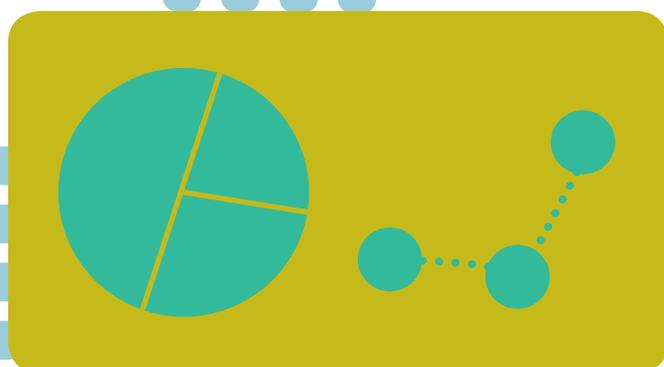
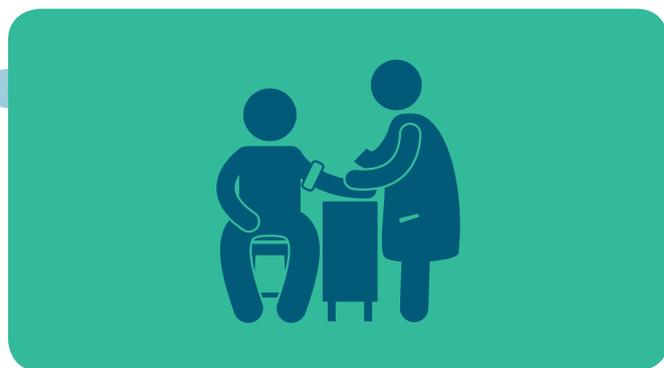


# National Diabetes Inpatient Audit (NaDIA) 2016



A summary report for people with diabetes and anyone interested in the quality of care for people with diabetes when they stay in hospital.

Based on findings from NaDIA 2016 in England and Wales

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## Background

In March 2017, NHS Digital published the [National Diabetes Inpatient Audit \(NaDIA\) 2016](#) report based on patient information collected from 209 hospitals in England and Wales during September 2016.

The report draws on information gathered by hospital staff about the diabetes care given to 15,774 inpatients with diabetes during their hospital stay. It also provides comment and opinion received from 8,579 of these patients about their experience of diabetes care while staying in hospital.

The [Healthcare Quality and Improvement Partnership \(HQIP\)](#) commissioned the NaDIA. As well as a national report, we have also published findings for each hospital that took part.

[NHS Digital](#) manages the NaDIA, working closely with [Diabetes UK](#). Clinicians working in hospitals also provide support.



## About this report

This report summarises the key findings from the 2016 NaDIA report for England and Wales. It is a document for everyone – people with diabetes, healthcare professionals, and general audiences.

Before writing this summary report, Diabetes UK talked to people with diabetes to find out what NaDIA information they wanted to see and how to present the findings. In this report we explain:

- what the national guidelines say about good quality care for people with diabetes when they are in hospital
- the main findings from the 2016 NaDIA
- recommendations for improvements to diabetes inpatient care

At the back of the report there is an explanation about what the NaDIA is and why it is important to audit inpatient care for people with diabetes. There is also a glossary and details of where to find more information.

# The results

In the 2016 audit, around 1 in 6 (17%) of all inpatients had diabetes. In a few hospitals, over a third of inpatients had diabetes.



Despite the high proportion of people with diabetes in hospital, there has been no change in staffing hours per inpatient since 2015. The audit found that even though there are more demands on staff time, there have been some very encouraging improvements since 2011. These include:

- an increase in the proportion of people being seen by the Diabetes Team. 69% in 2016, compared to 58% in 2011
- reductions in the following areas:
  - use of insulin infusions
  - all hypos
  - need for rescue treatment for severe hypos
  - foot ulcers developing during hospital stay

However, the findings of the NaDIA show that there is still a need for considerable improvements in the following areas:

- medication errors
- insulin errors
- medication management errors
- diabetic ketoacidosis (DKA)

The next section looks at these issues in more detail.

## Explanation of the different types of error

Staff record each patient's prescribed medication on a drug chart. This should include information about the dose and when it was given. Information about blood glucose readings should also be recorded.

**Medication errors** includes any type of error

**Insulin errors** includes errors relating to insulin. For example, the insulin dose not being clear on the drug chart. It also includes errors where the insulin dose has

not been reduced if unexplained blood glucose is below 4 mmol/L

**Medication management errors** includes errors relating to adjusting treatment according to blood glucose readings. It will include the 'insulin errors' explained above and any errors relating to adjusting tablets that are taken to manage blood glucose (known as oral hypoglycaemic agents)

## Staffing

Diabetes is a complex condition. Each person with diabetes needs a personal care plan, which includes the treatments and medications that are right for them. Good quality diabetes care in hospital relies on staff knowing about diabetes and how to treat and manage the condition. The NICE Quality Standard says that people with diabetes need care from ‘appropriately trained staff’ and ‘access to a specialist diabetes team’.

The NaDIA results show that specialist diabetes staffing levels are significantly lower than recommended. More than a quarter (28%) of hospitals had no diabetes inpatient specialist nurses (DISNs).



It is not always necessary for a person with diabetes to see the diabetes team when they stay in hospital, especially when their hospital stay is unrelated to diabetes. The Think Glucose guidelines<sup>1</sup> provide hospitals with recommendations on when a person with diabetes should be seen by the diabetes team. The NaDIA found that 69% of people with diabetes were seen by the diabetes team (based on the Think Glucose criteria). However, this also means that 3 in 10 (31%) people were not seen.

## Blood glucose monitoring

The audit collected information on inpatients’ blood glucose control. When a person with diabetes goes into hospital, it is important that blood glucose levels are closely monitored. Being unwell often effects blood glucose levels.

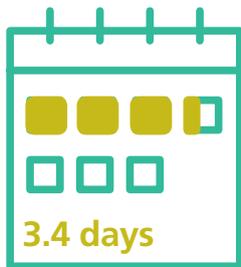
The number of times a day that blood glucose levels are tested will depend on how a person’s diabetes is treated. The audit uses the following guidelines to check whether blood glucose levels are being checked appropriately.

Treatment	Frequency of blood glucose testing
Metformin or diet alone	 1 or more tests per day
Long stay patient on diet and metformin with stable control	 Once weekly or more
Insulin, Exenatide, SU or more than one tablet, including DPP-4 inhibitors and glitazones	 2 or more tests per day
Unwell, unstable diabetes or basal bolus	 4 or more tests per day

The audit found that blood glucose monitoring was being done the majority of the time (6.7 days out of 7).

The average number of 'good diabetes days' in the previous 7 days was 3.4 days for people with insulin treated Type 2 diabetes.  
For patients with Type 1 diabetes, this was much lower at 2.6 days.

### Good diabetes days in a 7 day period



**Insulin treated  
Type 2 diabetes**



**Type 1 diabetes**

### 'Good diabetes day'

For the purposes of the audit, a 'good diabetes day' was defined as:

- Number of tests per day followed the guidelines
- No more than one blood glucose reading of more than 11mmol/L
- No blood glucose reading of less than 4mmol/L

## Use of insulin infusions

People with diabetes might sometimes need to receive their insulin by an infusion. This may happen when a patient is severely ill, or can have no food or is 'nil-by-mouth'. In these cases insulin is given to the inpatient using a drip, which needs regular checking and controlling by healthcare staff.

8% of patients in the audit had an insulin infusion in the previous 7 days. Of these, the audit shows that insulin infusions:

- were considered inappropriate for 7% of patients
- were used for too long for 6% of patients

However, the 2016 audit found the percentage of patients on an insulin infusion was less than in previous years. Similarly, there was a reduction in the percentage of those on an insulin infusions for too long. These are encouraging results.

But concern remains that among inpatients on an insulin infusion, around 2% had only between one and three blood glucose measurements in a 24-hour period. And 0.5% had no blood glucose measurements recorded at all. Monitoring of blood glucose levels is crucial to managing diabetes.

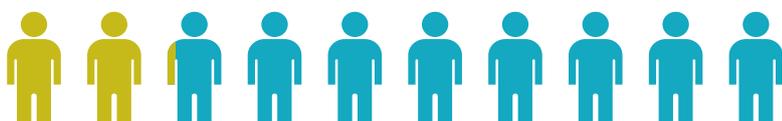
## Medication errors and their effects

In 2016, almost 2 out of 5 (38%) patients included in the audit experienced at least one diabetes medication error while in hospital.

The NaDIA collected information on two types of medication error:

- o **prescription errors** – for example, medication wasn't recorded on a patient's notes, or given at the wrong time
- o **medication management** – for example, not adjusting medication when blood glucose was more than 11 mmol/L, or stopping insulin inappropriately

Just over 1 in 5 (21%) of inpatients with diabetes experienced at least one **prescription error**



24% of inpatients with diabetes experienced at least one **medication management error**



23% of inpatients on insulin experienced at least one **insulin error**



To provide the right diabetes management for inpatients, general medical staff need knowledge, experience and confidence to make the necessary adjustments to diabetes medication. The NaDIA findings highlight that hospitals need to continue to provide and improve their provision of training, support, and tools to help general medical staff reduce medication errors.

## Hypoglycaemia (hypos)

The table below shows the percentages of patients having one or more hypoglycaemic episode (hypo) in the previous seven days in hospital.

### Percentage of inpatients having one or more hypo in previous 7 days – England and Wales 2016

	Percentage of inpatients
Patients had one or more hypo (blood glucose of less than 4.0mmol/L)	20%
Patients had one or more mild hypo (blood glucose of between 3.0 – 3.9mmol/L)	18%
Patients had one or more severe hypo (blood glucose of less than 3.0mmol/L)	8%

Note: some people may have had a mild hypo and a severe hypo, so are included twice in the above percentages

## Severe hypos

People with diabetes who self-tested their blood glucose whilst in hospital were more likely (15%) to have a severe hypo than those who didn't self-test (8%). Over a quarter (27%) of people with Type 1 diabetes had a severe hypo during their hospital stay.

The highest proportion of severe hypos took place in the early morning, between 5am and 9am.



The NaDIA shows that sometimes poor blood glucose control is having serious effects. In the 2016 audit, 181 patients (1.7%) had a severe hypo that needed to be treated by injection. Whilst this has decreased since 2011, the number of people requiring a rescue treatment is cause for concern.

## **181** Inpatients treated for hypo by injection

### Diabetic ketoacidosis (DKA) and hyperosmolar hyperglycaemic state (HHS)

DKA and HHS are serious conditions which can have severe consequences for the patient. DKA/HHS are generally preventable and should not arise during a hospital stay.

DKA mainly occurs in people with Type 1 diabetes when a severe lack of insulin means the body cannot use glucose for energy and switches to burning fatty acids, which produces acidic ketones. Ketones can cause severe illness and even death.

The 2016 audit found that 44 patients with Type 1 diabetes (4%) developed diabetic ketoacidosis (DKA) while they were in hospital.

## **44** Inpatients developing DKA in hospital

HHS mainly occurs in people with Type 2 diabetes who experience very high blood glucose levels (often over 40mmol/mol). It can develop over a course of weeks through a combination of illness (eg. infection) and dehydration. HHS is a potentially life-threatening emergency and should not develop in hospital. The NaDIA found that **26 patients** with Type 2 diabetes (0.2%) developed HHS during their hospital stay in 2016.

Improved diabetes management, including regular blood glucose monitoring and appropriate insulin adjustment, by hospital staff would have prevented these alarming results.

## Foot care

NICE has developed some [specific guidelines](#) about foot care for inpatients with diabetes that all hospitals should follow. Diabetes UK's '[Putting Feet First](#)' campaign also highlights how important the guidelines are in preventing complications.

These guidelines state that:

‘All patients with diabetes must have a **foot assessment** within **24 hours of admission** and the **multidisciplinary diabetes foot team (MDFT)** must see any patient either showing signs of **foot disease**, or at a **high risk of developing a foot lesion** while in hospital.’

The NaDIA results show that there have been significant improvements in foot care (where it is possible to compare the findings to previous years). More patients are having foot examinations, the number of hospitals with MDFTs has increased, and there is a significant reduction in people developing foot lesions while in hospital.

However, 24% of hospitals said that they did not have a MDFT.



Over a third (37%) of inpatients with diabetes had a specific diabetic foot risk for ulceration assessment.

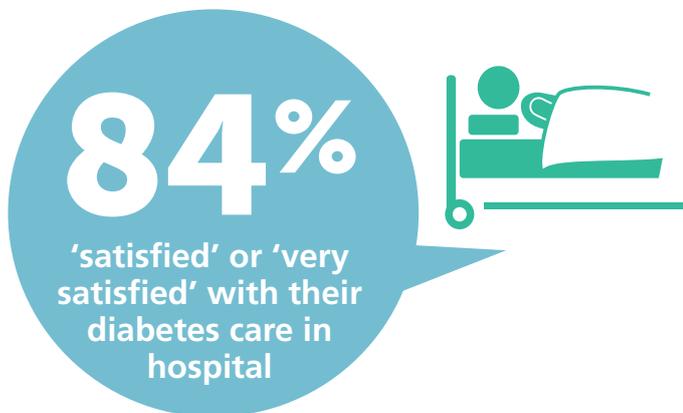


In addition, about 1 in 75 inpatients developed a foot lesion during their stay in hospital.



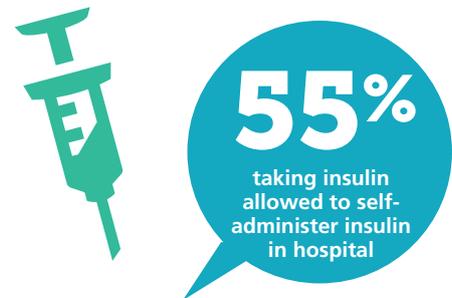
Hospital teams need to do more to make sure people with diabetes get the foot checks and foot care they need to prevent any problems becoming worse.

# Patients' views and experiences



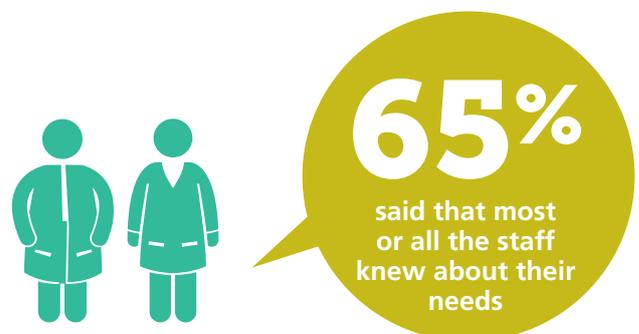
As part of the NaDIA, inpatients with diabetes can comment and give their views on their diabetes care while in hospital. 8,579 people with diabetes provided their views in 2016. Most people (84%) completing the survey said that they were 'very satisfied' or 'satisfied' with their diabetes care while in hospital.

Since 2011, there has been an increase in the proportion of patients who said that they were able to take control of their diabetes. 60% of patients said they were able to take control of their diabetes as much as they would have liked while in hospital. More than half of inpatients (55%) taking insulin had been allowed to self-administer insulin while in hospital.



When asked about food during their hospital stay, over half (54%) said the hospital always provided meal choices that were suitable to manage their diabetes. However, there has been an increase in those saying that meal choices were rarely or never suitable since 2011.

And when asked if staff caring for them had enough knowledge of diabetes to meet their needs, almost two-thirds (65%) said that most or all the staff knew about their needs. However, this meant around a third of all patients giving their views did not feel staff knew enough about their condition.



# Recommendations for hospitals

While there are several improvements reported in the 2016 NaDIA, some areas of diabetes care remain a concern. The recommendations to hospitals are that they should:

-  continue to **participate in this valuable audit of diabetes** care in hospitals
-  find out where **electronic prescribing** and the use of **electronic records** is working well and encourage your hospital to use them
-  encourage diabetes teams to **involve their patients in planning their care**
-  take action to **prevent night-time hypos**, including the introduction of bedtime snacks
-  make sure that there are **enough staff on the diabetes team** to provide support to other healthcare professionals and patients in the delivery of safe diabetes care
-  put **procedures** in place **on wards** to ensure that all appropriate patients are **promptly referred and seen by the diabetes team**
-  put procedures in place to **improve foot examinations on admission** and make sure that NICE guidance is implemented

Specific recommendations to diabetes teams within hospitals. They should:

-  continue to **educate and support junior doctors and nursing staff** to provide safe diabetes care
-  develop and test new systems to **reduce prescribing and medication management errors**
-  **record all DKA and HHS cases** that happen in hospital as serious incidents and analyse the causes of these incidents
-  continue to **monitor** the use of **insulin infusions** to make sure that they are used appropriately



# Recommendations for people with diabetes

If you have diabetes and are going to stay in hospital it may be useful to:



- bring an up-to-date **list of your usual medications** with you (or ask a relative to bring it), and the name and contact details of the healthcare professional who usually manages your diabetes care



- **take your own hypo treatments** into hospital with you



- **take your own blood testing** meter and test strips



- **tell your diabetes team that you are going into hospital** as an inpatient



- ask the hospital care team what **plan they have to manage your diabetes** while you are an inpatient

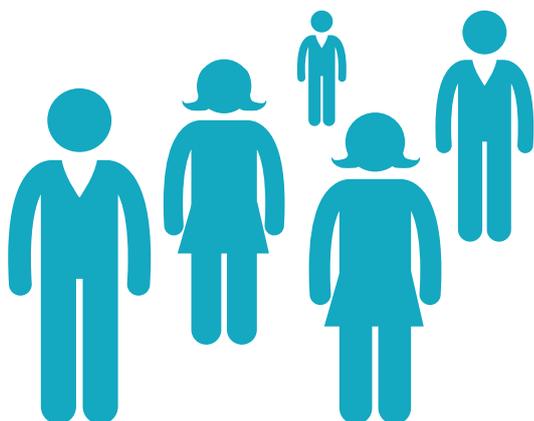


- **let a member of the ward staff know** if you feel your diabetes care is not safe or could be better



- if you live in England, contact the **Patient Advice and Liaison Service (PALS)** if you are unhappy with your care

- if you live in Wales, contact your **Community Health Council (CHC)** if you are unhappy with your care



# Further information

## What is the National Diabetes Inpatient Audit (NaDIA)?

The NaDIA is a project that checks the quality of diabetes care provided to people with diabetes when they stay in hospital as inpatients. This includes both people admitted to hospital because of their diabetes, or for another medical reason. The first NaDIA took place in 2010. Since then it has collected information each year about hospital stays for people with diabetes.

Hospital staff members collect information for the NaDIA. During one day of a specified week each year they record information about all inpatients with diabetes. In 2016 it was the week beginning Monday 26 September.

The information collected includes:

- the diabetes care provided to each patient
- specialist diabetes staffing levels in the hospital at the time
- comment and opinion from patients on their care experience

All this information helps highlight areas where diabetes care for patients is good, and where there is a need for improvement and changes that will help hospitals raise their overall standards.

More information about collecting the NaDIA data is on page 15.

## Why do we audit inpatient care for people with diabetes?

All hospitals should follow national guidelines on standards of care. There is a [National Service Framework \(NSF\) for Diabetes](#), and National Institute for Health and Care Excellence (NICE) Clinical [Care Quality Standards for Diabetes](#).

The [Care Quality Commission \(CQC\)](#) monitors, inspects and regulates hospitals to make sure they meet standards of quality and safety. The CQC uses some of information collected by NaDIA to help assess the quality and safety of diabetes care in hospitals.

The NaDIA measures whether hospitals are meeting these guidelines. In particular, the NaDIA collects information to check whether:

- the diabetes treatment and care given to patients minimise the risk of further medical complications whilst in hospital
- the hospital's management of patients diabetes puts patients at risk from possible harm
- people with diabetes have a reasonable experience during their hospital stay

The audit also looks at whether care has improved since the audit began, in 2010.

Each year, every hospital taking part in the NaDIA gets a copy of the findings for their hospital. Most importantly, hospital managers and staff are asked to look at areas where their care of people with diabetes is below standard, and to develop plans to improve these services.

The audit findings are publicly available, so anyone can see their local hospital's findings. You can find your hospital's NaDIA findings on [NHS Digital's website](#).

## How the NaDIA collects information

Each year, during the NaDIA survey week, hospitals collect information about diabetes care on one day. Information is collected in three ways:

# 1

Each hospital fills in a form to provide information about their hospital, including the number of:

- beds
- patients with diabetes
- specialist staff



# 2

A member of staff visits each patient with diabetes and fills in a form about the treatment they are getting during their current hospital stay. This information is available from bedside charts – patients aren't expected to recall all the details of their care.



# 3

Each patient who is fit and able can complete a questionnaire about their personal experience of diabetes care while they have been in hospital.



## Where to go for more information

### The National Diabetes Audit (NaDIA)

Information about the NaDIA and copies of the full reports are available on NHS Digital's website <http://digital.nhs.uk/diabetesinpatientaudit>

### Diabetes UK

For more information about diabetes, including living with diabetes, go to [www.diabetes.org.uk/Guide-to-diabetes](http://www.diabetes.org.uk/Guide-to-diabetes) or call Diabetes UK's Helpline on 0345 123 2399 for advice and support.

For information about getting involved in making a difference to diabetes treatment and care, go to [www.diabetes.org.uk/Get\\_involved/Diabetes-Voices](http://www.diabetes.org.uk/Get_involved/Diabetes-Voices)

To find out more about Diabetes UK's activities in your area, go to [www.diabetes.org.uk/In\\_Your\\_Area](http://www.diabetes.org.uk/In_Your_Area)

### National Service Framework for Diabetes (England)

The diabetes National Service Framework (NSF) was the first set of national treatment and care standards for people with diabetes. Find out more at [www.gov.uk/government/publications/national-service-framework-diabetes](http://www.gov.uk/government/publications/national-service-framework-diabetes)

### National Institute for Health and Care Excellence (NICE) guidelines

For information about how NICE develops guidelines, go to [www.nice.org.uk](http://www.nice.org.uk). Guidelines about diabetes care in hospital include:

- [Diabetes in adults quality standard \(QS6\)](#)
- [NICE Guidelines NG19](#)

### Healthcare Quality Improvement Partnership (HQIP)

To find out more about clinical audits – and patient involvement in national clinical audits – you can visit the HQIP website at <http://www.hqip.org.uk/involving-patients>

### Patient Advice and Liaison Service (PALS)

If you have a question about local health services or an enquiry about health matters, you can contact PALS. Find more information or your local PALS at [www.nhs.uk](http://www.nhs.uk)

### Community Health Councils (CHC) in Wales

If you need help and advice about NHS Services in Wales, you can contact CHC. Find out more at <http://www.wales.nhs.uk/sitesplus/899/home>

### NHS Choices (England)

NHS Choices provides information about your health, including finding and using NHS Services in England. Find out more at [www.nhs.uk](http://www.nhs.uk)

### NHS Wales

NHS Wales provides information about your health, including finding and using NHS Services in Wales. Find out more at <http://www.wales.nhs.uk>

## Explanation of words used in this booklet

### Audit

A way of gathering information and measuring local NHS organisations' performance and quality of care against national guidelines, from which come recommendations for improvements.

### Blood glucose

The main sugar the body makes from the food we eat. Glucose travels in the bloodstream, providing energy to all the body's living cells. However, the cells cannot use glucose without the help of insulin.

### Diabetes

Diabetes is the shortened name for the health condition called diabetes mellitus. Diabetes happens when the body cannot use blood glucose as energy because of having too little insulin or being unable to use insulin. See also Type 1 diabetes and Type 2 diabetes.

### Diabetic Ketoacidosis (DKA)

DKA is a dangerous complication that happens when the body of a person with diabetes starts running out of insulin. During DKA, when the body has no insulin to use, it switches to burning fatty acids. This produces acidic ketones, which can cause severe illness and death.

While DKA mostly happens to people with Type 1 diabetes, DKA can also develop in people with Type 2 diabetes.

### Insulin infusion

An insulin infusion sends insulin into the body through a needle inserted under the skin. It is often called a sliding scale because it can steadily deliver insulin at a set rate throughout the day, with increased doses when needed, for example, at meal times.

### Hypoglycaemia (or Hypo) including severe hypo

Hypoglycaemia happens when there is too little glucose in the blood. In the NaDIA data collection, a mild hypo is a blood sugar reading of 3-3.9 mmol/L and a severe hypo is a blood sugar reading below 3mmol/L.

### Multidisciplinary team

A team comprising different kinds of healthcare professionals working together to provide a patient's care. For example, a multidisciplinary foot care team normally comprises:

- a diabetologist (a consultant who specialises in diabetes)
- a surgeon with expertise in managing foot problems related to diabetes
- a podiatrist (someone trained to look after your feet, and sometimes called a chiropodist)

### National diabetes framework

A document describing the different diabetes treatment and care that all local health services in the UK should provide.

## NICE

The National Institute for Health and Care Excellence (NICE) is the independent regulatory body providing national guidance to the NHS on new and existing medicines, treatments, and procedures.

## Secondary care

The treatment and care you get in a hospital, either as an outpatient or inpatient.

## Type 1 diabetes

Type 1 diabetes develops when the body permanently destroys its own insulin-producing cells. When this happens a person needs regular insulin, given either by injection or an insulin pump.

## Type 2 diabetes

A condition in which the body either makes too little insulin, or cannot use the insulin it produces to turn blood glucose into energy. Diet and exercise is often enough to control a Type 2 diabetes condition, but some people also need diabetes medication or insulin.

# We welcome your views on how we can improve this report.

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