to give birth in hospitals where advanced neonatal resuscitation skills are available 24 hours a day. **[2008]**

1.27.2 Keep newborn babies of women and people with diabetes with their mother or the parent who gave birth to them unless the baby needs to be admitted to intensive or special care because of complications or abnormal clinical signs. **[2008]**

1.27.3 Test blood glucose level routinely 2 to 4 hours after birth in babies of women and people with diabetes. Carry out blood tests for babies with clinical signs of polycythaemia, hyperbilirubinaemia, hypocalcaemia or hypomagnesaemia. **[2008]**

1.27.4 Test the blood glucose of babies of women and people with diabetes using a quality-assured method validated for neonatal use (ward-based glucose electrode or laboratory analysis). **[2008]**

1.27.5 Perform an echocardiogram for babies of women and people with diabetes if they show clinical signs associated with congenital heart disease or cardiomyopathy, including heart murmur. Base the timing of the examination on the clinical circumstances. **[2008]**

1.27.6 Admit babies of women and people 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)
- jaundice requiring intense phototherapy and frequent monitoring of bilirubinaemia
- been born before 34 weeks (or between 34 and 36 weeks, if the initial assessment of the baby and their feeding suggests this is clinically appropriate). **[2008]**

1.27.7 Do not transfer babies of women and people with diabetes to community care until:

- they are at least 24 hours old **and**
- you are satisfied that the baby is maintaining blood glucose levels and is feeding well. **[2008]**

1.28 Preventing and assessing neonatal hypoglycaemia

1.28.1 All maternity units should have a written policy for preventing, detecting and managing hypoglycaemia in babies of women and people with diabetes. **[2008]**

1.28.2 Women and people with diabetes should feed their babies:

- as soon as possible after birth (within 30 minutes) **and then**
- at frequent intervals (every 2 to 3 hours) until feeding maintains their pre-feed capillary plasma glucose levels at a minimum of 2.0 mmol/litre. **[2008, amended 2015]**

1.28.3 Only use additional measures (such as tube feeding or intravenous dextrose) if:

- capillary plasma glucose values are below 2.0 mmol/litre on 2 consecutive readings despite maximal support for feeding **or**
- there are abnormal clinical signs **or**
- the baby will not effectively feed orally. **[2008, amended 2015]**

1.28.4 For babies with clinical signs of hypoglycaemia, test blood glucose levels and provide intravenous dextrose as soon as possible. **[2008, amended 2015]**

After birth

Blood glucose and plasma glucose:

‘Blood glucose’ is the more commonly used term. However, a lot of the evidence this guideline is based on uses ‘plasma’ rather than ‘blood’ or ‘interstitial’ glucose, and patient-held glucose meters and monitoring systems are calibrated to plasma

glucose equivalents. Because of this, in this guideline we use the term 'blood glucose', except when referring to specific concentration values.

1.29 Blood glucose level management, medicines and breastfeeding

Type 1 diabetes

1.29.1 Women, trans men and non-binary people with type 1 diabetes should change their hybrid closed loop (HCL) settings immediately after birth to those agreed for this time in their individualised diabetes management plan. After that, they should monitor their blood glucose levels to refine these settings. **[2026]**

For a short explanation of why the committee made this 2026 recommendation and how it might affect practice, see the rationale and impact section on postnatal care: managing type 1 diabetes after pregnancy.

Full details of the evidence and the committee's discussion are in evidence review B: managing type 1 diabetes using hybrid closed loop systems.

Type 2 diabetes

1.29.2 Women, trans men and non-binary people with insulin-treated type 2 diabetes should reduce their insulin immediately after birth and monitor their blood glucose levels to find the appropriate dose. **[2008, amended 2026]**

1.29.3 Women and people with pre-existing type 2 diabetes who are breastfeeding can resume or continue metformin, insulin, or both immediately after birth, but should avoid other blood glucose-lowering therapy while breastfeeding. **[2008, amended 2026]**

Breastfeeding with type 1 or type 2 diabetes

1.29.4 Explain to women, trans men and non-binary people 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 carbohydrate-containing snack available before or during feeds. **[2008, amended 2026]**

1.29.5 Women and people with diabetes who are breastfeeding should continue to avoid any medicines for their diabetes complications that were stopped for safety reasons when they started planning the pregnancy. **[2008]**

Gestational diabetes

1.29.6 Women and people who have been diagnosed with gestational diabetes should stop blood glucose-lowering therapy immediately after birth. **[2008]**

1.30 Information and follow-up after birth

Type 1 diabetes

1.30.1 Offer women, trans men and non-binary people with type 1 diabetes the option to remain on a pregnancy-specific HCL system for at least 6 months after birth. **[2026]**

1.30.2 Remind women and people with type 1 diabetes of the importance of contraception and the need for preconception care when planning future pregnancies. This includes using a pregnancy-specific HCL system. **[2008, amended 2026]**

For a short explanation of why the committee made this 2026 recommendation and how it might affect practice, see the rationale and impact section on postnatal care: managing type 1 diabetes after pregnancy.

Full details of the evidence and the committee's discussion are in evidence review B: managing type 1 diabetes using hybrid closed loop systems.

Type 2 diabetes

1.30.3 Refer women, trans men and non-binary people with pre-existing type 2 diabetes back to their routine diabetes care arrangements. **[2008, amended 2026]**

1.30.4 Remind women and people with diabetes of the importance of contraception and the need for preconception care when planning future pregnancies. **[2008]**

Gestational diabetes

1.30.5 Before women, trans men and non-binary people who were diagnosed with gestational diabetes are transferred to community care, test their blood glucose level to exclude persisting hyperglycaemia. **[2008]**

1.30.6 Remind women and people who were diagnosed with gestational diabetes of the symptoms of hyperglycaemia. **[2008]**

1.30.7 Explain to women and people who were diagnosed with gestational diabetes about the risks of recurrence in future pregnancies, and offer them diabetes testing when planning future pregnancies. **[2008, amended 2015]**

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

- offer lifestyle advice (including weight management, diet and exercise)

- offer a fasting plasma glucose test 6 to 13 weeks after the birth to exclude diabetes (for practical reasons this might take place at the 6-week postnatal check)
- after 13 weeks offer a fasting plasma glucose test if this has not been done earlier, or an HbA1c test if a fasting plasma glucose test is not possible
- do not routinely offer a 75-g 2-hour OGTT
- offer a referral or encourage and guide self-referral into the NHS Diabetes Prevention Programme. **[2015, amended 2026]**

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

- Advise those with a fasting plasma glucose level below 6.0 mmol/litre that:
  - they have a low probability of having diabetes at the moment
  - they should continue to follow the lifestyle advice (including weight management, 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 the NICE guideline on preventing type 2 diabetes (note that this guideline uses different risk thresholds, because it covers a different population).
- Advise those with a fasting plasma glucose level between 6.0 mmol/litre 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 the NICE guideline on preventing type 2 diabetes (note that this guideline uses different risk thresholds, because it covers a different population).

- Advise those 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 test to confirm this. **[2015]**

1.30.10 For women and people having an HbA1c test as the postnatal test:

- Advise those with an HbA1c level below 39 mmol/mol (5.7%) that:
  - they have a low probability of having diabetes at the moment
  - they should continue to follow the lifestyle advice (including weight management, 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 the NICE guideline on preventing type 2 diabetes (note that this guideline uses different risk thresholds, because it covers a different population).
- Advise those with an HbA1c level between 39 mmol/mol 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 the NICE guideline on preventing type 2 diabetes (note that this guideline uses different risk thresholds, because it covers a different population).
- Advise those with an HbA1c level of 48 mmol/mol (6.5%) or above that they have type 2 diabetes, and refer them for further care. **[2015]**

1.30.11 Offer an annual HbA1c test to women and people who have had gestational diabetes and have a negative postnatal test for diabetes. **[2015]**

1.30.12 Offer women and people with gestational diabetes early self-monitoring of blood glucose levels or an OGTT in future

pregnancies. Offer a subsequent OGTT if the first OGTT results in early pregnancy are normal (see recommendation 1.13.6). **[2008, amended 2015]**

Terms used in this guideline

Blood glucose and plasma glucose

'Blood glucose' is the more commonly used term. However, a lot of the evidence this guideline is based on uses 'plasma' rather than 'blood' or 'interstitial' glucose, and patient-held glucose meters and monitoring systems are calibrated to plasma glucose equivalents. Because of this, in this guideline we use the term 'blood glucose', except when referring to specific concentration values.

HbA1c levels

HbA1c values are reported in mmol/mol, using the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) standardised HbA1c test. The equivalent values in %, using the Diabetes Control and Complications Trial (DCCT)-aligned HbA1c test, are reported in parentheses.

Level 2 critical care

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

Pregnancy-specific hybrid closed loop system

Hybrid closed loop (HCL) systems link continuous glucose monitoring (CGM) with insulin pump technology (also known as continuous subcutaneous insulin infusion or CSII) to monitor blood glucose and automatically adjust the amount of insulin given through a pump to people living with type 1 diabetes.

An HCL system is pregnancy-specific if all of the following applies:

- the system is licensed for use in pregnancy

- the target or optimum blood glucose level can be set to values below 5 mmol/L
- the lower and upper value of the target range can be set to those recommended in this guideline
- evidence of a clinically relevant improvement in glucose outcomes for the women, trans men and non-binary people who are pregnant (defined as time in the pregnancy glucose target range of 3.5 to 7.8 mmol/L increased by at least 5% compared to standard care with CGM and standard insulin delivery by multiple daily injections or pump).

Recommendations for research

The guideline committee has made the following recommendations for research.

1 Testing for gestational diabetes

When should testing for gestational diabetes take place – in the first or second trimester?

Why this is important

Conventionally, testing for gestational diabetes takes place in the second trimester. Intervention has been shown to improve outcomes for women diagnosed with gestational diabetes. However, age at onset of pregnancy and obesity are increasing, and some women, trans men and non-binary people (especially those from populations with a high incidence of type 2 diabetes) enter pregnancy with undiagnosed type 2 diabetes, but may not be tested for diabetes until the second trimester. This exposes the woman, trans man or non-binary person and the fetus to risks resulting from early and prolonged maternal or parental hyperglycaemia. It is presumed that this is associated with increased morbidity. UK population studies are needed to establish the incidence of glucose intolerance in women and people in the first trimester of pregnancy. Well-designed randomised controlled trials are needed to

establish if testing, diagnosis and intervention in the first rather than the second trimester improves maternal or parental, fetal and neonatal outcomes, including fetal hyperinsulinaemia.

2 Barriers to achieving blood glucose targets before and during pregnancy

What are the barriers that women experience to achieving blood glucose targets?

Why this is important

It is vital for normal fetal development in the first trimester that women, trans men and non-binary people with pre-existing diabetes achieve and maintain good blood glucose levels both before and during pregnancy. Good management also helps to prevent macrosomia and other complications in the third trimester in women with pre-existing or gestational diabetes. Whereas many women and people manage to achieve blood glucose targets, a proportion of them continue to find it difficult to do so. A number of factors could be involved, such as health beliefs, lack of information on the importance of optimum blood glucose management, difficulties complying with a demanding regimen of blood glucose testing up to 7 times a day, and the need to adjust insulin dosage. A better understanding of the barriers in this cohort of women and people is needed so that healthcare professionals can work to overcome them. Robust qualitative studies are needed to explore these barriers, with the aim of improving blood glucose management and fetal outcomes in pregnancy for women and people with pre-existing or gestational diabetes.

3 Risk of fetal death for women and people with diabetes

How can fetuses at risk of intrauterine death be identified in women, trans men and non-binary people with diabetes?

Why this is important

Unexpected intrauterine death remains a significant contributor to perinatal mortality in pregnant women and pregnant people with diabetes. Conventional tests of fetal wellbeing (umbilical artery doppler ultrasound, cardiotocography and other biophysical tests) have been shown to have poor sensitivity for predicting such events. Alternative approaches that include measurements of erythropoietin in the amniotic fluid and MRI spectroscopy may be effective, but there is currently insufficient clinical evidence to evaluate them. Well-designed randomised controlled trials that are sufficiently powered are needed to determine whether these approaches are clinically and cost effective.

4 Postnatal treatment after gestational diabetes

Are there effective long-term pharmacological interventions to prevent the onset of type 2 diabetes that can be recommended postnatally for women, trans men and non-binary people who have been diagnosed with gestational diabetes?

Why this is important

Gestational diabetes is one of the strongest risk factors for the subsequent development of type 2 diabetes: up to 50% of those diagnosed with gestational diabetes develop type 2 diabetes within 5 years of the birth. There are some data suggesting that changes in diet and exercise, with or without metformin, can prevent type 2 diabetes developing in non-pregnant middle-aged people with glucose intolerance, but there are no studies specifically in women and people with a past history of gestational diabetes. There is therefore an urgent need to investigate what interventions may delay or prevent type 2 diabetes in this high-risk population. Undertaking a formal randomised controlled trial involving long-term outcomes is often not feasible in practice. However, it would be possible to have a quasi-randomised study comparing 2 populations of women and people with similar demographic profiles who had gestational diabetes. One population would be encouraged at their annual check to follow a specific diet and exercise regime and those in the other population would not. The incidence of the development of type 2

diabetes in the 2 groups at 5 years, 10 years and 20 years would be compared.

5 Hybrid closed loop systems and fetal and neonatal outcomes

Based on routinely collected real-world data, in women, trans men and non-binary people with type 1 diabetes, who are planning to become pregnant, are pregnant, or are in the postpartum period, what is the effectiveness and cost effectiveness of using hybrid closed loop (HCL) systems to improve fetal and neonatal outcomes, compared to other forms of insulin delivery?

Why this is important

The committee noted an absence of clinical evidence on the effectiveness of using HCL systems, compared with other forms of insulin delivery, to improve fetal and neonatal outcomes. The committee acknowledged that the association between glucose levels during pregnancy and pregnancy outcomes is well established. Therefore, they were confident the evidence from the AiDAPT and CRISTAL trials, for improved maternal glucose from early pregnancy onwards, will have clinically relevant health benefits both for pregnant women and pregnant people and for their babies. However, they considered that it would be valuable to do research using routinely collected real-world data, including audits, to examine the effect of HCL systems compared to other forms of insulin delivery on fetal and neonatal outcomes, including:

- preterm births
- large birthweight
- neonatal care admissions.

6 Hybrid closed loop systems and reducing the risk of adverse outcomes for the mother or parent

Based on routinely collected real-world data, in women, trans men and non-binary people with type 1 diabetes who are planning to become pregnant, are

pregnant, or are in the postpartum period, what is the effectiveness and cost effectiveness of using hybrid closed loop (HCL) systems to reduce the risk of adverse outcomes for the mother or parent, compared to other forms of insulin delivery?

Why this is important

The committee noted an absence of clinical evidence on the effectiveness of using HCL systems, compared with other forms of insulin delivery, to reduce the risk of adverse outcomes for the mother or parent. The committee acknowledged that the association between glucose levels during pregnancy and pregnancy outcomes is well established. Therefore, they were confident that improved maternal blood glucose levels from early pregnancy onwards, as shown in the AiDAPT and CRISTAL trials, will have clinically relevant health benefits both for pregnant women and pregnant people using an HCL system and for their babies. However, they agreed that it would be valuable to do research using routinely collected real-world data, including audits, to examine the effect of HCL systems compared to other forms of insulin delivery on reducing the risk of adverse outcomes for the mother or parent, including:

- severe hypoglycaemia
- nocturnal hypoglycaemia and
- diabetic ketoacidosis.

Rationale and impact

These sections briefly explain why the committee made the recommendations and how they might affect practice.

Preconception care for those with type 1 diabetes: education and advice

Why the committee made these recommendations

Recommendation 1.2.3

Offering information on hybrid closed loop systems

The need for shared decision making is recognised best practice, as is the need to share with people the objective, evidence-based information that they need to make an informed decision about their care. The committee agreed it is important that the information given is consistent across care centres to avoid inequalities. To support this, they specified which points it should cover.

How the recommendation might affect practice

This recommendation aims to standardise the information that is shared with women and people who are pregnant or planning a pregnancy. No impact on current practice is expected given that information can be shared as part of standard pre-pregnancy care.

Return to recommendation

Preconception care for all those with pre-existing diabetes

Recommendation 1.4.6

Why the committee made this recommendation

In line with NICE's guidelines on type 1 diabetes in adults and type 2 diabetes in adults, all adults with type 1 or type 2 diabetes should have an individualised diabetes management plan. Pregnancy affects diabetes and diabetes affects pregnancy. So, it's important to make changes on the way diabetes is managed while planning a pregnancy compared to before planning for pregnancy, in line with recommendations in this guideline. This is because it is well known that tightening blood glucose management can have a significant effect on outcomes for the mother or parent and their baby. The committee agreed that it was also important to update someone's individualised diabetes management plan to reflect these changes.

How the recommendation might affect practice

This recommendation aims to standardise practice, but should not have a significant resource impact given that all adults with type 1 or type 2 diabetes should already have an individualised diabetes management plan and that the

plan can be amended as part of taking notes in the appointment and updating records as a result of the appointment.

Return to recommendation

Preconception care for those with type 1 diabetes: hybrid closed loop systems

Recommendations 1.9.1 to 1.9.5

Why the committee made these recommendations

Offering a hybrid closed loop system

The committee looked at evidence on all hybrid closed loop (HCL) systems that are licensed for use in pregnancy. Some of these systems are pregnancy-specific and some are not. The evidence allowed the committee to separately compare pregnancy-specific HCL systems to standard care and non-pregnancy-specific HCL systems to standard care. Standard care was defined as continuous subcutaneous insulin infusion (CSII) with continuous glucose monitoring (CGM) or multiple daily injection (MDI) with CGM.

Evidence showed that pregnancy-specific HCL systems are more effective than standard care at achieving good glycaemic outcomes for the woman or person who is pregnant (including overall time in range, time above range, and nighttime in range). These benefits are clinically significant. For non-pregnancy-specific HCL systems, most of the results were uncertain, so the committee only recommended pregnancy-specific HCL systems.

Economic evidence from the CRISTAL trial suggested that, for women and people with diabetes who are pregnant, non-pregnancy-specific HCL systems were likely to save costs, compared to standard care, but these results were uncertain. The savings mainly related to a reduction in length and frequency of hospitalisation during pregnancy. Given that pregnancy-specific HCL systems improve glycaemic outcomes more than non-pregnancy-specific ones when each is compared to standard care, the committee agreed that it

was likely that pregnancy-specific HCL systems would also save costs, and potentially even more so than non-pregnancy-specific HCL systems.

The committee highlighted the need for further research on fetal and neonatal outcomes. This is because the groups studied in clinical trials were not large enough to detect a true difference between those using an HCL system and those on standard care on the risk of adverse effects for the baby.

Training on using an HCL system

The committee discussed the recommendations in NICE's technology appraisal guidance on HCL systems for managing blood glucose levels in type 1 diabetes. They were keen to ensure that women and people with type 1 diabetes who are pregnant or planning to become pregnant are supported to meet the training and competency requirements set by these recommendations. They agreed that this should be done in a way that is adapted to the needs of each person, so that health inequalities are avoided.

Multidisciplinary team support for those on HCL systems

Based on their experience, the committee agreed that, in addition to training, women, trans men and non-binary people with type 1 diabetes who are pregnant or planning a pregnancy should be given the advice and support they need to use an HCL system independently. They agreed that this support should be tailored to the person's needs, so that all people with type 1 diabetes can be empowered to use an HCL system if they wish to.

The committee agreed that the multidisciplinary team (MDT) should include a dietician. While a lot of other relevant clinical roles may overlap, dieticians bring in unique knowledge, including carbohydrate counting, which is key for diabetes management.

The committee highlighted that, while expertise on some topics is key, flexibility in the composition of the multidisciplinary team is also important. This is because, if the composition of the multidisciplinary team was strictly defined, it may not be possible for some smaller teams to meet the

requirements to constitute an MDT. This would then lead to health inequalities for women or people who are cared for by these teams.

Encouraging those on a non-pregnancy-specific HCL to move onto a pregnancy-specific one

Evidence showed that pregnancy-specific HCLs lead to better maternal or parental overall time in range than standard care, whereas non-pregnancy-specific HCLs did not. In a non-pregnancy-specific HCL system, it is not possible to set the glucose target as recommended for pregnancy, so glucose level management simply cannot be optimised as recommended, which is likely to lead to poorer outcomes. As a result, it is important for their and their baby's health that women and people planning a pregnancy use a pregnancy-specific HCL system.

However, using a new way of managing one's blood glucose levels and achieving the best possible results from it requires both training and time to get experienced with it. So, some women or people planning a pregnancy might be reluctant to start using an HCL system while they are trying to get pregnant, especially if they feel in control with their current treatment. Similarly, those already on a non-pregnancy-specific HCL system might be reluctant to change to a pregnancy-specific one. They may need encouragement and time to think about it. So, the committee agreed that they should be given more than one opportunity to discuss the risks and benefits of HCL systems, and the advantages and disadvantages of continuing on their current care plan against those of starting to use a pregnancy-specific HCL system.

How the recommendation might affect practice

The recommendations on offering an HCL system and associated discussions and training reflect best current practice. There may be a small increase in pregnant women and pregnant people using an HCL system but this isn't expected to have a significant resource impact. Access to HCL systems is through a 5-year phased roll out that has already started, in line with NHS England's implementation plan.

The recommendation on multidisciplinary team support reflects best current practice and will standardise practice across the NHS. It is not expected to have a significant resource impact.

Return to recommendations

Gestational diabetes: agreeing a management plan

Recommendation 1.14.5

Why the committee made this recommendation

As per NICE's guidelines on type 1 diabetes in adults and type 2 diabetes in adults, all adults with type 1 or type 2 diabetes should have an individualised diabetes management plan. The committee agreed that the same standard of care should be given to those with gestational diabetes, so they should have a diabetes management plan from diagnosis.

How the recommendation might affect practice

This recommendation aims to standardise practice but should not have a significant resource impact given that the plan can be written as part of taking notes in the appointment and updating records as a result of the appointment.

Return to recommendation

Managing diabetes during pregnancy for those with type 1 diabetes

Recommendations 1.15.1, 1.15.2, and 1.15.4 to 1.15.6

Why the committee made these recommendations

Offering information, support and a hybrid closed loop system during pregnancy if they have not been offered before

The committee acknowledged that not all pregnancies are planned, and that some women, trans men and non-binary people with type 1 diabetes might plan a pregnancy without telling their diabetes care team. They agreed that, to improve outcomes for these people and their babies, they should be offered in

pregnancy, where possible, all the information, support and care that they did not have in the preconception period. This includes being offered a pregnancy-specific hybrid closed loop (HCL) system. Although the committee agreed the benefits were likely to be greater for pregnant people if glucose levels were well managed during the preconception period, the committee agreed that it is never too late to start using a hybrid closed loop system, therefore if people are not on a pregnancy-specific HCL they should be offered one at the earliest possible point in their pregnancy.

Pregnancy affects diabetes and so making changes on the way diabetes is managed in pregnancy compared to before pregnancy can have an important effect on outcomes for the mother or parent and their baby. In addition, the committee wanted to ensure that:

- people are supported to make informed decisions about their care
- the information given is consistent across care centres to avoid inequalities
- any differences in outcomes between people who have had preconception care and those who have not are minimised.

See also recommendations 1.2.2 and 1.2.3, and section 1.9, and why the committee made these recommendations.

Target glucose levels

The committee agreed to recommend a pregnancy-specific target range of 3.5 to 7.8 mmol/L, in line with Clinical Targets for Continuous Glucose Monitoring Data Interpretation: Recommendations From the International Consensus on Time in Range and NHS England's Saving babies lives version 3, which both drive current practice and were used in the clinical trials considered by the committee.

However, also in line with the international consensus on time in range, they highlighted that it is important to minimise the time glucose levels spend below range.

Treating hypoglycaemia from 4 mmol/L

While the lower limit of target range extends down to 3.5 mmol/L in pregnancy, hypoglycaemia is commonly defined as glucose levels below 4 mmol/L. The committee agreed that, when considering whether to treat hypoglycaemia, it is important to take the blood glucose level trend into account in addition to its value. This is all the more important because pregnancy can decrease hypoglycaemia awareness.

How the recommendation might affect practice

The recommendations on target glucose levels and when to treat hypoglycaemia do not reflect a significant change in current practice. They should not have a significant resource impact.

The recommendations on offering an HCL system and associated training reflect best current practice.

Access to HCL systems is through a 5-year phased roll out that has already started, in line with NHS England's implementation plan. As a result, this recommendation has no significant resource impact.

Return to recommendations

Managing diabetes during pregnancy for those with type 2 or gestational diabetes

Why the committee made the recommendations

Recommendations 1.15.12 to 1.15.13

When to offer CGM to those with type 2 or gestational diabetes

NICE’s 2015 evidence review showed that, when compared with intermittent capillary glucose monitoring, real-time CGM (known as rtCGM) resulted in:

- more women achieving their blood glucose targets
- fewer caesarean sections
- fewer neonatal intensive care unit (NICU) admissions.

However, the majority of the evidence considered was only in people with type 1 diabetes, therefore, at that time, the committee could not write an offer recommendation for those who do not have type 1 diabetes.

In 2026, the recommendations on CGM were amended to:

- remove the distinction between rtCGM and intermittently scanned CGM (isCGM), given that the only isCGM still on the market in the UK can also be used as rtCGM
- ensure the conditions for offering a CGM to a woman, trans man or non-binary person with type 2 diabetes weren't more restrictive in pregnancy than outside pregnancy (as specified in the 2022 recommendation on CGM in NICE's guideline on type 2 diabetes in adults).

Offering education and support to those using a CGM

The committee believed that education and support are important for pregnant women using continuous glucose monitoring (CGM), to ensure they get the full benefit. Therefore, they updated and expanded the 2015 recommendation on providing support.

How the recommendations might affect practice

The recommendation on CGM for people with type 2 diabetes is now in line with recommendations in NICE's guideline on type 2 diabetes in adults. This is standard practice and therefore no resource impact is expected.

Return to recommendations

Organisation of antenatal care: updating diabetes management plans

Recommendation 1.20.5

Why the committee made this recommendation

In line with NICE's guidelines on type 1 diabetes in adults and type 2 diabetes in adults, all adults with type 1 or type 2 diabetes should have an individualised diabetes management plan. For those with type 1 and type 2

diabetes, pregnancy affects diabetes and diabetes affects pregnancy. So, it's important to make changes on the way diabetes is managed in pregnancy compared to before pregnancy, in line with recommendations in this guideline. This is because it is well known that tightening blood glucose management can have a significant effect on outcomes for the mother or parent and their baby. The committee agreed that it was also important to update someone's individualised diabetes management plan to reflect these changes.

For those with gestational diabetes, the committee agreed that the standard of care should be the same as for those with other types of diabetes, so they should have a diabetes management plan for their pregnancy, and this plan should be kept up to date until discharge from pregnancy services.

How the recommendation might affect practice

This recommendation aims to standardise practice but should not have a significant resource impact. This is because:

- all adults with type 1 or type 2 diabetes should already have an individualised diabetes management plan
- for those with gestational diabetes, the plan will be created at diagnosis
- the plan can be amended as part of taking notes in each appointment and updating records as a result of the appointment.

Return to recommendation

Antenatal care for those with type 1 diabetes: planning for labour, birth and the postnatal period

Recommendations 1.22.1 and 1.22.2

Why the committee made these recommendations

The committee agreed, based on their experience, that people should be supported, as much as possible, to manage their blood glucose level themselves during labour and birth.

From 37 weeks, babies are considered to be at full term and birth can happen at any time, especially given that diabetes increases the risk of preterm birth. So, it's best to be ready before that.

Insulin need will drop at birth, so people should plan to change their hybrid closed loop (HCL) settings immediately after birth to minimise the risk of severe hypoglycaemia. The best people to support someone with diabetes in identifying these settings are members of their usual diabetes care team. It cannot be guaranteed that anyone from that team will be present immediately after the baby's birth so the discussion needs to happen in advance.

How the recommendation might affect practice

The recommendations on individualised management plans do not reflect a significant change in current practice. They should not have a significant resource impact.

Return to recommendations

Intrapartum care for those with type 1 diabetes: hybrid closed loop systems

Recommendations 1.24.2 and 1.24.3

Why the committee made these recommendations

Using a hybrid closed loop system during birth

The only evidence on using a hybrid closed loop (HCL) system during labour and birth that was available to the committee showed uncertain effects on glycaemic outcomes. However, this evidence was from the CRISTAL trial, so it only covered non-pregnancy-specific HCL systems. In the committee's experience, blood glucose levels are better managed through an HCL system than with standard care, and evidence on using pregnancy-specific HCL systems during pregnancy and the postnatal period showed that these systems improve glycaemic outcomes for the mother or parent who will be giving birth or has given birth (whereas non-pregnancy-specific HCL systems

have uncertain effects on outcomes). As a result, the committee agreed that it was likely that using a pregnancy-specific HCL system during labour and birth would result in tighter glucose level management than standard care.

Return to recommendations

Intrapartum care for those with type 1 diabetes: anaesthesia and hybrid closed loop systems

Recommendation 1.25.2

Why the committee made these recommendations

There are safety issues around using hybrid closed loop (HCL) systems during certain medical and diagnostic procedures, and during general anaesthesia. These could differ from one HCL system to another. It is important to see the relevant product documentation for precautions and warnings.

In addition, should someone receive general anaesthesia, they will not be able to manage their blood glucose through their pump while they are under anaesthesia. Though partners can be present for birth, they will be asked to leave the theatre if the person giving birth is given a general anaesthesia, so they cannot help with managing blood glucose through the pump during the anaesthesia.

Should someone's pump be disconnected for general anaesthesia, the person will need an alternative source of insulin, because they will not have had insulin from their pump. In addition, they may not be aware that their pump has been disconnected if they were unconscious when it happened.

Evidence showed that pregnancy-specific HCL systems lead to better glycaemic outcomes than standard care, so use of the HCL system should be resumed as soon as possible.

How the recommendation might affect practice

The recommendations on removing HCL systems during general anaesthesia is current best practice. It should not have a significant resource impact.

Return to recommendation

Postnatal care: managing type 1 diabetes after pregnancy

Recommendation 1.29.1 and 1.30.1

Why the committee made these recommendations

Changing one's hybrid closed loop system settings immediately after birth

Insulin needs drop at birth. Breastfeeding also carries a risk of hypoglycaemia. So, if the woman or person who has given birth does not change their hybrid closed loop (HCL) system settings immediately after birth, they will be at risk of severe hypoglycaemia. The committee therefore made this recommendation, in line with recommendation 1.22.2, based on their knowledge and experience.

Continued hybrid closed loop system use

Clinical trial evidence showed that continuing to use a pregnancy-specific HCL system for 6 months after birth improved glycaemic outcomes for the mother or person who has given birth, in a clinically significant way. For non-pregnancy-specific HCL systems, the effect was uncertain, and was only reported on a much shorter period (until discharge from hospital).

The evidence did not cover outcomes beyond 6 months. However, the committee agreed that the woman or person could continue to use their pregnancy-specific HCL system for more than 6 months after birth, especially if they are planning another pregnancy. In addition, clinically, it makes sense that, if the person has maintained optimal blood glucose levels using an HCL system in pregnancy, they are likely to be able to do the same in the post-pregnancy period.

How the recommendation might affect practice

The recommendations on individualised management plans do not reflect a significant change in current practice. They should not have a significant resource impact.

Access to HCL systems is through a 5-year phased roll out that has already started, in line with NHS England's implementation plan. As a result, this recommendation has no significant resource impact.

Return to recommendations

Finding more information and committee details

To find NICE guidance on related topics, including guidance in development, see the NICE topic page on diabetes.

For details of the guideline committee see the committee member list.

Update information

Recommendations that have been deleted, or changed without an evidence review

We propose to delete some recommendations from the 2020 guideline. Table 2 sets out these recommendations and includes details of replacement recommendations. If there is no replacement recommendation, an explanation for the proposed deletion is given.

For recommendations shaded in grey and ending **[2008, amended 2026], [2015, amended 2026]** or **[2020, amended 2026]**, we have made changes that could affect the intent without reviewing the evidence. Yellow shading is used to highlight these changes, and reasons for the changes are given in table 3.

For recommendations shaded in grey and ending **[2008]**, **[2015]** or **[2020]** we have not reviewed the evidence. In some cases, minor changes have been made – for example, to update links, or bring the language and style up to

date – without changing the intent of the recommendation. Minor changes are listed in table 4.

Table 2 Recommendations that have been deleted

Recommendation in 2020 guideline	Comment
Advise pregnant women with type 1 diabetes to test their fasting, pre-meal, 1-hour post-meal and bedtime blood glucose levels daily. [2015] (1.3.1)	Not needed anymore because women and people with type 1 diabetes will have a CGM as part of their HCL so will be continuously monitoring their blood glucose.
Consider rapid-acting insulin analogues (aspart and lispro) for pregnant women with diabetes. Be aware that these insulin analogues have advantages over soluble human insulin during pregnancy. [2008] (1.3.12)	It is now common practice to use rapid-acting insulin analogues.
Offer continuous subcutaneous insulin infusion (CSII; also known as insulin pump therapy) to pregnant women with insulin-treated diabetes who: • are using multiple daily injections of insulin and • do not achieve blood glucose control without significant disabling hypoglycaemia. [2008] (1.3.16)	No longer valid for type 1 diabetes (recommendation superseded by the recommendations on offering an HCL system) and a continuous subcutaneous insulin infusion is not offered in practice to people with type 2 and gestational.
Offer real-time continuous glucose monitoring (rtCGM) to all pregnant women with type 1 diabetes to help them meet their pregnancy blood glucose targets and improve neonatal outcomes. [2020] (1.3.17)	No longer valid for type 1 diabetes (recommendation superseded by the recommendations on offering an HCL system, which includes a CGM).
Offer intermittently scanned continuous glucose monitoring (isCGM, commonly referred to as 'flash') to pregnant women with type 1 diabetes who are unable to use rtCGM or express a clear preference for isCGM. [2020] (1.3.18)	No longer valid for type 1 diabetes (recommendation superseded by the recommendations on offering an HCL system, which includes a CGM). In addition, there is only one isCGM still in use in the UK, which can be used as a rtCGM as well.
Advise pregnant women with type 2 diabetes or gestational diabetes to seek urgent medical advice if they become hyperglycaemic or unwell. **[2015]** (1.3.22)	Deleted because we have amended the recommendation on ketone meters in the pre-pregnancy section to include people with type 2 diabetes.
Consider intravenous dextrose and insulin infusion from the onset of established labour for women with type 1 diabetes. [2008] (1.4.11)	Deleted at the committee's request. If people are using an HCL system, they will not need to be on IV insulin (unless in conditions set by recommendation

	1.4.12 in the live guideline – numbered 1.24.4 in this updated guideline).

Table 3 Amended recommendation wording (change to intent) without an evidence review

Recommendation in [year of previous guideline] guideline	Recommendation in current guideline	Reason for change
When women with diabetes are planning a pregnancy, provide them and their families with information about how diabetes affects pregnancy and how pregnancy affects diabetes. The information should cover: • the role of diet, body weight and exercise • the risks of hypoglycaemia and impaired awareness of hypoglycaemia during pregnancy • how nausea and vomiting in pregnancy can affect blood glucose control • the increased risk of having a baby who is large for gestational age, which increases the likelihood of birth trauma, induction of labour, and instrumental and caesarean section deliveries • the need for diabetic retinopathy assessment before and during pregnancy • the need for diabetic nephropathy assessment before pregnancy	When a woman, trans man or non-binary person with diabetes is planning a pregnancy, provide them and their families with information about how diabetes can affect pregnancy outcomes. The information should cover: • the increased risk of having a baby who is large for gestational age, which increases the likelihood of birth trauma, induction of labour, and instrumental and caesarean section deliveries • the need for diabetic retinopathy assessment before and during pregnancy • the need for diabetic nephropathy assessment before and during pregnancy • the importance of maintaining optimal blood glucose levels for the woman or person during labour and birth, and the need for early feeding of the baby, in order to reduce the risk of neonatal hypoglycaemia • the possibility that the baby may have health	Some bullets have been moved to another recommendation (1.2.2 in the updated guideline). The stem has been amended accordingly. This was to provide a better split between information on how pregnancy affects diabetes and its management, and how diabetes affects pregnancy outcomes. The recommendation on providing structured education (now 1.2.2) would otherwise have repeated part of this recommendation (now 1.3.3) 'and during' was added to bullet 3, in line with another recommendation in this guideline, for consistency.

• the importance of maternal blood glucose control during labour and birth, and the need for early feeding of the baby, in order to reduce the risk of neonatal hypoglycaemia • the possibility of that the baby may have health problems in the first 28 days, and may need admitting to a neonatal unit • the risk of the baby developing obesity, diabetes and/or other health problems in later life. [2008] (1.1.3)	problems in the first 28 days, and may need admitting to a neonatal unit • the risk of the baby developing obesity, diabetes, other health problems, or a combination of these, in later life. **[2008]** (1.3.3)	
As early as possible, offer a structured education programme to women with diabetes who are planning a pregnancy (if they have not already attended one). For more guidance, see the education and information section in the NICE guideline on type 1 diabetes in adults, and the patient education section in the NICE guideline on type 2 diabetes in adults. **[2008]** (1.1.28)	As early as possible, offer a structured diabetes education programme to women and people with diabetes who are planning a pregnancy (if they have not already attended one). It should cover: • how pregnancy affect blood glucose levels, and how that changes as the pregnancy progresses (including the risks of hypoglycaemia and impaired awareness of hypoglycaemia) • the importance of managing glucose levels before and during pregnancy, including achieving and maintaining glucose and HbA1c targets • the complications of diabetes in pregnancy for the woman or person and their baby,	We have made the structured education programme clearer in this recommendation, in line with NICE's guidelines on type 1 diabetes in adults (NG17), diabetes (type 1 and type 2) in children and young people (NG18) and type 2 diabetes in adults (NG28). This was because the committee said that it wasn't clear what these education programmes would involve.

	and how to reduce their risk • how diet, body weight, physical activity and intercurrent illness affect blood glucose levels and their management in pregnancy • how nausea and vomiting in pregnancy can affect blood glucose levels • managing intercurrent illness in pregnancy ('sick-day rules', including monitoring of blood ketones [beta-hydroxybutyrate]) • detecting and managing hypoglycaemia, hyperglycaemia and ketosis in pregnancy (see also the sections on risk of hypoglycaemia with insulin-treated diabetes and on ketone testing and diabetes ketoacidosis) • the importance of good oral hygiene and regular oral health reviews in pregnancy for preventing periodontitis • when to take capillary blood glucose measurements. **[2008, amended 2026]** (1.2.2)	
For women with diabetes who are planning a pregnancy and who have a body mass index (BMI) above 27 kg/m^2, offer advice on how to lose weight, in line with the NICE guideline on	For women and people with diabetes who are planning a pregnancy and are living with overweight or obesity, offer advice on how to lose weight, in line with NICE's guideline on overweight and obesity	The BMI threshold was removed to reflect the 2025 update of NICE's guideline on overweight and obesity management.

overweight and obesity management (this includes guidance on BMI and using variations on the BMI cut-off, based on the risk for different ethnic groups). **[2008]** (1.1.10)	management. **[2008, amended 2026]** (1.5.2)	
Women with diabetes may be advised to use metformin as an adjunct or alternative to insulin in the preconception period and during pregnancy, when the likely benefits from improved blood glucose control outweigh the potential for harm. Stop all other oral blood glucose-lowering agents before pregnancy, and use insulin instead. **[2008]** (1.1.21)	Women, trans men and non-binary people with diabetes may be advised to use metformin as an adjunct or alternative to insulin in the preconception period and during pregnancy, when the likely benefits from improved blood glucose levels outweigh the potential for harm. For those with type 2 diabetes, stop all other blood glucose-lowering agents before pregnancy. **[2008 amended 2026]** (1.8.1)	'oral' deleted after 'other' because there are now other glucose-lowering therapies that are not 'oral'. Because of this, 'for those with type 2 diabetes' has been added, to make it clear that only those with type 2 diabetes may have been taking other glucose-lowering agents that they would need to stop.
Use isophane insulin (also known as NPH insulin) as the first choice for long-acting insulin during pregnancy. Consider continuing treatment with long-acting insulin analogues (insulin detemir or insulin glargine) for women with diabetes who have established good blood glucose control before pregnancy. Levemir insulin (insulin detemir), in both its Penfill and Flexpen presentations, is to be discontinued, with an anticipated supply end date of December 2026. A Medicine Supply Notification (MSN/2025/036U) has been issued about the discontinuation. For information on alternative	Use isophane insulin (also known as NPH insulin) as the first choice for long-acting insulin during pregnancy. Consider continuing treatment with long-acting insulin analogues for women and people with diabetes who have been maintaining optimal blood glucose levels before pregnancy. **[2008, amended 2015 and 2026]** (1.8.2)	Mention of specific long-acting insulin analogues has been deleted in view of recent shortages.

basal insulins, see the Association of British Clinical Diabetologists and the Primary Care Diabetes & Obesity Society guidance on discontinuation of Levemir (insulin detemir). NICE is assessing the impact of the discontinuation of insulin detemir on recommendations in this guideline. **[2008, amended 2015]** (1.1.23)		
To help women, trans men and non-binary people make an informed decision about risk assessment and testing for gestational diabetes, explain that: • some people find that gestational diabetes can be managed with changes in diet and exercise • most people with gestational diabetes will need oral blood glucose lowering agents or insulin • if gestational diabetes is not detected and managed, there is a small increase in the risk of serious adverse birth complications such as shoulder dystocia people with gestational diabetes will need more monitoring, and may need more interventions during pregnancy and labour. [2015] (1.13.1)	To help women, trans men and non-binary people make an informed decision about risk assessment and testing for gestational diabetes, explain that: • some people find that gestational diabetes can be managed with changes in diet and exercise • most people with gestational diabetes will need metformin or insulin • if gestational diabetes is not detected and managed, there is a small increase in the risk of serious adverse birth complications such as shoulder dystocia • people with gestational diabetes will need more monitoring, and may need more interventions during pregnancy and labour. [2015] (1.13.1)	It was noted that metformin and insulin are the only blood glucose lowering agents that are used in pregnancy therefore the recommendation was amended for safety and clarity.
Use the same capillary plasma glucose target levels for women with gestational diabetes as for women with	Use the same capillary plasma glucose target levels for women and people with gestational diabetes as for those with	Added ‘type 2’ because targets have changed for type 1 diabetes.

pre-existing diabetes (see recommendations 1.3.5 and 1.3.6). **[2015]** (1.2.12)	pre-existing type 2 diabetes (see recommendations 1.15.8). **[2015, amended 2026]** (1.14.3)	
A 2020 Medicines and Healthcare products Regulatory Agency drug safety update highlights the need to rotate insulin injection sites within the same body area to avoid cutaneous amyloidosis and other skin reactions (for example, lipodystrophy).	Advise women and people with insulin-treated diabetes to rotate insulin injection or infusion sites (including rotating within the same body area) to avoid skin reactions (for example lipodystrophy). **[2026]** (1.8.3)	The committee felt that this would be more useful as a recommendation, as per other NICE guidelines on diabetes and there are other skin reactions more common than the one previously highlighted in the guideline.
Advise pregnant women with diabetes who are taking insulin to maintain their capillary plasma glucose level above 4 mmol/litre. **[2015, amended 2020]** (1.3.6)	Advise pregnant women and pregnant people with type 2 or gestational diabetes who are taking insulin to maintain their capillary plasma glucose level above 4 mmol/L. [2015, amended 2020 and 2026] (1.15.9)	We have removed type 1 from this recommendation as these people have separate glucose level thresholds to maintain.
Advise pregnant women with type 2 diabetes or gestational diabetes to test their fasting and 1-hour post-meal blood glucose levels daily if they are: • managing their diabetes with diet and exercise changes alone **or** • taking oral therapy (with or without diet and exercise changes) or single-dose intermediate-acting or long-acting insulin. **[2015]** (1.3.3)	Advise pregnant women, pregnant trans men and pregnant non-binary people with type 2 diabetes or gestational diabetes to test their fasting and 1 hour post-meal blood glucose levels daily if they are: • managing their diabetes with diet and exercise changes alone or • taking metformin (with or without diet and exercise changes) or single-dose intermediate-acting or long-acting insulin. [2015] (1.15.11)	It was noted that metformin and insulin are the only blood glucose lowering agents that are used in pregnancy therefore the recommendation was amended for safety and clarity.
Consider rtCGM for pregnant women who are on insulin therapy but do not have type 1 diabetes, if:	Offer continuous glucose monitoring (CGM) to pregnant women and pregnant people who have type 2 diabetes and are on multiple daily	We have aligned the recommendation for people with type 2 diabetes with that in NICE's guideline on type 2 diabetes in adults (NG28) to ensure that

• they have problematic severe hypoglycaemia (with or without impaired awareness of hypoglycaemia) **or** • they have unstable blood glucose levels that are causing concern despite efforts to optimise glycaemic control. [2020] (1.3.19)	insulin injections if any of the following apply: • they have recurrent hypoglycaemia or severe hypoglycaemia • they have impaired hypoglycaemia awareness • they have a condition or disability (including a learning disability or cognitive impairment) that means they cannot self-monitor their blood glucose by capillary blood glucose monitoring but could use an isCGM device (or have it scanned for them) • they would otherwise be advised to self-measure at least 8 times a day. **[2022]** (1.15.12) AND Consider CGM for pregnant women and pregnant people who have gestational diabetes and are on insulin therapy, if they have: • problematic severe hypoglycaemia (with or without impaired awareness of hypoglycaemia) or • unstable blood glucose levels that are causing concern despite efforts to optimise them. **[2015, amended 2020 and 2026]** (1.15.13)	conditions to have a CGM in pregnancy are not tighter than outside pregnancy and we removed 'is' and 'rt' from 'isCGM' and 'rtCGM' for those with type 2 and gestational diabetes because all CGMs now offer a real-time option (and only one offers an intermittent scanning option, which is very rarely used, according to the committee).
Measure HbA1c levels at the booking appointment for all pregnant women with pre-existing diabetes, to determine the level of	Measure HbA1c levels at the booking appointment to determine the level of risk for the pregnancy for all pregnant women, pregnant trans men and	Added 'previous gestational diabetes' because the committee said this group would also be at risk.

risk for the pregnancy. **[2015]** (1.3.7)	non-binary pregnant people with: • pre-existing diabetes or • previous gestational diabetes. [2015, amended 2026] (1.16.1)	
Do not routinely use HbA1c levels to assess a woman's blood glucose control in the second and third trimesters of pregnancy. **[2008]** (1.3.11)	Do not solely use HbA1c levels to assess how well a woman, trans man or non-binary person is maintaining their blood glucose targets in the second and third trimesters of pregnancy. **[2008]** (1.16.5)	'solely' added on the committee's advice, because 'saving babies lives' makes it mandatory to measure HbA1c in the second and third trimester of pregnancy.
Use intravenous dextrose and insulin infusion during labour and birth for women with diabetes whose capillary plasma glucose is not maintained between 4 mmol/litre and 7 mmol/litre. **[2008, amended 2015]** (1.4.12)	(Under type 1 diabetes) Use intravenous dextrose and insulin infusion during labour and birth if the woman, trans man or non-binary person's plasma glucose is not maintained between 4 mmol/litre and 7 mmol/litre. If the HCL system is disconnected or the closed loop is interrupted, work with the person to ensure that their HCL system is reconnected, if needed, and the closed loop is restarted as soon as possible. [2008, amended 2015 and 2026] (1.24.3) AND (under type 2 and gestational diabetes) Use intravenous dextrose and insulin infusion during labour and birth if their capillary plasma glucose is not maintained between 4 mmol/litre and 7 mmol/litre. **[2008, amended 2015]** (1.24.4)	The committee added a note in the recommendation for people with type 1 diabetes about reconnecting their HCL as soon as possible if it needs to be disconnected at any point.
Women with pre-existing type 2 diabetes who are breastfeeding can resume or continue metformin immediately after birth,	Women and people with pre-existing type 2 diabetes who are breastfeeding can resume or continue metformin,	'oral' deleted after 'other' because there are now other glucose lowering therapies that are not 'oral'. Because of this,

but should avoid other oral blood glucose-lowering therapy while breastfeeding. Note that this is an off-label use of metformin. See NICE's information on prescribing medicines. **[2008, amended 2020]** (1.6.4)	insulin, or both immediately after birth, but should avoid other blood glucose lowering therapy while breastfeeding. **[2008, amended 2026]** (1.29.3)	'insulin, or both' was added earlier in the sentence to clarify that 'other' means other than metformin, insulin, or both. Off-label statement removed as this is not off-label.
Remind women with diabetes of the importance of contraception and the need for preconception care when planning future pregnancies. **[2008]** (1.6.7)	Remind women and people with type 1 diabetes of the importance of contraception and the need for preconception care when planning future pregnancies. This includes using a pregnancy-specific HCL. [2008, amended 2026] (1.30.2) AND (under type 2 diabetes) Remind women and people with diabetes of the importance of contraception and the need for preconception care when planning future pregnancies. [2008] (1.30.4)	The committee made a new recommendation about changing HCL settings in people with type 1 diabetes immediately after birth and clarified that this recommendation now relates to people with type 2 diabetes only.
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 to 13 weeks after the birth to exclude diabetes (for practical reasons this might take place at the 6-week postnatal check)	For women and people who were diagnosed with gestational diabetes and whose blood glucose levels returned to normal after the birth: • offer lifestyle advice (including weight management, diet and exercise) • offer a fasting plasma glucose test 6 to 13 weeks after the birth to exclude diabetes (for practical reasons this might take place at the 6 week postnatal check)	There are no eligibility criteria. Feedback suggested that people were not being referred in the NHS Diabetes Prevention Programme due to the restrictive nature of the recommendation. We have amended to encourage referrals.

• after 13 weeks offer a fasting plasma glucose test if this has not been done earlier, or an HbA1c test if a fasting plasma glucose test is not possible • do not routinely offer a 75-g 2-hour OGTT • offer a referral into the NHS Diabetes Prevention Programme if eligible based on the results of the fasting plasma glucose test or HbA1c test. **[2015, amended 2020]** (1.6.11)	• after 13 weeks offer a fasting plasma glucose test if this has not been done earlier, or an HbA1c test if a fasting plasma glucose test is not possible • do not routinely offer a 75-g 2 hour OGTT • offer a referral or encourage and guide self-referral into the NHS Diabetes Prevention Programme. [2015, amended 2026] (1.30.8)	
1.6.6 Refer women with pre-existing diabetes back to their routine diabetes care arrangements. **[2008]**	Refer women, trans men and non-binary people with pre-existing type 2 diabetes back to their routine diabetes care arrangements. **[2008, amended 2026]** (1.30.3)	'type 2' added because this only applies for people with type 2 diabetes (people with type 1 diabetes are always cared for in specialist care centres, both out of and in pregnancy).

Table 4 Minor changes to recommendation wording (no change to intent)

Recommendation numbers in current guideline	Comment
1.29.4	'carbohydrate-containing' added. The dietician on the committee commented that it should be clarified that the meal or snack should contain carbohydrates.
All recommendations that used to speak about 'women'	The wording has been made inclusive, so it is clear that the recommendations also cover trans men and non-binary people registered female at birth.
All recommendations that used to speak about blood glucose 'control'	The word 'control' has been changed to 'management' or the sentence has been

	amended in some other way to avoid the word ‘control’. This is because ‘control’ is not person-centred language.
1.4.4	‘to become pregnant’ was changed to ‘a pregnancy’ for consistency with other recommendations.
1.5.2, 1.5.3, 1.7.2, 1.11.2, 1.14.8	Cross-references to other NICE guidelines have been added.
1.18.1	Cross-reference to an NHS programme has been added.
1.14.1	‘and/or’ deleted, as per NICE style.
1.2.15 in live guideline	Only used to state ‘deleted’ – we do not include such statements anymore.
1.15.8	‘with type 2 or gestational diabetes’ added because, for those with type 1 diabetes, this recommendation is superseded by recommendation 1.6.4.
1.15.9	‘with type 2 or gestational diabetes’ added because, for those with type 1 diabetes, this recommendation is superseded by recommendation 1.6.5 and 1.6.6.
1.16.3	‘risk for the pregnancy’ changed to ‘risk of adverse pregnancy outcomes’ because it was clear from the 2008 full guideline that this was what was meant, and because ‘risk for the pregnancy’ can be understood, in lay terms, as meaning ‘risk of miscarriage’ (only) but the evidence covered risks of other adverse outcomes as well.
1.27.3	‘carry out blood glucose testing’ replaced with ‘test blood glucose level’.

December 2020: We reviewed the evidence and made new recommendations on continuous glucose monitoring (CGM) and intermittently scanned CGM (flash) during pregnancy for women with type 1 diabetes. These recommendations are marked **[2020]**.

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