The Rowan Hillson Inpatient Safety Award 2022
The best interventions: redesigning, rebuilding and maintaining safe inpatient diabetes care during COVID

UMESH DASHORA,[1] PUNITH KEMPEGOWDA,[2] ADRIAN LI,[3] SOPHIE HARRIS,[3,4] ERWIN CASTRO,[1] ROWAN HILLSON,[5] CHRISTINE JONES,[6] KETAN DHATARIYA,[6,7] ON BEHALF OF JOINT BRITISH DIABETES SOCIETIES FOR INPATIENT CARE

Abstract

Introduction: The annual National Diabetes Inpatient Audit (NaDIA and NaDIA-Harms) in the UK continues to show significant problems with patient care. During the COVID pandemic patient care has been even more difficult. New initiatives are urgently required to improve inpatient safety for people with diabetes.

Method: The Joint British Diabetes Societies for Inpatient Care (JBDS-IP) organised the seventh national Rowan Hillson Inpatient Safety Award on the theme of "the best interventions: redesigning, rebuilding and maintaining safe inpatient diabetes care during COVID".

Result: The winner was the DEKODE team, led by Dr Punith Kempegowda from University Hospitals Birmingham NHS Foundation Trust, for their innovative quality improvement project across hospitals during COVID to improve diabetes-related ketoacidosis (DKA) management and study DKA in people with COVID. Adherence to national guidance improved in some hospitals, with falls in hypoglycaemia, and overall there was a significant improvement in awareness about DKA amongst junior doctors.

The King's College NHS Foundation Trust team, led by Adrian Li and colleagues, received the highly commended award for their innovative project of remote blood glucose (BG) monitoring across healthcare boundaries. This improved diabetes control and tackled health inequalities.

Summary and conclusion: These and similar schemes need to be developed, promoted and shared to improve safety for people with diabetes admitted in hospital during COVID times.

Introduction

Insulin and medication errors are common and preventable. National Diabetes Inpatient Audit (NaDIA) results between the years 2010 and 2019 demonstrated some reduction in medication errors (44.5% to 30.4%), prescribing errors (30.7% to 16.8%), glucose management errors (24.1% to 18.4%), insulin errors (25.8% to 18.2%) and severe hypoglycaemia (11.8% to 6.8%) in hospitalised patients with diabetes in the UK.[1] NaDIA results also showed that there is considerable variation between Trusts and sometimes at different times within the same Trust.[1] In the audit there was no significant change in either DKA or hyperglycaemic hyperosmolar state (HHS) since the data collection began in 2010. NaDIA results show that 3.6% of inpatients with T1DM developed DKA during their hospital stay and 0.2% of inpatients with T2DM developed HHS.[1] NaDIA harm audit reported 4,605 serious inpatient harms including hypoglycaemic rescue (3,200), DKA (750), HHS (135) and diabetic foot ulcer (515).[2] The proportion of hospitals utilising remote blood glucose monitoring (BGM) increased from 35% to 71% between 2013 and 2017.[1] Clearly, further improvements are needed.

Methods

Following the success of previous contests,[3-8] the Joint British Diabetes Societies for Inpatient Care (JBDS-IP) launched the seventh round of this national competition in 2022 to find the best interventions that encompass redesigning, rebuilding and main-

1. Diabetes and Endocrine Centre, Conquest Hospital, Hastings, UK
2. University Hospitals Birmingham NHS Foundation Trust, UK
3. King's College Hospital NHS Foundation Trust, London, UK
4. Health Innovation Network
5. Former National Clinical Director for Diabetes, Department of Health, UK
6. Elsie Bertram Diabetes Centre, Norfolk and Norwich University Hospitals NHS Foundation Trust, Norwich, UK
7. Norwich Medical School, University of East Anglia, Norwich, Norfolk, UK.

Address for correspondence: Dr Umesh Dashora
Consultant, Diabetes and Endocrinology, Conquest Hospital, The Ridge, St Leonards on Sea TN7 7RD, UK
E-mail: u.dashora@nhs.net

https://doi.org/10.15277/bjd.2022.389

taining safe inpatient diabetes care during COVID so that effective projects can be identified, rewarded and shared with other Trusts in the UK. The project was led by Dr Umesh Dashora and Erwin Castro of the JBDS Inpatient Safety Group.

The topic of this competition was selected at a meeting of JBDS members and was then agreed by Dr Rowan Hillson. Marking criteria were set by the Inpatient Safety Group and included the following areas: background, objectives, project plan/methods, evaluation, impact, adaptability, learning and feedback from staff and patients. Christine Jones, JBDS Administrator, co-ordinated advertising the award through the membership of the Association of British Clinical Diabetologists (ABCD), the Diabetes Inpatient Specialist Nurse (DISN) UK Group and Diabetes UK. Dr Rowan Hillson chaired the judging panel which consisted of Dr Clare Crowley, Consultant Pharmacist, Medicines Safety, Oxford University Hospitals NHS Foundation Trust; Professor Gerry Rayman, Consultant in Diabetes, Endocrinology and General Medicine, Ipswich Hospitals NHS Trust and Hon. Professor University of East Anglia; Dr Susannah Rowles, Consultant Physician, Diabetes and Endocrinology, Pennine Acute Hospitals NHS Trust; Rose Stewart, Consultant Clinical Psychologist, Betsi Cadwaladr University Health Board, North Wales; and Esther Walden, Senior Clinical Adviser for Diabetes UK. The final decision was made by Dr Rowan Hillson.

Results of the competition

Winner

The winner was the team from University Hospitals Birmingham NHS Foundation Trust, led by Dr Punith Kempegowda (P.Kempegowda@bham.ac.uk), for their innovative quality improvement project across hospitals during COVID to improve diabetes-related ketoacidosis management. The details of their entry are as follows.

Background

DKA is an acute complication of diabetes which needs hospitalisation. Incremental reductions in mortality over the years have been observed in DKA, with current figures ranging between 0.2%-1.8%.[9,10] COVID-19 infection predisposes people to develop hyperglycaemia, whether with or without a prior diagnosis of diabetes, and is associated with a disproportionately poor prognosis. It also disrupted non-urgent services like outpatient clinics, quality improvement services and established pathways to manage people with DKA, which were significantly affected. Queen Elizabeth Hospital Birmingham (QH) has an established quality improvement programme that focuses on sustaining good medical care for people with DKA.[11-13] This model was further strengthened with a cloud-based data collection system called DEKODE (Digital Evaluation of Ketosis and Other Diabetes Emergencies). This has helped answer several important questions in DKA,[13] and helped us to understand the impact of COVID on DKA management at our centre. More people with T2DM with COVID had DKA than expected. They were more likely to require intensive care than those without COVID or pre-COVID.[14] We felt it was more crucial than ever to understand how inpatient care for people with DKA had been affected by the COVID pandemic

in other hospitals in our region and to identify opportunities to share our sustainable model of DKA auditing system with them.

Aim

To improve patient safety and provide uniform care for people admitted with DKA in hospitals across the West Midlands by establishing a common DKA registry and sharing best practice across the centres.

Methods

The project was initiated at QH in 2020 and is still ongoing. It expanded across Heartlands Hospital (HH), Good Hope Hospital (GHH), City Hospital (CH), Sandwell Hospital (SH) and Walsall Manor Hospital (WH) in the West Midlands following acceptance of invitations by clinical leads in these centres. Junior doctor leads were established in each of these hospitals and acted as liaisons between their team and the clinical service leads to facilitate the registration of the Quality Improvement Project (QIP) in line with local information governance policies and subsequent data collection. DKA was diagnosed based on JBDS criteria (blood glucose >11 mmol/L or history of diabetes, pH ≤7.3 or bicarbonate ≤15 mmol/L and ketonaemia ≥3 mmol/L). DKA resolution was defined as blood ketones <0.6 and pH>7.3. Data on patient demographics, metabolic parameters and various aspects of DKA management were collected. A medical student or junior doctor obtained the list of people admitted with DKA each month through health informatics. The diagnosis was confirmed, and relevant data were collected retrospectively for all people admitted with DKA in the participating hospital. Approximately five hours were spent each month in collecting these data. Patient consent was not obtained as all information was obtained retrospectively, after the patient was discharged, as part of the QIP. No identifiable information was collected, in line with the Trust's clinical governance regulations.

Various interventions, including regular feedback on various parameters of DKA management, updated DKA guidelines based on latest JBDS recommendations (Figure 1), GIFs and presentations to junior doctors about DKA management, were provided at regular intervals to participating hospitals following assessment of result patterns over time to improve DKA management in multiple centres. The data were also reviewed every 3 to 4 months and feedback was given to the leads in the emergency medicine, acute medicine and diabetes team who then cascaded this to their teams. Diabetes Specialist Nurses (DSNs) were involved in ongoing education to provide best care for people with DKA and ensure that staff followed the Trust's DKA guidelines. All hospitals were using a DKA guideline adapted from the JBDS version condensed into one page (Figure 1).

Results

In all, 814 episodes from six different centres (QH, HH, GHH, CH, SH and WH) were analysed. Figure 2 shows an example of the results that were generated from this project. A significant improvement in FRIII prescription (2020 vs 2021 median 96.0% vs 100%, p=0.028) was seen in WH. Hourly glucose measurement improved in CH (2020 vs 2021 median 77.5% vs 89.1%, p=0.084) and SH (2020 vs 2021 median 76.1% vs 92.6%, p=0.006).Hourly ketone measurement significantly improved in four hospitals (QH: 2020 vs 2021 median 56.0% vs 61.4%,

Figure 1. Updated DKA guidelines used as part of the DEKODE programme have helped to bring in uniformity across all participating hospitals.
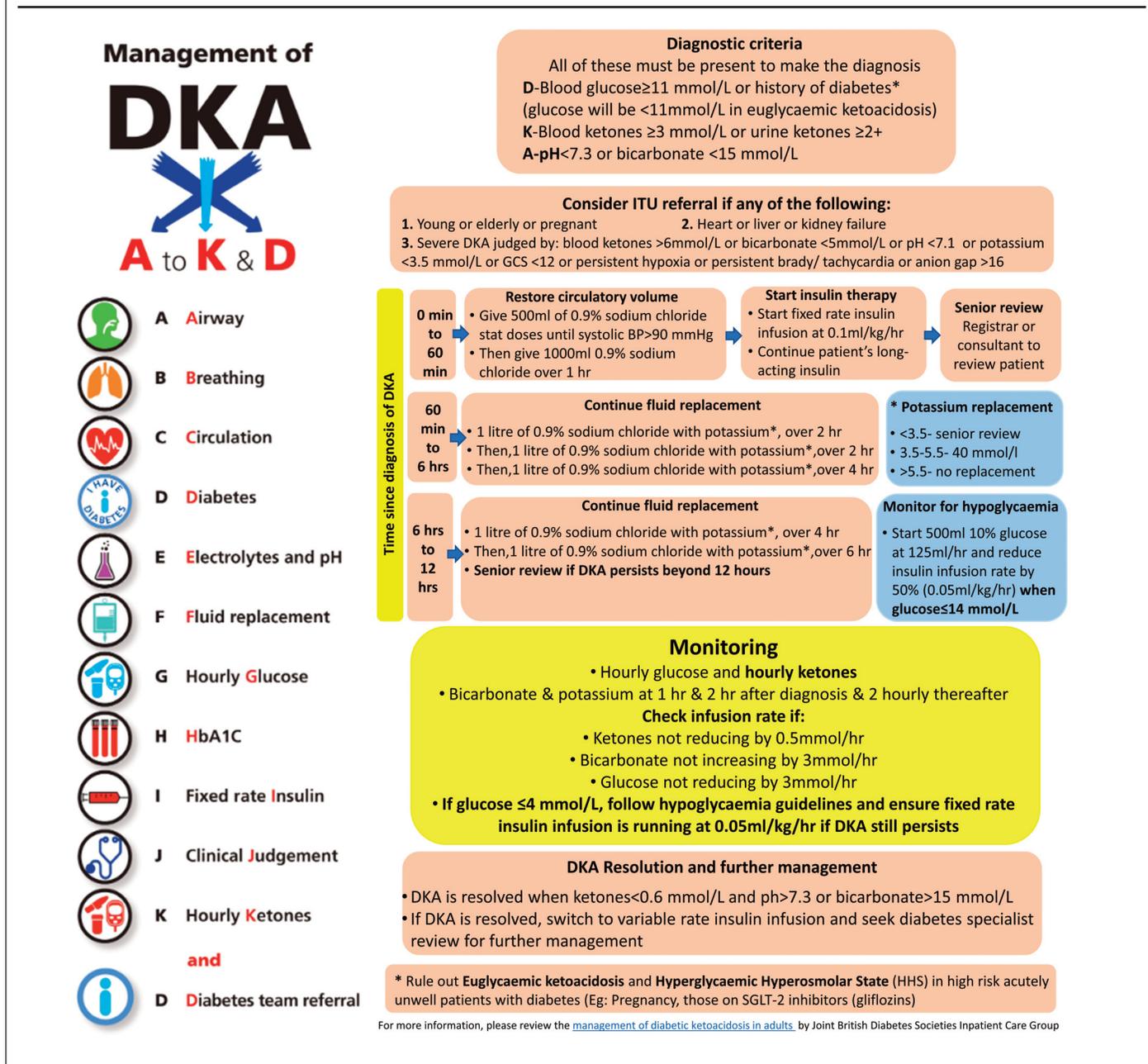
p=0.001; CH: 10% vs 67.3%, p<0.001; SH: 10.5% vs 62.6%,p<0.001; WH: 14.3% vs 69.6%,p<0.001). Prevalence of hypoglycaemia during DKA reduced in CH (2020 vs 2021 median 25.0% vs 13.3%, p=0.039). The prevalence of hyperkalaemia increased in QH (2020 vs 2021 median 17.6% vs 37.4%, p<0.001). DKA duration (2020 vs 2021 median 11.1 hours vs 13.1 hours, p=0.024) and length of stay (2020 vs 2021 median 3.7 days vs 4.6 days, p=0.044) increased in QH. Patients treated in ITU received one-to-one nursing care, which may have introduced bias in the overall care received. This was a limitation in our project.

Feedback

The rapid expansion of our QIP across five other centres reflects its convenience in adaptability and sustainability. It increases adherence to national care guidelines in DKA management across hospitals, identifies areas of concerns and encourages exchange of best practice between sites. External members from other Trusts were not involved in evaluation and feedback. The project provided an opportunity to establish a network of medical students and junior doctors to develop their quality improvement, implementation, teamwork and leadership skills (Figure 3). It also facilitates identification of patterns to develop more robust and

Figure 2. Changes in median DKA duration during the COVID pandemic in various participating centres in DEKODE. Hospitals are anonymised to avoid comparison between centres.


Diagnosis of DKA to resolution (defined as pH>7.3 and bicarbonate >15 mmol/L; and ketones < 0.6 mmol/L).
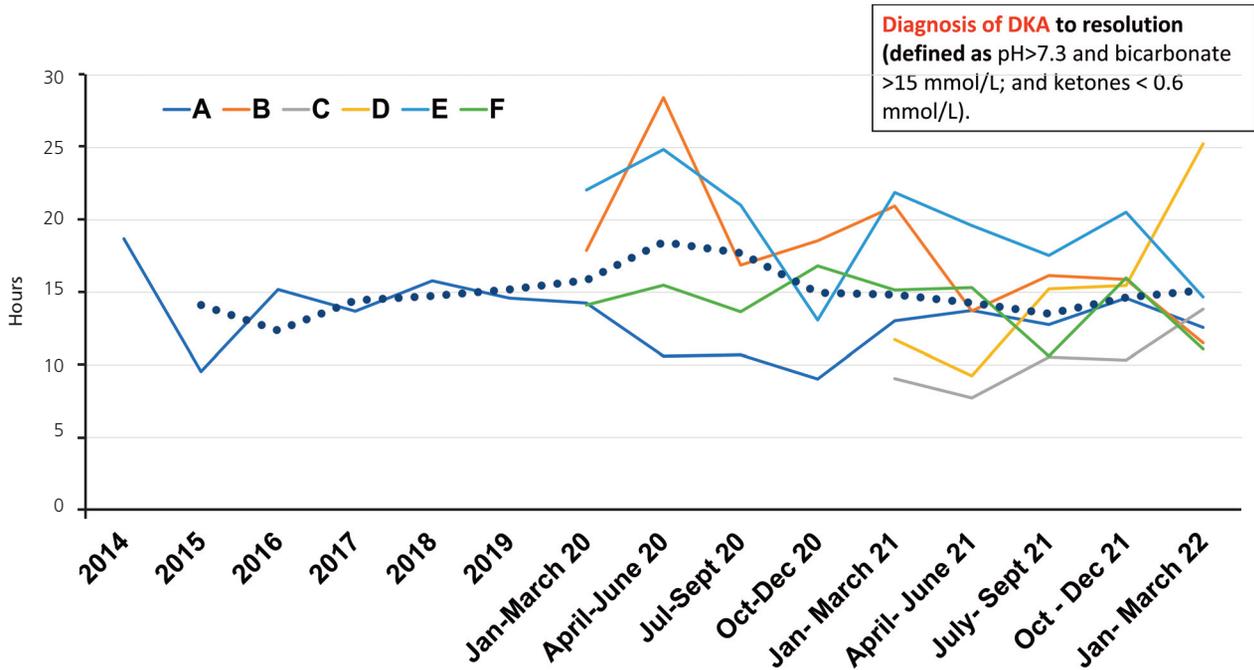
Figure 3. the DEKODE team. More than 75% are medical students and junior doctors.
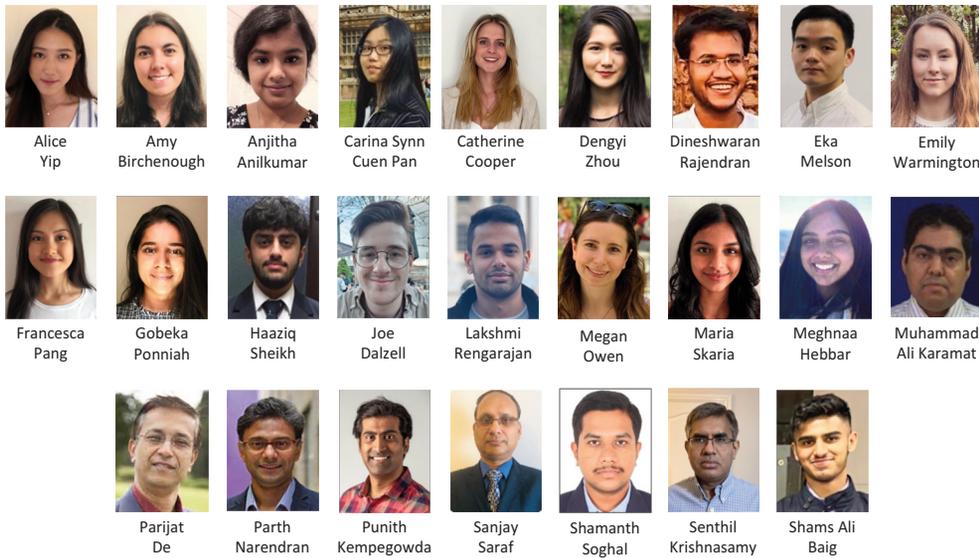
evidence-based guidelines which are tailored to current trends in the aetiology and management of DKA.

We have now been in touch with the Association for British Clinical Diabetologists (ABCD) about the success of the model and expressed our interest in rolling out DEKODE nationally so any interested centre can participate and benefit from regular feedback and early warning when care is deviating from the national median. The representatives of ABCD have responded positively to the proposal and we are currently on the way to launching this.

Highly commended
The team from King's College Hospital NHS Foundation Trust team, led by Adrian Li (adrian.li@nhs.net), Sophie Harris (sophieharris1@nhs.net) and colleagues, received the highly commended award for their innovative project of remote blood glucose monitoring which improved diabetes control and tackled health inequalities. The details of their project are as follows.

Background of the project
The emergence of dexamethasone as a key treatment for COVID-19 pneumonitis led to a surge in steroid-induced hyperglycaemia in patients both with and without diabetes. At the peak of the pandemic 40% of inpatients had diabetes (baseline 21% NaDIA) and the inpatient team became inundated with referrals to assist with the facilitation of safe early discharges and avoid admissions from the Emergency Department (ED). However, it was difficult to predict how a patient would respond once steroids doses were changed or discontinued.

At King's College Hospital NHS Foundation Trust, several initiatives were introduced to tackle the crisis, including adopting and adapting national COVID-19 diabetes guidance and COVID-19 electronic prescribing bundles. However, the safe de-escalation of care and immediate follow-up of these patients remained challenging. Although closer working with diabetes intermediate care teams allowed for an earlier transfer to post-discharge review, efficient transfer of glucose monitoring data proved difficult.

DBm-Health is a remote blood glucose monitoring initiative, utilising Bluetooth Near Field Communication (NFC) to connect wireless glucose meters with smartphone App technology. Glucose measurements are uploaded immediately and can then be reviewed remotely by the inpatient diabetes team. Uniquely, patients were being onboarded whilst they remained as inpatients or during an ambulatory care presentation, thus utilising the technology prior to their discharge but allowing the data to be shared between acute and intermediate care providers.

Methods
The DBm-Health pilot received investment from NHS England to launch initially at King's College Hospital NHS Foundation Trust. Monthly steering group meetings with South East London Clinical Commissioning Group (CCG) and industry were organised to facilitate implementation.

The inpatient team identified and onboarded appropriate patients to the platform. They would then follow up these patients using the platform's messaging ability or contact patients by telephone when indicated (dose change required or patient requested callback). The diabetes technician contacted patients who appeared not to be using the App to help troubleshoot any technical queries.

Data from patients onboarded were collected prospectively by the inpatient team, including demographic information, admission data and HbA$_{1c}$ at checkpoints within a 12-month timeline.

The initiative aims to evaluate clinical outcomes, in particular HbA$_{1c}$, but also to obtain experiences from patients and clinicians. As a measure of success, patients onboarded onto DBm-Health had baseline and 3-month HbA$_{1c}$ values checked. The comparator group were selected from data retrieved from the hospital data intelligence unit, which looked at non-pregnant adults with T2DM presenting to the hospital with dysglycaemia prior to the COVID pandemic in 2017-2018 (n=40).

Patient experience was explored through surveys, which were sent to DBm-Health users and staff via the platform's messaging system.

Results
Since the pilot began, 100 patients have been onboarded to the platform; 83 from King's College Hospital and a further 17 patients from the community. All patients required insulin starts. The demographic data for patients onboarded can be found in Table 1: the key message is that the project has been able to bridge the digital divide by onboarding nearly 40% of patients over the age of 55 and nearly 60% from ethnic minority groups.

Patients were eligible if they could facilitate daily blood glucose monitoring independently and had access to a smartphone. Those who were eligible for onboarding but declined the intervention usually did so based on reluctance to utilise new technology. We do not know the number of patients who declined the intervention.

The number who disengaged after onboarding is not currently

Table 1 Characteristics of DBm-Health users including age, gender, ethnicity and type of diabetes (data from April 2021 to February 2022)

Patient characteristics	n (%)
Sex	
Male	50 (60)
Female	33 (40)
Age	
18-24	2 (2.4)
25-34	7 (8.4)
35-44	16 (19.3)
45-54	26 (31.3)
55-64	22 (26.5)
65+	10 (12.1)
Ethnicity	
White	29 (34.9)
BAME	48 (57.8)
Asian/Asian British	5 (6.0)
Black African/Black Caribbean/Black British	32 (39.0)
Mixed/Multiple Ethnic Groups	11 (13.3)
Not stated	6 (7.3)
Diabetes status	
Pre-existing diabetes	55 (66.3)
Non pre-existing diabetes	28 (33.7)
Type 1	4 (4.8)
Type 2	66 (79.5)
Other	13 (15.7)

Figure 4. Comparison of mean HbA1c mmol/mol at admission and 3 months following discharge in those using DBm-Health versus Control (cohort taken from 2017-2018)
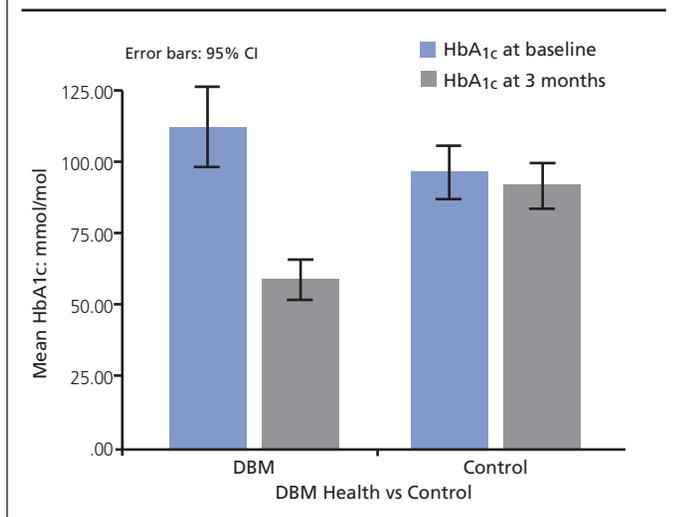
available but retrospective analysis to look at reasons behind disengagement remains on the agenda at the end of the pilot.

Data were accessible only for the Acute Trust and community specialist team. Patients were usually discharged to the GP after a period of care under the Acute Trust and were then discharged from the platform.

The clinical impact has been significant, with an average reduction in HbA$_{1c}$ by 3 months of 4.8% (50.9mmol/mol) compared to 0.4% (5mmol/mol) in the comparator group (Figure 4). Patients have been onboarded directly in ED and Ambulatory Care Units, preventing hospital admission. Additionally, patients have been onboarded during their inpatient stay, allowing medical teams to discharge them safely at the point of medical stability. There are no recorded readmissions to date, and positive patient feedback shows that patients from diverse backgrounds are both able to engage with remote monitoring and feel positive about managing their glucose levels remotely using this digital support tool.

We did not collect information on adverse events related to remote monitoring systematically. The majority of patients onboarded had T2DM or steroid-induced non-ketotic hyperglycaemia. When ketone monitoring was required, the specialist inpatient team usually provided a different meter to facilitate this. These patients were not onboarded onto the platform since the App was unable to connect with these meters. No adverse events were recorded in relation to remote monitoring.

New-versus-existing diabetes data were not available for the comparator group, which may account for the magnitude of improvement in HbA$_{1c}$ at 3 months and provides a degree of limitation. However, even when the intervention group is taken in isolation, the improvement in HbA$_{1c}$ remains a very positive outcome.

Feedback

The DBm-Health project has allowed the inpatient diabetes team

to target those in need with a dashboard that clearly identifies patients with blood glucose levels out of range. Time spent onboarding patients is offset by time save later through daily activities of the inpatient diabetes specialist team. The system has enabled more efficient allocation of finite resources and case prioritisation, to focus on patients who may need more input. Time saved with patients who are stable can subsequently be spent with patients who may have more difficulty with managing their diabetes.

The project has demonstrated bridging of the digital divide by proving engagement amongst older patients and those from ethnic minority groups. There is excellent engagement from people with T2DM, who are often excluded from novel diabetes technologies.

Patient survey responses demonstrate high satisfaction using the platform. Clinicians have also welcomed the use of DBm-Health: all surveyed agreed that DBm-Health was an improvement on the former non-remote system, with the majority agreeing that it improves the patient-clinician interaction and reduces time spent gathering glucose data.

From 28 patient surveys:
- 96% welcomed the use of Dbm-Health
- 86% found DBm-Health easy to use
- 89% felt that the App offered reassurance that their blood glucose was being monitored safely
- 43% of patients had used the callback request function. Of this cohort, 83% felt their problem had been resolved and 53% felt it was resolved quickly

From nine clinician surveys:
- The main benefits were increased accuracy and speed of data retrieval
- Better communication with the messaging function was particularly useful
- Shorter consultation lengths, which also led to higher patient satisfaction and more time available to spend on those unable to onboard DBm-Health
- Ability to track and escalate early concerning patterns of suboptimal compliance and blood glucose trends

Commended projects

The Northampton General Hospital NHS Trust team, led by Dr Sowmya Gururaj-Setty (s.gururaj-setty@nhs.net) and Mr Thomas Williams, was commended for their project of a new diabetes in-reach service during the COVID-19 pandemic.

Responding to NaDIA results showing a high percentage of inpatients suffering insulin errors and prescription errors compared to the national mean (16.76% vs 13.76% and 14.94 vs 13.43%, respectively) locally, the team developed a multi-disciplinary in-reach team consisting of a diabetes specialist nurse, a diabetes specialist pharmacist and a consultant which completed 159 reviews of inpatients on a proactive basis between June 2020 and August 2020. The patients were identified through a combination of ward co-ordinators and the IBOX IT system.

By re-deployment of staff, the team showed improvement in the speed of review of diabetic emergencies from 0% to 75%

(n=12) of people seen within 24 hours, with a decrease in average time of review from 2.7 days to 1.8 days. Length of stay (LOS) for people admitted due to diabetes reduced from 13.1 days to 3.4 days (n=34). There was an increase in error reporting with a more favourable spread of harms rating for those wards covered (10 incidents reported of which 9 were rated no harm incidents vs 1 moderate, 1 low, 1 no harm in the same period the year before). The reduction of LOS saved £1,885 per patient admitted. The qualitative data showed the service was well received by both the staff and the patients. This pilot resulted in approval of a business case for a significant increase in DSN time for inpatients (compared to the third lowest DSN time recorded in the Getting It Right First Time [GIRFT] visit).

The team from East and North Hertfordshire NHS Trust, led by Shelley Hodgins (shelley.hodgkins@nhs.net), was commended for their project on a teaching video that was focused on the treatment of hypoglycaemia. An audit of hypoglycaemia episodes showed that the existing algorithm in the hypoglycaemia treatment box was not being followed and nearly 91% of episodes of hypoglycaemia were treated incorrectly within the hospital setting. The team responded by producing a bite-sized teaching video focusing on mild, moderate and severe hypoglycaemia, with clear actions that should be taken in each scenario. The video was only six minutes long and featured the lead diabetes outreach nurse as the patient and her colleague as the nurse. The video was sent to all the diabetes team members for approval. Once approved, a poster was designed by the clinical photography team to promote the video.

The video was made accessible to staff by putting it on the Trust's YouTube channel via a QR code. The video was shown during weekly Trust Quality Huddle. The team is seeing improvements in the treatment of hypoglycaemia following the launch of the video and is planning a formal re-audit to check for improvements. Initial feedback in the form of e-mails and informal responses was positive. The costs were minimal and mainly consisted of staff time in preparing the video and the cost of printing the posters. The idea is easily transferrable to other Trusts and other situations. Close relationship with clinical photography and the communication team was key to the success of the project. The video was aimed at healthcare professionals but there are aspects that may be useful for patients. The video was based on a combination of the JBDS Guideline and the Trust policy. The variation from the JBDS guideline was a result of the treatment products that we have available in our Trust. The video itself may therefore not be transferrable to other Trusts.

The Guy's and St Thomas' Hospital team led by Elizabeth Camfield (elizabeth.camfield@gstt.nhs.uk) received a commended award for their project of a multidisciplinary inpatient service for safe discharges in the pandemic. As the first wave of COVID hit the UK, a multiprofessional team of diabetes specialist dieticians and nurses was set up to provide inpatient and post-discharge support. A unique component of the project was the recruitment of dieticians into this multiprofessional team to support insulin dose titration, with some rapid training sessions using

TREND competencies framework. An insulin discharge bundle was designed by the pharmacy lead to clarify steps for the ward teams to ensure that all patients were discharged home with the correct equipment and knowledge. Sufficient supplies to take out (TTOs) up to 1 month rather than the traditional 10 days were provided to reduce the pressure on primary care and community teams.

An enhanced telephone support line staffed by a multiprofessional team was set up to provide ongoing support on insulin titration and other aspects of self-management. Between January and March 2021, a total of 1,220 phone calls were made, providing support for up to 3 weeks post discharge. This intervention prevented any increase in LOS and readmissions. All elements of this project have continued. Due to pressures of COVID, a formal post-intervention audit was not completed but a feedback board was maintained in the department. This received a number of positive comments and an occasional criticism, which was discussed by the department and action taken.

As a result of these initiatives the inpatient service at Guys & St Thomas' hospital has been redesigned. There has been a permanent shift in the workforce of the inpatient team, with diabetes specialist dietitians involved in all aspects of inpatient care, including insulin support. They work together with the nursing teams and the resulting major inter-professional sharing of learning has enhanced all areas of inpatient diabetes care.

The insulin discharge bundle is now in place for routine practice for all patients starting on insulin across the Trust and the enhanced post-discharge telephone clinic is now in place for all patients that require additional telephone support during this period.

Summary and conclusions

The competition revealed some exemplary innovations during COVID times which have resulted in tangible benefits for staff and people with diabetes. All teams are commended for continuing with innovations for patient care despite the gruelling demands of COVID and its aftermath. The University Hospitals Birmingham team won the award as they were able to improve awareness of DKA and adherence to national guidelines amongst junior medical doctors across many hospitals, to reduce and standardise the duration of DKA resolution, and to reduce hypoglycaemia. The project increased knowledge of DKA in people with T2DM and COVID and provides a major practical tool for auditing DKA management nationwide and improving national guidance. It is hoped that ABCD will roll out the project nationally. The King's College team were close behind. They won the highly commended award as they were able to improve diabetes control and tackle health inequalities with their innovative project of remote BG monitoring across healthcare boundaries. The Northampton General Hospital team was commended for their new diabetes in-reach service which expedited clinical advice, reduced length of stay and increased harm reporting. The East and North Hertfordshire NHS Trust team was commended for their innovative educational video on hypoglycaemia. The Guy's and St Thomas' team was commended for their novel and timely project of a multidisciplinary inpatient service that recruited dieticians

Key messages

- The Rowan Hillson Inpatient Safety Award 2022 identified the best interventions encompassing redesigning, rebuilding and maintaining safe inpatient diabetes care during the COVID pandemic
- The winner was the DEKODE team from University Hospitals Birmingham NHS Foundation Trust, led by Dr Punith Kempegowda, for their innovative quality improvement project across hospitals during COVID to improve diabetes-related ketoacidosis (DKA) management and study diabetic ketoacidosis in people with COVID. Adherence to national guidance improved in some hospitals, with falls in hypoglycaemia and overall significant improvement in awareness about DKA amongst junior doctors
- The King's College Hospital NHS Foundation Trust team, led by Adrian Li and colleagues, received the highly commended award for their innovative project of remote blood glucose (BG) monitoring across healthcare boundaries. This improved diabetes control and tackled health inequalities

to support inpatients and post-discharge patients. The team also produced a safe insulin discharge bundle by the pharmacy lead. The initiative attracted positive feedback.

We all need to promote and share these ideas and develop new ones to help increase patient safety in our hospitals for people with diabetes. Many of these initiatives required very little funding and other Trusts can easily adapt them for their use.

Next year's award title will be chosen at the next JBDS meeting. We look forward to spreading the inspiring work that doctors all around the country are doing. This paper satisfies quality reporting guidelines (SQUIRE 2.0) and includes the aim, the details, the outcome, the funding, the generalisability and the learning from each initiative to improve inpatient safety of people with diabetes during COVID times.

References

1. NHS Digital. National Diabetes Inpatient Audit 2019. https://digital.nhs.uk/data-and-information/publications/statistical/national-diabetes-inpatient-audit/2019 (accessed 13 January 2021)
2. NHS Digital. National Diabetes Inpatient Audit - Harms 2020 England - NHS Digital (accessed 27 May 2022)
3. Dashora U, Sampson MJ, Castro E, *et al*. Rowan Hillson Insulin Safety Award 'best in class' insulin prescription chart competition. *Br J Diabetes Vasc Dis* 2015;**15**:135-8. https://doi.org/10.15277/bjdvd.2015.028
4. Dashora U, Sampson MJ, Castro E, *et al*. The best hypoglycaemia avoidance initiative in the UK. *Br J Diabetes* 2017;**17**:74-7. https://doi.org/10.15277/bjd.2917.126
5. Dashora U, Sampson M, Castro E, *et al*. The best joint pharmacy and diabetes team initiative to improve insulin and prescribing safety in hospital. *Br J Diabetes* 2018;**18**:163-6. https://doi.org/10.15277/bjd.2018.195
6. Dashora U, Sampson M, Castro E, *et al*. The Rowan Hillson Inpatient Diabetes Safety Award 2017 for the best digital initiative. *Br J Diabetes* 2018;**18**:110-12. https://doi.org/10.15277/bjd.2018.182
7. Dashora U, Sampson M, Castro E, *et al*. The Rowan Hillson Inpatient Safety Award 2018 for the best inpatient diabetes educational programme for healthcare professionals. *Br J Diabetes* 2020;**20**:151-4. https://doi.org/10.15277/bjd.2020.264
8. Dashora U, Laurent DB, Leech N, *et al*. The Rowan Hillson Inpatient Safety Award 2019 for the best perioperative pathway for people with diabetes. *Br J Diabetes* 2021;**21**:149-53. https://doi.org/10.15277/bjd.2021.296
9. Gibb FW, Teoh WL, Graham J, Lockman K. Risk of death following admission to a UK hospital with diabetic ketoacidosis. *Diabetologia* 2016;**59**:2082-7. https://doi.org/10.1007/S00125-016-3034-0
10. Wright J, Ruck K, Rabbitts R, *et al*. Diabetic ketoacidosis (DKA) in Birmingham, UK, 2000—2009: an evaluation of risk factors for recurrence and mortality. *Br J Diabetes Vascular Dis* 2009;**9**:278-82. https://doi.org/10.1177/1474651409353248
11. Kempegowda P, Chandan JS, Coombs B, *et al*. Regular Performance Feedback May Be Key to Maintain Good Quality DKA Management: Results from a Five-Year Study. *BMJ Open Diabetes Research Care* 2019;**7**:e000695. https://doi.org/10.1136/bmjdrc-2019-000695
12. Kempegowda P, Coombs B, Nightingale P, *et al*. Regular and Frequent Feedback of Specific Clinical Criteria Delivers a Sustained Improvement in the Management of Diabetic Ketoacidosis. *Clinical Medicine* 2017;**17**:389–94. https://doi.org/10.7861/clinmedicine.17-5-89
13. Kempegowda P, Melson E, Johnson A, *et al*. Effect of Covid-19 on the Clinical Course of Diabetic Ketoacidosis (Dka) in People with Type 1 and Type 2 Diabetes. *Endocrine Connections* 2021;**10**:371–77. https://doi.org/10.1530/EC-20-0567
14. Ooi E, Nash K, Rengarajan L, *et al*. Clinical and Biochemical Profile of 786 Sequential Episodes of Diabetic Ketoacidosis in Adults with Type 1 and Type 2 Diabetes Mellitus. *BMJ Open Diabetes Research Care* 2021;**9**:e002451. https://doi.org/10.1136/bmjdrc-2021-002451