

## RESEARCH ARTICLE

## Care Delivery

# Changing trends and variation in service delivery for inpatient diabetes care in England: A national survey

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**Abstract**

**Background:** The Getting It Right First Time (GIRFT) programme national report was published in 2020 with recommendations on how inpatient diabetes care could be improved. To determine whether there have been changes in service provision of inpatient diabetes care since the GIRFT report and to gather feedback from staff on current diabetes care, we conducted a survey of NHS hospitals in England.

**Methods:** A national survey of inpatient diabetes service provision and diabetes staff opinion was conducted across NHS hospital trusts in England between 1 July 2024 and 31 March 2025. The survey assessed inpatient diabetes prevalence, workforce staffing, infrastructure and information technology, care pathways (including perioperative care) and systems to improve patient safety. Findings were compared with previous national audits, including the National Diabetes Inpatient Audit (NaDIA; 2010–2019) and the 2024 National Diabetes Audit - Integrated Specialist Services (NDA ISS) survey.

**Results:** Responses were received from 136 hospitals, representing 102 (77%) of 132 NHS hospital trusts in England with a diabetes service. Most hospitals reported a continued increase in inpatient numbers since 2019. Although approximately 85% of hospitals reported access to Diabetes Inpatient Specialist Nurses (DISNs), nearly two-thirds had no weekend DISN service. Access to diabetes physician support and out-of-hours specialist advice was limited. The use of networked glucose monitoring systems was widespread, but their use for quality improvement was inconsistent. Trusts with higher specialist staffing levels demonstrated shorter lengths of stay and fewer 30-day emergency readmissions.

**Conclusions:** Despite improvements in inpatient diabetes service provision since 2019, substantial variation remains, with workforce capacity failing to match rising demand and increasing clinical complexity. The absence of a national bedside inpatient diabetes audit since 2019 represents a critical gap. Reinstating a national bedside audit and integrating service-level evaluation with patient-level outcomes should be prioritised to support safe, effective and equitable inpatient diabetes care in England.

## KEYWORDS

diabetes, service provision, variation in care

## 1 | INTRODUCTION

People with diabetes are three to four times more likely to be hospitalised than those without diabetes<sup>1</sup> and in the United Kingdom, they represent approximately 25%–30% of inpatients.<sup>2</sup> Over 90% of hospital admissions among people with diabetes are for non-diabetes conditions.<sup>3,4</sup> Consequently, they are primarily, and often solely, managed by non-diabetes specialists<sup>5</sup> who may have limited experience in inpatient diabetes care.<sup>3</sup>

This knowledge gap is thought to contribute to longer hospital stays and higher morbidity and mortality for people with diabetes.<sup>6,7</sup> People with diabetes report inadequate staff understanding of diabetes management, loss of autonomy over self management, insulin management errors and poor coordination of meals with insulin dosing.<sup>8,9</sup> Additional concerns include poor communication, emotional distress and fear during admission.

These shortcomings increase the risk of acute diabetes-related harm, which occurs in about one in 20 admissions,<sup>10</sup> most often due to hypo- or hyperglycaemia. Severe hypoglycaemia may result in coma or death, while poorly managed hyperglycaemia can cause diabetic ketoacidosis or hyperosmolar hyperglycaemic state. Preventable hospital-acquired foot lesions add further risk, prolonging hospitalisation, increasing costs and raising the likelihood of amputation.<sup>11</sup> Evidence shows that coordinated inpatient diabetes care, including Diabetes Inpatient Specialist Nurses (DISNs), improves care quality and reduces length of stay.<sup>5,12,13</sup>

The Getting It Right First Time (GIRFT) programme is a national improvement initiative in England aimed at reducing variation in healthcare delivery. Its 2020 diabetes report, following visits to 101 hospital trusts, issued six recommendations to improve inpatient diabetes services, including greater use of multidisciplinary teams, better identification of inpatients with diabetes, reduced insulin errors, improved perioperative care and enhanced self management, all with potential financial benefits.<sup>3</sup> Subsequent follow-up visits (termed 'Gateway reviews') highlighted persistent variation and reinforced the need for improvement.

This study aimed to evaluate current inpatient diabetes service models in light of GIRFT recommendations and compare them with previous national assessments, including National Diabetes Inpatient Audit (NaDIA) 2010–2019<sup>14</sup> and the 2024 National Diabetes Audit - Integrated

### What's new?

- The prevalence of inpatient diabetes continues to rise across England, with almost all hospitals reporting increased demand since 2019. Specialist workforce provision remains inadequate, and though most hospitals have DISNs, the majority do not meet JBDS-recommended staffing levels for safe inpatient diabetes care, and weekend diabetes services are not provided in most hospitals.
- Marked variation persists in perioperative diabetes pathways, with fewer than one-quarter of hospitals having a dedicated multidisciplinary perioperative team and very limited perioperative DSN support. Digital glucose-monitoring systems are widely available but not optimally used, with inconsistent use of alert functions and limited application of glucose data for quality improvement.
- Self-management and essential safety processes are under-implemented, including low rates of formal insulin-self-management competency assessment and poor adherence to 24-h foot examination recommendations. Fewer than half of hospitals report having a diabetes safety board and senior management engagement in these is limited. Higher consultant diabetes staffing is associated with improved outcomes, including shorter length of stay and reduced 30-day readmissions, emphasising the importance of investment in specialist inpatient teams.

Specialist Services (NDA ISS) survey,<sup>15</sup> while gathering staff feedback to provide an updated national overview of inpatient diabetes care in England.

## 2 | METHODS

### 2.1 | Study design

This study was a retrospective analysis of observational survey data collected as part of the GIRFT national quality improvement programme.

## 2.2 | Ethics

This work formed part of a service evaluation and quality improvement initiative. Data were collected through a survey of inpatient diabetes service delivery models across NHS hospital trusts in England. The study did not involve direct patient participation, and no identifiable patient data were collected; therefore, formal research ethics approval and individual patient consent were not required.

## 2.3 | Survey design and distribution

The survey design was informed by two previous national surveys assessing inpatient diabetes service provision in England: The NaDIA 2019<sup>14</sup> and the NDA ISS Survey 2024.<sup>15</sup> It was further guided by the GIRFT national specialty report for diabetes and findings from subsequent GIRFT Integrated Care Board (ICB) visits.<sup>3</sup>

Survey questions addressed key domains of inpatient diabetes care and link to the six recommendations in the GIRFT national report<sup>3</sup>:

1. Demand for services: inpatient prevalence of diabetes.
2. Diabetes multidisciplinary team workforce.
3. Systems for identifying participants on admission: infrastructure, access to information technology, care pathways and clinical policies.
4. Perioperative diabetes care.
5. Quality of patient care: safety and efficiency.

The full survey instrument is provided in [Table S1](#).

The survey was administered using an online platform and distributed to a central contact list of all NHS acute hospital trusts in England. In England, acute care hospitals are managed by NHS hospital trusts, each serving a defined geographical population; individual trusts typically operate between one and four acute hospitals. The survey was open from 1 July 2024 to 31 March 2025.

## 2.4 | Linking to hospital episodes statistics data

The Hospital Episodes Statistics (HES) admitted patient care dataset is a record of all hospital inpatient episodes funded by the NHS in England. All emergency, elective and day case admitted patient care episodes recorded in the HES dataset for the financial year 2024/25 (coinciding with the period of survey data collection) where the participants had an International Statistical Classification of Diseases and Related Health Problems, tenth revision

(ICD-10) code identifying them as having diabetes were extracted. The ICD-10 codes used were E10- (insulin-dependent diabetes mellitus), E11- (non-insulin-dependent diabetes mellitus), E13- (other specified diabetes mellitus), E14- (unspecified diabetes mellitus) and were counted if present in any position in the procedural record. Data on length of stay in days for the spell in the hospital, all-cause emergency readmission to the hospital within 30 days of discharge, age of the participant in years and biological sex were extracted and linked at a hospital site level to data from the survey.

## 2.5 | Data analysis and statistical methods

Data were analysed using standard statistical software: Microsoft Excel (Microsoft Corp, Redmond, WA, USA) and Stata (Stata Corp LLC, College Station, TX, USA). Frequency data are presented for all reported question responses. Bivariate associations were tested using Spearman's correlation coefficient and the Chi-squared test as appropriate to the data.

Multivariable regression modelling was used to try to understand the relationship between the whole-time equivalents (WTE) per 100 bed days for DISNs and consultant physicians and the outcomes length of stay in days (discrete count data) and 30-day emergency readmission (binary data). Length of stay was modelled using negative binomial regression and 30-day emergency readmission was modelled using logistic regression. Both models were adjusted for age, modelled as a continuous variable and biological sex, modelled as a categorical variable. The outputs are reported as incident rate ratios (IRRs) for the negative binomial model and odds ratios (ORs) for the logistic model. Confidence intervals are reported and used to draw inference, with a 95% confidence interval not containing the value 1 taken to indicate statistical significance.

## 3 | RESULTS

Data were obtained from 136 hospitals in England representing 102 of the 132 NHS hospital trusts invited to participate (77%). Of the 128 respondents who stated their job role, 59 (46.1%) were nurses, 49 (38.3%) were consultant physicians, 9 (7.0%) were in non-clinical managerial/team lead roles and 11 (8.6%) had other roles.

Responses relating to prevalence and service provision are summarised in [Table 1](#). The majority of hospitals reported an increase in the proportion of inpatients with diabetes since 2019. Almost all had a dedicated diabetes inpatient specialist nursing team; however, almost

TABLE 1 Service configuration survey responses.

Question	Number of responses (%)
<i>Since the last inpatient audit in 2019, have you seen an increase in the number of acute beds occupied by people with Diabetes? If so, what was the increase?</i>	
No increase	8 (5.9%)
Yes: 1%–10%	23 (16.9%)
Yes: 11%–20%	29 (21.3%)
Yes: 21%–30%	16 (11.8%)
Yes: 31%–40%	8 (5.9%)
Yes: 41%–50%	10 (7.4%)
Yes: 51%–60%	5 (3.8%)
Yes: 61%–70%	1 (0.7%)
Yes: no figure given	2 (1.5%)
Don't know	34 (25.0%)
<i>Does your hospital have a dedicated DISN or team?</i>	
Yes	116 (85.3%)
Partial	15 (11.0%)
No	4 (2.9%)
Funded post, but currently vacant	1 (0.7%)
<i>If your hospital does have a dedicated DISN or team, do they provide care seven days a week?</i>	
7-day service, including all day Saturday and Sunday	20 (15.2%)
7-day service, including all day Saturday and Sunday—phone/on-call at the weekend	2 (1.5%)
7-day service, but half-day Saturday and Sunday	16 (12.1%)
7-day service, but half-day Saturday and Sunday—phone/on-call at the weekend	1 (0.8%)
6-day service, including one whole day during the weekend (i.e. either Saturday or Sunday)	5 (3.8%)
5-day service plus half-day during the weekend (i.e. either Saturday or Sunday, am or pm service only)	5 (3.8%)
No weekend service	83 (62.9%)
<i>Did your hospital receive NHS England transformation funding for Diabetes Inpatient Specialist Nursing?</i>	
Yes	60 (44.1%)
No	56 (41.2%)
Don't know	20 (14.7%)
<i>Has the DISN post become substantive through continued funding by the ICS/Trust?</i>	
Yes	42 (70.0%)
No	18 (30.0%)
<i>Does your hospital provide access to a diabetes physician seven days a week?</i>	
7-day service, including all day Saturday and Sunday	19 (14%)

TABLE 1 (Continued)

Question	Number of responses (%)
7-day service, but half-day Saturday and Sunday	9 (6.6%)
Yes, only when on call for general medicine	41 (30.1%)
5-day service plus half-day during the weekend (i.e. either Saturday or Sunday, am or pm service only)	2 (1.5%)
No weekend service	63 (46.3%)
Not answered	2 (1.5%)
<i>Is there an advice service provided out of hours for inpatient diabetes problems</i>	
Yes—seven days per week	26 (19.1%)
Yes—Monday to Friday only	7 (5.1%)
Yes—Saturdays and Sundays only	1 (0.7%)
Yes—Sunday only	1 (0.7%)
No	101 (74.3%)
<i>Does your hospital have an electronic system to identify and notify the inpatient diabetes team of all people with diabetes on admission?</i>	
Yes	55 (40.4%)
No	80 (58.8%)
Don't know	1 (0.7%)
<i>Does your hospital have a system to help non-specialist staff to triage those who need to be reviewed by the inpatient diabetes team?</i>	
Yes	76 (56.3%)
No	58 (43%)
Don't know	1 (0.7%)
<i>Approximately what percentage of those referred to your hospital diabetes inpatient service are seen within 24 h of referral?</i>	
0%–19%	5 (3.7%)
20%–39%	4 (3%)
40%–59%	13 (9.6%)
60%–79%	34 (25.2%)
80%–100%	79 (58.5%)
<i>Does your hospital's diabetes inpatient team report to a trust-level diabetes safety board that reviews the quality of the service?</i>	
Yes	60 (44.4%)
No	68 (50.4%)
Don't know	7 (5.2%)
<i>Is there a team of individuals in your hospital who are responsible for organising perioperative diabetes care?</i>	
Yes	31 (22.8%)
Partial	34 (25%)
No	71 (52.2%)

TABLE 1 (Continued)

Question	Number of responses (%)
<i>Does your hospital have a dedicated Perioperative Diabetes Specialist Nurse?</i>	
Yes	21 (15.4%)
No	115 (84.6%)
<i>Is there a perioperative pathway that covers referral for surgery, pre-assessment, admission, theatres, recovery and ward care, to discharge for people with diabetes?</i>	
Yes	94 (69.1%)
No	40 (29.4%)
Don't know	2 (1.5%)

two-thirds had no weekend DISN cover. Furthermore, almost half had no dedicated diabetes physician service at weekends.

Over two-thirds of trusts had a perioperative pathway for persons with diabetes undergoing surgery. However, fewer than half had a multidisciplinary team responsible for organising perioperative diabetes care, and only approximately 15% had a perioperative DSN to support the participants through their perioperative journey.

There was a significant association between hospitals with an electronic system to flag inpatients with diabetes and those with a triage system for review of participants by a diabetes team member ( $X^2(1)=12.080, p=0.001$ ). There was a significant association between having a DISN service for seven days per week and having a dedicated perioperative pathway for inpatients ( $X^2(1)=7.486, p=0.006$ ). There was a significant association between having a DISN for seven days per week and having a team that is responsible for perioperative care ( $X^2(2)=48.700, p<0.001$ ).

Data on patient diabetes monitoring whilst in hospitals are summarised in Table 2. Almost all hospitals allowed inpatients on continuous glucose monitors to continue to use them. Over 80% had networked capillary blood glucose (CBG) meters. However, only three-quarters of those with CBG meters used them to alert staff to out-of-range results (62.5% of all hospitals) and only a quarter to help drive quality improvement. Around 60% of hospitals allowed participants to self-manage their diabetes during their stay. Only half of all hospitals had mandatory training for staff on safe insulin use.

When undertaking foot checks, 20.1% of hospitals did not employ a screening test for loss of protective sensation. The majority (65.7%) reported that they utilised either the 10-gm monofilament and/or the Ipswich Touch Test as their screening test. However, only 27.2% reported that the test was performed in more than 60% of participants within 24 h of admission.

Measures of WTE for each job role are summarised in Figure 1. Nurses had by far the largest WTE roles (median 0.6 WTE), followed by consultants (median 0.05 WTE) and registrars (median 0.02 WTE). The WTE for other professions was extremely low, with 59 (43.4%) having no dedicated input from either a pharmacist, dietitian or administrative staff.

There was a significant positive correlation between consultant WTE and WTE for DISNs ( $r=0.235, p=0.015$ ), registrars ( $r=0.417, p<0.001$ ), pharmacists ( $r=0.199, p=0.042$ ) and dietitians ( $r=0.304, p=0.002$ ). The only other significant correlation in WTE was between pharmacists and dietitians ( $r=0.286, p=0.003$ ).

Table 3 summarises descriptive statistics and the outputs of the multivariable regression models for the relationship between WTE per 100 beds and the two outcomes investigated. HES data for 1,738,941 participants were linked to all 136 hospitals included in the survey. In modelling, there was a relatively consistent association between higher WTE per 100 beds for diabetes consultants and both shorter stay and fewer emergency readmissions within 30 days. For DISNs, the association was not consistent across the quartiles of WTE per 100 beds.

## 4 | DISCUSSION

The NaDIA was conducted annually across NHS trusts between 2010 and 2019.<sup>14</sup> The present survey builds on the work of the NaDIA<sup>14</sup> and the 2024 NDA ISS survey,<sup>15</sup> providing an updated national overview of inpatient diabetes service delivery in England following the publication of GIRFT recommendations. Our findings highlight five interrelated domains of inpatient diabetes care: demand for services, workforce, systems, perioperative care and quality of care.

### 4.1 | Demand for services: Inpatient prevalence of diabetes

Over the decade from 2010 to 2019, the proportion of hospital beds occupied by people with diabetes increased from 14.5% to 18.1%, as reported by NaDIA.<sup>14</sup> However, since the final NaDIA in 2019, no national data have been published. In the current survey, almost 95% of responding hospitals reported a further increase in the proportion of inpatients with diabetes, with almost 70% estimating an increase of more than 20%. These findings are consistent with NHS England analyses of HES data which identify an increase in the

TABLE 2 Monitoring of diabetes status during inpatient stay.

Question	Number of responses (%)
<i>Does your hospital allow participants on continued glucose monitoring (CGM) sensors to continue using them during their admission?</i>	
Yes	124 (91.2%)
No	11 (8.1%)
Don't know	1 (0.7%)
<i>Does your hospital have networked capillary blood glucose (CBG) meters?</i>	
Yes	114 (83.8%)
No	22 (16.2%)
<i>If yes, are they configured and used to identify and act on out-of-range blood glucose readings and management?</i>	
Yes	85 (74.6%)
No	29 (25.4%)
<i>If yes, do you use point-of-care CBG data to drive quality improvements?</i>	
Yes	37 (35.2%)
No	68 (64.8%)
<i>Is there a policy in place in your hospital for participants on insulin to self-manage (both administer and dose adjust) where appropriate?</i>	
Yes	83 (61.5%)
No	52 (38.5%)
<i>If you have an insulin self management policy, can you give an approximate estimation of the proportion of those who should be self-managing who have been both assessed and then permitted to self-manage?</i>	
0%–19%	30 (37.5%)
20%–39%	20 (25.0%)
40%–59%	18 (22.5%)
60%–79%	8 (10.0%)
80%–100%	4 (5.0%)
<i>Do staff in your hospital have access to training modules on safe insulin use?</i>	
Yes	129 (95.6%)
No	5 (3.7%)
Don't know	1 (0.7%)
<i>If you do have access, is such training mandatory in your hospital?</i>	
Yes	64 (49.6%)
No	63 (48.8%)
Don't know	2 (1.6%)
<i>Does your hospital have an ongoing audit of hospital acquired foot lesions including pressure ulcers?</i>	
Yes	102 (76.7%)
No	31 (23.3%)
<i>Which screening test is used in your hospital to check for loss of protective sensation?</i>	
Ipswich Touch Test	47 (35.1%)
1gm Monofilament	41 (30.6%)

TABLE 2 (Continued)

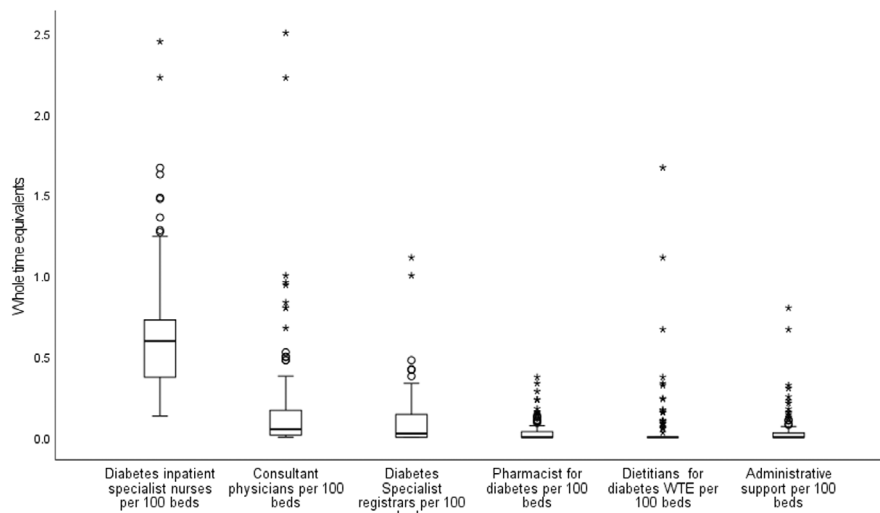
Question	Number of responses (%)
Tuning Fork	1 (0.7%)
Nerve centre pressure area assessment tools	1 (0.7%)
Visual checks	3 (2.2%)
Screening questionnaire	2 (1.5%)
Combination of tests	12 (9.0%)
None	27 (20.1%)
<i>Approximately what proportion of participants in your hospital with diabetes have a foot assessment within 24 h of admission?</i>	
0%–19%	52 (41.6%)
20%–39%	21 (16.8%)
40%–59%	18 (14.4%)
60%–79%	10 (8.0%)
80%–100%	24 (19.2%)

proportion of participants undergoing elective and non-elective (emergency) admissions who have diabetes from 17% and 23%, respectively, in the financial year 2018/19 to 20% and 27%, respectively, in the financial year 2024/25.<sup>16</sup> Together, these data indicate an increasing demand for inpatient diabetes care.

## 4.2 | Diabetes multidisciplinary team workforce

Provision of DISN services has steadily increased from 69% of hospitals having at least one DISN in 2015 to 72% in 2019, to 75% in 2024,<sup>14,15</sup> and approximately 85% of hospitals in the current survey. Nearly half reported receipt of NHS England transformation funding for DISN posts between 2017 and 2020; however, 30% of these posts were not made substantive once funding ceased. Although the overall increase in DISN availability is encouraging, it should be noted that the absolute WTE per 100 beds is relatively low with considerable variation. We defined WTE relative to the number of general and acute beds available within the hospital. This definition varied from that used by The Joint British Diabetes Societies (JBDS) report, where WTE is reported relative to every 100 diabetes patients using a hospital bed.<sup>17</sup> JBDS recommend staffing per 100 diabetes patients in hospital to be: consultants 0.65, specialist nurses 3.38, dieticians 0.48, podiatrists 0.93, pharmacists 0.65 and psychologists 0.33. Given the near doubling of inpatient diabetes prevalence over the past 15 years and the increasing complexity of diabetes therapies and technologies, staffing levels should continue to be monitored.

**FIGURE 1** Whole-time equivalents for staffing groups per 100 beds. Box plots show the median (central line), the upper and lower quartile (upper and lower bound of box) and values within 1.5 times the upper and lower quartile values (whiskers). Open circles and asterisks indicate mild (more than 1.5 times the interquartile range from the nearest quartile) and extreme outlier (more than 3 times the interquartile range from the nearest quartile) respectively.



**TABLE 3** Association of key measures of service quality with length of stay and 30-day emergency readmissions.

	Length of stay		30-day emergency readmission	
	Median	Odds ratio (95% confidence interval)	Proportion of participants	Odds ratio (95% confidence interval)
<i>Whole-time equivalents of DISN</i>				
Quartile 1	2	1 (reference)	11.4%	1 (reference)
Quartile 2	3	1.11 (1.10 to 1.12)	12.4%	1.10 (1.09 to 1.12)
Quartile 3	1	0.87 (0.86 to 0.88)	10.5%	0.91 (0.90 to 0.93)
Quartile 4	3	1.07 (1.06 to 1.07)	12.1%	1.07 (1.06 to 1.09)
<i>Whole-time equivalents of consultant physician</i>				
Quartile 1	3	1 (reference)	12.6%	1 (reference)
Quartile 2	2	0.86 (0.86 to 0.87)	11.4%	0.90 (0.89 to 0.91)
Quartile 3	3	0.98 (0.98 to 0.99)	12.0%	0.95 (0.94 to 0.97)
Quartile 4	1	0.77 (0.76 to 0.77)	10.8%	0.84 (0.83 to 0.86)

The association between consultant WTE and other staff groups may reflect consultants' influence in shaping inpatient teams, and/or the ability of financially stronger trusts to fund both more consultants and wider multi-disciplinary staffing. Unlike the link between consultant WTE and outcomes, we found no similar association for DISN WTE. This may reflect variation in how DISNs are deployed across hospitals. Notably, previous evidence of DISN impact has often come from their involvement in broader service improvement initiatives.<sup>5</sup>

Seven-day DISN services remain limited. Coverage increased from 7% of hospitals in NaDIA 2015 to 17% in NaDIA 2019, 32% in NDA ISS 2024 and 37% in the current survey.<sup>14,15</sup> However, only 15% of hospitals reported comprehensive weekend cover that did not rely on telephone advice or on-call from home arrangements. Access to diabetes physician support at weekends was also limited, with nearly half of hospitals reporting no weekend

consultant input. In 30% of hospitals where there was a weekend service, it was only available when on call for general medicine. Almost three-quarters of hospitals did not have an out-of-hours advice service. Such services will become increasingly important with the advent of more complex technologies.

The absence of a clear association between workforce numbers for most staff groups and outcomes likely reflects the multifactorial nature of diabetes care provision, which extends beyond staffing levels alone. Factors such as organisational structure, institutional motivation and priorities, a culture of continuous quality improvement and the size and demographic make-up of the catchment population of the trust are likely to play significant roles in influencing outcomes. Across all these factors, clinical and executive leadership and desire to change are likely to be central to embedding recommendations to improve patient care.

### 4.3 | Systems for identifying people on admission: Infrastructure, access to information technology care pathways and clinical policies

Forty percent of hospitals reported using an electronic system to identify all inpatients admitted with diabetes and 56% had a mechanism enabling non-specialist teams to triage referrals to diabetes services. The latter findings represent a reduction compared with NaDIA 2019 (63%) and NDA ISS 2024 (69%) and indicate declining (or at best static) system-level support for proactive inpatient diabetes care.<sup>14,15</sup> Only around 40% of hospitals reported routine reporting of diabetes-related data to trust boards, limiting organisational oversight and accountability.

Although training in the safe use of insulin was almost universally available and more prevalent than in previous audits, it was mandatory in only half of hospitals. This represents a missed opportunity to reduce preventable insulin-related harm, particularly in settings where care is frequently delivered by non-specialists.

### 4.4 | Perioperative diabetes care

Although almost 70% of hospitals reported having a perioperative pathway, fewer than 25% reported having a team of individuals responsible for organising perioperative diabetes care and only 15% of hospitals reported having a perioperative diabetes nurse specialist. The Improving the Peri-operative Pathway of People with Diabetes (IP3D) intervention is a GIRFT-led initiative that aims to improve perioperative care for people with diabetes. A pilot of the initiative identified improved patient care and reduced length of stay when a perioperative passport was introduced at eight hospitals in England and care was coordinated by a perioperative diabetes nurse specialist.<sup>18</sup> Roll-out of the IP3D initiative could lead to a better patient experience and financial savings in elective care across England.

### 4.5 | Quality of patient care: Safety and efficiency

The use of networked CBG monitoring systems has increased, from 71% of hospitals in NaDIA 2019 to 87% in NDA ISS 2024 and 84% in this survey.<sup>14,15</sup> However, only three-quarters had alert functions for out-of-range glucose values, and just 35% used CBG data for quality improvement purposes, such as monitoring hypoglycaemia rates. This underutilisation of routinely collected data represents a missed opportunity to enhance safety and reduce workload.

Fewer than half of hospitals reported having a diabetes safety board, despite GIRFT recommendations. Follow-up visits by the GIRFT team also showed that where boards existed, senior managerial engagement was often limited. Combined with a lack of mandatory training in insulin use, this suggests insufficient governance, which could undermine efforts to reduce insulin-related harms.

Persons with insulin-treated diabetes frequently report frustration when their autonomy is removed during hospital admission, particularly when insulin is delayed or altered inappropriately.<sup>19</sup> GIRFT recommends supporting self management where safe.<sup>20</sup> Over 60% of trusts reported having a self-administration and management of insulin (SAMI) policy, consistent with previous findings,<sup>21</sup> however, respondents estimated that only a minority of eligible participants were permitted to self-manage, and formal competency assessment was uncommon, with only 37.5% of hospitals reporting that over 40% of eligible participants were assessed for competency. These findings suggest that SAMI remains underused despite participant preference and guideline support.

The survey also shows poor adherence to NICE guidelines and GIRFT recommendations that a foot examination should be completed within 24 h of admission.<sup>3,22</sup> Failure to perform early foot examinations can lead to serious consequences, including sepsis and amputation.

### 4.6 | Future work and recommendations for practice

The increasing demand for inpatient diabetes services, along with the substantial variability in service delivery models identified in this survey and the changes observed since previous national inpatient audits, highlights the need for ongoing, regular national audit and evaluation. While some variation supports innovation, variation that compromises outcomes or efficiency is unwarranted and should be addressed. Systematic monitoring is essential to identify good practice, drive quality improvement and reduce suboptimal care.

Unlike the NaDIA,<sup>14</sup> which addressed bedside diabetes care in detail, including insulin-prescribing errors, frequency of glucose monitoring, use of insulin infusions, 'good diabetes days' and patient experience, the present survey focused primarily on service organisation. Future work should therefore integrate service-level evaluation with patient-level outcome measures to provide a fuller picture of inpatient diabetes care and to better understand how service design influences clinical outcomes.

## 4.7 | Strengths and limitations

A key strength of this study is its national scope. We received 136 responses from 102 NHS English hospital trusts providing a comprehensive overview of inpatient diabetes service provision. The survey design also built on previous national surveys, enabling direct comparison and assessment over time.

Several limitations should be acknowledged. Data were self-reported, so differences in interpretation and variable completeness are likely. Furthermore, the survey did not capture patient-level outcomes, bedside care or patient perspectives. As such we had to rely on high-level outcomes taken from administrative data, which have recognised limitations in reflecting outcomes that matter to people. Finally, findings apply to the English NHS and should not be generalised to other healthcare systems.

## 5 | CONCLUSIONS

As the prevalence of diabetes in the United Kingdom continues to rise, alongside an ageing population with increasing multimorbidity, inpatient bed occupancy by people with diabetes will continue to increase. Diabetes prevention programmes are unlikely to influence this trend in the short term.

Inpatient diabetes care is increasingly complex due to rapid advances in technologies such as insulin pumps, continuous glucose monitors and hybrid closed-loop systems. The diversity of devices with individual device-specific features requires staff to be sufficiently knowledgeable to support patients, particularly during surgery or severe illness. Newer therapies, including GLP1 receptor agonists and SGLT2 inhibitors, also need careful management during acute illness because of their associated risks. Digital systems must continue to evolve to integrate newer technologies with electronic prescribing and patient records. Given these emerging challenges and the fact that inpatient diabetes care is resource-intensive, ready access to inpatient diabetes specialists is essential to ensure safe, effective care, minimise harm, shorten hospital stays and reduce costs.

The lack of a national bedside inpatient diabetes audit in England for over six years has created a major gap in understanding quality and safety issues, particularly amid rising demand and workforce pressures. Crucially, a bedside evaluation component is needed to ensure that the voices of people with diabetes are heard and acted upon. NHS England has set up a diabetes inpatient audit expert reference group to develop a framework for future inpatient audits. Such data can guide service redesign and

support delivery of consistently high quality, compassionate inpatient diabetes care.

### AUTHOR CONTRIBUTIONS

This study was designed and organised by GR, PJ, FE, TWRB and WKG. Initial analysis was conducted by FE, WKG and PJ. The first draft was written by PJ and WKG, supported by GR and FE. All authors critically reviewed the manuscript, agreed to the submission of the final draft and are accountable for all aspects of the work.

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### CONFLICT OF INTEREST STATEMENT

The authors declare that there is no conflict of interest.

### ETHICS STATEMENT

Ethical approval was not sought for the present study because it was a survey of service provision as part of a quality improvement initiative and did not directly involve human participants. This study was completed in accordance with the Helsinki Declaration as revised in 2013.

### INFORMED CONSENT TO PARTICIPATE

Informed consent was not sought for the present study because it did not directly involve human participants.

### CONSENT TO PUBLISH

All authors consent to publication.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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