Benefits case study

Use of National Diabetes Inpatient Audit data

Enabling stakeholders to implement service and pathway changes, with the aim of improving quality of care for people with diabetes who are admitted to hospitals

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Version: 1.0

Published February 2017
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1.0 Introduction

1.1 Purpose of case study

The National Diabetes Inpatient Audit (NaDIA) is an annual snapshot audit of diabetes inpatient care in England and Wales and is open to participation from hospitals with medical, surgical, gynaecology wards or intensive care units.\(^1\)

The purpose of this benefits case study is to describe:

- the service and pathway changes in inpatient diabetes care services that hospitals and trusts have initiated as a result of NaDIA findings; and
- the benefits (improvements) that patients and service providers have realised, as a result of the changes.

1.2 Benefit definition

The key focus of this case study is to describe how NaDIA data has helped realise benefits for patients using inpatient diabetes care services. To help ensure there is a clear and transparent understanding of benefits, a definition of benefit is provided below:

- ‘The measurable improvement from change, which is perceived as positive by one or more stakeholders, and which contributes to organizational (including strategic) objectives’ (Jenner, 2014).\(^2\)

Based on an example presented in this case study, the diagram in Figure 1 sets out a graphical representation of the alignment between NaDIA and benefits:

![Figure 1: Alignment of NaDIA data to benefits, based on Peterborough City Hospital](image)

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\(^1\) NHS Digital, National Diabetes Inpatient Audit [online] Available at: [http://digital.nhs.uk/diabetesinpatientaudit](http://digital.nhs.uk/diabetesinpatientaudit) [Accessed 17 August 2016]

2. National Diabetes Inpatient Audit

2.1 Audit overview

The National Diabetes Inpatient Audit (NaDIA) is commissioned by the Healthcare Quality Improvement Partnership (HQIP) and delivered by NHS Digital, working with Diabetes UK. The first publication of this report was in 2010 and sets out to measure the quality of diabetes care provided to people with diabetes while they are admitted to hospital, by answering the following questions:

- Did diabetes management minimise the risk of avoidable complications?
- Did harm result from the inpatient stay?
- Was patient experience of the inpatient stay favourable?
- Has the quality of care and patient feedback changed since the previous audit years?

2.2 Inclusion Criteria

The National Diabetes Inpatient Audit generally takes place over a few days every year. In 2015, the audit ran between 21 and 25 September 2015, with hospitals conducting the audit on only one day of the allocated week. A patient was included in the inpatient audit if they had a diagnosis of diabetes and had been admitted to a bed for 24 hours or more. Patients on an Obstetric or Paediatric ward were excluded from this audit. Mental Health wards were also excluded due to the high prevalence of long stay patients. Other exclusions included:

- Patients who were hyperglycaemic but not yet formally diagnosed with diabetes
- Accident and Emergency
- Day case ward
- Day surgery unit patients
- Observation ward (if patients had been admitted for less than 24 hours)
- Surgical short stay unit (if patients had been admitted for less than 24 hours)
- Palliative care centres
- Community Hospitals

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2.3 Key findings from The National Diabetes Inpatient Audit 2015 report

The National Diabetes Inpatient Audit collects a wide range of information about patient harms during an inpatient stay as well as patient opinions on how well their diabetes was managed. Examples of findings highlighted in the National Diabetes Inpatient Audit 2015 report, which continue to prompt the quality improvement work being undertaken by the hospitals in this study, include:

**Diabetes teams and staffing**
- Almost one-third of sites in the audit have no diabetes inpatient specialist nurse (DISN) available (31.1 per cent), with no increase since audit inception.\(^4\)
- 35.5 per cent of inpatients with diabetes were seen by a member of the diabetes team.\(^5\)

**Foot care**
- 31.0 per cent of hospital sites do not have a multi-disciplinary diabetic foot care team.\(^6\)
- Two thirds of inpatients did not have a specific diabetic foot risk examination (67.0 per cent).\(^7\)
- Two fifths of inpatients admitted with active foot disease were not seen by a member of the multi-disciplinary diabetic foot care team within the first 24 hours of their hospital stay (40.5 per cent).\(^8\)

**Medication errors**
- 38.3 per cent of inpatient drug charts reviewed in the 2015 audit had at least one diabetes medication error in the previous 7 days.\(^9\)
- 22.2 per cent of inpatient drug charts had at least one prescription error in the previous 7 days.\(^10\)
- 23.9 per cent of inpatient drug charts had at least one medication management error in the previous 7 days.\(^11\)

**Patient satisfaction**
- 14.2 per cent of inpatients stated that they were not able to test their own blood glucose levels but would have liked to.\(^12\)
- 9.3 per cent of inpatients taking insulin for their diabetes reported that they were not permitted to self-administer insulin while in hospital but would have liked to do so.\(^13\)

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\(^5\) Ibid. p.11

\(^6\) Ibid. p.11

\(^7\) Ibid. p.9

\(^8\) Ibid. p.9

\(^9\) Ibid. p.12

\(^10\) Ibid. p.12

\(^11\) Ibid. p.12

\(^12\) Ibid. p.12

\(^13\) Ibid. p.13
3.0 Driver of the National Diabetes Inpatient Audit

In 2007, a diabetic patient died at Stafford Hospital after going into a diabetic coma while being treated for fractures to her arm and pelvis. The hospital pleaded guilty at Stafford Magistrates' Court to failing to properly manage and organise hospital services including its systems for record keeping and sharing patient information between staff members.

In light of this, the first pilot national audit of inpatients with diabetes was undertaken in September 2009, which had been set up in response to concerns over the standards of care and the clinical outcomes for people with diabetes whilst an inpatient. The audit aimed to provide information on current staffing levels, the standards of care provided and the size of the problem in terms of patient numbers, morbidity, harm and patient experience.

4.0 National Diabetes Inpatient audit aim and objectives

The National Diabetes Inpatient Audit (NaDIA) was established in 2009 to:

- provide quality information to the NHS about standards of care for people with diabetes who are in hospital
- assess and compare the quality of care and experience people with diabetes receive from providers to support service improvement and benchmarking of services to support reductions in variability of care
- to drive service improvements and to support planning, policy making, commissioning, regulation and research and governance.

5.0 Publication users and uses of the NaDIA data

This section describes how a sample of stakeholders have used the annual National Diabetes Inpatient Audit publication data to drive improvements within their care settings.

5.1 Doncaster Royal Infirmary

Service changes

Annette Johnson, Lead Nurse Diabetes & Endocrine Service at Doncaster Royal Infirmary, explained that the following the review of NaDIA data from the previous year, a pilot Diabetes In-patient Nursing Team was employed within the hospital in 2013, which due its success was permanently embedded as a fixed service thereafter. A consultant at the hospital had been trying to implement a Diabetes Inpatient Specialist Nurse (DISN) Team for a long time and the NaDIA data stood as a driving force in reaching this goal. The general role of DISN Teams within hospitals are to provide:

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• Clinical care
• Education
• Developing guidelines
• Administration/organisation

The DISN team is now invaluable in supporting the ward staff and many non-endocrine consultants are now showing support for the service.

Since 2014, the hospital has developed hypoglycaemia protocol and a new diabetes Keto-Acidosis Integrated Pathways of Care (IPOC), with all emergency care group staff now receiving an annual training updates on both of these. Education remains of paramount importance and the DISN team are encouraged to educate staff at every opportunity, both inside and outside of formal sessions.

Measurable benefits
The above improvement strategies have contributed towards the following improved results in 2015:

<table>
<thead>
<tr>
<th>Area of Improvement</th>
<th>2013 (%)</th>
<th>2015 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication errors</td>
<td>55.6</td>
<td>32.9</td>
</tr>
<tr>
<td>Prescription errors</td>
<td>35.2</td>
<td>27.1</td>
</tr>
<tr>
<td>Management errors</td>
<td>48.1</td>
<td>15.3</td>
</tr>
<tr>
<td>Insulin errors</td>
<td>25.9</td>
<td>10.6</td>
</tr>
<tr>
<td>Foot risk assessment within 24 hours</td>
<td>6.2</td>
<td>65.3</td>
</tr>
<tr>
<td>Foot risk assessment during stay</td>
<td>9.9</td>
<td>75.0</td>
</tr>
</tbody>
</table>

5.2 Peterborough City Hospital
Service changes
Lynda Whittle, Diabetes Inpatient Outreach Nurse at Peterborough City Hospital, explained that the Trust has come a long way in how they manage inpatient diabetes.

Prior to 2013, the Trust employed a Community Diabetes Nurse to attend the hospital and see patients who were referred on their referral system. The problems with this service were that:

• It was a very ad-hoc service and very reactive
• Diabetes inpatients did not have a specialist nurse on site as the nurse was based in the community
• The Community Diabetes Nurse was often difficult to contact
• Adverse events were increasing

After reviewing the above issues in combination with the hospital level data from the NADIA audit, the hospital was inspired to employ their own Diabetes Inpatient Specialist Nurse (DISN).
The aim was for the DISN to:

- Work alongside the Community Diabetes Nurse and wear a uniform (the community DSN did not) in order to be visible on the wards
- Be accessible and contactable and assist with diabetes management in all adult areas
- Provide mandatory education for all nurses on diabetes inpatient care as well as all new staff entering the Trust and all junior and senior medical staff.

After a year, Peterborough decided to employ another full time diabetes nurse as the role had expanded so rapidly and improvements were being observed, such as:

- Shortened length of stay for diabetes inpatients
- Admission avoidances
- Doubled patient referrals to the DISN
- Diabetes Link Nurse Study Days had become far more popular, with over 30 nurses regularly attending 3-4 times a year.

The hospital now has 3 Whole Time Equivalents (WTEs) within the Diabetes Nursing Team who provide a visible, dedicated and pro-active diabetes specialist presence from 7am to 5pm Monday to Friday and 7am -3pm at weekends.

Hospital diabetes guidelines are also now regularly updated and Peterborough City Hospital have two extremely pro-active diabetes consultants who support and help educate hospital staff in diabetes inpatient care.

Lynda summarised the improvements the hospital has been able to make as a result of the NaDIA data:

Quote:

“I could go on more as we are very passionate about our diabetes team here at Peterborough. We have used the NaDIA audit to our advantage as this has been pivotal in allowing us to benchmark our care locally and nationally.”

Lynda Whittle, Diabetes Inpatient Outreach Nurse, Peterborough City Hospital

### Measurable benefits

The above improvement strategies have contributed towards the following improved results in 2015:

<table>
<thead>
<tr>
<th>Area of Improvement</th>
<th>2013 (%)</th>
<th>2015 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication errors</td>
<td>42.6</td>
<td>29.0</td>
</tr>
<tr>
<td>Management errors</td>
<td>35.2</td>
<td>13.0</td>
</tr>
<tr>
<td>% Severe hypo</td>
<td>10.3</td>
<td>3.3</td>
</tr>
</tbody>
</table>

15 Link nurses support many areas of specialist nursing practice and provide education to colleagues, participate in the education of patients and identify patients’ areas of concern by carrying out ongoing audits amongst other responsibilities.
5.3 St Mary's Hospital (Isle of Wight)

Service changes

Phil Mannall, Inpatient DSN at St Mary’s Hospital, explained how they had been able to make such excellent improvements within the hospital:

The 2013 NaDIA report highlighted that the hospital had high medication, management, prescription and insulin errors. To address this, the hospital, after approvals from nurse and pharmacy management and after consultants agreed to policy, initiated the Self-Administration Management of Medicines (SAM) scheme. This scheme was implemented to improve the clinical care of patients\(^{16}\) and covers most medications, including insulin, and aims to:

- Allow patients to have control over administering their medication whilst in hospital, as appropriate on a graded scheme of independence
- Reduce medication errors and improve medicine safety on wards as well as increase patient empowerment.\(^{17}\)

The Diabetes Team started promoting the scheme by announcing a start date on their internet magazine and producing posters for patients advising them to request SAM in hospital and what to bring in to ensure they were equipped for hospital admission. SAM was then promoted by Phil and ward pharmacists, which involved encouraging nurses to use the Self Administration Assessment Tool\(^{18}\) to decide whether a patient was suitable for the scheme.

Phil advised he has been putting together a Diabetes Ward Nurse Day to promote SAM and reinforce how it works and the benefits it delivers to both patients and staff. This year, the Ward Nurse Day will focus on diabetes issues from the patient’s perspective and the hospital hope to have some patients speak out about their hospital experience and how self-administration of insulin under SAM enabled them to effectively control their diabetes during their stay in hospital.

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\(^{17}\) Ibid p.32

\(^{18}\) Ibid p.5
Summary of strategies used in each area by St Mary’s Hospital in order to improve results and patient care

<table>
<thead>
<tr>
<th>Area of Improvement</th>
<th>How improvements have been made</th>
</tr>
</thead>
</table>
| Medication errors   | • Worked closely with Medical Assessment Unit to ensure insulin and diabetes medication is appropriate for patient’s current condition and prescribed correctly on electronic and paper prescription charts (using correct/appropriate device and ensuring timing is correct).  
• Introduced an insulin temporary switch method for patients who are currently unable to self-administer their own insulin so appropriate alternatives can be prescribed and dispensed.  
• Encouraged wards to roll out self-administration of insulin for patients who are able to do this. |
| Prescription errors | • Encouraged wards to roll out self-administration of insulin for patients who are able to do this. |
| Management errors   | • Worked closely with Pharmacy to ensure medication is prescribed and administered correctly |
| Insulin errors      | • Encouraging wards to roll out self-administration of insulin for patients who are able to do this. |
| Seen by the MDFT within 24 hours | • Helped ensure wards communicate effectively with MDFT, encourage use of Podiatry Referral form. |
| Staff aware of diabetes | • Annual Diabetes education day for ward nurses, regular link nurse meetings with learning elements attached, eLearning modules on Diabetes education and SAM.  
• Offering ad hoc tailored education to ward areas or one to one teaching for Nurses, Drs, Nursing/Pharmacy students |

Measurable benefits

The above improvement strategies have contributed towards the following improved results in 2015:

<table>
<thead>
<tr>
<th>Area of Improvement</th>
<th>2013 (%)</th>
<th>2015 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication errors</td>
<td>60.9</td>
<td>25.0</td>
</tr>
<tr>
<td>Prescription errors</td>
<td>47.8</td>
<td>25.0</td>
</tr>
<tr>
<td>Management errors</td>
<td>39.1</td>
<td>0.0</td>
</tr>
<tr>
<td>Insulin errors</td>
<td>47.8</td>
<td>25.0</td>
</tr>
<tr>
<td>Seen by the MDFT within 24 hours</td>
<td>42.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Staff aware of diabetes</td>
<td>72.5</td>
<td>100.0</td>
</tr>
</tbody>
</table>
5.4 Royal Derby Hospital
Medication, Prescription, Management and Insulin Errors

Beverley Eaglesfield, Diabetes Specialist Nurse at Royal Derby Hospital, described how the hospital took action after previous National Diabetes Inpatient Audits showed several ‘below average’ measures, including insulin errors, prescription and management errors. In response to these errors, an Insulin Safety Team was set up which promotes the safe use of insulin and improves general diabetes care for inpatients in the trust. This multidisciplinary focus team addresses insulin errors, prescription and management errors to improve patient safety.

The group includes the Head of Patient Safety, Quality and Improvement, a Consultant Diabetologist, a Lead Diabetes Nurse Specialist and a Senior Pharmacist, supported by the Medical Director. The group reviews all insulin related incidents and covers all diabetes related medication errors, hypoglycemic events and general care of inpatients with diabetes. Initiatives include:

- ‘Safe Use of Insulin’ Training
- Introducing laminated insulin profile forms to all areas, credit card style diabetes information for junior doctors and nurses.
- Ensuring safety information is available on the Trust intranet
- Making changes to electronic prescription (EPMA); sharing lessons learned from incidents through inductions, one stop workshops, link nurse network meetings and weekly prescribing letters
- Ensuring an immediate response to any insulin-related issues and established their role in significantly reducing insulin errors and improving the general care of inpatients with diabetes
- Focusing teaching on insulin safety for junior doctors during their induction and formal training hours

Beverley explained that the ‘Safe Use of Insulin training is essential to the role of all staff prescribing and supplying and administering insulin. This is currently delivered as face to face training but plans are in place to use ‘The six steps to insulin safety’ e-learning also. Developed by the Primary Care Diabetes Society (PCDS) and TREND UK, the aim of the online module is to reduce insulin errors in clinical practice. It was created in response to the National Patient Safety Agency (NPSA) statement in 2010 which wanted a training programme put in place for all healthcare professionals who were expected to prescribe, prepare and administer insulin.19

Foot Risk Assessment During Stay

Previous audits had identified below average levels of foot risk assessments. In response to this, the Trust has implemented the following:

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• The foot risk assessment tool (The Ipswich Touch Test) has been introduced as part of the Inpatient Diabetes Chart. Foot care training and awareness has been cascaded via the link nurse network.
• Daily foot checks are a part of the inpatient chart and both foot risk assessments and daily checks are included in Ward Assurance measures.
• Derby has a particularly pro-active MDT and Inpatient foot referrals are reviewed by the team.
• The consultants have started to provide 7 day cover and this enables for prompt review of all the foot admissions and referrals.

% Severe Hypos
The hospital also managed to reduce severe hypo episodes by focusing on the below:
• Extensive training given in recognising and treating hypoglycaemia in inpatients.
• Hypoglycaemia guidelines published on the Trust intranet
• All inpatient and clinic areas have hypo boxes
• Daily hypo reports produced using the inpatient blood glucose monitoring system to facilitate early intervention and prevent further and severe episodes of hypoglycaemia.
• Electronic referral to DISNs ensures prompt and appropriate action
• Plans are in place for Electronic patient records which will flag up hypo risk in relation to insulin and sulphonylureas

All of the above measures have been introduced alongside 7 day working by the Diabetes Team to ensure prompt interventions and management.
Beverley concluded:

Quote:
“We strive as a team to improve our inpatient diabetes care. The audit provides a way of measuring the improvements we are making and enable us to focus on specific areas.”
Beverley Eaglesfield, Diabetes Specialist Nurse, Royal Derby Hospital

Measurable benefits
The above improvement strategies have contributed towards the following improved results in 2015:

<table>
<thead>
<tr>
<th>Area of Improvement</th>
<th>2013 (%)</th>
<th>2015 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication errors</td>
<td>41.4</td>
<td>27.1</td>
</tr>
<tr>
<td>Prescription errors</td>
<td>14.9</td>
<td>8.3</td>
</tr>
<tr>
<td>Management errors</td>
<td>29.9</td>
<td>19.8</td>
</tr>
<tr>
<td>Insulin errors</td>
<td>20.7</td>
<td>10.4</td>
</tr>
<tr>
<td>Foot risk assessment during stay</td>
<td>17.1</td>
<td>50.0</td>
</tr>
<tr>
<td>% Severe hypo</td>
<td>9.8</td>
<td>4.4</td>
</tr>
</tbody>
</table>
6.0 Other improvement initiatives

6.1 Ipswich Hospital NHS Trust

Ipswich Touch Test (IpTT)

Ipswich Hospital has implemented many improvement strategies since the National Diabetes Inpatient Audit began in 2009, most specifically to the foot care aspects of inpatient diabetes care. Hospital patients with diabetes experiencing loss of protective sensation are at risk of foot ulcers that can cause considerable suffering, possible amputation and costly treatment.20

The National Diabetes Inpatient Audit (NaDIA) in 2010 and 2011 showed respectively that:

- Only 27.5 per cent and 22.4 per cent of diabetes inpatients had their feet checked during the course of their hospital stay21.

As a result of the NaDIA statistics, the Ipswich Hospital NHS Trust devised a project to involve the person with diabetes and their relatives in their own care by having them undertake an examination at home using the Ipswich Touch Test (IpTT). The test involves lightly touching the tips of the first, third and fifth toes of each foot, with the patient’s inability to feel two or more of these touches signifying neuropathy or loss of protective sensation.

Success of the initiative

The Touch the Toes Test, known officially as the Ipswich Touch Test, was designed by Gerry Rayman, Consultant Physician and Diabetologist, and the diabetes team at Ipswich Hospital. It is used alongside with a “foot of the bed” form, which contains instructions for how to use the test, a chart for findings, a risk factor assessment and a referral pathway for those at risk.

The scheme had the backing of Nurses and care assistants on launch, with them commenting that they felt empowered to act quickly. The number of patients whose feet were examined jumped from 27 to 85 percent. Hospital acquired diabetic foot lesions fell by 62 per cent.

The cost of the scheme was estimated to be no more than £2,000, while the fall in ulcers represented a saving in excess of £100,000 per year.22

Judges commended the “simple but effective” technique and noted that it was highly transferable. It is now a widely-used tool amongst both Ipswich Trust and other trusts and won the Patient Safety HSJ award in 2012.

Measurable benefits

The below results show how the Ipswich Touch Test initiative has helped to improve foot care for inpatients with diabetes within Ipswich Hospital NHS Trust since 2010, shortly after the audit began:

<table>
<thead>
<tr>
<th>Area of Improvement</th>
<th>2010 (%)</th>
<th>2015 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seen by the MDFT within 24 hours</td>
<td>75.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Foot risk assessment within 24 hours</td>
<td>35.1</td>
<td>79.1</td>
</tr>
<tr>
<td>Foot risk assessment during stay</td>
<td>50.0</td>
<td>90.7</td>
</tr>
</tbody>
</table>

6.2 University Hospital Southampton NHS Foundation Trust

Minimum standards of care

In response to observations from the NaDIA audit results as well as clinical events and knowledge gaps among some clinical staff, Dr Mayank Patel, lead consultant in diabetes at University Hospital Southampton NHS Foundation Trust, felt that something different needed to be done in order to improve diabetes care for inpatients.

Dr Patel and his team recently worked on a set of standards to ensure patients with diabetes receive the specialist care they require when in hospital. The standards include a number of simple processes which can be rolled out across hospital wards for all staff regardless of specialty, such as:

- Including the use of a ‘ThinkGlucose’ logo on patient status boards on wards to identify anyone with diabetes.23
- Nurses and doctors ensuring that a foot disease assessment is carried out within 24 hours of admission and that results are recorded
- Ensuring that insulin or oral diabetes medications are given at or before mealtimes as recommended
- Providing initial, immediate and appropriate action for managing hypoglycaemia and hyperglycaemia
- Managing referrals to the inpatient diabetes team when required
- Carrying out patient reviews, providing educational materials for staff, patients and families and a diabetes discharge plan where necessary
- Investigating and disseminating learning from incidents and review any re-admissions due to uncontrolled diabetes with healthcare partners in the community

The benefits of the standards scheme are that:

- Patients are encouraged to take responsibility for ensuring they inform staff if they require diabetes support
- Clinicians and their patients are given the best foundation to provide the right care for the duration of a hospital admission

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• Guidance is provided for all medical and nursing staff on what steps to take to meet patients’ needs
• The scheme can be rolled out across hospital wards for all staff regardless of specialty

The minimum standards of care for all adult patients with diabetes are as follows24:

Ward staff (medical and nursing) commitment
• All patients with diabetes on the ward will be identifiable to all ward staff by utilising the ‘Thinkglucose’ logo on the patient status at a glance boards
• Initial, immediate and appropriate action will be taken for managing hypoglycaemia and hyperglycaemia before referring to the diabetes team
• All patients’ feet will be assessed and results documented within 24 hours of admission for signs of foot disease and the patient will be referred for specialist assessment as appropriate
• Safe practices for using insulin (in accordance with insulin guidelines) will be observed at all times
• Bolus or pre-mixed insulins or oral diabetes medications will be given before or at mealtimes as recommended in the manufacturer guidance
• Insulin will always be prescribed even when patients are self-administering
• The self-administration of insulin will be supported where appropriate
• Patients will be referred to the diabetes team for review as needed
• Ward staff will be kept up to date with diabetes where necessary.

Diabetes inpatient team commitment
• A diabetes patient review will be provided where indicated
• Diabetes educational material will be provided for staff, patients, carers and relatives where necessary
• A diabetes discharge plan will be provided where necessary
• Learning from incidents related to diabetes will be disseminated
• Re-admissions to the trust within 30 days due to uncontrolled diabetes will be reviewed and plans put in place with community providers to prevent further admissions.

Patient commitment
• To inform staff if they need diabetes support.

DiAppBetes

The audit results also influenced Dr Patel to work with Dr Sanjay Gupta, acute medicine and diabetes consultant, on the DiAppBetes25, a smartphone app launched in February, 2012 to improve the treatment of patients with diabetes while they are in hospital. The app was

25 NHS Digital does not endorse or recommend any commercial products, processes, or services mentioned within this case study. Mention of any of these is to provide the reader with real life examples of where benefits have occurred.
Benefits case study

designed to provide information to support non-specialist doctors and nurses and act as a decision support tool for staff looking after diabetic patients in hospital. The app provides key information to help support non-specialist doctors and nurses treating patients with the condition. The app gives users information on the safe and effective use of insulin and dose adjustment advice as well as providing a search tool which offers guidance on different treatments and advice on circumstances that warrant specialist input.

The app was created for medical staff members who may not have the expertise to manage a patients’ diabetes alongside other conditions, therefore increasing the risk of insulin errors which could seriously affect a patient’s health. To reduce these errors and increase patient safety, the app provides:

- Guidance and advice on how to prescribe insulin
- Guidance and advice on how to manage hypoglycaemia depending on the severity of the hypoglycaemic episode and the condition of the individual
- A summary of all insulins and non-insulin-based treatments
- A “traffic light system” checklist to use when deciding when a patient should be referred to a specialist.

Ultimately, it is hoped the app will help patients’ diabetes to be managed more effectively and ensure complex patients are referred to the inpatient diabetes team more promptly, in turn reducing unnecessary extra stays spent in hospital.

**Measurable benefits**

Since the app was launched in 2012, the University Hospital Southampton NHS Foundation Trust has demonstrated improvements in many areas of inpatient diabetes care. It is hoped that the recent Minimum Standards of Care scheme will continue to improve results across the trust which will hopefully be visible in the 2016 NaDIA results.

<table>
<thead>
<tr>
<th>Area of Improvement</th>
<th>2011 (%) (Pre-app)</th>
<th>2015 (%) (Post-app)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication errors</td>
<td>53.7</td>
<td>39.2</td>
</tr>
<tr>
<td>Prescription errors</td>
<td>35.4</td>
<td>21.7</td>
</tr>
<tr>
<td>Management errors</td>
<td>32.9</td>
<td>22.5</td>
</tr>
<tr>
<td>Insulin errors</td>
<td>31.7</td>
<td>23.3</td>
</tr>
<tr>
<td>Foot risk assessment within 24 hours</td>
<td>8.3</td>
<td>64.9</td>
</tr>
<tr>
<td>Foot risk assessment during stay</td>
<td>13.0</td>
<td>66.9</td>
</tr>
<tr>
<td>Able to take control of diabetes care</td>
<td>42.7</td>
<td>64.8</td>
</tr>
<tr>
<td>All or most staff know enough about diabetes</td>
<td>51.4</td>
<td>66.4</td>
</tr>
</tbody>
</table>
7.0 Comments from the Clinical Lead

Audit lead clinician, Dr Gerry Rayman (Consultant Physician and Head of Service at the Diabetes and Endocrine Centre at Ipswich Hospital NHS Trust), said: “The audit continues to play an important role in changing the standards of hospital care for patients with diabetes and driving forward changes that can save lives, improve inpatient experiences and save money for hospital trusts.

We have seen a number of successes which include falls in the instances of hypoglycaemic episodes, unnecessary insulin infusions and hospital-acquired foot ulcers. These are, in part, due to the take up of new and more efficient ways of working. The number of hospital sites with care improvement initiatives such as Electronic Patient Records and Electronic Prescribing and a diabetes Mortality and Morbidity meetings are now held in 54 per cent of sites, has increased since 2013.

Each year, we have seen inpatient numbers increasing steadily and, today, more than a third of inpatients in some hospitals have diabetes. There has been little change in staffing levels to accommodate this rise and while overall satisfaction with care is high, the audit shows that there is more work to be done. The audit is stimulating people to ask questions about their hospital care which will also help to drive forward improvements.

While we can celebrate the achievements of the NaDIA, we must continue to focus on reducing preventable and serious complications including severe hypoglycaemia, hospital acquired foot ulceration, diabetic ketoacidosis and hyperosmolar hyperglycaemic state.

Improvements in medicine management, identifying those at risk, educating other health care professionals and implementing best practice will be a focus for specialist teams within hospitals who are committed to delivering an excellent service to patients with diabetes, despite the many demands upon them.”