Joint British Diabetes Societies for In-Patient Care (JBDS-IP)

The Rowan Hillson Inpatient Safety Award 2019
Best Perioperative Pathway for People with Diabetes

How to enter:

1. Email your completed entry to: Christine Jones, JBDS Administrator at christine.jones@nnuh.nhs.uk

   All entries must be emailed by: 06.03.20

2. Please submit any supplementary materials to support your initiative, as these will be considered as part of the judging process.

3. **Please note this competition is only for projects undertaken in the last 3 years i.e. since 1.1.2016.**

Your contact details:

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Post: Consultant in Diabetes and Metabolic Medicine

Trust name and address where work was undertaken: Newcastle University Hospitals NHS Foundation Trust.

Additional contributors:

Emma McCone on behalf of Pre-op assessment services
Dr Karuna Kotur and Dr Ben Goodman behalf of the anaesthetic department and theatres
Ms Lucy Wales and Angela Adams on behalf of surgery and surgical wards
Dr Ayat Bashir who completed and analysed the audit data
Kim Patience and Helen Young on behalf of the inpatient diabetes specialist nurse team.
Lorna Clarke and Andy Green on behalf of pharmacy
Louise Mosettig on behalf of day case surgery.
Sharon Thompson on behalf of Critical Care .

Title of entry (10 words maximum)

Making Surgery Safer for people with Diabetes.

Brief summary of entry

Provide a short summary of your initiative in **no more than 200 words (The box will expand)**

Despite national guidelines (JBDS, ASGBI, AAGBI, BADS), peri-operative diabetes care is often inadequate. In 2016, surgical wards were recognized as the highest risk area for diabetes patients in our trust, with inadequate peri-operative planning (66%), high rates of medication errors (41%), hypoglycaemia (27%) and datix incidents/patient harm events.

We embarked on a 3-year quality improvement campaign as a multi-specialty, multi-disciplinary group bringing together key staff involved in delivering the peri-operative pathway. Our aim was to transform the safety of surgical patients with diabetes across our trust by addressing systems and processes underpinning the patient journey from referral to discharge. We developed trust-wide policies and protocols for the delivery of high-quality peri-operative diabetes care, educational initiatives and targeted diabetes specialist nurse in-reach. Combining these initiatives with innovative electronic whiteboard alerts for glycaemic control, and electronic hypo alerts, the safety of diabetes surgical patients was transformed.

We reduced pre-operative overnight admissions for poorly controlled diabetes patients, whilst improving glycaemic control for all patients on day of surgery. Insulin errors and hypoglycaemia on surgical wards has been reduced by > 50%, with evidence of reduced Datix incidents/patient harm events. Surgical wards are now the safest place for diabetes in-patients in our trust.

Background/Situation analysis/Innovation (300 words maximum)

Briefly provide the background and rationale for the initiative. From this the judges should be able to understand why there was a need for the initiative to be undertaken. Explain what makes your initiative innovative or pioneering.

Diabetes affects more than 15% of the UK surgical population. Despite national recognition that high quality peri-operative diabetes care improves outcomes, people undergoing surgery often receive inadequate diabetes care. The National Diabetes inpatient Audit (NADIA) reports that nationwide about 1 in 3 patients experience a diabetes related medication error, 1 in 6 have hypoglycaemia and 1 in 12 severe hypoglycaemia.

Newcastle NHS Foundation Trusts is the highest volume Trust for surgery, with more than 76000 surgical episodes per year, 15% with diabetes. Surgical wards were the highest risk areas for diabetes in our trust, with inadequate peri-operative planning (66%), high rates of insulin error (31%), hypoglycaemia (27%) and other diabetes harm events. Improving peri-operative diabetes care was identified as a key priority when the Trust enrolled in the national Sign-Up-to-Safety campaign.

Over a 3 year period we used a multispecialty MDT approach to transform the processes underpinning the diabetes surgical patient journey from referral to discharge. We developed trust wide policies and protocols based on national

guidelines for best practice (JBDS, ASGB!, AAGBI, BADS). Key areas targetted included pre-operative care planning,glycaemic control in theatre and recovery, handover practices, surgical ward management and diabetes discharge planning.

We identified risk areas such as hypoglycaemia and worked with IT colleagues to develop electronic diabetes support solutions such as electronic sugar cube alerts and automatic hypoglycaemia alerts to the diabetes nurses.

A key to success was to incorporate clinical stakeholders into the MDT leadership group, meeting every 6 weeks over 3 years. All members were recognised as leaders and changed practice in their own clinical areas. Feedback enabled peer support for ongoing challenges, the opportunity to share learning and further development of the pathway.

This group continues to meet and further advance the quality of peri-operative diabetes care.

Objectives (200 words maximum)

State clearly the objectives of the initiative(s).

Our aim was to reduce diabetes related harm events in patients undergoing surgery by >50% over a 3 year period from 2016-2019 by using an MDT led quality improvement campaign. The delivery involved;

1. Understanding the journey for a patient with diabetes through the perioperative pathway and outlining risk.
2. Measuring the baseline quality of care in all parts of the pathway.
3. Using multidisciplinary multispecialty dialogue and expertise of people working in each area to customise the perioperative pathway to be deliverable.
4. Developing diabetes specific handover tools to enhance patient safety as they move from one clinical area to another.
5. Utilising quality improvement including re-audit, PDSA, feedback and analysis of incident reporting as measurements of change in practice and to feed this into the ongoing design and implementation of pathways.
6. Providing specific multidisciplinary education to all levels of clinical practitioner through departmental meetings, drop in sessions, doctors teaching sessions, patient safety briefings and departmental clinical governance meetings. Particular focus has been on engaging consultant anaesthetists and surgeons.
7. To develop innovative technological aids such as electronic sugar cube displays and automatic hypo alert systems to aid identification

of the diabetes “at risk” patient.

Project plan/methods (400 words maximum)

Please outline the method(s) you used to achieve your objectives. The judges will also be looking for a clear rationale for your method(s).

Development of customised Peri-operative Diabetes Guidelines.

The first draft of the perioperative pathway was adapted from JBDS, ASGBI, AAGBI and BADS guidelines by an anaesthetist, a diabetes consultant and a pre-operative assessment clinic (PACS) nurse. The Pathway was arranged into sections for adoption in specific clinical areas (See supplementary file), and made easily identifiable by colour coding.

Guidelines for surgical ward care were developed and piloted by collaboration between the vascular surgery team and diabetes team before being launched trust-wide. The pathway was refined by the peri-operative MDT. It includes the domains:

- **Pre-operative assessment and admission**
  - Individualised written care plans provided for all patients for their diabetes management prior to and during admission discussed at pre-op assessment clinic.
  - Assessment tool for Day of Surgery patient admission.
  - A decision aid for insulin /glucose infusions for anaesthetists.
- **Theatre and recovery**
  - Anaesthetic/recovery guidelines for theatre nursing staff and orderlies
  - Ward handover document to confirm whether subcutaneous insulin has been given in theatre/recovery and guidance for ward staff regarding planned eating and the post-op diabetes plan.
- **Post-operative ward care**
  - Diabetes handover care plan to guide ward staff on the ongoing plan for food and medication.
  - Guidelines for surgical ward diabetes care.
    - Tool for junior doctors on diabetes medication titration
    - Criteria for diabetes specialist nurse referral.
- **Discharge**
  - Advice on discharge planning including “Right insulin Right device” and organisation of ongoing footcare where needed.

"Plan Do Study Act": Use of Audit and PDSA cycles to amend the care pathway.

Surgical specific NADIA outcomes were provided on request from the National team. We developed a customised audit tool to gain additional detail in the quality of care in all parts of the pathway. Detailed analysis of hypoglycaemia on the vascular surgical ward was assessed using PDSA cycles.

Electronic Sugar cube alerts and Hypoglycaemia alerts.

Despite guidelines and education, medication errors and hypoglycaemia continued. The sugar cube alert was initiated as a hand drawn icon on the handover whiteboard, indicating out of range blood glucose levels requiring adjustment of diabetes medication. An electronic whiteboard version was developed linking downloaded blood glucose levels to the appearance of a colour coded sugar cube indicating hypo or hyperglycaemia to prompt the clinical team to review the electronic blood glucose chart.

The downloadable blood glucose system was adapted to send automatic alerts to the diabetes nurses when patients had glucose levels <4.0 mmol/l, facilitating discussion with the surgical team to prevent hypoglycaemia.

Evaluation and results (400 words maximum)

Use this section to report the results and demonstrate how you measured the success of your initiative/project

Pre-operative diabetes care planning substantially improved (82% vs 33%) with reduction in overnight admissions for people with diabetes (15% vs 35%). This has resulted in 200 surgical bed days saved per year with annual cost savings of >£60,000.

Theatre and recovery monitoring improved, reducing pre -operative and intraoperative hypoglycaemia (0% vs 14%) and hyperglycaemia (1% vs 58%).

Surgical ward handover processes improved and the innovative sugar cube whiteboard alert system enabled appropriate medication action and specialist support. Electronic alerts for insulin were also sent to pharmacy staff to enhance reconciliation processes and specialist teams alerted for any patients experiencing recurrent hypoglycaemia. These changes had tremendous impact, reducing surgical ward medication errors (17% vs 41%), prescribing errors (7% vs 10%), all hypoglycaemia (17% vs 31%) and severe hypoglycaemia (5% vs 10%), whilst maintaining high levels of patient satisfaction (96%).

Peri-operative diabetes DATIX incident reporting initially increased and then decreased and has continued to fall. Analysis of the reports suggested that they were arising as staff felt empowered to document when they observed the guidelines were not being adhered to.

Impact (300 words maximum)

Describe the impact of the initiative(s) for inpatients with diabetes and how this was measured.

The rationale for the project was to improve the patient safety and experience for people with diabetes undergoing surgery. Patients had indicated that they were frustrated about being admitted day before surgery "only for someone to mess up my diabetes" The planning of their diabetes care by a well informed PACS nurse and the option for most patients to take home a wrtitten plan of what to do with their medication and then to come in on the day of surgery has been very popular.

The reduction of inpatient hypoglycaemia has resulted in reduction of postponed surgical procedures and less post-operative hypoglycaemia which improves the patients experience in addition to their safety.
Reduction in overnight admissions (15% vs 35%) resulted in 200 surgical bed days saved/year with annual cost savings of >£60,000.

Using the NADIA patient questionaires to assess satisfaction, in 2018 following the introduction of the perioperative initiative, 96% of those on surgical wards reported being satisisfied or extremely satisfied with their care. This is higher than the rest of the hospital and higher than the national figure.

Adaptability, Cost and Sustainability (300 words maximum)

How easily could your initiative(s) be adapted to other hospital Trusts? Please state whether any other Trust(s) has adapted your initiative(s) and/or any steps you have taken to promote wider dissemination of your initiative(s).

Please demonstrate the sustainability of your initiative(s). Include the cost incurred and the source of funding i.e. acute trust or CCG or any other means. Describe the process by which the funding has been sought and the challenges experienced.

Spread across our organisation was achieved by MDT communication and feedback, targeting trust patient safety briefings, clinical risk groups, specialty governance meetings and matron forums. Key initiatives were supported by poster campaigns and rolling educational initiatives for MDT frontline staff. Feedback reports were obtained for surgical Datix incidents. Patient harm events were targeted as shared learning opportunities at Safety Briefings. All this can be achieved in any trust.

Newcastle Trusts use a GKI based IV insulin protocol which would need to be adapted by other trusts to VRII, but it is the approach not the clinical detail that we feel could be adopted.

Our whiteboard alert sugar cube system was piloted on standard ward

whiteboards with minimal resources with success. We collaborated with our trust electronic whiteboard team, enabling roll-out of the alert system in electronic format to all wards in our trust. Other organisations would be able to replicate our novel alert system, even in the absence of electronic whiteboards.

Every opportunity has been taken to share our learning at trust, regional and national level, enabling spread through and across organisations (NVS, ASIT, ASGBI, VS).

We work with "TEAPOT" a northern region perioperative working group to share ideas around perioperative diabetes care.

Costs and Savings

Sign-up-to-Safety provided the initial platform and executive support to get the team around the table. The group's enthusiasm and vision and positive feedback from patients and colleagues has driven continuation. We seek opportunity to link with Trust initiatives such as electronic white boards to ensure diabetes care is the first area to benefit!

Is it labour intensive? We met from 4pm-6pm every 6 weeks. This was considered worthwhile for the outcome.

We estimate £60,000 saved through reduced length of stay

Learning (300 words maximum)

One of the main aims of the competition is to enable learning and sharing of initiatives for the benefit of inpatients with diabetes. Use this section to outline any learning(s) that can be taken from the initiative(s) and/or challenges faced along the way that could be transferred to other Trusts looking at introducing similar initiatives.

The backbone of this project was the acknowledgement of the initial problem and the identification of a group of people with a passion to improve things. This can be achieved in any trust. We found the team model of MDT leadership extraordinarily effective in achieving the necessary joined-up cross specialty approach required to effectively co-ordinate the entire pathway of care for surgical diabetes patients and to maintain ongoing engagement. Change led from within each department is key.

The PDSA approach enabled us to review and quality improve in a timely fashion, recognising areas that have not benefitted and adapting the process. For example we initially saw little impact on quality of diabetes care on surgical wards despite increased DSN presence. The recognition of issues regarding handover of hypoglycaemia events which subsequently resulted in

eth sugar cube initiative and hypo alert initiative was an example of a critical PDSA approach.

We have empowered frontline staff with the knowledge and support to deliver effective safe diabetes peri-operative care. By improving alert systems for poor glycaemic control we have ensured our highest risk patients are identified at the right time with the right action taken. Medication errors and hypoglycaemia have fallen dramatically which is likely to realise further cost savings in the longer term by reducing length of stay and improving surgical outcomes.

The shared leadership model with no one as head of the project has kept the group engaged and the continued sharing of ideas from different specialties has been key. We believe every Trust needs a perioperative diabetes working group to represent the diverse group of health care workers involved in delivering the pathway effectively. Our next aim is to include our primary care colleagues and develop ways to improve diabetes fitness for surgery.

Feedback from staff and patients (300 words maximum)

Please include a summary of any patient feedback and evaluations of the initiative(s). It will be helpful if you can provide (as supporting materials) the tools used to gather this information. If available please include summary of staff feedback to demonstrate their perspective on the initiative(s)' impact on the care of inpatients with diabetes in relation to improved insulin and prescribing safety.

In 2019 the Peri-operative Diabetes working group were finalists in the Trust's celebrating excellence awards for quality, improvement and sustainability in recognition of the impact that the project has across the Trust.

We were one of 2 projects selected by the Chief executive to present at the Trust leadership conference as an example of success through collaboration and leadership (presentation attached)

Staff feedback to the DSNS has indicated that frontline nurses particularly in pre-op suite and in theatre and recovery have been much clearer on what good care looks like and because of the clear guidelines have felt able to highlight to more senior staff when they have "strayed from the guidelines" and empowered to correct them.

Patient satisfaction has been monitored using the annual NADIA patient survey to review patient satisfaction for all diabetes in-patients in our trust. Patients on surgical wards have consistently reported higher levels of satisfaction with their care with diabetes care at 96% being satisfied or

extremely satisfied, considerably above the national average.

Supporting materials

The judges' core assessment of your initiative will be based on this entry form. However, we do recommend that you ***support your entry*** with relevant materials, as these will be made available to the judges and are often the deciding factor in short listing the finalists.

Supporting materials could include: IT based programmes, pamphlets, booklets, audits, events, reports, journal articles, evaluation documentation, websites etc.

Supporting materials along with your entry form should be submitted by email to christine.jones@nnuh.nhs.uk.

Closing date: 28.02.2020

The winners of the Rowan Hillson Insulin Safety Award 2019: Best Perioperative Pathway for People with Diabetes will be published on the Association of British Clinical Diabetologists (ABCD), Diabetes UK and DISN UK Group websites and will appear and be referred to in future journal articles. By submitting your entry, you will be consenting to your initiative being used for these purposes.