NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Guideline

Type 1 diabetes in adults: diagnosis and management

Draft for consultation, November 2021

This is an update to NICE guideline NG17 (published August 2015). We have:

- reviewed the evidence on diagnosis and continuous glucose monitoring (CGM) for adults with type 1 diabetes
- replaced existing recommendations on diagnosis (previously numbered 1.1.1 to 1.1.5) and CGM (previously numbered 1.6.21 to 1.6.24) with new recommendations
- moved or updated other recommendations to reflect these changes

Who is it for?

- Healthcare professionals
- Commissioners and providers
- Adults with type 1 diabetes and their families and carers

What does it include?

- the recommendations that have been updated
- related recommendations that have not been updated but are included here for context (shaded in grey and marked **[2004, amended 2015]**, **[2015]** or **[2015, amended 2022]**)
- recommendations for research
- rationale and impact sections that explain why the committee made the 2022 recommendations and how they might affect practice

- the guideline context.

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

Commenting on this update

We have reviewed the evidence on the diagnosis of type 1 diabetes and continuous glucose monitoring. You are invited to comment on the new and updated recommendations. These are marked as **[2022].**

We have not reviewed the evidence for the recommendations marked **[2004, amended 2015], [2015]** or **[2015, amended 2022]** (shaded in grey) and cannot accept comments on them. In some cases, we have made minor wording changes for clarification (shaded in yellow).

Sections of the guideline that have had no changes at all have been temporarily removed for this consultation and will be re-instated when the final guideline is published. See the existing short version of the guideline.

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

Full details of the evidence and the committee's discussion on the 2022 recommendations are in the evidence reviews. Evidence for the 2004 and 2015 recommendations is in the full version of the 2015 guideline.

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Contents

Recommendations

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

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.

1.1 Diagnosis and early care plan

Initial diagnosis

1.1.1 Make an initial diagnosis of type 1 diabetes on clinical grounds in adults presenting with hyperglycaemia. Bear in mind that people with type 1 diabetes typically (but not always) have 1 or more of:

- ketosis
- rapid weight loss
- age of onset under 50 years
- BMI below 25 kg/m^2
- personal and/or family history of autoimmune disease. **[2015, amended 2022]**

1.1.2 Do not use age or BMI alone to exclude or diagnose type 1 diabetes in adults. **[2022]**

1.1.3 Keep in mind the possibility of other diabetes subtypes and revisit the diagnosis at subsequent clinical reviews. Carry out further investigations if there is uncertainty (see recommendations 1.1.7 and 1.1.8). **[2022]**

1.1.4 Measure diabetes-specific autoantibodies in adults with an initial diagnosis of type 1 diabetes, taking into account that:

- diabetes-specific autoantibody tests have their lowest false negative rate at the time of diagnosis
- carrying out quantitative tests for 2 different diabetes-specific autoantibodies, with at least 1 being positive, reduces the false negative rate. **[2022]**

1.1.5 Do not routinely measure serum C-peptide to confirm type 1 diabetes in adults. **[2022]**

1.1.6 In people with a negative diabetes-specific autoantibody result, and if diabetes classification remains uncertain, consider measuring non-fasting serum C-peptide (with a paired blood glucose). **[2022]**

Revisiting initial diagnosis

1.1.7 At subsequent clinical reviews, consider using serum C-peptide to revisit the diabetes classification if there is doubt that type 1 diabetes is the correct diagnosis. **[2022]**

1.1.8 Take into account that the discriminative value of serum C-peptide to diagnose type 1 diabetes increases the longer the test is done after initial diagnosis of diabetes. **[2022]**

1.1.9 For people aged 60 and over presenting with weight loss and new-onset diabetes, follow recommendations on assessing for pancreatic cancer in the pancreatic cancer section of the NICE guideline on suspected cancer, recognition and referral. **[2022]**

For a short explanation of why the committee made these recommendations see the rationale and impact section on diagnosis.

Full details of the evidence and the committee's discussion are in evidence review C: diagnosis of diabetes.

1.6 Blood glucose management

Continuous glucose monitoring

NICE diagnostics guidance on integrated sensor-augmented pump therapy systems for managing blood glucose levels in type 1 diabetes is being updated. The guidance is being updated as a multiple technology appraisal and will assess hybrid closed loop systems.

1.6.10 Offer adults with type 1 diabetes a choice of real-time continuous glucose monitoring or intermittently scanned continuous glucose monitoring (isCGM, commonly referred to as 'flash') based on their individual preferences, needs, characteristics, and the functionality of the devices available. See box 1 for examples of factors to consider as part of this discussion. **[2022]**

Box 1 Factors to consider when choosing a continuous glucose monitoring device

- Whether the device provides predictive alerts or alarms and if these need to be shared with anyone else, for example a carer.
- Whether using the device requires access to particular technologies (such as a smartphone and up-to-date phone software).
- How easy the device is to use and take readings from, including for people with limited dexterity.
- Fear, frequency, awareness and severity of hypoglycaemia.
- The person's insulin regimen or type of insulin pump, if relevant (taking into account whether a particular device integrates with their pump as part of a hybrid closed loop or insulin suspend function).
- Whether, how often and how the device needs to be calibrated.
- Whether data can be extracted and shared with the person's healthcare provider.
- How unpredictable the person's blood glucose levels are and whether erratic blood glucose is affecting their quality of life.

- Whether the person has situations when symptoms of hypoglycaemia cannot be communicated or can be confused, for example during exercise.
- Clinical factors that may make devices easier or harder to use.
- Frequency of sensor replacement.
- Sensitivities to the device, for example local skin reactions.
- Cosmetic factors.

1.6.11 Offer the continuous glucose monitoring device with the lowest cost that meets the person's identified needs and preferences. **[2022]**

1.6.12 If a person is unable or does not wish to use any real-time CGM or isCGM device, offer capillary blood glucose monitoring. **[2022]**

1.6.13 Continuous glucose monitoring should be provided by a team with expertise in its use, as part of supporting people to self-manage their diabetes. **[2015, amended 2022]**

1.6.14 Ensure continuous glucose monitoring is part of the education provided to adults with type 1 diabetes (see the section on education and information in the existing version of the guideline), and that people using CGM devices are empowered to do so (see recommendations on empowering people to self-monitor blood glucose). **[2022]**

1.6.15 Monitor and review the person's use of continuous glucose monitoring as part of reviewing their diabetes care plan (see recommendations 1.1.7, 1.2.5 and 1.2.6 in the existing version of the guideline). **[2022]**

For a short explanation of why the committee made these recommendations see the rationale and impact section on continuous glucose monitoring.

Full details of the evidence and the committee's discussion are in evidence review A: continuous glucose monitoring in adults with type 1 diabetes.

Self-monitoring of capillary blood glucose

Frequency of self-monitoring of blood glucose

1.6.16 Advise adults with type 1 diabetes who are using capillary blood glucose monitoring to routinely self-monitor their blood glucose levels, and to test at least 4 times a day (including before each meal and before bed). **[2015, amended 2022]**

1.6.17 Support adults with type 1 diabetes who are using capillary blood glucose monitoring to test at least 4 times a day, and up to 10 times a day:

- if their target for blood glucose control, measured by HbA1c level (see recommendation 1.6.6 in the existing version of the guideline), is not reached
- if they are having more frequent hypoglycaemic episodes
- if there is a legal requirement to do so, such as before driving (see the Driver and Vehicle Licensing Agency (DVLA) guide for medical professionals)
- during periods of illness
- before, during and after sport
- when planning pregnancy, during pregnancy and while breastfeeding (see NICE's guideline on diabetes in pregnancy)
- if they need to know their blood glucose levels more than 4 times a day for other reasons (for example, impaired hypoglycaemia awareness, or they are undertaking high-risk activities). **[2015, amended 2022]**

1.6.18 Enable additional blood glucose testing (more than 10 times a day) for adults with type 1 diabetes who are using capillary blood glucose monitoring if this is necessary because of:

- the person's lifestyle (for example, they drive for long periods of time, they undertake high-risk activities or have a high-risk occupation, or they are travelling) **or**
- impaired hypoglycaemia awareness. **[2015, amended 2022]**

Blood glucose targets

1.6.19 Advise adults with type 1 diabetes to aim for:

- a fasting plasma glucose level of 5 to 7 mmol/litre on waking **and**
- a plasma glucose level of 4 to 7 mmol/litre before meals at other times of the day. **[2015]**

1.6.20 Advise adults with type 1 diabetes who choose to test after meals to aim for a plasma glucose level of 5 to 9 mmol/litre at least 90 minutes after eating. (This timing may be different in pregnancy – for guidance on plasma glucose targets in pregnancy, see NICE's guideline on diabetes in pregnancy.) **[2015]**

1.6.21 Agree bedtime target plasma glucose levels with each adult with type 1 diabetes. Take into account the timing of their last meal of the day and the related insulin dose, and ensure the target is consistent with the recommended fasting level on waking (see recommendation 1.6.19). **[2015]**

Empowering people to self-monitor blood glucose

1.6.22 Teach self-monitoring skills at the time of diagnosis and the start of insulin therapy. **[2004, amended 2015]**

1.6.23 When choosing blood glucose meters:

- take the needs of the adult with type 1 diabetes into account
- ensure that meters meet current ISO standards. **[2015]**

1.6.24 Teach adults with type 1 diabetes how to measure their blood glucose level, interpret the results and take appropriate action. Review these skills at least annually. **[2015]**

1.6.25 Support adults with type 1 diabetes through structured education (see section on education and information in the existing version of the guideline) to make the best use of data from self-monitoring of blood glucose. **[2015]**

Sites for self-monitoring of blood glucose

1.6.26 Monitoring blood glucose using sites other than the fingertips cannot be recommended as a routine alternative to conventional self-monitoring of blood glucose. **[2004, amended 2015]**

Recommendations for research

The guideline committee has made the following key recommendations for research.

Key recommendations for research

1 Clinical features for distinguishing between type 1 diabetes and other types of diabetes

What are the best clinical features or combination of features for distinguishing between type 1 diabetes and other types of diabetes? **[2022]**

For a short explanation of why the committee made this recommendation see the rationale section on diagnosis.

Full details of the evidence and the committee's discussion are in evidence review C: diagnosis of diabetes.

2 The use of C-peptide in diagnosing diabetes

What is the effectiveness of C-peptide at correcting misclassification of diabetes diagnosis and what is the optimal timing for the test in distinguishing subtypes of diabetes? **[2022]**

For a short explanation of why the committee made this recommendation see the rationale section on diagnosis.

Full details of the evidence and the committee's discussion are in evidence review C: diagnosis of diabetes.

3 Use of routinely collected real-world data to examine the effectiveness and cost effectiveness of continuous glucose monitoring

Based on routinely collected real-world data, what is the effectiveness and cost effectiveness of CGM devices to improve glycaemic control? **[2022]**

For a short explanation of why the committee made this recommendation see the rationale section on continuous glucose monitoring.

Full details of the evidence and the committee's discussion are in evidence review A: continuous glucose monitoring in adults with type 1 diabetes.

4 Improved methods and interventions for achieving HbA1c targets in adults with type 1 diabetes

What methods and interventions are effective in increasing the number of adults with type 1 diabetes who achieve the recommended HbA1c targets without risking severe hypoglycaemia or weight gain? **[2015]**

5 Structured education programmes for adults with type 1 diabetes

In adults with type 1 diabetes, what methods can be used to increase the uptake of structured education programmes and to improve their clinical outcomes (particularly achieving and sustaining blood glucose control targets)? **[2015]**

6 Risk stratification tool for HbA1c targets for adults with type 1 diabetes

Can a risk stratification tool be used to aid the setting of individualised HbA1c targets for adults with type 1 diabetes? **[2015]**

Rationale and impact

These sections briefly explain why the committee made the 2022 recommendations and how they might affect practice.

Diagnosis

Recommendations 1.1.1 to 1.1.9

Why the committee made the recommendations

The committee wanted to highlight the importance of distinguishing between type 1 diabetes and other diabetes types because of the differing treatment pathways that follow, particularly with insulin treatment. The most common misdiagnosis is type 1 diabetes being misdiagnosed as type 2, which could lead to the person not receiving insulin treatment and a subsequent risk of diabetic ketoacidosis. It is less harmful to be diagnosed with type 1 diabetes when the person actually has type 2 diabetes. However, there are still harms, including the long-term effects and costs of unnecessary insulin therapy, the missed opportunity for oral diabetes therapies and the psychological impact of misdiagnosis.

There was no new definitive evidence on clinical features, so this recommendation remains unchanged from the 2015 guideline (recommendation 1.1.1). Because of this lack of new evidence the committee made a research recommendation on clinical features for distinguishing between type 1 diabetes and other types of diabetes.

The evidence showed that no single clinical feature had a sufficient predictive value to make a diagnosis by itself. The committee were particularly concerned that age and BMI might be used in isolation. They noted that the average BMI in people with type 1 diabetes is increasing, and the age at

which people are diagnosed with type 2 diabetes is decreasing. This means these clinical features are becoming less useful on their own to differentiate between the subtypes. Despite the growing crossover in age and BMI when people present with type 1 and type 2 diabetes, the committee agreed that these characteristics are still useful for making an initial working diagnosis of diabetes subtype in many people. However, further testing is increasingly needed as previously 'atypical' features of type 1 become more commonplace and 'uncertain' classifications become more common.

In a change from the 2015 guideline, the committee agreed it was important to encourage the use of diabetes-specific autoantibody testing at diagnosis to avoid misclassifying diabetes subtype. They also wanted to clarify that autoantibody testing is appropriate for people with suspected type 1 diabetes.

There was no high-quality evidence on tests to distinguish type 1 diabetes from type 2 diabetes or other types of diabetes, so the committee based the recommendations on the timings when the tests might be most useful in diabetes subclassification (autoantibody testing is best used at the time of presentation, and C-peptide is best used with increasing time from initial presentation) rather than overall measures of diagnostic accuracy.

Because of the lack of high-quality evidence, the committee made a research recommendation to examine the effectiveness of C-peptide at correcting misclassification of diabetes at initial diagnosis and the optimal timing for this test in distinguishing between subtypes of diabetes.

Based on their clinical experience, the committee were confident that measuring autoantibodies in people with suspected type 1 diabetes would be cost effective. This is because of the low costs of the autoantibody tests, compared with the much higher costs associated with inaccurate diagnosis. Misclassification using clinical criteria alone results in additional costs, both from the use of ineffective treatments and from clinical harm (caused by delaying insulin prescription in people with type 1 diabetes, or unnecessary use of insulin in people with type 2 diabetes).

Further, because autoantibody tests are more accurate when done at the time of presentation rather than later at a clinical review, they would also be more cost effective at that time rather than later, because the cost will be the same but more useful information will be obtained from the test at the time of diagnosis.

The committee noted that using autoantibody testing also means that healthcare professionals do not have to rely on characteristics alone when people first present, which can help avoid assumptions about links between ethnicity and diabetes type (for example, assuming that people in black, Asian and other minority ethnic groups are more likely to have type 2 diabetes).

The committee still could not recommend routine non-fasting serum C-peptide testing because of a lack of high quality and clinical evidence, and this would be a significant and costly change in clinical practice. However, they thought it would be an appropriate test if clinical presentation and autoantibody testing did not provide a clear classification of diabetes (for example, if clinical features were consistent with type 1 diabetes but autoantibody results were negative).

The committee noted that serum C-peptide is more appropriate in individual clinical diagnosis settings because it can be paired with blood glucose, whereas urine C-peptide is mainly used in epidemiological studies.

How the recommendations might affect practice

It is likely these recommendations will lead to increased autoantibody testing in people presenting with suspected type 1 diabetes. This will increase testing costs, but this increase is not expected to be substantial, because of the low costs of the tests themselves. There is less likely to be an increased use of serum C-peptide testing in the classification of diabetes, because the guideline only recommends this be done if there is still diagnostic uncertainty after the use of autoantibody testing.

Although there is a cost associated with some of the new recommendations, alongside concerns about their availability in all settings, the committee felt

this would be balanced out by benefits from reducing the misclassification of diabetes at presentation and ensuring early appropriate treatment of type 1 (and in some cases type 2) diabetes. This will avoid unnecessary tests and treatment and side-effects from prolonged insulin use, especially as autoantibody test results become less reliable the longer after diagnosis they are carried out.

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Continuous glucose monitoring

Recommendations 1.6.10 to 1.6.15

Why the committee made the recommendations

The committee agreed that there was enough evidence in key outcomes, such as HbA1c, time in range and severe or nocturnal hypoglycaemia, to demonstrate that both real-time CGM and intermittently scanned CGM (isCGM, or 'flash') provide clinical benefits over standard self-monitoring of blood glucose. However, they considered that the evidence for real-time CGM compared with flash was not good enough quality and too low in sample size to clearly show clinical benefits of one technology over the other.

The committee also acknowledged that CGM technologies were changing very quickly, with increasing overlap between real-time CGM and flash as features such as predictive alerts are being added to newer flash devices.

The health economic modelling found that, when the benefit of reduced fear of hypoglycaemia with CGM was included, both technologies were cost effective for the full population of adults with type 1 diabetes compared with standard self-monitoring of blood glucose.

Based on the above factors and the evidence, the committee agreed that there was no advantage to recommending one specific device over another compared with standard self-monitoring of blood glucose. They concluded that the specific functionality of flash versus real-time CGM devices should be discussed between the person and their healthcare professional.

The committee highlighted the benefits of providing a choice of different CGM devices because the most suitable device would vary for each person. They therefore included a summary table in the recommendations outlining the factors to consider when choosing a CGM device. The committee agreed that this freedom of choice is more beneficial than being limited to a specific device, particularly because adherence to the technology is likely to be higher if the device is matched to the person's needs.

The committee retained the 2015 recommendation on providing people with support from a team with expertise in the use of continuous glucose monitoring. Community-based specialist teams are now available and are no longer always based in secondary care, so 'centre' was changed to 'team' in the old recommendation to make this clearer.

Given the rapid advances in the technology, the committee made a research recommendation to investigate what are the best metrics to collect routine real-world data in healthcare systems to learn about the effects of CGM devices. If routine healthcare data is collected it can show the direct effect of implemented technology on the population, rather than it being interpreted through the results of trials.

How the recommendations might affect practice

These recommendations are likely to result in broader access to flash and real-time CGM devices, as opposed to a binary decision on access based on stringent criteria. This should reduce inequalities and enable more people to use CGM. Currently, people with more time and knowledge to self-advocate are often more likely to gain access to these devices.

There is likely to be an increase in costs from more use of CGM devices. A number of different devices are available, so if more than 1 device would be appropriate for a person and would meet their needs and preferences, using the lowest cost device among those options would help to reduce the cost impact.

Return to recommendations

Context

Type 1 diabetes affects over 370,000 adults in the UK. It results from destruction of the cells that normally make insulin. Loss of insulin secretion results in high blood glucose and other metabolic and haematological abnormalities, which have both short-term and long-term adverse effects on health.

Over years, type 1 diabetes causes tissue damage which, if not detected and managed early, can result in disability: blindness, kidney failure and foot ulceration leading to amputation, as well as premature heart disease, stroke and death. The risk of all of these complications is greatly reduced by treatment that keeps circulating glucose levels to as near normal as possible, reducing tissue damage. Disability from complications that are not avoided can often be prevented by early detection and active management.

Type 1 diabetes is treated by insulin replacement and supported by active management of other cardiovascular risk factors, such as hypertension and high circulating lipids. Modern insulin replacement therapy aims to recreate normal fluctuations in circulating insulin concentrations. This supports a flexible lifestyle with minimal restrictions and, properly done, can improve blood glucose levels, reducing the risk of both structural complications and episodes of hypoglycaemia.

Flexible insulin therapy usually involves self-injecting multiple daily doses of insulin, with doses adjusted based on taken or planned exercise, intended food intake and other factors, including current blood glucose, which the insulin user needs to test on a regular basis. This self-management needs the insulin user to have the skills and confidence to manage the regimen.

One of the most important roles of healthcare professionals providing diabetes care to adults with type 1 diabetes is to ensure that systems are in place to provide informed expert support, education and training for insulin users, as well as a range of other more conventional biomedical services and interventions.

Although type 1 diabetes in adults is not rare, it is not common enough that all healthcare professionals who deal with it are able to acquire and maintain all the necessary skills for its management. The aim of this guideline is to provide evidence-based, practical advice on supporting adults with type 1 diabetes to live full, largely unrestricted, lives and to avoid the short-term and long-term complications of both the disease and of its treatment.

Finding more information and committee details

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

For details of the guideline committee see the committee member list

Update information

This guideline is an update of NICE guideline NG17 (published August 2015) and will replace it. We have reviewed evidence on the diagnosis of type 1 diabetes and continuous glucose monitoring.

Recommendations are marked **[2022]** if the evidence has been reviewed.

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

We propose to delete some recommendations from the 2015 guideline. Table 1 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 **[2015, amended 2022]**, 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 2.

Table 1 Recommendations that have been deleted

Recommendation in 2015 guideline	Comment

1.1.2	This recommendation was deleted because it was replaced by a new recommendation (1.1.2)
1.1.3	This recommendation was deleted because it was replaced by a new recommendation (1.1.4)
1.1.4	This recommendation was deleted because it was replaced by a new recommendation (1.1.4)
1.1.5	This recommendation was deleted because it was replaced by new recommendations (1.1.6 and 1.1.8)
1.6.21	This recommendation was deleted because it was replaced by a new recommendation (1.2.1)
1.6.22	This recommendation was deleted because it was replaced by a new recommendation (1.2.1)
Research recommendation 2: Continuous glucose monitoring for adults with type 1 diabetes	In adults with type 1 diabetes who have chronically poor control of blood glucose levels, what is the clinical and cost effectiveness of continuous glucose monitoring technologies?
Research recommendation 5: Technologies for preventing and treating impaired hypoglycaemia awareness in adults with type 1 diabetes	For adults with type 1 diabetes, what are the optimum technologies (such as insulin pump therapy and/or continuous glucose monitoring, partially or fully automated insulin delivery, and behavioural, psychological and educational interventions) and how are they best used, in terms of clinical and cost effectiveness, for preventing and treating impaired hypoglycaemia awareness?

Table 2 Amended recommendation wording (change to intent) without an evidence review

Recommendation in 2015 guideline	Recommendation in current guideline	Reason for change
1.1.1 Diagnose type 1 diabetes on clinical grounds in adults presenting with hyperglycaemia. Bear in mind that people with type 1 diabetes typically (but not always) have 1 or more of: • ketosis	1.1.1 Make an initial diagnosis of type 1 diabetes on clinical grounds in adults presenting with hyperglycaemia. Bear in mind that people with type 1 diabetes typically (but not always) have 1 or more of:	Wording changed to initial diagnosis to differentiate between this and later new recommendations on revisiting initial diagnosis.

• rapid weight loss • age of onset under 50 years • BMI below 25 kg/m2 • personal and/or family history of autoimmune disease.	• ketosis • rapid weight loss • age of onset under 50 years • BMI below 25 kg/m2 • personal and/or family history of autoimmune disease.	
1.6.24 Real-time continuous glucose monitoring should be provided by a centre with expertise in its use, as part of a strategy to optimise a person's HbA1c levels and reduce the frequency of hypoglycaemic episodes.	1.6.13 Continuous glucose monitoring should be provided by a team with expertise in its use, as part of supporting people to self-manage their diabetes	'Centre' changed to 'team' because community-based specialist teams are now available. The wording has also been simplified to 'supporting people to self-manage their diabetes'.
1.6.10 Advise adults with type 1 diabetes to routinely self monitor their blood glucose levels, and to test at least 4 times a day (including before each meal and before bed).	1.6.16 Advise adults with type 1 diabetes who are using capillary blood glucose monitoring to routinely self monitor their blood glucose levels, and to test at least 4 times a day (including before each meal and before bed).	Recommendation clarified to clearly differentiate adults who are using capillary blood glucose monitoring from those using CGM.
1.6.11 Support adults with type 1 diabetes to test at least 4 times a day, and up to 10 times a day: • if their target for blood glucose control, measured by HbA1c level (see recommendation 1.6.6), is not reached • if they are having more frequent hypoglycaemic episodes • if there is a legal requirement to do so, such as before driving (see the Driver and Vehicle Licensing Agency (DVLA) guide for medical professionals) • during periods of illness • before, during and after sport • when planning pregnancy, during pregnancy and while breastfeeding (see NICE's	1.6.17 Support adults with type 1 diabetes who are using capillary blood glucose monitoring to test at least 4 times a day, and up to 10 times a day: • if their target for blood glucose control, measured by HbA1c level (see recommendation 1.6.6), is not reached • if they are having more frequent hypoglycaemic episodes • if there is a legal requirement to do so, such as before driving (see the Driver and Vehicle Licensing Agency (DVLA) guide for medical professionals) • during periods of illness • before, during and after sport • when planning pregnancy, during pregnancy and while	Recommendation clarified to clearly differentiate adults who are using capillary blood glucose monitoring from those using CGM.

guideline on diabetes in pregnancy) • if they need to know their blood glucose levels more than 4 times a day for other reasons (for example, impaired hypoglycaemia awareness, or they are undertaking high risk activities).	breastfeeding (see NICE's guideline on diabetes in pregnancy) • if they need to know their blood glucose levels more than 4 times a day for other reasons (for example, impaired hypoglycaemia awareness, or they are undertaking high risk activities).	
1.6.12 Enable additional blood glucose testing (more than 10 times a day) for adults with type 1 diabetes if this is necessary because of: • the person's lifestyle (for example, they drive for long periods of time, they undertake high risk activities or have a high risk occupation, or they are travelling) or • impaired hypoglycaemia awareness.	1.6.18 Enable additional blood glucose testing (more than 10 times a day) for adults with type 1 diabetes who are using capillary blood glucose monitoring if this is necessary because of: • the person's lifestyle (for example, they drive for long periods of time, they undertake high risk activities or have a high-risk occupation, or they are travelling) or • impaired hypoglycaemia awareness.	Recommendation clarified to clearly differentiate adults who are using capillary blood glucose monitoring from those using CGM.

ISBN: 978-1-4731-1389-3