Developing best practice tariffs for diabetic ketoacidosis and hypoglycaemia

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Best practice tariffs (BPTs) for diabetic ketoacidosis (DKA) and hypoglycaemia have been developed following directly from the publication of the NICE quality standard for diabetes (2011) which states:

‘11. People with diabetes admitted to hospital are cared for by appropriately trained staff, provided with access to a specialist diabetes team, and given the choice of self-monitoring and managing their own insulin.

‘12. People admitted to hospital with diabetic ketoacidosis receive educational and psychological support prior to discharge and are followed up by a specialist diabetes team.

‘13. People with diabetes who have experienced hypoglycaemia requiring medical attention are referred to a specialist diabetes team.’

The BPTs were included in the Payment by Results (PbR) road-test exercise 2012/13 and will be introduced from April 2013 subject to feedback from this exercise. The road-test exercise provides an opportunity for the NHS to test out the new tariff and supports the planning process. The focus of the road test is to gather comments on the draft 2012/13 PbR guidance and PbR code of conduct.

Background

In recent years our understanding of the care people with diabetes receive when they are in hospital has increased dramatically. The National Diabetes Inpatient Audit (NaDIA) has been instrumental in highlighting the vast number of people with diabetes in hospital, and in demonstrating the harm that can befall them while an inpatient, including developing DKA, experiencing a medication error or developing hypoglycaemia. In addition, the National Patient Safety Agency (NPSA) published a rapid response in June 2010 reacting to data showing that, between 2004 and 2009, 3,881 patient safety incidents and four deaths involving incorrect administration of insulin were reported to the NPSA.

A number of measures have been undertaken to try and improve the care for people with diabetes while they are in hospital. In March 2010, the Joint British Diabetes Societies Inpatient Care Group published ‘The Hospital Management of Hypoglycaemia in Adults with Diabetes Mellitus’ and guidelines for the management of DKA outlining the evidence-based care people should expect to receive when admitted to hospital with these acute, life-threatening emergencies. While both documents outline the emergency treatment required, they also emphasise the need for early specialist intervention and outline the rationale for this in terms of both patient safety and reducing length of stay.

While 15% of hospital inpatient beds are occupied by people with diabetes, only 9% are coded as being admitted primarily for a diabetes-related problem, and in 47% of cases this is due to diabetic foot complications. Many more admissions are, in fact, due to problems that have occurred solely because the person had diabetes, or problems that the diabetes has caused to occur sooner, or with more severity than in someone without diabetes. Furthermore, one in three hospital admissions of people with diabetes are not coded as such in hospital episode statistics. However, most glucose-related admissions have a diabetes code. Hospital episode statistics tell us that there were 36,391 admissions with a hyperglycaemic or hypoglycaemic emergency in 2011/12 and the great majority of these were emergency admissions. For DKA, most of these individuals were under the age of 70 years but for hypoglycaemia the majority were elderly. Older age was associated with a greater median length of stay. (Table 1.)

<table>
<thead>
<tr>
<th>Healthcare Resource Group (HRG) and description</th>
<th>Admissions</th>
<th>Male</th>
<th>Emergency</th>
<th>Median LoS</th>
<th>Mean age</th>
<th>Age 75+</th>
<th>Bed days</th>
</tr>
</thead>
<tbody>
<tr>
<td>K11 Diabetes with hyperglycaemic emergency &gt;69 or w cc</td>
<td>7,388</td>
<td>5,357</td>
<td>7,222</td>
<td>2</td>
<td>74</td>
<td>7,092</td>
<td>38,277</td>
</tr>
<tr>
<td>K12 Diabetes with hyperglycaemic emergency &lt;70 w/o cc</td>
<td>4,371</td>
<td>2,855</td>
<td>3,806</td>
<td>1</td>
<td>34</td>
<td>–</td>
<td>7,225</td>
</tr>
<tr>
<td>K13 Diabetes with hyperglycaemic emergency &gt;69 or w cc</td>
<td>4,218</td>
<td>3,454</td>
<td>4,172</td>
<td>4</td>
<td>54</td>
<td>1,642</td>
<td>29,973</td>
</tr>
<tr>
<td>K14 Diabetes with hyperglycaemic emergency &lt;70 w/o cc</td>
<td>7,023</td>
<td>5,678</td>
<td>6,992</td>
<td>2</td>
<td>35</td>
<td>–</td>
<td>21,289</td>
</tr>
<tr>
<td>K15 Diabetes and other hyperglycaemic disorder &gt;69 or w cc</td>
<td>6,381</td>
<td>5,109</td>
<td>5,846</td>
<td>3</td>
<td>69</td>
<td>4,769</td>
<td>38,266</td>
</tr>
<tr>
<td>K16 Diabetes and other hyperglycaemic disorder &lt;70 w/o cc</td>
<td>7,010</td>
<td>5,531</td>
<td>5,711</td>
<td>1</td>
<td>44</td>
<td>–</td>
<td>11,535</td>
</tr>
<tr>
<td>Totals</td>
<td>36,391</td>
<td>27,984</td>
<td>33,749</td>
<td>–</td>
<td>310</td>
<td>13,503</td>
<td>146,565</td>
</tr>
</tbody>
</table>

LoS = length of stay; >69 = patient over 69 years (example); w = with; w/o = without; cc = complications and comorbidities.

Table 1. The NHS Information Centre, Hospital Episode Statistics for England. Inpatient statistics, 2011/12. (Copyright © 2012, reused with permission of the Health and Social Care Information Centre. All rights reserved)
The evidence base

The available evidence suggests that DKA remains a frequent and life-threatening complication of type 1 diabetes, and errors in its management are common and associated with significant morbidity and mortality. Data from the 2010/2011 National Diabetes Audit tell us that the incidence of DKA in adults with diabetes is increasing, with 8472 adults experiencing at least one episode during the audit period. Patients who have been admitted with DKA are 2.764 times more likely to die in the next 21 months than people with diabetes who have not been admitted with DKA.

It has been demonstrated that the involvement of a diabetes specialist team (DST) in the care of those admitted to hospital with DKA shortens patient stay and improves safety. Recommendations have been made that DSTs be involved in patient care as soon as possible during the acute phase. The DST is vital in identifying and assessing the underlying cause of DKA or hypoglycaemia and making decisions regarding the management, discharge and follow up of the patient. Importantly, the DST can offer evaluation of the person’s understanding of diabetes, their attitudes and beliefs.

Best practice tariffs

A best practice tariff (BPT) is a national tariff that has been structured and priced to adequately reimburse and incentivise care that is high quality and cost effective. The aim is to reduce unexplained variation in clinical quality and universalise best practice. A specific approach has been developed for each BPT, tailored to the clinical characteristics of best practice and the availability and quality of data.

The service areas covered by BPTs are selected using the following criteria:

- High impact (i.e. high volumes, significant variation in practice, or significant impact on outcomes).
- A strong evidence base on what constitutes best practice.
- Clinical consensus on the characteristics of best practice.

The process

An initial application was made for the proposed BPT in January 2012. Following positive review, the diabetes policy team at the Department of Health was invited to submit a comprehensive proposal outlining the criteria that would need to be met in order to meet best practice.

The advisory group

In order to proceed with the application, an advisory group was formed. This was made up of representatives from major stakeholder groups in diabetes, the majority of whom had participated in the Joint British Societies DKA guideline writing group. While there was little disagreement among the members of the group as to what represented best practice, it became clear that as well as reflecting best practice the tariff would also, to some degree, need to be pragmatic and achievable. The group did not wish to disadvantage trusts from providing high quality care by making the terms of the tariff too stringent. The specific issues that generated debate at this stage of development centred on the need to provide structured education and access to specialist psychology in a timely fashion after the admission. While everyone accepted that these represent best practice, many concerns were raised with regard to the provision of psychological input where required. The policy team at the Department of Health, in consultation with colleagues from Payment by Results, gathered information and guidance from diabetes specialist psychologists and sought to better understand the provision and funding of specialist psychological services. In the end, the inclusion of specialist psychological intervention proved a step too far. The challenges to inclusion seemed insurmountable, and included lack of access in many areas and block funding of services rather than funding on an individual patient basis.

Tariff criteria

The advisory group agreed on a number of actions that would combine collectively to represent best practice.

During an inpatient admission a patient must:

- Be referred to the diabetes specialist team (DST) on admission, and be assessed within one working day by a member of the DST.
- Have an education review by a member of the DST prior to discharge that should include:
  - Review of usual glycaemic control
  - Review of injection technique/blood glucose monitoring/equipment/sites
  - Discussion of sick day rules
  - Assessment of the need for home ketone testing (blood or urinary) with education to enable this
  - Provision of contact telephone numbers for the DST including out of hours.
- Be seen by a diabetologist or DSN prior to discharge.
- Be discharged with a written care plan: a process that allows the person with diabetes to have active involvement in deciding, agreeing and owning how their diabetes is managed. This should be copied to the GP.

Following discharge:

- Access to structured education must be offered within three months.

The decision to include access to a structured education programme within the BPT was to try and address concerns over poor provision of structured education at some providers and to try to reduce current waiting lists. The advisory group also sought to respond to information suggesting that structured education can reduce admission rates for both DKA and hypoglycaemia. The guidance notes for the BPT explain that structured education should be delivered in line with the criteria laid out in the Diabetes UK ‘Care Recommendation: Education of People with Diabetes’.

Coding

The road-test guidance for the BPTs sets out the sub HRG codes to which the BPTs apply.

Setting the level of incentive

With the draft terms of the tariff in place, the PbR team sought to determine the level of incentive that should be applied to achieve best practice. It became apparent early on that the BPTs for DKA and hypoglycaemia could not
replicate the majority of BPTs by offering one fixed level of incentive for achieving best practice. This is because DKA and hypoglycaemia each cover several sub HRG codes with different tariff prices attached to them. The variation in tariff across these codes is considerable, and therefore setting one BPT price would not be feasible as this would disadvantage some groups, while offering a potential incentive to untoward admission in other groups where the tariff price could have potentially doubled. In order to overcome this situation, it was proposed that the incentive for achieving best practice would be a fixed proportion of the existing tariff price (15%). It was made clear to us from the beginning of the application process that there would be no additional funding associated with the BPT; implementing the BPT could not result in an overall increase in expenditure.

In view of this, it was decided that those trusts not achieving best practice would receive a 15% reduction in the existing base tariff price, while those which did achieve best practice would continue to receive the current base tariff price.

**The implementation**

Using data from the National Diabetes Inpatient Audit, we were able to determine that a significant proportion of organisations could configure their services to establish a specialist team in line with best practice. Other organisations should be able to establish specialist teams as the majority already have a diabetologist, diabetes specialist nurse and dietitian on site.

**Sense check**

The BPT proposals were submitted to the PbR team and subsequently included in the tariff sense-check exercise in autumn 2012. The purpose of the sense check is to scrutinise the draft prices to ensure there are no hidden incentives to perverse clinical practice and to double check the impact of what is being proposed. The response from the sense-check exercise was largely focused on one issue: that of 24/7 working. With the Royal College of Physicians Future Hospital Commission examining this issue, feedback centred on the need for the tariff to reflect the move towards 24/7 working by revising the guidance such that patients admitted with DKA or hypoglycaemia should be reviewed within 24 hours rather than within one working day. Stakeholder opinion on this has failed to reach a consensus, although this view is supported by the National Clinical Director and the Department of Health policy team as reflecting best practice. The guidance is likely to be changed to ‘within 24 hours’ acknowledging that for some trusts achievement of the BPTs will not currently be possible at weekends but within such trusts this should still be achievable on five days of the week.

**The payment**

The BPTs will apply at a sub HRG level and will be mandatory. We would urge hospital trusts to determine the likely impact of the BPTs on their diabetes service and to begin developing an implementation plan.

**The best practice criteria required to achieve the payment has been developed in line with:**

2. NICE. Type 1 diabetes guidance.
3. NHS Institute for Innovation and Improvement ThinkGlucose™ Project.
4. NHS Diabetes and Joint British Diabetes Societies’ guidelines on the management of diabetic ketoacidosis.
5. NHS Diabetes and Joint British Diabetes Societies. ‘The Hospital Management of Hypoglycaemia in Adults with Diabetes Mellitus’.

Through the introduction of BPTs for DKA and hypoglycaemia, we hope to improve the care of people with diabetes in hospitals and to universalise best practice and reduce unwarranted variation in care.

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**Declaration of interests**

There are no conflicts of interest declared.

**References**