The Rowan Hillson Inpatient Safety Award 2023: a new online patient flagging system for effective and safe diabetes patients' follow-up when discharged from hospital

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Abstract

One of the biggest challenges in improving patient safety is identifying them promptly when discharging them from hospital to allow effective planning of follow-ups. Previously, our diabetes team had to undergo a manually laborious pathway to achieve this, thereby risking delays and patient safety, and making poor use of time. When our hospital adopted the new software NerveCentre, we took this as an opportunity to make changes within the system to improve this aspect of diabetes care. NerveCentre initially had minimal diabetes care features. By working closely and meticulously with the company and hospital IT department, we developed a new diabetes 'dashboard' in the software that allows all diabetes inpatients to be flagged up effectively to the diabetes team, both upon admission and upon discharge. The dashboard could also hold all the important diabetes information relevant to the patient. This initiative was made possible with a great team understanding of the available resources and which aspects of inpatient diabetes care needed to be improved. We now have a safer and more efficient pathway for following up on diabetes patients upon discharge. This is also evident in our 3-month data: they show a 100% follow-up rate, timely telephone follow-up when required, and that fewer outpatient face-to-face clinic appointments are needed. We received positive feedback from healthcare members and patients. In addition, our initiatives are also easily translatable to other electronic software or adaptable by other hospitals. We are grateful to be winners of the prestigious Rowan Hillson Inpatient Safety Award 2023, and we hope that this will serve as a platform to allow greater exposure of this project idea to other healthcare professionals.

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Background

Diabetes is one of the most common chronic diseases in the UK: an estimated 6.5% of the population have this condition. [1] According to the National Diabetes Inpatient Audit (NaDIA), 18% of acute hospital beds are occupied by patients with diabetes, and data from 11 participating hospital sites reported that 25% to 31% of inpatients had diabetes.[2] In Luton and Dunstable University Hospital, a district hospital, an average of 330 diabetic patients are admitted per calendar month, with or without diabetes-related issues as the main presenting complaint. It is crucial that these patients' diabetes management is optimised during their inpatient stay to avoid complications and delay in discharge related to diabetes.

Our hospital started using the relatively new electronic software NerveCentre in 2019. It serves as an online system housing all the inpatient information such as medical details, nurse admission assessment, drug chart, medical observation and bed flow status. Unfortunately, the software did not have many features relating to diabetes at the start. Our diabetes team identified this gap and started working closely with the software company and hospital IT department at an early stage to ensure that diabetes safety features were incorporated into the software as soon as possible. The first aspect that we tried to incorporate into the software was a built-in system that could flag all newly admitted diabetes patients to the diabetes team. We recognised the potential benefits of having this flagging system in alerting us to all admitted diabetes patients, as well as giving us the opportunity to intervene early and optimise their inpatient diabetes management. Over the years, by working closely and meticulously with the software company and hospital IT department, we successfully developed a system within NerveCentre that allowed the flagging of newly-admitted diabetes inpatients, thereby ensuring they were reviewed by the diabetes in-reaching team within 24 to 48 hours. By achieving this, we were able to optimise inpatient glycaemic management, improve patients' safety and avoid delays in patients' discharge for reasons related to diabetes.

The other challenge we faced was safe discharge and

follow-up of diabetes inpatients. This is particularly important for patients with a new diagnosis of diabetes, on initiation of insulin treatment, or for those with complicated diabetes control needing review post-discharge. We had set clear criteria on how to follow up these patients if required, with diabetes consultants, diabetes specialist nurses (DSNs), community DSNs and/or GPs. Prior to this initiative, we had to follow a laborious pathway manually (Figure 1) to identify discharged patients that needed follow-up. There would often be a delay in triaging these patients as there was no single system that housed all this information and flagged them up upon discharge. We, therefore, aimed to improve these aspects of diabetes management.

Objectives

Prior to our initiative, one of the biggest delaying factors in triaging the follow-up of diabetes inpatients was being notified promptly of their discharge. This was due to: i) patients being seldom flagged up to the diabetes team upon discharge; ii) the commonly assumed default GP follow-up by many non-diabetes clinicians; and iii) delay in receiving a discharge summary for the diabetes team to triage the follow-up plans upon discharge. In addition, the amount of manual input needed to identify the discharged patients and the relevant information contributed negatively to the follow- up efficiency of discharged diabetes patients (Figure 1).

Therefore, the objectives of our initiative were:

i   To create a new online system within NerveCentre that would allow all diabetes inpatients needing follow-up post-

discharge to be flagged up to the diabetes team when they were ready for discharge.

ii   To reduce the complexity and amount of manual effort required for the follow-up triaging pathway (Figure 1) by optimising and utilising NerveCentre, which can house all vital information.

iii   To ensure all important diabetes follow-up details were available online and included in patients' discharge summaries.

Methods

To achieve the objectives of this initiative, we again worked closely with the software company and hospital IT department in setting up a system within the software that would allow all important diabetes details to be included and easily accessible on the patient's admission page on NerveCentre. We also wanted the software to be able to flag all diabetes inpatients needing follow-up after discharge to the diabetes team. We first identified the most appropriate way and time point for the flagging to be initiated, which was in conjunction with the drug reconciliation and finalisation stage of the discharge summary. We then ensured that the patient flagging would readily be picked up by the diabetes team to ensure follow-up actions were implemented effectively. We designed the system in a way that was as user-friendly as possible and avoided unnecessary or complicated steps.

Once the new system was ready and incorporated into the hospital's software, we educated the hospital staff on the importance, rationale and utilisation of this new software

Figure 1. Complicated inpatient Diabetes pathway (including follow up on discharge) pre-iniatiative changes
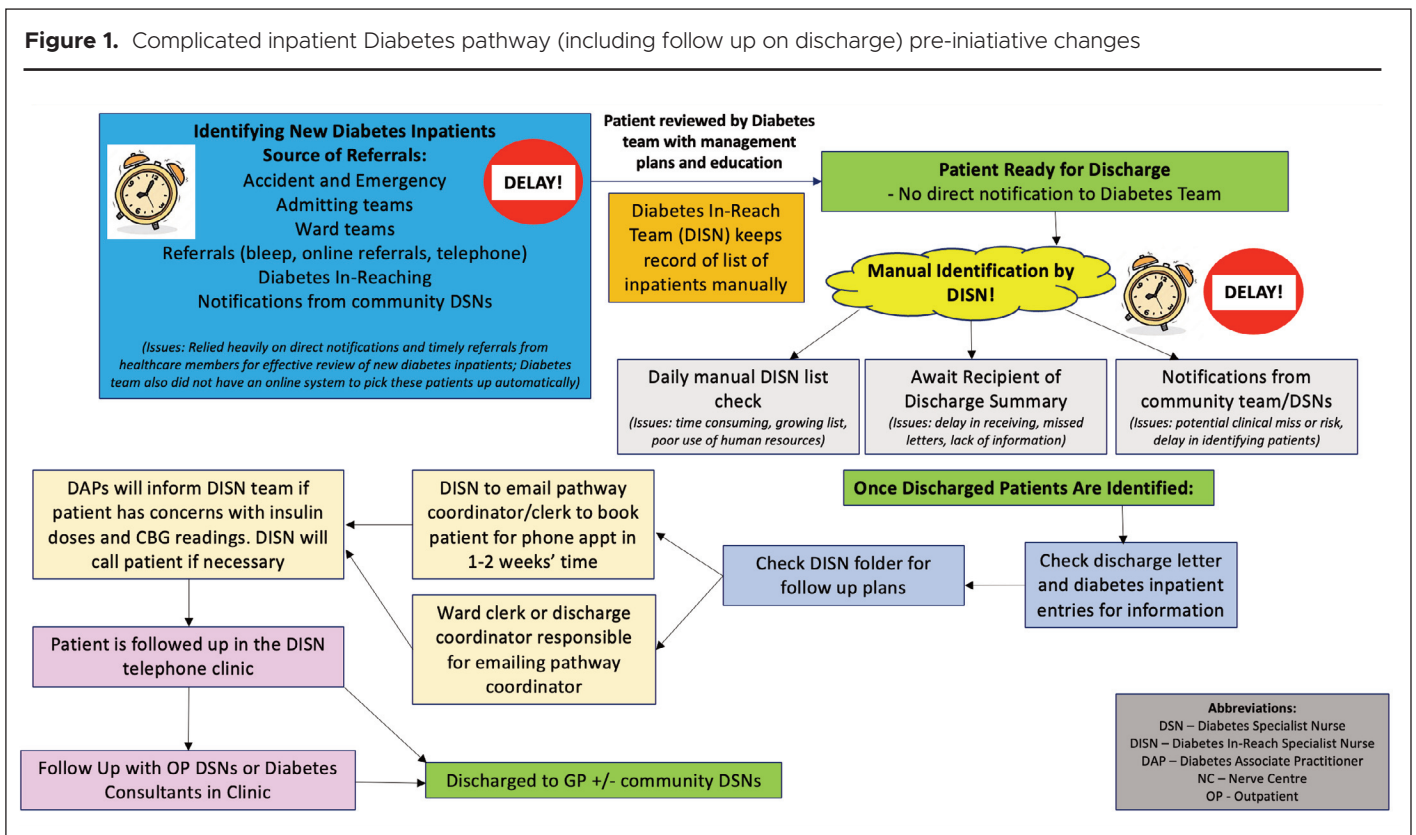
feature. In parallel, we actively entered details of diabetes follow-up plans upon discharge on the patient's discharge letter in advance, during the diabetes in-reaching team review. This step was introduced as part of the diabetes in-reaching activity to avoid missing important or wrong information on the patient's diabetes follow-up in the discharge letter.

We collected three months of data retrospectively, looking into the number of diabetes inpatients being appropriately planned on follow-up upon discharge. We also looked retrospectively into whether the patients were followed up in a timely fashion in secondary care upon discharge. All these data were collected two months after the new system went live, giving sufficient time to account for staff familiarisation and knowledge with the new feature of the hospital software. Complaints, incidence reporting and feedback were monitored for learning and further development.

Results

We worked closely with NerveCentre and hospital IT teams for five months to design the new diabetes dashboard and discharge flagging system for diabetes inpatients. The diabetes dashboard allows the diabetes in-reaching team to include important diabetes details (such as acute management and follow-up plans) for patients and it is easily accessible on the patient's admission page. The initial phase of the innovative was challenging as we had to get the NerveCentre team, hospital IT department and stakeholders on board to start the process. We prepared multiple proposals and presentations to highlight the importance of this initiative and how we envisioned the system to be on the software. Our case proposal and vision had to be clearly conveyed to team members, with both clinical and non-clinical backgrounds, in order for the initiative to be approved and progress. Multiple online and face-to-face meetings were

held to discuss the development and plans. This was challenging as we had to involve members of different teams at different times in the meetings. However, we managed to pass the hurdle by having good advanced planning, clear objectives and realistic expectations from every member of the team involved, as well as always setting up estimated datelines to ensure good efficacy. We trialled several prototypes amongst ourselves during these months and obtained feedback from the team members frequently to improve the design. This stage was equally challenging as we needed to refine and perfect the system in detail before it went live as any major changes after that could be difficult or ineffective. The finalised version went live and was available for clinical use in September 2022 (Figure 2a and 2b).

Prior to this initiative, we received several incident reports or primary care team notifications on missed patient follow-ups upon discharge. With the new system, we were able to identify all the patients that needed follow-up after discharge in that three months (n=262), giving a 100% rate of follow-up of discharged patients. We were able to follow up 48% of these patients (n=126) of them by telephone consultation with DSNs in the hospital. This telephone clinic is conducted by our DSNs four times a week on average and aims to review discharged patients needing secondary care follow-up. With the flagging system, we were also able to effectively triage patients into the DSNs' telephone clinic based on their urgency ('urgent' for review within 1 week; 'soon' for review within 2 weeks; 'routine' for review on routine). 41% were appropriately seen as 'urgent', 15% were seen as 'soon', and 44% were routinely followed up by telephone consultation.

Forty-five percent (n=119) of the flagged patients were deemed appropriate for community DSN follow-up and support. Of the 262 patients, we also requested GP support for
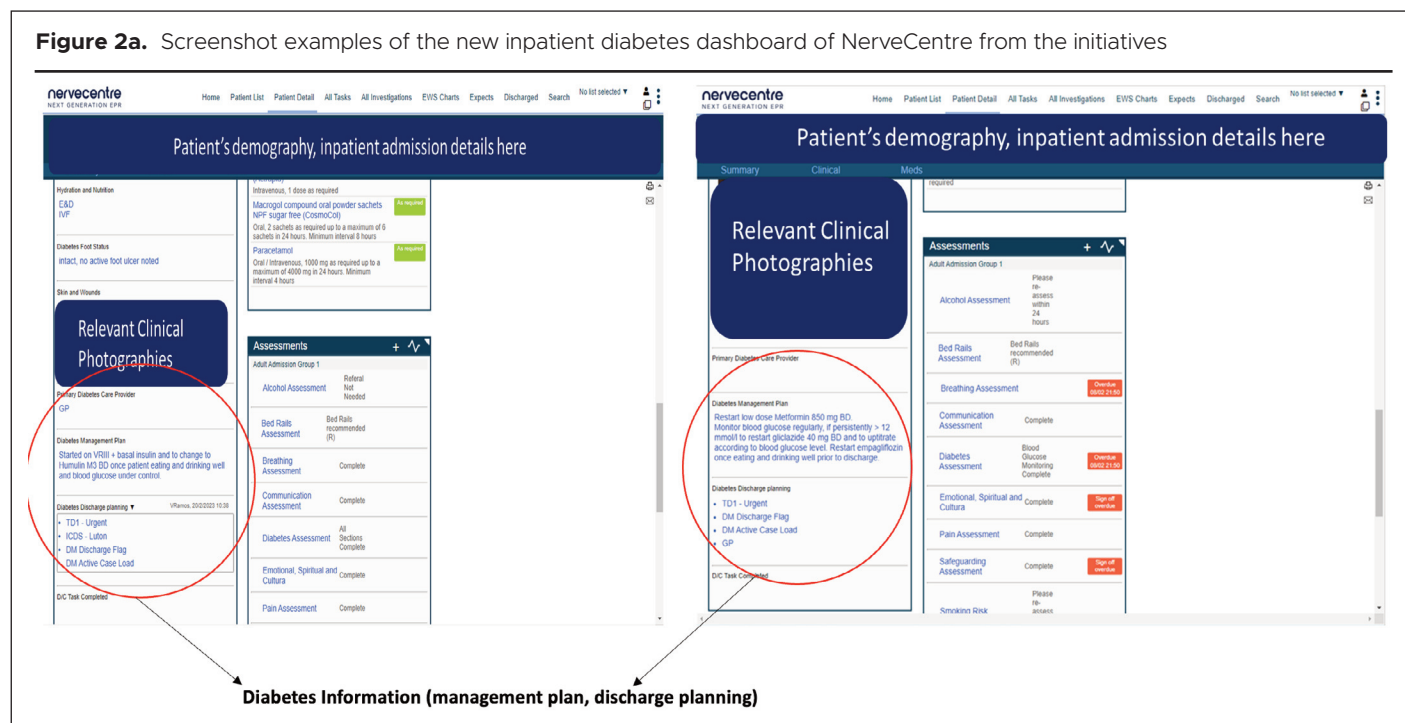

Figure 2a. Screenshot examples of the new inpatient diabetes dashboard of NerveCentre from the initiatives

Diabetes Information (management plan, discharge planning)

Figure 2b. Screenshot example of list of discharged patients generated from the 'flagging' system

83 patients. With this effective triaging and follow-up, only 29 patients (11%) needed a further hospital outpatient clinic appointment for face-to-face review and follow-up after discharge. As the team was prompted immediately by the new flagging system when patients were discharged, we also avoided delays in triaging the patients to the right follow-up pathway.

Discussion

Impact

Although this flagging system is still relatively new to the hospital, we show the significance of its introduction to inpatient diabetes care within the last three months of data collection. The system ensures that diabetes inpatients who need follow-up post-discharge are not 'lost in translation' and that they do not miss out on timely review post-discharge. This is evident from our data showing that all the flagged patients were triaged according to the right follow-up pathway post-discharge. For patients who needed secondary care telephone follow-up, we achieved a 100% rate of timely review.

We now have a more straightforward and less manually laborious inpatient pathway (Figure 3) compared to the previous one (Figure 1). This makes the system flow more efficient and safer. We also minimise the risk of missed information with the new diabetes dashboard feature and by introducing the new step of entering details of diabetes follow-up plans upon discharge on the patient's discharge letter in advance, during the in-reaching inpatient review. In addition, the flagging system allows us to inform our community DSNs and GP colleagues immediately about discharged patients that require their monitoring. Previously, there were delays in this step due to variable timing in receiving notification of a patient's discharge. This aspect is crucial as we work closely with the community diabetes team and this new system will allow them to further support the secondary team effectively. With effective triaging, we also showed a low percentage (11%) of patients requiring a face-to-face outpatient clinic appointment.

Although we do not have the data, we hypothesise that with this effective flagging system, patients' diabetes care is improved due to timely follow-up post-discharge. This will also improve patients' confidence in their diabetes management after discharge by healthcare professionals. In addition, we strongly believe that this flagging system reduces the re-admission rate due to glycaemic control-related issues as discharged patients are followed up effectively. However, we will need to collect data on this in the longer term to prove its benefits regarding this aspect.

Our limiting factor for this retrospective study was not having any concrete data before the initiation of this new flagging system for comparison. This is because the data are not easy to ascertain. They could partially be obtainable if the patients were readmitted to the hospital, via incidence reporting or if we were notified by the GPs/community DSNs. In the three months of this data collection, we did not receive any incidence report or notification from GPs/community DSNs regarding missed necessary follow-up. More importantly, we kept track of all these patients during that months and achieved 100% follow-up rates.

Figure 3. The new inpatient Diabetes pathway (including follow up on discharge)
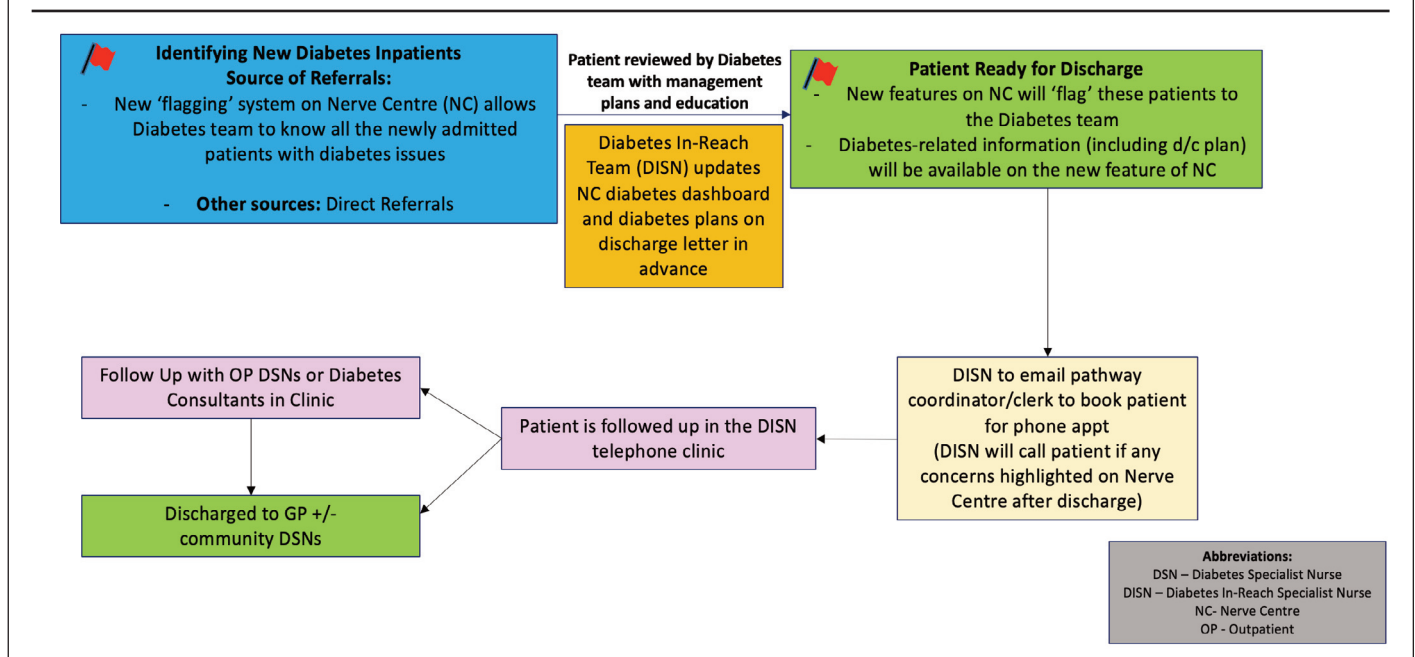
Adaptability, cost and sustainability

NerveCentre is relatively new electronic software that allows live hospital documentation and patient care. These include inpatient records such as observations, medical history, drug prescription and administration, as well as bedflow monitoring. The software is used by more than 40 NHS Trusts (equivalent to at least 18% of NHS Trusts) and healthcare organisations, including more than 100 hospitals. We have so far introduced within the software a new diabetes team handover dashboard and a flagging feature for newly admitted diabetes patients. More recently, we have successfully introduced the new flagging system for discharged patients needing follow-up.

Our initiatives have shown a significant impact on the safety of diabetes inpatients, from the point of admission to follow-up on discharge. This can easily be applied in other hospitals using NerveCentre, as the initiative designs are readily accessible and easily applicable for any hospital diabetes care. In addition, the design is very simple and therefore can also be translated into other NHS software. The key thing is the intention of the flagging system, which is to ensure that no diabetes patients that need follow-up post-discharge are missed by the team.

As the new software had already been agreed for hospital use, and there is always a drive for improvement and feedback, these initiative proposals were very much welcomed by the company and hospital. Cost was therefore not incurred on the department. More importantly, the simple yet effective design of these initiatives make them very sustainable and they can easily be adapted by other hospitals, regardless of the available software in their Trusts.

Feedback

The new inpatient diabetes care features introduced into the hospital electronic system have been well received by healthcare members and patients. We have received positive feedback from the diabetes in-reaching nurses (DISN) and patients. The DISN felt that the new electronic system reduced the manual effort needed to trace and follow up discharged patients (Figure 1 and 4). With efficient notification on patients' discharge, the team feels reassured that patients are being followed up quickly, appropriately and safely. There is also a lower risk of missed patient follow-up.

The team also feels more 'in control' with their telephone clinic list as they are able to triage discharged patients more effectively. With this triage, patients are seen accordingly based on the urgency of their need, thereby ensuring patients' safety and diabetes management optimisation post-discharge. Community DSNs also commented on the more timely referrals to them since the introduction of this new system.

We collected feedback from patients during their telephone follow-ups. Feedback was very positive, including:

i   Very helpful to be followed up after the initiation of diabetes treatment and education

ii   Thankful that they are being followed up timely

iii   Feels safe as there is a safety net setting and contact number available if needed

Our effort in these initiatives has been recognised locally by the Trust. More recently, we also won the prestigious national 'Insulin Safety Week Excellence Award 2022' (organised by QiC Diabetes and Sanofi), which is made possible with the introduction of this new diabetes dashboard function within the software.

Learning

One of the biggest learning points we took from this project is the importance of early and active involvement, as well as perseverance, when it comes to implementing new features or

Figure 5. The Inpatient Diabetes Team of Luton and Dunstable University Hospital

Key messages

▲ Prompt and effective identification of diabetes inpatients allow safer diabetes patients' management and follow-up when discharged from hospital.

▲ It is important to make full use of the technology available in improving patients' safety and care.

▲ A good understanding of the existing service and available resources, as well as early and active actions, are crucial for success in implementing changes within a hospital.

changes within the hospital. When the new software was introduced to the hospital, we took an early proactive role in implementing the new diabetes safety features. We worked closely with the software/IT teams, organising regular meetings and trialing several versions before finalising one to go live. With great teamwork and perseverance, we were able to achieve our initiatives within a reasonable period of time.

Another aspect that contributed to our success in these initiatives was our good understanding of which aspects of diabetes care needed to be improved within our hospital. Before the introduction of NerveCentre, relentless manual and laborious efforts were put in by the team to ensure patients' safety; over time, we were able to identify the gaps and improvements that needed to be addressed. We were also well aware of what resources and follow-up pathways are available, both in the primary and secondary care settings. With this strong understanding and experience, we were quickly able to suggest diabetes care proposals and expectations for the new software when it was launched in the hospital. Our clear vision allowed the new systems to be developed effectively and applied immediately in the clinical setting.

Lastly, it is important to make full use of the technology available in improving patients' safety. We could easily stick to our 'old manual' system for the comfort of familiarity, but we knew that this would not be sustainable in the long run. Further, it would not improve patients' safety or be cost- and time-effective. We jumped on board immediately, therefore, when the opportunity to change arose.

Conclusion

Our diabetes team (Figure 5) has worked very hard and closely with the software company and hospital IT department in developing these new diabetes features on NerveCentre, with the main intention of optimising inpatient diabetes care from the point of admission through to discharge and follow up. The design of this initiative is simple and cost-effective, but yet the impact on the patients' diabetes management and safety is prominent, as is evident from our data collection. We are grateful to be awarded as the Winners of the prestigious Rowan Hillson Inpatient Safety Award 2023, and we hope that this will serve as a platform to allow greater exposure of this project idea to other healthcare professionals.

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