Health Services Safety Investigations Body

## Investigation report

# Insulin: supporting safe administration in inpatient settings

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**Theme:**
Medication, Long-term conditions, Hospital care



## Contents

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# A note of acknowledgement

We would like to thank the many people who contributed to this investigation. We’re grateful to the patients, families and staff affected by the patient safety issue who shared their personal experiences, including intimate and traumatic situations, with us.

# About this report

This report considers the safe administration of insulin for people with known diabetes mellitus, who may be at risk of harm during admissions to hospital. We are also undertaking a series of investigations that explore risks to patient safety for patients with diabetes in the community who self-administer insulin, and who may be at increased risk of harm because of their circumstances. While the findings of the report are about insulin and diabetes care in acute settings, they may also be applicable in other healthcare settings and for other physical long-term conditions.

The terminology used in this report has been chosen while acknowledging that there are differing views across organisations and groups. The report refers to ‘patients’ in line with NHS documents. Diabetes mellitus is the scientific name for what is commonly called ‘diabetes’. This report will refer to the condition as ‘diabetes’ throughout.

# Executive summary

## Background

This report focuses on the safety of patients in hospital in England who have diabetes requiring treatment with insulin. It considers issues around the management of diabetes care and the safe administration of insulin for inpatients. Insulin is a high-risk medication and is among the most common causes of harm from medication errors in the NHS.

The prevalence of diabetes in England is rising, with an estimated 4.2 million people affected by 2030. Diabetes affects a growing proportion of the inpatient population and is associated with significant risks when care is not managed effectively.

## The patient safety issue

Going into hospital can create risks for patients with diabetes. Patients have come to harm or died in hospital because their diabetes requiring treatment with insulin has not been appropriately managed.

## The investigation

Hearing and reviewing the experiences of those affected led the investigation to examine the following in relation to the patient safety issue:

- How staff are supported to monitor and care for patients with known diabetes on a hospital ward.
- How patients are supported to safely self-administer their insulin (through injections or via a pump or hybrid closed loop system), as part of a diabetes self-management regime.
- What national recommendations/observations have been made to date and the outcomes seen.
- The investigation’s findings are offered to support improvements in services for patients who are admitted to hospital and require ongoing care for their diabetes that requires insulin therapy.

## Findings

- Integrated care board (ICB), regional and national oversight for inpatient diabetes care is fragmented, and assurance for patient safety is devolved to individual trusts. This leads to gaps in responsibility and accountability for implementing national guidance and recommendations, and for acting on national audit data, for improvement of patient safety.
- Regulatory activity requires strengthening to effectively assess and address safety concerns relating to inpatient diabetes care.
- Local hospital oversight structures required by national guidance and recommendations, such as diabetes safety boards, are often absent. This can hamper local-level oversight and mitigation of risks, increasing risks to inpatients who have diabetes.
- Prioritisation and funding of inpatient diabetes care at the hospital and ICB level has not supported the full implementation of national guidance and recommendations.

- Participation in the National Diabetes Inpatient Safety Audit is low, limiting the ability to track trends, benchmark performance, or drive strategic and nationwide diabetes care improvements.
- Most inpatient diabetes care is delivered by non-specialists who may lack confidence and/or competence in diabetes management.
- Specialist diabetes teams are often under-resourced and unable to provide 7-day coverage to support non-specialist staff and care for patients. Even at recommended staffing levels, specialist teams cannot always see every patient who may need support.
- Diabetes/insulin awareness training for non-specialist staff and students is inconsistent. Education gaps persist at both trust and undergraduate levels, with no national minimum mandated standard for diabetes care or insulin safety education, training and competency assessments.
- Many hospital clinicians, along with national stakeholders, strongly support adding blood glucose levels to the National Early Warning Score (NEWS2) to improve the detection of diabetes-related patient deterioration, but acknowledge challenges in doing so.
- Many patients who safely self-administer insulin at home through injection, insulin pumps, or hybrid closed loop systems, are prevented from doing so in hospital. This can be due to local policies on diabetes self-management and insulin self-administration, and the reluctance of staff to allow patients to self-administer because they fear being blamed if things go wrong.
- Lack of clarity about safe bedside storage of insulin and misconceptions about the regulatory stance on this create barriers for patients to self-administer.
- Networked glucose meters can improve safety, but implementation of required hardware and software is inconsistent.
- There is limited integration between hospital networked glucose meters and electronic patient records, creating potential blind spots in inpatient diabetes care.

**HSSIB makes the following safety recommendations**

**Safety recommendation R/2026/076:**

HSSIB recommends that NHS England/Department of Health and Social Care sets out the expectations and responsibilities of NHS trusts, integrated care boards and NHS England for the oversight and assurance of inpatient

diabetes care. This should support organisations to implement and act on improvements shared in national guidance, recommendations and audit data. It should also include how existing functions (Getting It Right First Time and the Diabetes Care Accreditation Programme), and those currently in development (new National Diabetes Audit for Inpatient Care) can be more closely aligned and utilised to help better understand and respond to challenges relating to the safety and quality of inpatient diabetes care.

**Safety recommendation R/2026/077:**

HSSIB recommends that the Royal College of Physicians reviews and acts on new data and outcomes of studies about adopting blood glucose into NEWS2 and shares any decisions it makes. This is to encourage understanding and support consideration of how blood glucose issues can be recognised early and escalated to mitigate harm.

**Safety recommendation R/2026/078:**

HSSIB recommends that the Care Quality Commission assesses how it can use data from the Diabetes Care Accreditation Programme and the new National Diabetes Audit for Inpatient Care as part of its regulatory activity. This is to ensure that known challenges in inpatient diabetes care, and knowledge of providers that do not report national diabetes audit data, are considered to provide intelligence in support of regulatory activity.

**HSSIB makes the following safety observations**

**Safety observation O/2026/083:**

Organisations and individuals involved in the provision of clinical undergraduate and pre-registration education, and trust preceptorship/ induction programmes, can improve patient safety by using the findings of this report to prioritise diabetes care and insulin management education and training as appropriate.

**Safety observation O/2026/084:**

Professional regulators and royal colleges can improve patient safety by reviewing this report and disseminating appropriate communications to their registrants and members in relation to understanding their expectations in providing safe diabetes care.

### HSSIB suggests safety learning for integrated care boards

HSSIB investigations include safety learning for integrated care boards where this may help organisations think about how to respond to a patient safety issue that relates to integrated care across a geographical footprint. Informed by the findings in this report, the investigation proposes the following safety learning.

**Safety learning for integrated care boards ICB/2026/016:**

HSSIB suggests that integrated care boards consider the findings of this report to inform funding prioritisation decisions for trust diabetes specialist inpatient services. This is to help support the delivery of safe inpatient diabetes care through appropriately staffed 7-day inpatient diabetes specialist services to mitigate patient harm.

### Local-level learning

HSSIB investigations include local-level learning where this may help organisations and staff identify and think about how to respond to specific patient safety concerns at the local level. HSSIB has developed the following prompts to support local-level learning for NHS trusts.

**Self-management of diabetes and insulin administration**

- Do you have a policy that supports patients to safely self-manage their diabetes and support self-administration of insulin?
- Is your policy clear, available, and does it enable clinicians to support safe self-management and self-administration?
- Are the timing and content of meals considered in support of patients self-managing their diabetes?

- Is safe bedside storage of insulin provided to support self-administration? If not, how could this be supported?
- Are clinicians aware of national guidance and the regulatory stance regarding promotion of safe self-management of diabetes and insulin administration?

**Diabetes specialist workforce and capacity**

- Is your inpatient diabetes specialist team appropriately resourced to help mitigate known diabetes-related risks?
- Is your diabetes inpatient specialist team supported to operate out of hours, such as over weekends and bank holidays?

**Non-specialist diabetes care**

- Do you protect education and training time for diabetes training?
- Does your diabetes training ensure key risks to inpatients with diabetes are highlighted to staff?
- Do you have a diabetes specialist team that is appropriately resourced with sufficient capacity to deliver diabetes education and training?

**Hospital diabetes technology**

- Do you have networked glucose meters to support remote monitoring of patients with diabetes?
- Do the glucose meters in your hospital automatically upload data to electronic patient records, and does this support remote monitoring of patients? Does your inpatient diabetes specialist team access diabetes related reports/alerts daily to identify patients at risk?
- Do you provide digital tools or apps to support your non-specialist clinicians in providing safe diabetes care?

**Wearable diabetes technology**

- Do you have a wearable diabetes technology element in your diabetes education and training programme?
- Do you have clear and available guidance on wearable diabetes technology for your non-specialist clinicians?

**Oversight and governance**

- Do you participate in the Diabetes Care Accreditation Programme (DCAP)?
- Do you submit data to the National Diabetes Inpatient Safety Audit (to be superseded by the National Diabetes Audit for Inpatient Care)?
- Do you have a diabetes safety board with senior management involvement?
- Does your diabetes safety board work with your inpatient diabetes specialist team to understand key diabetes risks and issues?
- Does your diabetes safety board have the authority to agree actions and prioritise resources for their implementation?

# 1. Background and context

This report considers the safe administration of insulin for people with known diabetes, who may be at risk of harm during admissions to hospital.

HSSIB identified incidents where people with diabetes who required insulin therapy during their hospital admission had been harmed from hyper- and hypo- glycaemia (high and low blood glucose). In some of these incidents, patients had died or experienced life-changing harm.

This section provides background information for the investigation.

## 1.1 Diabetes and insulin

1.1.1 NHS England (n.d.a) states that ‘Managing the growing incidence of diabetes in England is set to be one of the major clinical challenges of the 21st century’ and rising levels of diabetes have been described as a ‘global pandemic’ (NCD Risk Factor Collaboration, 2024).

1.1.2 Glucose is the sugar the body uses for brain and muscle energy. Diabetes mellitus (commonly referred to as ‘diabetes’) is a condition where the level of glucose in a person’s blood is too high. The body normally controls blood glucose levels through the production of the hormone insulin by the pancreas but this ability is lost in diabetes. Around 8% of people with diabetes have type 1 and 90% have type 2. In type 1 diabetes, the pancreas does not produce insulin and so people will need lifelong insulin therapy. In type 2 diabetes, the body does not produce enough

insulin or the body's cells become resistant to insulin; the person may need insulin therapy if appropriate (Diabetes UK, n.d.b). There are also other types of diabetes, such as type 3c which can develop following damage to a person's pancreas.

1.1.3 A person's health can be harmed if their blood glucose levels are too high or too low. High levels (hyperglycaemia) can lead to life-threatening complications such as diabetic ketoacidosis (DKA), which causes acids to accumulate in the blood. DKA is a life-threatening diabetes complication caused by a severe lack of insulin. Without enough insulin, the body cannot use glucose for energy and so it starts to break down fat and muscle, leading to harmful accumulation of acids in the blood (ketones). Low levels of glucose (hypoglycaemia) – causes of which include taking too much medication or missing food – can in severe cases result in loss of consciousness and death. In the longer term, high blood glucose levels can cause problems with a person's eyes, nerves and kidneys, and increase the risk of conditions such as heart attack and stroke.

1.1.4 When managing diabetes, the aim is to manage blood glucose levels within a target range. Glucose levels are measured by sampling blood via a finger-prick test, a blood test or a continuous glucose monitor (CGM). A CGM can provide intermittent or real-time readings of a person's glucose level. The National Institute for Health and Care Excellence (NICE) (2022a; 2022b, 2023a) recommends that all people with type 1 diabetes and some people with type 2 should have access to a CGM.

1.1.5 To monitor blood glucose levels over time, a person's glycated haemoglobin (HbA1c) is measured. HbA1c measures the amount of glucose sticking to red-blood cells and provides an indication of average levels from the past 2 to 3 months. For someone with diabetes, NICE (2022a; 2022b) provides guidance on target HbA1c. A person's target HbA1c should be individualised to ensure their circumstances are considered including their risk of hypoglycaemia.

**Insulin therapy**

1.1.6 Insulin can be administered by injection or pump to help people manage their blood glucose levels. There are different types of insulin with different onset times (how long it takes to take effect) and duration. For example, a rapid-acting insulin may take effect in 5 to 15 minutes and last 2 to 5 hours, while a basal (background/ long-acting) insulin may take effect in 2 hours and last 18 to 42 hours (Diabetes Specialist Nurse Forum UK, 2024).

1.1.7 All people with type 1 diabetes need insulin to replace what is not produced by their pancreas. For type 1 diabetes, NICE (2022a) recommends using a basal insulin and then rapid-acting insulin before meals. Some people living with type 2 diabetes also require insulin if other medications have not enabled adequate control of their blood glucose levels.

1.1.8 Insulin can also be administered by continuous subcutaneous infusion via a stand-alone insulin pump or hybrid closed loop system. Hybrid closed loop systems involve a pump and CGM 'talking to each other' to automatically adjust the insulin dose (Diabetes UK, 2025a). NICE (2022a; 2023b) recommends hybrid closed loop systems as an option for certain people.

**Issues relating to inpatients with diabetes and insulin administration**

1.1.9 The majority of patients in hospital with diabetes are admitted for other health related reasons. In 2020 a sixth of all hospital beds were occupied with people with diabetes, 90% of whom were in hospital 'with' their diabetes, rather than 'because' of it (Getting It Right First Time, 2020).

1.1.10 Most inpatient care for people with diabetes is provided by non-diabetes specialist clinicians (non-specialists). Hospitals can also have multidisciplinary diabetes specialist teams (diabetes specialists). These include 'nurses, pharmacists, dietitians, psychologists and podiatrists' (Getting It Right First Time, 2020) who provide aspects of specialist diabetes care, and provide wider support to non-specialists.

1.1.11 While most people who live with diabetes safely self-manage their condition and self-administer their insulin (if required) in the community and at home, being admitted to hospital introduces risks related to the management of their diabetes which can lead to harm. In 2020 it was reported that 'as many as four in ten people who have diabetes experience an insulin error while in hospital' (Getting It Right First Time, 2020). In addition, in 2017 'an estimated 9,600 people required rescue treatment having fallen into a coma after a hypoglycaemic attack [episode] in hospital', '2,200 suffered from diabetic ketoacidosis (DKA) whilst in hospital due to undertreatment with insulin', and 'people with diabetes stay an average 1-3 days longer in hospital than the rest of the population and have a 6% higher mortality rate' (Getting It Right First Time, 2020).

1.1.12 Using 2010 data, it was estimated in 2019 that due to the 'prolonged length of stay in the inpatient diabetes population' that 'excess bed days incurred an estimated tariff cost of £129.2M' and, as the data was almost 10 years old, those figures were 'likely to have increased' (Joint British Diabetes Societies, 2019).

1.1.13 Overarching UK clinical guidance including care for patients with diabetes are set by NICE (2022a; 2022b). The Joint British Diabetes Societies (JBDS) provides specific guidance for inpatient diabetes care including what a ‘good diabetes inpatient service’ is (Joint British Diabetes Societies, 2019) including associated staffing levels. The Getting It Right First Time (GIRFT) programme is a national clinical improvement initiative in England aimed at reducing unwarranted variation in healthcare delivery (Getting It Right First Time, 2020). It carries out national inpatient diabetes reviews and makes recommendations.

1.1.14 GIRFT’s most recent survey (GIRFT supplementary report 2026-in preparation) gathered data between July 2024 and March 2025, had a 77% participation rate, and reflects the most recent data regarding inpatient diabetes care service evaluation. Both JBDS guidance and GIRFT recommendations underpin diabetes accreditation programme and national audit frameworks.

1.1.15 The National Diabetes Audit is a national clinical audit which measures the quality of diabetes healthcare in England and Wales which has a specific inpatient element. Until 2019 this was the National Diabetes Inpatient Audit (NaDIA). This was superseded by the National Diabetes Inpatient Safety Audit (NDISA) (NHS England, 2024), which gathers data about inpatient diabetes harms alongside alignment with GIRFT recommendations and had a response rate of 68.2% of eligible hospitals. The National Diabetes Audit for Inpatient Care (NDA IC) is in development to replace the NDISA, and is a priority for 2026. The NDA IC will be integrated with the Diabetes Care Accreditation Programme (DCAP), which is a programme within the Accreditation Unit of the Royal College of Physicians (RCP).

## 1.2 Safe self-administration of insulin

1.2.1 Self-administration of insulin is where people inject the medication themselves, or their insulin is administered via insulin pumps or hybrid closed loop systems. Diabetes UK (2025b) provides guidance on using an insulin pen device. Steps include choosing where to inject; attaching a needle to the pen and priming the device; dialling up the dose; injecting the insulin and counting to 10; and safely disposing of used equipment.

### Considerations for safe self-administration of insulin

1.2.2 Insulin is a time-critical and high-risk medication – it should not be omitted without a valid clinical or safety reason, and can have serious side effects. Administration of insulin requires certain knowledge and skills to ensure it is done safely. Incorrect administration can result in the complications described in 1.1.3.

1.2.3 Considerations for safe self-administration of insulin are multiple and include the following (Diabetes UK, 2023):

- **Insulin** – there are different types of insulin (see 1.1.6). Some have similar names but may differ in type and strength. The person should understand the types they are prescribed, how quickly they act and how to prepare them. Insulin requires appropriate storage and unopened supplies should be stored in a refrigerator.
- **Dose** – insulin doses will be tailored to each person and how much they need will depend on factors such as their weight, the type of diabetes they have and what they are eating. The person should understand the doses they require and how that dose may need to be adjusted depending on their blood glucose levels.
- **Time** – insulin may need to be taken at different times. Some is taken around a mealtime and some may need to be taken at the same time each day such as bedtime. The person should understand when they need to take their insulin.
- **Device** – the type of administration device used will depend on the type of insulin. The person should understand how to prepare, use and store the device. The person also needs to understand what other kit is needed to administer their insulin and measure blood glucose levels, and ensure they have enough supplies.
- **Technique** – administering insulin in the right way ensures it is effective. The person needs to understand the technique for administering insulin and should vary the administration site to avoid the development of fatty lumps (lipohypertrophy) that may affect insulin absorption. Sites for injection also need to be kept clean to avoid infections.
- **Complications** – a person who self-administers insulin needs to understand the potential for complications, how to identify them and how to manage or seek help for them. This includes insulin dose adjustment for the management of hyperglycaemia and hypoglycaemia, as well as during illness.

1.2.4 A diabetes diagnosis has lifelong implications. The considerations associated with self-administration of insulin and self-care are significant. Whether someone is able to effectively self-care will vary depending on their circumstances, for example their age, support network, health literacy, cognitive functioning and mental health (Alexandre et al, 2021).

**Safe self-administration of insulin in inpatient settings**

1.2.5 Self-management of diabetes includes patients monitoring their own blood glucose levels, and then self-administering an appropriate dose of insulin via an injection (and having facilities to safely dispose of needles) or receiving their insulin via an insulin pump or hybrid-closed loop system. This allows patients to continue to be responsible for their own diabetes care during hospital admissions. Inpatients who have diabetes will often have far greater knowledge of the management of their diabetes than the clinical staff caring for them during a hospital stay, and 'People who manage their diabetes prior to admission must be assumed competent to continue to self-manage during the admission unless the clinical situation prevents this' (Joint British Diabetes Societies, 2023).

1.2.6 Guidance on self-management of diabetes including self-administration of insulin in inpatient settings is provided by numerous organisations and bodies (Getting It Right First Time, 2020; Joint British Diabetes Societies, 2023; National Institute for Health and Care Excellence, 2023c; Specialist Pharmacy Service, 2023). Appropriate diabetes self-management including self-administration of insulin during hospital admissions empowers patients and supports safer outcomes.

# 2. Staff, patient and family experiences of diabetes care in acute hospitals

This section describes the prevalence of diabetes and challenges associated with care for inpatients with diabetes requiring treatment with insulin. It provides a sample of the insights the investigation gathered into the harms and experiences of those affected. These insights include perspectives from clinicians and from patients and families, including families who lost loved ones.

## 2.1 Prevalence of diabetes

2.1.1 Discussions with diabetes clinicians across hospitals in England indicated an ongoing rise in the prevalence of diabetes among hospital inpatients and, in turn, a proportionate rise of inpatients requiring insulin therapy. One clinician described this trend as "increasing exponentially"; another expected it to "become ever more common".

2.1.2 Hospitals visited by the investigation estimated that between 20% and 35% of their inpatients had diabetes. For example, in a hospital with 500 beds, approximately 120 patients daily required diabetes management; in a 1,000-bed hospital, this figure rose to 200 to 220 patients per day.

> “There is nowhere in the hospital that you are not going to come across somebody with diabetes.”
>
> **Staff insight**

2.1.3 Alongside the growing number of inpatients with diabetes, the complexity of diabetes care was also described as increasing. However, the investigation heard that “the system” (the wider health and care system) is not recognising the growing risks and the impact they will have.

## 2.2 Examples of harm and experiences of those affected

2.2.1 The investigation spoke with patients, carers and families, including those whose loved one had died. It also reviewed coroner prevention of future death reports and serious incident reports. A representative selection of issues that led to harm included:

- Insulin infusion being stopped (before surgery) and then not restarted, contributing to a patient’s death.
- Insulin consistently being administered after meals rather than before, contributing to a patient’s death – which continued to happen ‘occasionally’ in later incidents with other patients.
- Insulin at the incorrect dose (too high) being administered, contributing to a patient’s death.
- Harm caused by patients not being allowed to self-manage their diabetes (and self-administer insulin), and where clinicians did not effectively manage their condition.
- Harm caused by patients having their wearable diabetes technology removed during their hospital stay, and where clinicians did not effectively manage their condition.
- Referrals being made to diabetes specialist teams, but appropriate responses being delayed because of the specialist team being unavailable out of hours and over weekends and bank holidays.

2.2.2 While people generally manage their diabetes safely in the community, the investigation heard views that reflected consistent challenges in providing safe diabetes care across hospitals in England. For type 1 diabetes, the investigation

heard that approximately 1 in 25 patients in hospital go into diabetic ketoacidosis (DKA – see 1.1.3) because their insulin is omitted or they are not given enough insulin to deal with their clinical condition at the time.

"She had gone into ketoacidosis, basically. She might have been able to get through if they just gave her insulin."

**Bereaved family insight**

2.2.3 Insulin management was described specifically as being one of the most common causes of harm from medication errors in the NHS, leading to heightened caution among staff because they are nervous about it. The sense of fear was palpable among patients and staff when describing their feelings regarding inpatient diabetes care.

"I think it's the scariest place on the planet for a diabetic person to be in hospital. I worry for everyone's safety."

**Patient insight**

2.2.4 The approach to supporting people to safely self-manage their diabetes, including self-administration of insulin, varied significantly across the hospitals the investigation visited. Some supported patients to continue to be responsible for their diabetes care when safe to do so; however, frustrations were repeatedly heard where this was not the case.

"If you live with your diabetes and do [administer] insulin every day by default, you know more about what to do with your insulin than any staff member."

**Staff insight**

2.2.5 The way hospital policies were written and implemented demonstrated the differences in approach to whether patients were allowed to self-manage their diabetes and self-administer insulin. Some hospitals the investigation visited adopted an opt-in policy (where patients and staff had to agree that patients could

self-administer) while some adopted an opt-out policy (where there was an assumption that patients would continue to self-administer unless there was a reason they could not).

2.2.6 Even when patients self-managed their diabetes, clinical oversight remained necessary, particularly when patients were severely unwell or their level of consciousness was reduced, for example because of the effects of sedation. Without clinical oversight there was a risk of harm.

2.2.7 Staff described that they can be reluctant to let people self-manage their diabetes. This reluctance stemmed from both a fear of patients not managing their condition effectively, or through “caring too much” and wanting to do as much as possible for their patients.

> “We try and care too much where we will say ‘we’ll do the insulin for you’ when actually patients are quite capable to do it themselves.”
>
> **Staff insight**

2.2.8 Challenges in providing the conditions to enable patients to self-administer their insulin, such as the storage of insulin by the bedside, were encountered and these varied across hospitals. Reasons for these challenges spanned local policies and regulatory considerations.

> “Everyone’s worried about, well, CQC [the Care Quality Commission] are going to come and ask me about my self-management, management of medicines, and my safe storage of medicines.”
>
> **Staff insight**

2.2.9 An additional challenge in the management of diabetes for inpatients included providing appropriate meals at appropriate times in line with their insulin therapy.

> “If we don’t account for meal timing, then blood glucose is already on the rise, and the effectiveness of the insulin is reduced.”

**Staff insight**

2.2.10 Hospitals told the investigation about numerous challenges relating to their diabetes specialist workforce, including staff numbers and availability. Non-specialist staffs' reliance on diabetes specialist teams, and subsequent impacts when they were unavailable, was a consistent theme.

"There is a lack of diabetes specialists at the weekends. It's not OK. I mean diabetes is a 24 hour day, 365 day condition and them not being around adds to anxiety and fear."

**Patient insight**

"A flip side of implementing inpatient specialist teams is that everybody then becomes dependent on them to turn up, rather than doing a little bit themselves right."

**Staff insight**

2.2.11 The investigation heard that there was inconsistency across hospitals in the knowledge, training and competence of non-specialists in providing safe inpatient diabetes care. These were often described as insufficient to mitigate harm and promote safe outcomes.

"I felt like I knew more about diabetes. Which is not a position you want to be in when your loved one is in there with them."

**Bereaved family insight**

2.2.12 Approaches to supporting and equipping non-specialist staff with the skills and knowledge required to provide safe inpatient diabetes care varied. The requirement for training was inconsistent across hospitals and challenges relating to the content of diabetes training and how it was delivered were heard.

> “People living with diabetes go into every single healthcare service. You don’t have a single healthcare professional out there that doesn’t have some kind of interaction with diabetes and insulin. So it’s about getting it in early into education and training.”
>
> **Staff insight**

2.2.13 Outside of traditional trust diabetes training packages, the investigation heard about new and novel methods to help support non-specialists in delivering safe diabetes care through the use of digital apps. These were heard to provide significant benefits, especially during times when specialist diabetes support was unavailable.

2.2.14 There was variation across hospitals in the use of technology to support safe diabetes care. This included variation in the physical equipment used, hospitals’ digital infrastructure, and how blood glucose readings were captured in electronic patient records to support clinical decisions. Additionally, some clinicians discussed how there are national systems [the National Early Warning Score (NEWS2) which is used to identify patients whose health is deteriorating] that are universally used to detect severely unwell or deteriorating patients, but these systems do not account for blood glucose readings during patient acuity scoring.

> “It’s [NEWS2] got everything on it apart from glucose, and nobody knows why.”
>
> **Staff insight**

2.2.15 Wearable diabetes technology was heard to be “life-changing” for many people with diabetes, improving safety through continuous monitoring of blood glucose and through insulin administration with insulin pumps. Where these are combined into hybrid closed loop (HCL) systems this represented the most recent advance to support people with the management of their diabetes. However, it was heard that in hospital wearable diabetes technology is not relied upon for blood glucose readings due to limitations in how they measure. The resulting decisions about insulin management, with finger-prick tests, remains the established method.

> “People who have not been finger pricking for weeks are going to come into hospital and get finger pricked four times a day. And that just feels naff. Take my patient last week, he has a sensor on, he has a pump on, it’s looping and I have to say to him ‘I’m really sorry, but you need to be finger pricked four times a day.’”
>
> **Staff insight**

2.2.16 Although wearable diabetes technology was consistently described as critical for improving safety in diabetes care and promoting positive patient outcomes, the investigation heard significant challenges around staff awareness and knowledge of these specifically in relation to inpatient care.

> “We don’t know what happened during the operation, but when she came out, nobody reattached her pump or gave her any insulin.”
>
> **Bereaved family insight**

2.2.17 There was variation in the methods used and the depth to which hospitals tracked the safety of their diabetes care and insulin-related harms. Some had very limited data. Others kept extensive records spanning 5 to 6 years, having made it a priority and committed resource to do so, to enable learning and improvement.

> “We don’t have data because we just don’t have time to gather it, we still get harms.”
>
> **Staff insight**

**Summary**

2.2.18 The experiences heard and the local evidence gathered showed that the prevalence of diabetes among hospital inpatients is rising. Inpatients’ diabetes was not always managed effectively leading to serious complications, and there were challenges in accessing specialist diabetes support. Non-specialist staff were not

consistently supported to deliver adequate diabetes care or gain insulin administration knowledge or competence, and the approach to supporting inpatients to self-manage their diabetes and self-administer their insulin varied.

2.2.19 There was variation in the use of hospital technology in providing safe diabetes care and mitigating harm, including how it was used to alert staff to severe diabetes-related illness or patient deterioration. Wearable technology was heard to be improving diabetes care; however, hospitals described challenges in making sure staff were appropriately aware and trained in relation to these technologies. Hospitals described increasingly using digital tools and apps to support diabetes care; however, the use of these varied. In addition, the methods for collecting information about diabetes and insulin related harms, and the resulting depth of understanding, varied across hospitals.

# 3. Challenges associated with inpatient diabetes care in acute hospitals

This section considers the key themes identified by the investigation relating to the safety of inpatients with diabetes who require insulin therapy. It includes analysis of the experiences of those affected and the local evidence gathered, as well as national policy, guidance, regulations and the views and insights of national stakeholders and organisations that govern this aspect of care. The findings are presented within the following themes:

- self-management of diabetes and insulin self-administration
- diabetes specialist workforce and capacity
- diabetes care – non-specialist clinicians
- diabetes technology
- regulatory activity and oversight
- fragmentation across the healthcare system.

## 3.1 Self-management of diabetes and insulin administration

3.1.1 The investigation consistently heard that supporting patient self-management reduces risks, mitigates harm and improves safety. This can also include where families and carers, that may have provided support in the community, can continue to provide appropriate support in hospital. However, there were many examples where patients were not supported to self-manage their diabetes,

including their insulin administration. The investigation was informed of one hospital’s local audit that showed the number of patients having hypoglycaemic events (problems caused by low blood glucose – see 1.1.3) was halved when insulin was self-managed, compared to when it was managed by nursing staff. This was because patients were adjusting their doses and self-administering their insulin at the right time. However, the investigation heard that there is an increasing number of patients who may be less able to self-manage due to factors such as age, cognitive impairment, or dexterity challenges; these patients would continue to require clinical support.

3.1.2 Hospitals reported differing levels of maturity in their diabetes self-management policies, including policies around self-administration of insulin. Some had developed robust policies over time, while others were still evolving their approach. One hospital described their self-management policy development as having stalled completely because of limited staff capacity. Notably, it was described that there could also be a gap between policy and actual practice. This could be because staff were not fully aware of the policy, or were too busy to implement it due to the time required to carry out comprehensive risk assessments. It was described that it could be quicker and easier to carry out clinician-led diabetes management.

3.1.3 It was described that self-management would not only improve safety and reduce harm, it would also reduce the workload of nursing staff who are providing aspects of care that could be effectively and safely managed by a patient, freeing up time for other tasks. However, where patients are supported to self-administer, the need for clinical oversight and monitoring remains, through finger-prick tests for blood glucose monitoring (see 3.4).

3.1.4 Patients’ self-management of diabetes is intrinsically linked with the timing and content of meals. A diabetes specialist told the investigation about situations where meals were served before a patient’s insulin was administered, or insulin was prescribed at set times (for example at 08:00, 12:00 and 17:00 hours) which did not account for mealtime schedules. Sometimes "due to time pressures" nurses completed ward medication rounds and then collected insulin from a fridge to administer to patients with diabetes (or to give to patients with diabetes so they could self-administer), which caused delays. This was mitigated by moving insulin to the patient's bedside.

3.1.5 The investigation heard that self-administration in hospitals can be hindered by limitations in staff support, influenced by a fear of repercussions if a patient makes an error after being assessed as competent; often “nurses don’t want to

relinquish control”. However, a diabetes specialist nurse described that this fear was often misplaced, as patients who usually self-manage at home will carry on doing so after discharge, without reassessment. It was also heard that some patients had continued to self-manage their diabetes and insulin administration before hospital staff had been able to review their needs and prescribe insulin because of delays, thereby preventing harm which could have otherwise occurred.

3.1.6 There were concerns about the safety of storing insulin at the patient’s bedside in support of diabetes self-management and insulin self-administration. However, one staff member described that safety should be considered as a balance of risks against benefits, where the benefits gained from patients and staff having ready access to insulin outweigh the risks of misuse, theft or self-harm. Although the investigation was made aware of challenges, none of the hospitals engaged with during the investigation reported incidents of misuse, theft or self-harm, and allowing bedside storage to support patients’ self-management was said to often reduce the occurrence of harm. Supporting strategies included amending policies so that insulin was not unnecessarily classed as a ‘lockable medication’, which meant storage solutions such as plastic containers or medication bags could be used. Where insulin remained classed as a lockable medication, there were examples of lockable bedside cabinets or coded boxes in use at the bedside. The investigation was informed however that some insulins should be kept refrigerated and are unsuitable for storage in bedside lockers, in these specific cases alternative provision to appropriate access should be supported.

3.1.7 Staff expressed uncertainty about how the Care Quality Commission (CQC) views bedside insulin storage and said there was a lack of clear national guidance. National guidance states the importance, and safety benefits, of enabling patients to self-manage their diabetes and associated insulin administration; National Institute for Health and Care Excellence (NICE) (2023c), Getting It Right First Time (GIRFT) (2026), Joint British Diabetes Societies (JBDS) (2023a), and Diabetes Care Accreditation Programme (DCAP) (2023) all emphasise that patients must be assumed competent and supported to continue to self-manage their diabetes, and their insulin administration, if safe to do so when admitted to hospital. NICE (2022a) guidance states that adults with type 1 diabetes who are in hospital should be enabled ‘to self-administer subcutaneous insulin if they are willing and able and it is safe for them to do so’. Aspects such as safe storage of insulin by the bedside are covered in JBDS (2023) and Specialist Pharmacy Service (2023) guidance.

3.1.8 The investigation met with the CQC to gain insights in relation to hospital staff apprehension around regulatory repercussions. The CQC said that although there are no specific regulations, and therefore regulatory guidance, regarding self-

administration, it “actively encourage[s] safe self-administration”. In relation to bedside storage, it would ask organisations how “they assure themselves” that insulin is stored safely. However, myths contrary to this persist.

3.1.9 In the most recent National Diabetes Inpatient Safety Audit (NDISA) data (NHS England, 2024) 65.9% of hospitals reported that they had a diabetes self-management policy. GIRFT survey data (GIRFT supplementary report 2026-in preparation) showed that ‘62% of hospitals reported having relevant [self-management] policies’, but that ‘respondents estimated that only a minority of eligible patients were permitted to self-manage’ (Getting It Right First Time, 2026). The hospitals that did not have a self-management policy were therefore not aligning to national guidance, GIRFT, or the CQC’s stance on supporting patients to self-manage their diabetes and self-administer insulin. Even in those hospitals that did have a self-management policy, local evidence showed significant variation in approach where they could have either an “opt-in” or “opt-out” approach.

3.1.10 Without a concerted effort to align safe diabetes self-management and insulin administration with national recommendations and guidance, current challenges relating to the safety and quality of inpatient diabetes care will remain. A culture that trusts and supports patient expertise, while maintaining appropriate clinical oversight, will help reduce harm for inpatients who have diabetes.

**HSSIB has identified local-level learning for NHS trusts**

- Do you have a policy that supports patients to safely self-manage their diabetes and support self-administration of insulin?
- Is your policy clear, available, and does it enable clinicians to support safe self-management and self-administration?
- Are the timing and content of meals considered in support of patients self-managing their diabetes?
- Is safe bedside storage of insulin provided to support self-administration? If not, how could this be supported?
- Are clinicians aware of national guidance and the regulatory stance regarding promotion of safe self-management of diabetes and insulin administration?

## 3.2 Diabetes specialist workforce and capacity

3.2.1 A diabetes consultant described that every person with diabetes would benefit from diabetes specialist input during a hospital stay, but this was not feasible for most specialist teams. Despite describing growth in multidisciplinary diabetes specialist teams during recent years, hospitals told the investigation that there were not enough diabetes specialists to meet the need for direct patient care and support for non-specialist staff (see 3.3). Hospitals consistently described that their diabetes specialist staffing levels, and specialist availability, often fell short of GIRFT recommendations and JBDS guidance.

3.2.2 During one hospital site visit, staff described how, following national recommendations for a 7-day specialist diabetes service, funding was provided for 6 specialist staff instead of the recommended 9. This left the team “very stretched” to meet needs and expectations, and they “spend the working day firefighting”. This was not uncommon, with most of the hospitals that the investigation engaged with not meeting diabetes specialist staffing guidelines.

3.2.3 Even at full recommended staffing levels, diabetes specialist teams described that they would not be able to see every patient with diabetes to meet all of their diabetes care needs. A staff member explained that “there’s no way my very small team can see that many people”. They said that, in a hospital with 1,400 beds and “effectively 4 diabetes specialist staff members a day, I just can’t do that … so there are patients that I never see who I should see, and there are patients I see who I potentially don’t really need to, but do because they’re being referred”.

3.2.4 Availability and capacity among diabetes specialist teams varied. Some hospitals offered a 5-day service, others had a partial or full 7-day service. All diabetes specialist teams expressed a desire to provide full 7-day services, in line with national guidance, but repeatedly cited funding constraints: “there's no funding for us to be a 7-day service”. Hospitals described that risks and issues increased because there was no diabetes specialist weekend cover, and gave examples of related patient safety events and harm.

3.2.5 There was ongoing tension between the recognised benefits of comprehensive diabetes specialist input, and the practical constraints created by limited staffing and resources. As a result, diabetes specialist teams described prioritising the most complex or high-risk patients, leaving many inpatients with diabetes without specialist review during their stay, and placing diabetes management primarily in the hands of non-specialist staff.

3.2.6 The investigation heard how the presence of inpatient diabetes specialist teams can lead non-specialists to refer patients to these teams for diabetes management, even for less complex cases. It was described that this may result in delays or lack of decision-making when specialists are unavailable, such as out of hours or on weekends and bank holidays. In these situations one clinician described how “on-call medical registrars are called, who don’t necessarily have a sufficient degree of diabetes knowledge”.

3.2.7 The investigation heard that a key reason for staff defaulting to referring patients to diabetes specialist teams was a lack of training and/or confidence among non-specialist nurses and doctors (see 3.3). Other factors included unclear or inappropriate referral criteria, and increased time pressures which shifted care towards being “task-focused” and “firefighting”, reducing opportunities for a holistic approach. It was described that this could lead to diabetes specialist teams being overwhelmed with referrals, putting strain on limited resources.

3.2.8 Non-specialist staff provide the majority of inpatient diabetes care, but were often anxious about diabetes management and insulin administration, which led them to request additional support. There was a persistent gap whereby a reliance was created on diabetes specialist teams but they struggled to meet demand, or to equip others (through education and training of non-specialists – see 3.3) to reduce the demand.

3.2.9 National guidance (Joint British Diabetes Societies, 2019), national recommendations (Getting It Right First Time, 2020), and accreditation programme standards (Diabetes Care Accreditation Programme, 2023) emphasise the need for a 7-day inpatient specialist diabetes service, and for safe/optimal diabetes specialist staffing numbers. Regulatory guidance states that providers must ‘deploy sufficient numbers of … staff to make sure that they can meet people's care and treatment needs’ (Care Quality Commission, 2025a).

3.2.10 Inpatient diabetes specialist teams ‘were extremely rare at the turn of the 21st century’ (Joint British Diabetes Societies, 2019), but numbers have grown since. The investigation heard from a national stakeholder that transformation funding was provided by NHS England to help establish multidisciplinary inpatient diabetes teams. NHS England invested £28.7m in the years 2017/18 and 2018/19 for ‘new or expanded multi-disciplinary footcare teams and diabetes inpatient specialist nursing teams’, stating that ‘these teams deliver significant improvements to recovery and reduce lengths of stay in hospital’ while also ‘reducing variation and delivering significant benefits for patients’ (NHS, 2019).

3.2.11 Following the transformation funding, GIRFT (2020) recommended that ‘All trusts must have a dedicated multi-disciplinary team of specialist diabetes inpatient practitioners as indicated in the NHS Long Term Plan. Trusts should work towards providing base level specialist diabetes cover at weekends where this does not exist’. JBDS (2019) also published national guidance on ‘Safe staffing levels for inpatient specialist nurses’ which assumed ‘half day working on Saturday, Sunday and bank holidays’. At trust level, business cases for investment in diabetes services require sufficient evidence to justify changes or additional resources. However, data for this often does not exist locally (see 2.2) or nationally (see 3.5).

3.2.12 In the most recent national audit data (NHS England, 2024), 84.1% of hospitals in England reported that they ‘have a dedicated multi-disciplinary team of specialist diabetes inpdatient practitioners’. However, only 34.8% provide at least ‘base level [partial service] specialist diabetes cover at weekends’. Recent GIRFT survey data (GIRFT supplementary report 2026-in preparation) shows that ‘approximately 90% of hospitals still do not meet the Joint British Diabetes Societies (JBDS) recommended DISN [diabetes inpatient specialist nurse] staffing levels’ and that ‘only 15% of hospitals reported comprehensive weekend cover that did not rely on telephone advice or on-call from home arrangements’ (Getting It Right First Time, 2026). A survey was carried out in 2023 by the JBDS which concluded that ‘Current inpatient diabetes staffing is much lower than needed in most Trusts who responded to the survey’ (JBDS, 2023b). Recent market research highlighted that ‘almost 7 in 10 (68%)’ of people with Type 1 diabetes who had recently been in hospital ‘didn’t have access to a diabetes specialist nurse or member of the diabetes team during their stay’ (Breakthrough T1D, 2025).

3.2.13 National stakeholders described that where 5-day specialist diabetes services have been set up, they have since become established as standard, but there has been no subsequent drive or prioritisation of funding to continue to develop these into a 7-day service. Periods such as weekends and bank holidays are discussed throughout this report, and have been identified as points where specific challenges arise where diabetes care rests in the hands of non-specialists, and the risk of patient harm can increase. A national stakeholder described their frustration with this, stating “if it is important for 5 days, why is it not important for 7 days?” and that even moving to a partial 7-day service in all hospitals would significantly mitigate risks.

3.2.14 Inpatient specialist diabetes teams are also responsible for delivering crucial education and training, and upskilling of non-specialist staff. Inadequate diabetes specialist staffing levels have an impact on capacity, which in turn affects the ability to provide education and training for non-specialists (see 3.3).

3.2.15 While national guidance emphasises the necessity of robust, 7-day inpatient diabetes specialist services, and regulatory guidance requires providers to deploy sufficient numbers of staff, there remains a significant gap between this and the reality in many hospitals. This shortfall increases the risk of insulin management errors and patient harm, and places additional pressure on non-specialist staff, who may lack the expertise or confidence to manage complex diabetes cases independently when diabetes specialist staff are unavailable (see 3.3).

**HSSIB has identified local-level learning for NHS trusts**

- Is your inpatient diabetes specialist team appropriately resourced to help mitigate known diabetes-related risks?
- Is your diabetes inpatient specialist team supported to operate out of hours, such as over weekends and bank holidays?

3.2.16 NHS England described that the initial funding to establish inpatient diabetes multidisciplinary teams was ‘transformation funding’ and was provided for 5 years to support an increase in the number of inpatient diabetes specialists. After this time, the ring-fence on funding was removed and future spending decisions were devolved to integrated care boards (ICBs) which were now responsible for sustaining these services. While the transformation funding led to improvements in line with the NHS Long Term Plan, these improvements did not achieve the subsequent requirements for weekend cover and staffing levels set out in the GIRFT recommendations and JBDS guidance. GIRFT told the investigation that in 30% of trusts, transformation funded inpatient diabetes specialist nurse posts were discontinued due to a lack of ongoing funding from trusts and ICBs. With diabetes inpatient service costs no longer ring-fenced and absorbed into ICB budgets and routine commissioning, there was concern about sustaining the improvements made to date and achieving alignment with GIRFT recommendations and JBDS guidelines.

3.2.17 Without a concerted effort to align staffing levels and service provision with national guidance and recommendations, and regulatory guidance, including through ongoing investment and prioritisation, current challenges to the safety and quality of inpatient diabetes care will continue.

**HSSIB suggests safety learning for integrated care boards**

**Safety learning for Integrated Care Boards ICB/2026/016:**

HSSIB suggests that integrated care boards consider the findings of this report to inform funding prioritisation decisions for trust diabetes specialist inpatient services. This is to help support the delivery of safe inpatient diabetes care through appropriately staffed 7-day inpatient diabetes specialist services to mitigate patient harm.

## 3.3 Diabetes care – non-specialist clinicians

3.3.1 Most of the care inpatients with diabetes receive is delivered by non-specialists (nurses and doctors), who access diabetes specialist support as needed. However, the investigation heard repeatedly that non-specialists can sometimes lack the knowledge, competence or confidence required for consistent and reliable safe diabetes care and insulin administration through appropriate monitoring and management. Across diabetes specialist and non-specialist staff, this was considered to be one of the major risks of harm in the provision of inpatient diabetes care and insulin administration. The investigation also heard that whilst current diabetes inpatient care guidelines are comprehensive, they are in the main written for diabetes specialist staff. Non-specialist staff expressed significant anxiety about insulin administration; one non-specialist described being “absolutely petrified of insulin knowing how lethal it can be if I get it wrong”.

3.3.2 Training approaches for non-specialists varied significantly across hospitals. Some required mandatory annual diabetes and insulin training with practical competency assessments, while others offered more limited, non-mandatory training. One provider made training essential for all who prescribe, administer or dispense insulin, but one senior nurse said: “I’ve not been able to get all the staff to do it … because they’ve got so many conflicting things that they have to learn.” It was described that there is constant pressure for clinical work and “education time is not protected”. Training is also essential based on the products that are being procured for use; differences in the mechanism of delivery, and the safety and usability between some insulin devices, could impact a trust’s choice of product to use in an inpatient setting.

3.3.3 It was heard that diabetes and insulin management are specialist areas, and non-specialists are not afforded the opportunity to sufficiently build up their knowledge. Several diabetes specialists described diabetes education and training

packages that were unfit for purpose. One staff member said: “Training needs to be the right training. It currently doesn’t cover the most common and serious diabetes issues encountered on a ward.”

3.3.4 Diabetes specialists provided education in various ways, such as “espresso teaching” – that is, brief, opportunistic sessions. However, the investigation heard that high staff turnover meant that “within a few weeks you may have new staff on there”. As one staff member put it: “Education is where we all probably fall down, non-specialists struggle to attend because of insufficient ward staffing and inability to be released, resulting in cancelled education sessions.”

3.3.5 Education and training were described as often being too technical; staff described that a more effective approach would be to focus on the principles of safe insulin use. Staff suggested that having basic rules or core principles would be beneficial, such as not removing devices unnecessarily, taking food into account, monitoring, and administering insulin – similar to a ‘Sepsis 6’ approach which sets out six essential actions to take if sepsis is suspected (Sepsis Trust, 2024).

3.3.6 Across staff in hospitals there was a consistent perception that diabetes management and insulin administration education at trust level for non-specialists was inconsistent, often inadequate, and not sufficiently prioritised. Staff described mitigation strategies such as making training mandatory, protecting time for education, focusing on practical learning, using competency assessments, and involving diabetes specialist teams in teaching. However, these approaches were inconsistent across hospitals.

**HSSIB has identified local-level learning for NHS trusts**

- Do you protect education and training time for diabetes training?
- Does your diabetes training ensure key risks to inpatients with diabetes are highlighted to staff?
- Do you have a diabetes specialist team that is appropriately resourced with sufficient capacity to deliver diabetes education and training?

3.3.7 Regulatory guidance states that providers must deploy sufficient numbers of ‘suitably qualified, competent, skilled and experienced staff’ to meet people’s care and treatment needs (Care Quality Commission, 2025a). In the most recent NDISA (NHS England, 2024), 23.5% of hospitals reported that they did not provide an

appropriate level of training for every healthcare professional that ‘dispenses, prescribes and/or administers insulin, appropriate to their level of responsibility’. This issue has also been recognised in national reports; ‘There is often a lack of knowledge about diabetes and its treatment amongst the wider [non-specialist] workforce’ (Diabetes UK, 2022).

3.3.8 Diabetes specialist teams, which are crucial for the education, training, and upskilling of non-specialist clinicians, often did not have capacity (see 3.2) to provide education and training for non-specialists alongside clinical care. Their limited availability, or complete unavailability, at weekends and outside standard working hours impacted their ability to provide support and education on wards as challenges arose.

3.3.9 The investigation engaged with the Nursing and Midwifery Council (NMC) to discuss its findings in relation to limitations in education, training and competence for non-specialist nurses providing inpatient diabetes care and insulin management. The NMC described setting outcome-focused, person-centred standards of proficiency that all nurses need to demonstrate. It said that clinical competency in diabetes care relies on employer-led preceptorship and induction programmes, with appropriate continuing professional development.

3.3.10 The NMC stated that it is ‘the responsibility of NMC approved education providers in collaboration with their practice placement partners to determine the implementation details of the programme they’ve been approved to run, including the curriculum setting’. Being able to demonstrate the knowledge and skills to support people with ‘commonly encountered physical health conditions’ is a dedicated proficiency within the NMC standards (Nursing and Midwifery Council, 2024), to equip newly registered nurses for their role, which should be achieved at the point of their registration on completion of their undergraduate degree. Diabetes is one of the most commonly encountered physical health conditions in healthcare.

3.3.11 The NMC also highlighted that hospitals are responsible for ensuring their staff are adequately trained, and individual clinicians are responsible for identifying any deficiencies and skills gaps that affect the care that they deliver. If skills gaps are identified then clinicians should seek support from their employer to improve areas of their practice, by gaining appropriate knowledge, experience and competency.

3.3.12 The investigation acknowledges that education and training occur across different settings, and that there will be similar and competing needs across many health-related conditions. However, this report highlights the continuing harm that affects inpatients with diabetes, to which the current diabetes and education and training strategy contributes. The investigation was unable to identify a sole organisation that is responsible for or empowered to make education and training content prioritisation decisions across trusts and universities, to enable a more strategic approach to mitigating common and significant harms in healthcare.

3.3.13 For diabetes care specifically, this education and training gap is one of the systemic challenges that contributes to the ongoing risks and harms for one of the largest, and growing, cohorts of inpatients – responsibility and accountability for which is unclear. A national stakeholder reflected that ‘diabetes is so prevalent it becomes everyone’s problem, but that actually results in it being no one’s problem, so no one owns the training’. A base level of undergraduate diabetes education for all clinicians, which is nationally driven and sets a minimum mandated standard, would support provider-led education and training, and help mitigate current patient safety risks that result from variation in education, training and competence for diabetes care and insulin management.

**HSSIB makes the following safety observations**

**Safety observation O/2026/083:**

Organisations and individuals involved in the provision of clinical undergraduate and pre-registration education, and trust preceptorship/ induction programmes, can improve patient safety by using the findings of this report to prioritise diabetes care and insulin management education and training as appropriate.

**Safety observation O/2026/084:**

Professional regulators and royal colleges can improve patient safety by reviewing this report and disseminating appropriate communications to their registrants and members in relation to understanding their expectations in providing safe diabetes care.

## 3.4 Diabetes technology

### Hospital technology and digital systems

3.4.1 Blood glucose monitoring is critical in hospitals to detect and prevent dangerous complications for people with diabetes. Early identification of blood glucose issues can prevent avoidable harm. Several hospitals described using blood glucose monitoring that feeds into their digital systems (electronic patient records) that generate daily reports on high and low glucose readings, as well as ketone levels. These reports are sent to diabetes specialist teams, enabling them to identify patients who need intervention.

3.4.2 While these systems reduced reliance on manual referrals, their effectiveness depended on the availability of diabetes specialist teams. Many hospitals lacked 7-day diabetes specialist coverage (see 3.2), meaning electronic referrals could go unaddressed over weekends or holidays.

3.4.3 There was variation in the technology and digital systems in place to support diabetes care across hospitals. Some hospitals had standalone glucose/ketones meters, some had meters that linked to a central digital system where the results may or may not be visible in electronic patient records. Some hospitals had full seamless connectivity from blood glucose measurement to review of results and actions in electronic patient records, also utilising automated alerts for readings outside of a set range.

3.4.4 Networked systems allowed glucose data to be interpreted remotely, improving management and patient care. However, not all hospitals utilised the diabetes hardware and digital systems to their full potential for patient records, alerts, or automated referrals. In addition, IT challenges could prevent the data from being used effectively for both internal and external audits. The investigation heard that these challenges were often due to a lack of sufficient IT support staff and associated resources to configure, prioritise and support digital systems for diabetes care. HSSIB has carried out a thematic review that discusses similar challenges (Health Services Safety Investigations Body, 2025a).

3.4.5 GIRFT (2020) made a recommendation, in relation to ensuring rapid referral to a diabetes specialist team, for ‘web-linked blood glucose meters which provide an alert system for staff when any out-of-range reading is recorded’. In the most recent NDISA (NHS England, 2024), 87.1% of hospitals reported that they had web-linked meters, but only 67% used them to ‘alert’. The recent GIRFT survey (GIRFT supplementary report 2026-in preparation) showed that 84% of hospitals had

networked blood glucose monitoring systems, with ‘three quarters of hospitals’ configured to ‘alert staff to out-of-range glucose values’ (Getting It Right First Time, 2026).

3.4.6 Although technology exists and is available to improve glucose monitoring for patients with diabetes, and alert staff to issues, their use and implementation remains inconsistent due to IT integration challenges and lack of sufficient IT support staff.

**HSSIB has identified local-level learning for NHS trusts**

- Do you have networked glucose meters to support remote monitoring of patients with diabetes?
- Do the glucose meters in your hospital automatically upload data to electronic patient records, and does this support remote monitoring of patients?
- Does your inpatient diabetes specialist team access diabetes related reports/alerts daily to identify patients at risk?

**Patient deterioration monitoring (NEWS2)**

3.4.7 The National Early Warning Score (NEWS2) is the standardised and evidenced based process of recording, scoring and responding to changes in physiological parameters in acutely ill patients to help detect deterioration. However, it does not include blood glucose levels within its scoring. These are recorded separately, either on paper or a different electronic observations chart. As a result, low or high blood sugars may not trigger a response in the same way that NEWS2 does, and patients may be placed at risk of not having the change in their condition properly identified. The escalation process in this way is distinct and separate from the NEWS2 escalation process.

3.4.8 As the Royal College of Physicians (n.d.a) describes: ‘NEWS is based on a simple aggregate scoring system in which a score is allocated to physiological measurements, already recorded in routine practice.’ The six parameters are respiration rate, oxygen saturation, systolic blood pressure, pulse rate, level of consciousness or new confusion, and temperature. A patient’s scores are recorded on a chart, which provides assessment and an overall score to inform a

proportionate clinical response. The scores have been validated for use through extensive data collection – this data is only at present partly available for inclusion of blood glucose into NEWS2.

3.4.9 Some trusts have adapted their digital systems to display blood glucose readings directly under the NEWS2 chart to ensure it is given prominence, making it easier for clinicians to review them during ward rounds and take timely action. Blood glucose is one of a number of signs which can indicate deterioration. The RCP told the investigation that they are working on a document regarding the signs of deterioration, which should be considered alongside NEWS2, which includes blood glucose. However, there was widespread consensus among diabetes specialist staff that blood glucose should be included in standard observations and integrated fully into NEWS2.

3.4.10 A concern heard regarding incorporating blood glucose into NEWS2 was that whilst hypoglycaemia (low glucose) is a serious concern, there is variability in terms of a need to intervene for those with higher blood glucoses, where scales would need to vary. Additionally, concerns were heard regarding further layers of complexity relating to how scoring would account for people with known diabetes to people who do not have diabetes, or for differences for people with type 1 diabetes compared with type 2.

3.4.11 Concerns were also heard regarding technical aspects of integrating blood glucose into NEWS2. Many hospitals have electronic observation recording which feeds into NEWS2 but lack similar integrated electronic blood glucose monitoring. Some systems allow manual entry of glucose values, but it was described that this could introduce transcription errors and ideally glucose meters should upload data directly, in the same way as other observation monitoring devices.

3.4.12 From a practical perspective, challenges were noted relating to how often blood glucose readings would need to be taken. If blood glucose readings were incorporated into NEWS2 it would mean all patients across all health settings, such as pre-hospital emergency care, would require blood glucose readings via a finger-prick test, not just those known to have diabetes. However, some clinicians described that blood glucose readings are already taken during routine observations, and that adding it to NEWS2 would not be a significant practical burden.

3.4.13 Adding blood glucose to NEWS2, and the associated challenges, has been explored (Dhatariya and Umpierrez, 2022) and the investigation was told that the Royal College of Physicians (RCP) has considered it. A national stakeholder said that

after consideration it was not implemented but “they didn’t know the rationale as to why” as it would “clearly improve safety and reduce harm” and, with recent developments in technology, now could be a good time to revisit it for further consideration.

3.4.14 The investigation engaged with the RCP to understand its previous considerations around NEWS2 and discuss the findings of this investigation. The RCP told the investigation that a key reason blood glucose has not been included in NEWS2 to date is the lack of consistent, reliable data to prove that standard parameters could be established for all patients, regardless of whether they have diabetes or not. The RCP also said that there were several practical barriers. These included the need for readily available equipment for finger-prick testing in all health settings,, the reproducibility of measurements, identifying those deteriorating in a consistent way across both the acute and community setting including pre-hospital ambulance care, and the challenge of integrating glucose into the scoring system without overcomplicating it.

3.4.15 Including blood glucose in NEWS2 would also necessitate changes to hospital technology and electronic patient record systems to ensure routine, networked monitoring, recording and alerting, with effective implementation relying on national standards in health IT.

3.4.16 It was highlighted to the investigation that there are ongoing local studies and, with further data collection and stakeholder engagement, this may allow further consideration of blood glucose to be incorporated into NEWS2. In response, the RCP told the investigation that it would require large scale studies, not local studies, to validate the scoring system. The RCP also discussed that it is currently looking into a number of signs and symptoms including blood glucose for patients who are deteriorating and, should any significant data be produced, relook at inclusion of blood glucose into NEWS2 at this time.

3.4.17 Incorporating blood glucose into NEWS2 as a scored component could mitigate challenges in identifying, and then appropriately responding to or escalating, patients with diabetes who require clinical intervention. However, it requires further consideration to ensure challenges are considered and any unintended consequences can be limited.

**HSSIB makes the following safety recommendation**

**Safety recommendation R/2026/077:**

HSSIB recommends that the Royal College of Physicians reviews and acts on new data and outcomes of studies about adopting blood glucose into NEWS2 and shares any decisions it makes. This is to encourage understanding and support consideration of how blood glucose issues can be recognised early and escalated to mitigate harm.

**Wearable diabetes technology**

3.4.18 Advances in wearable diabetes technology have improved quality of life, and safety, for many people with diabetes and are well established out of hospital. These benefits can continue, when clinically safe, during hospital admissions. However, the benefits can only continue if all clinical staff that may provide care for patients with diabetes are appropriately educated, trained and competent (see 3.3) in the various technologies that may be encountered, and if specialist diabetes teams are consistently available to provide guidance when required (see 3.2).

3.4.19 The investigation heard that wearable diabetes technologies, such as insulin pumps, continuous glucose monitors (CGMs) and hybrid closed loop (HCL) systems, are advancing rapidly. With expanded eligibility criteria, the investigation was told that an estimated 50% to 70% of people with type 1 may seek access to new closed-loop systems. Children are currently prioritised for these technologies, but over time there will be more adults using closed-loop systems and staff caring for them in hospital may not have the appropriate levels of awareness and training.

3.4.20 Hospitals described challenges in keeping pace with technological advancements, including issues related to funding, infrastructure and consumables, all of which can impact care and safety. Not all hospitals offer the same types of devices and it was heard that availability varied by hospital and local funding decisions, leading to inconsistencies across regions. Patients attending a hospital from out of area may have technology that staff are unfamiliar with.

3.4.21 The investigation heard that the safest approach during a hospital admission is often to leave a patient’s insulin pump, CGM or HCL system in place unless there is a clear reason not to. However, not all staff are aware of this, and devices were described as sometimes being removed unnecessarily, reverting the patient to traditional diabetes and insulin management and increasing risk.

3.4.22 For severely unwell patients, it was heard that patients' devices may not respond quickly enough: "We take it off the loop because it can't work out the fact that you're unwell. It's trying to adapt what it needs and it's not fast enough … the closed loops are great, but they can also be dangerous in hospital for severely unwell patients."

3.4.23 Clinicians described that finger-prick tests for blood glucose readings are taken to 'ensure a calibrated reading is available' to monitor how a patient's diabetes is being managed. This is a requirement even if patients have newer technologies, such as CGMs or HCLs, as these may not have the same accuracy due to limitations in the way that they measure blood glucose and in some situations may put patients at the risk of harm.

3.4.24 Newer wearable technologies do not feed into hospital digital systems and patient records, and therefore cannot provide alerts and automatic escalation to specialist teams in the same way as traditional finger-prick testing technology and networked glucose meters do. This can frustrate patients who are accustomed to newer technology.

3.4.25 While wearable diabetes technology is improving diabetes care, hospitals described challenges in ensuring staff are trained and systems are in place to keep patients safe. The investigation heard a clear need for better planning, more consistent training, and clearer national guidance to keep pace with technological change. The investigation was told that Diabetes UK and JBDS are actively working on synthesising evidence and developing appropriate guidelines for the use of wearable technologies in hospital.

3.4.26 HCL systems aim to maintain a patient's blood glucose levels within a target range 'but there are limited data and guidance on real-world use and safety of HCL systems in the hospital setting' (Joint British Diabetes Societies, 2024). Because of the specific challenges relating to HCLs, including how they may interact with other medications, guidance states that they should only continue to be used in a hospital setting under guidance from a specialist diabetes team.

3.4.27 For staff who are appropriately educated, trained and competent in the various diabetes technologies, there is also a need for further support in the form of clear guidance, policies and frameworks that describe safe use of these technologies across different hospital environments and situations. Where policies and support for clinicians regarding technology did exist, there remained examples

where insufficient knowledge among non-specialist staff resulted in patients' wearable diabetes devices being removed inappropriately, introducing unwarranted risk.

**HSSIB has identified local-level learning for NHS trusts**

- Do you have a wearable diabetes technology element in your diabetes education and training programme?
- Do you have clear and available guidance on wearable diabetes technology for your non-specialist clinicians?

**Digital tools and apps to support non-specialist staff**

3.4.28 The investigation observed hospitals that were increasingly using digital tools, such as apps and online guides, to support diabetes care. These resources can help non-specialist staff quickly access information and make safe decisions, particularly when diabetes specialists are unavailable.

3.4.29 Some hospitals had also created interactive posters and flowcharts for high-traffic areas like emergency departments, offering quick-reference guides for urgent situations. However, the use of digital tools, apps and online guides varied significantly across hospitals, often depending on individual initiative and local investment.

3.4.30 Across the hospitals and national stakeholders the investigation engaged with, digital tools and apps were considered to support non-specialists in providing safe diabetes care. Their value was significant in reducing unnecessary referrals to diabetes specialist teams, and in providing additional support and therefore safety when diabetes specialist teams were unavailable.

**HSSIB has identified local-level learning for NHS trusts**

- Do you provide digital tools or apps to support your non-specialist clinicians in providing safe diabetes care?

## 3.5 Regulatory activity and oversight

### Regulatory activity

3.5.1 The CQC assesses whether organisations assure safe practice in line with national guidance (for example that of NICE and JBDS). Where a provider does not follow best practice guidance, the CQC needs to be assured that the provider's approach is safe and effective for patients. In relation to inpatient diabetes care, CQC inspections focus on care meeting the needs of the individual patient, including evidence of safe insulin storage, safe insulin administration, and support for self-management. As discussed in section 3.1, the CQC actively encourages self-administration and bedside storage of insulin where safe and appropriate, in contrast to the misconceptions and myths heard locally.

3.5.2 CQC inspections are determined taking into account risks identified at the service. Where diabetes care and insulin management is identified as a risk within a service, this would form part of the inspection and engagement activity with the hospital. Onsite inspection activity gives a snapshot of practice at a given time, supported by data provided by the trust. Competing priorities and resource constraints can affect the depth of assessment regarding specific diabetes care and insulin management, and detailed CQC analysis and assessment of hospitals' diabetes care would be a challenge. The Diabetes Care Accreditation Programme (DCAP – see 3.5.12 to 3.5.14) aims to meet this challenge of in-depth analysis of national audit and accreditation data, which could be useful for providing a rich source of intelligence for the CQC in consideration and support of their inspection activity. Additionally, knowledge of the providers that do not report into the National Diabetes Audit could influence the depth of diabetes specific inspection activity the CQC may wish to carry out. This would be in line with the 10 Year Health Plan for England in relation to audit data, which the 'Care Quality Commission will consider as part of their intelligence led approach to regulation' (UK Government, 2025).

**HSSIB makes the following safety recommendation**

**Safety recommendation R/2026/078:**

HSSIB recommends that the Care Quality Commission assesses how it can use data from the Diabetes Care Accreditation Programme and the new National Diabetes Audit for Inpatient Care as part of its regulatory activity.

This is to ensure that known challenges in inpatient diabetes care, and knowledge of providers that do not report national diabetes audit data, are considered to provide intelligence in support of regulatory activity.

**Oversight**

3.5.3 Limited and inconsistent oversight for inpatient diabetes care at trust level was a recurrent theme during the investigation. National guidance and recommendations (Getting It Right First Time, 2020) require hospitals to establish a diabetes safety board, attended by multidisciplinary clinical teams, to review the overall quality of the inpatient diabetes service. The board should have senior management involvement and the authority to mandate actions based on harm and outcome data. However, only 38.6% of hospitals that responded to the NDISA (NHS England, 2024) reported that their diabetes specialist teams are accountable to such a board. The recent GIRFT survey showed that 44.4% of diabetes inpatient specialist teams 'report to a trust level diabetes safety board' (Getting It Right First Time, 2026). Reasons heard for the low proportion of hospitals having a specific diabetes safety board were that some trust senior leadership teams believed diabetes care was considered as part of other safety oversight activities such as medications management, or had not recognised a need for a discrete and specific diabetes safety board. This could lead to gaps in local accountability in relation to diabetes care, which cut across multiple hospital departments and directorates, including medical and surgical specialties.

3.5.4 Without systematic oversight of key diabetes metrics, hospitals cannot accurately assess needs or prioritise resources. Diabetes safety boards were considered by numerous national stakeholders to be essential for justifying investment in diabetes care and ensuring organisational accountability. Without appropriate local diabetes care oversight, the visibility of associated diabetes care issues and harms can go unrecognised and unmeasured, with no actions taken to improve safety.

3.5.5 The investigation heard from several national stakeholders that to enable local oversight of diabetes safety metrics, local leadership must also prioritise and facilitate the submission of data to the National Diabetes Inpatient Safety Audit and, when implemented, the new National Diabetes Audit for Inpatient Care, to ensure meaningful participation and improvement, and ensure clinicians have sufficient time to report data. There is currently no clear body holding trusts to account for inpatient diabetes audit participation, making trust senior leadership engagement increasingly important. In addition, patients with diabetes who may

require elective treatment (such as planned surgery) have no way of understanding how diabetes care is delivered in individual hospitals, or how safe it is. This information could empower patients to make informed decisions, especially where they may have anxiety and fears associated with inpatient diabetes care as described in section 2.2.

3.5.6 Without a concerted effort to align local oversight and accountability with national recommendations and guidance, the safety and quality of inpatient diabetes care will continue to face current challenges.

**HSSIB has identified local-level learning for NHS trusts**

- Do you participate in the Diabetes Care Accreditation Programme (DCAP)?
- Do you submit data to the National Diabetes Inpatient Safety Audit (to be superseded by the National Diabetes Audit for Inpatient Care)?
- Do you have a diabetes safety board with senior management involvement?
- Does your diabetes safety board work with your inpatient diabetes specialist team to understand key diabetes risks and issues?
- Does your diabetes safety board have the authority to agree actions and prioritise resources for their implementation?

3.5.7 Submission to the National Diabetes Audit is a legal requirement under the Health and Social Care Act 2012 (UK Government, 2012a; 2012b) to comply with the National Diabetes Audit directions 2017 (NHS England, 2017). In addition, the NHS Standard Contract 2025/26 service conditions (NHS England, 2025) requires providers to make national clinical audit data available. Providers are also required by regulations to provide details of audit participation in their annual reports on service quality (Quality Accounts) (NHS England, n.d.b).

3.5.8 The National Diabetes Inpatient Audit (NaDIA) was launched in 2009 and provided annual snapshots of inpatient diabetes management at a national level. The NaDIA was described as “labour intensive using paper and booklets”. However the investigation heard that some providers had electronic processes which made it less time consuming, reducing the time required by nearly a third.

3.5.9 NaDIA was replaced by the National Diabetes Inpatient Safety Audit (NDISA) in 2018, with the aim of gathering more automated and continuous data in relation to diabetes care and harms. Another function was to measure compliance with GIRFT standards for inpatient diabetes care (Getting It Right First Time, 2020). Participation in NDISA has been low, and efforts to automate harm data collection have faced technical barriers, such as the lack of networked glucose meters for continuous blood glucose (CBG) data, and issues with the supporting digital infrastructure. In addition, only 35% of hospitals use CBG data for ‘quality improvement purposes, such as monitoring hypoglycaemia rates’ (Getting It Right First Time, 2026).

3.5.10 The burden of continuous data collection has also been a challenge for stretched diabetes specialist teams. Without comprehensive data infrastructure and diabetes specialist staff capacity, monitoring harms in an automated, consistent or actionable way is challenging. As a result, national diabetes care data is incomplete, limiting the ability to track trends, benchmark performance, or use robust data to support diabetes care improvements.

3.5.11 National leadership, including NHS England, recognised the need for improved capture of safety data and the need for future inpatient diabetes audit solutions to develop strategies for improving participation (including adequate infrastructure, incentives, and where needed, enforcement). NHS England and the Diabetes Care Accreditation Programme (DCAP) have already started to consider this and intend to launch a new National Diabetes Audit for Inpatient Care in 2026.

3.5.12 The DCAP, developed from JBDS guidance and a programme within the accreditation unit of the RCP, aims to establish national standards for inpatient diabetes care. DCAP provides a structured, evidence-based framework for benchmarking and improvement, and also has the potential to assist with diabetes care knowledge gaps. This could include supporting CQC regulatory activity by providing evidence collected during accreditation combined with national audit data on safety metrics, and/or non-compliance with obligations to report to the audit. This would support one of the aims in the 10 Year Health Plan of ‘a more intelligence-based regulatory approach’ (UK Government, 2025).

3.5.13 The integration of DCAP with a new National Diabetes Audit for Inpatient Care, is proposed by the RCP to address data limitations and provide both process and outcome data across local providers, on a national scale. National stakeholders considered that pooling analytical resources and avoiding duplication (local datasets, NaDIA, NDISA, GIRFT) would help ensure hospitals are assessed using standardised metrics. The investigation heard from a national stakeholder that

there could however be some potential improvements in relation to the burden of evidence required for accreditation, cognisant of the stretched diabetes specialist teams that need to support the process.

3.5.14 There is currently limited uptake of DCAP across hospitals, largely because it is relatively new (it launched in 2023) and also due a lack of incentives to become accredited. The potential for insurance premium reductions, or a tariff incentive similar to that of the Joint Advisory Group on Gastrointestinal Endoscopy programme (Royal College of Physicians, n.d.b) which is dependent upon accreditation status, could further motivate accreditation participation. DCAP could assist with improved and robust national data, oversight and benchmarking, to inform and drive actions to improve the safety of inpatient diabetes care.

3.5.15 A national stakeholder described that ideally, NHS England regional and national teams would use audit data to support and hold ICBs and providers to account. NHS England informed the investigation that in response to the Hewitt Review (Hewitt, 2023), the current healthcare operating model has devolved responsibility for quality to ICBs, with NHS England taking a ‘light touch’ approach to assurance centrally. It was also stated that levers for NHS England to ‘direct’ ICBs no longer exist under the new operating model. During the course of the investigation and before it engaged with NHS England, the role of ICBs in providing oversight, support or influence for safe patient care, did not feature significantly in conversations with staff, hospitals or stakeholders.

3.5.16 National stakeholders reflected that reductions in team size at NHS England have made national oversight of all inpatient diabetes care unfeasible. As a result, quality improvement was described as now being largely self-directed by local healthcare systems, with NHS England’s role limited to publishing data and providing limited support. ICBs are also experiencing a reduction in headcount and the investigation only heard of limited cases where ‘local systems’ or ICBs were using national audit data to support or drive diabetes care improvements.

3.5.17 Safety improvements in inpatient diabetes care are hindered by fragmented oversight and insufficient mechanisms and levers to monitor outcomes and drive improvement. The 10 Year Health Plan (UK Government, 2025) states that ‘The centre [NHS England/Department of Health and Social Care] will continue to have seven NHS regions’ that are responsible ‘alongside the national headquarters, for performance management and oversight of providers’. It further states that the centre will work with integrated ICBs to ‘ensure services are configured

appropriately to deliver’ and that the national team has assurance functions, which regional teams should support. This is in contrast with the Hewitt Review's proposals for greater autonomy for integrated care systems (Hewitt, 2023).

3.5.18 National stakeholders reflected that the clinical oversight model is unclear in healthcare generally, not just for diabetes, and that the National Quality Board is currently reviewing the NHS operating model for oversight. However, the outcomes of this will not be realised in the short term, during which time responsibility for oversight and assurance specifically for inpatient diabetes care between trusts, ICBs, regions, and the centre, will remain unclear (see 3.6).

## 3.6 Fragmentation across the healthcare system

3.6.1 Inpatient diabetes care workstreams across national organisations are fragmented. There is no single central body responsible for integrating data, ensuring adherence to guidance and recommendations, and co-ordinating improvement efforts. This fragmentation across the healthcare system results in gaps and missed opportunities for learning. System fragmentation and accountability is not specific to inpatient diabetes care; a previous HSSIB investigation has explored challenges in relation to healthcare system accountability (Health Services Safety Investigations Body, 2025b).

3.6.2 There is a clear need for better integration between audit data, accreditation, governance, oversight, and regulatory mechanisms. The result of not having this is that known inpatient diabetes care safety issues have persisted longer than necessary, exposing patients to ongoing harm and risks.

3.6.3 Despite affecting up to 25% of hospital inpatients, diabetes care costs and risks are absorbed into broader categories, rather than being explicitly addressed. NHS England described that the national transformation funding identified to meet the goals in the NHS Long Term Plan in relation to diabetes care (NHS, 2019) was time limited, and in the latest spending review, technology advancements (such as hybrid closed loop systems) have been supported, which also support improved patient outcomes and reduce complications and the need for hospital care.

3.6.4 While prevention and technology are prioritised nationally and have a positive impact on the lives of many people living with diabetes, inpatient diabetes care remains under-resourced locally. With insufficient specialist staffing and inconsistent 7-day coverage there remains a pressing need to prioritise appropriate resources for inpatient diabetes care. A national stakeholder told the investigation that the economic argument for investing in inpatient diabetes care has previously been

made. It was reported that fully funding inpatient diabetes care and specialist teams will be offset by the cost savings in relation to errors and harm, alongside the untold wellbeing and safety benefits for patients, by avoiding the immediate and ongoing harms they may encounter. The National Diabetes Treatment and Care Programme supporting documentation (NHS, 2016) also stated that there is ‘good evidence for cost savings that significantly exceed the cost of putting DISNs [diabetes inpatient specialist nurses] in place’.

3.6.5 Despite significant work by organisations across the inpatient diabetes care landscape (GIRFT, JBDS, Specialist Pharmacy Service, Diabetes UK, NHS England), consistent implementation of JBDS inpatient diabetes national guidance and GIRFT recommendations has not been achieved. This continues to compromise the safety of inpatient diabetes care. Similar challenges regarding the implementation of recommendations from national bodies have been highlighted in previous HSSIB reports (Health Services Safety Investigations Body, 2024).

3.6.6 National stakeholders reflected that the intentions of the 2020 GIRFT diabetes national specialty report (Getting It Right First Time, 2020) still stand, and are akin to a national strategy to improve the safety of inpatient diabetes care, as the aims of its recommendations have still not been achieved. However, the responsibility and accountability across the healthcare system hierarchy for the oversight and assurance of the implementation of the GIRFT recommendations, and for meeting national JBDS guidance, remains unclear. Clear responsibilities and expectations across key organisations and stakeholders in relation to this would support addressing systemic challenges. National direction and clarity could provide positive influence and support prioritisation of inpatient diabetes care at regional, ICB, and local levels. If indeed ‘the growing incidence of diabetes in England is set to be one of the major clinical challenges of the 21st century’ (NHS England, n.d.a), then a comparable major system approach with appropriate prioritisation will be required to keep patients with diabetes safe in hospital.

**HSSIB makes the following safety recommendation**

**Safety recommendation R/2026/076:**

HSSIB recommends that NHS England/Department of Health and Social Care sets out the expectations and responsibilities of NHS trusts, integrated care boards and NHS England for the oversight and assurance of inpatient diabetes care. This should support organisations to implement and act on improvements shared in national guidance, recommendations and audit data.

It should also include how existing functions (Getting It Right First Time and the Diabetes Care Accreditation Programme), and those currently in development (new National Diabetes Audit for Inpatient Care) can be more closely aligned and utilised to help better understand and respond to challenges relating to the safety and quality of inpatient diabetes care.

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# 5. Appendix

## Investigation Approach

### Terms of reference

Through engagement with patients, families, staff, hospitals providing inpatient diabetes care, and national stakeholders, the investigation examined the following:

- How staff are supported to monitor and care for patients with known diabetes on a hospital ward.
- How patients are supported to safely self-administer their insulin, as part of a diabetes self-management regime.
- What national recommendations/observations have been made to date and the outcomes seen.

The investigation began with a focus on the care received by patients and delivered by organisations. It then went on to engage with regional and national bodies.

### Evidence gathering

The investigation visited and engaged with hospitals as shown in table A. Further evidence was gathered from policy and academic literature, the Strategic Executive Information System (StEIS), the Learning from Patient Safety Events (LFPSE) system, and reviews of reports to prevent future deaths (PFDs).

**Table A Evidence gathering and engagement**

| Evidence source | Details |
|---|---|
| StEIS – serious incident search | Events submitted 1/01/2023 – 30/09/2025, n = 23,413.<br><br>Filtered by description (‘insulin’, n= 1924), n = 255.<br><br>Further narrowed and reviewed by inpatient settings. |

| Evidence source | Details |
|---|---|
| LFPSE – patient safety incidents | Events submitted 1/10/2023 – 30/04/2025, n = 54,065.<br><br>Filtered by drug involved (‘insulin’, n = 1725) AND description (‘insulin’, n= 1924), n = 2334.<br><br>Further narrowed and reviewed by inpatient settings, ‘acute’, n = 1219. |
| Reports to prevent future deaths (PFD) – search | Report dates 01/01/2023 – 01/12/2025.<br><br>Filtered by keyword ‘insulin’, n = 14.<br><br>Further narrowed by inpatient settings. |
| Patient, family and carer insights | Patient, family and carer insights through interviews and observations during the course of the investigation. |
| Hospitals providing inpatient diabetes care in England – in person and remote engagement | Hospitals that had specific incidents in relation to poor outcomes identified through StEIS/ LFPSE.<br><br>Hospitals that were identified as providing areas of ‘good practice’ for inpatient diabetes care.<br><br>Inpatient specialist diabetes teams.<br><br>Non-specialist clinicians who provide aspects of inpatient diabetes care.<br><br>Quality oversight and governance teams in relation to inpatient diabetes care. |

### Analysis of findings

The findings presented in this report were identified following triangulation of various evidence sources and following consultation with stakeholders involved in the investigation. The investigation approach was informed by the Systems Engineering Initiative for Patient Safety (SEIPS) to help explore the workplace conditions that influence patient outcomes (Holden et al, 2013).

**Stakeholder engagement and consultation**

The investigation engaged with the stakeholders listed below who contributed evidence to the investigation. Stakeholders also contributed to the development of the safety recommendations.

- Breakthrough T1D
- Care Quality Commission (CQC)
- Diabetes Care Accreditation Programme (DCAP)
- Diabetes UK
- Getting it Right First Time (GIRFT)
- Joint British Diabetes Societies (JBDS)
- Royal College of Physicians (RCP)
- Nursing and Midwifery Council (NMC)
- National Institute for Health and Care Excellence (NICE)
- Diabetes Specialist Network (DSN) Forum UK
- Diabetes Inpatient Specialist Nurse (DISN) UK Group
- Specialist Pharmacy Service
- NHS England
- Other experts including senior diabetes and endocrinology clinicians.