Costing statement: diabetes in children and young people
Implementing the NICE guideline on diabetes (type 1 and type 2) in children and young people (NG18)

Published: August 2015
Summary

The guideline is an update of the recommendations for children and young people in NICE guideline CG15 (published July 2004). The guideline includes recommendations on diagnosis, education and management; recognition, diagnosis, referral for and treatment of diabetic ketoacidosis; and diabetes service provision.

In England, a best practice tariff was introduced to provide an annual payment for the treatment of every child and young person under the age of 19 with diabetes. This is a 'year-of-care' tariff payable to paediatric diabetes units on completion of the predetermined criteria (see section 4.13 of the 2014–15 National Tariff Payment System – annex 4A: additional information on currencies with national prices), which cover all aspects of high-quality diabetes care.

The best practice tariff for paediatric diabetes became mandatory in 2012–13. Expert opinion suggests that this, coupled with the peer review of all the paediatric diabetes units in England during 2013–14, has led to significant improvement in clinical services for children and young people with diabetes.

However, the National Paediatric Diabetes Audit 2013–2014 report on care processes and outcomes noted that further progress is needed. This may have a cost of up to £14.7 million for commissioners at the national level.

In addition, there are a number of recommendations highlighted in this statement that are outside the best practice tariff and may have costs and/or savings at a local level. NHS organisations are advised to assess the resource implications of the recommendations locally.
1 Introduction

1.1 This costing statement considers the cost implications of implementing the recommendations made in Diabetes (type 1 and type 2) in children and young people (NICE guideline NG18). The guideline is an update of the recommendations for children and young people in NICE guideline CG15 (published July 2004) and replaces this. The guideline updates the recommendations on diagnosis, education and management; recognition, diagnosis, referral for and treatment of diabetic ketoacidosis; and diabetes service provision. It also adds recommendations on education, management and service provision for type 2 diabetes in children and young people.

1.2 The costing statement considered only the new and amended recommendations. It was assumed that recommendations from the previous guideline have already been implemented.

1.3 The guideline might have resource implications at a local level as a result of variation in clinical practice across the country. Therefore, we encourage organisations to evaluate their own practices against the recommendations in the NICE guideline and assess costs locally. Some of the resource effects to be considered locally are discussed in this statement.

1.4 Paediatric diabetes services are commissioned by clinical commissioning groups and NHS England. Diabetes services are delivered by GPs and primary and community healthcare providers, and NHS hospital trusts in secondary care.

2 Background

2.1 The National Paediatric Diabetes Audit 2013–2014 identified 24,000 children and young people with diabetes type 1 diabetes and 500 with type 2 diabetes in England.
2.2 Although the National Paediatric Diabetes Audit 2013–2014 report on care processes and outcomes identified some significant improvements in outcomes, it also recognised significant inequalities in care across England and Wales. These inequalities leave some children and young people at serious risk of future complications and poorer quality of life.

2.3 In England, a best practice tariff (BPT) was introduced to provide an annual payment for the treatment of every child and young person under the age of 19 with diabetes. This is a ‘year-of-care’ tariff payable to paediatric diabetes units on completion of the predetermined criteria (see section 4.13 of the 2014–15 National Tariff Payment System – annex 4A: additional information on currencies with national prices), which cover all aspects of high-quality diabetes care.

2.4 The best practice tariff for paediatric diabetes became mandatory in 2012–13. Expert opinion suggests that this, coupled with the peer review of all the paediatric diabetes units in England during 2013–14, has led to significant improvement in clinical services for children and young people with diabetes.

3 Recommendations with potential resource impact

Overall impact

3.1 Many of the recommendations in the guideline are consistent with the requirements of the best practice tariff for paediatric diabetes. Expert clinical opinion suggests that slightly over 80% (130) of paediatric diabetes units are achieving the best practice tariff (see table 1). If the remaining 20% (33) of paediatric diabetes units achieved the best practice tariff there would be an estimated cost to commissioners of up to £14.7 million (see table 2).

3.2 Consultation comments suggest that:

- BPT payments may be subject to local negotiations within the flexibilities of payment by results (PBR), and
• while costs may be incurred to increase the achievement of the BPT as part of implementing this guideline, such payments are currently available to providers.

**Table 1 Average number of patients per paediatric diabetes unit (PDU) and best practice tariff payment details**

<table>
<thead>
<tr>
<th>Details</th>
<th>%</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevalence of diabetes in children and young people</td>
<td></td>
<td>25,498</td>
</tr>
<tr>
<td>Number of PDUs in England[^1]</td>
<td>100</td>
<td>163</td>
</tr>
<tr>
<td>Average number of patients per PDU</td>
<td></td>
<td>156</td>
</tr>
<tr>
<td>Estimated number of PDUs achieving BPT</td>
<td>80</td>
<td>130</td>
</tr>
<tr>
<td>Estimated number of PDUs not achieving BPT</td>
<td>20</td>
<td>33</td>
</tr>
</tbody>
</table>


BPT, best practice tariff; PDU, paediatric diabetes unit

**Table 2 Potential payments to paediatric diabetes units not meeting best practice tariff criteria**

<table>
<thead>
<tr>
<th>Details</th>
<th>Number of people and cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated number of PDUs not meeting BPT</td>
<td>33</td>
</tr>
<tr>
<td>Average number of patients per PDU</td>
<td>156</td>
</tr>
<tr>
<td>Total number of patients covered (33 x 156)</td>
<td>5,086</td>
</tr>
<tr>
<td>2015–16 BPT per patient[^1]</td>
<td>£2,895</td>
</tr>
<tr>
<td>Estimated additional cost</td>
<td>£14.7 million</td>
</tr>
</tbody>
</table>

[^1]NHS England's guide to the enhanced tariff option for 2015–16

BPT, best practice tariff; PDU, paediatric diabetes unit

3.3 Achieving the best practice tariff criteria should lead to more effective clinical management of diabetes in children and young people. This may lead to savings from a reduction in attendances at emergency departments and emergency admissions to hospital, and in costs associated with complications of diabetes.

**Continuous glucose monitoring for children and young people with type 1 diabetes**

3.4 Recommendations 1.2.62, 1.2.63 and 1.2.64 advise when to offer or consider continuous glucose monitoring for children and young people with type 1 diabetes.
3.5 Expert clinical opinion suggests that the recommendations on continuous glucose monitoring should result in more children being appropriately offered this treatment. However, the number of children and young people who might need continuous glucose monitoring is not expected to rise significantly above current levels.

3.6 Clinical experts have stated that the cost of continuous glucose monitoring (including a receiver, transmitter and sensors) ranges from £1,000–2,500. The main ongoing cost is for disposable sensors, which cost £40–60 each and are designed to last 5–7 days.

3.7 The National Paediatric Diabetes Audit 2011–12 report on hospital admissions and complications estimated that about 4% of children and young people aged under 17 years with type 1 diabetes experience one or more episodes of severe hypoglycaemia per year. This equates to an estimated 960 episodes per year.

Potential savings

3.8 Preventing 960 episodes of severe hypoglycaemia and the associated emergency hospital admissions could result in potential savings of £0.3–1.5 million. This is based on a saving of £300–1,600 for each avoided admission for diabetes with hypoglycaemic disorders (see NHS England's guide to the enhanced tariff option for 2015–16).

Blood ketone monitoring for children and young people with type 1 diabetes

3.9 Recommendation 1.2.74 advises how and when to monitor blood ketone levels in children and young people with type 1 diabetes.

3.10 Based on expert clinical opinion, the recommendation represents a significant change in practice. This is because there would need to be a shift from using urine ketone detection strips to using blood ketone detection strips. The cost of urine detection strips ranges from £2.25 to £3.06 for a pack of 50 (4 packs needed per year), and the cost of blood ketone detection strips ranges from £20.84 to £21.04 for a pack of 10 (3
packs needed per year). Therefore the estimated minimum annual cost is £9 per patient using urine strips and £62 per patient using blood ketone strips (prices obtained from the NHS electronic drug tariff: August 2015). The national cost of this would be up to £1.3 million (25,000 x £53).

**Potential savings**

3.11 For each hospital admission avoided for diabetic ketoacidosis (HRG PA67Z) there is a potential saving of £1,000–1,400 (see NHS England's guide to the enhanced tariff option for 2015–16). This means that the extra cost would be covered by a reduction of around 1100 admissions (£1.3 million divided by £1,200, which is the midpoint of the potential saving range of £1,000–1,400). Further avoided admissions would generate a saving to the NHS.

**Diabetic ketoacidosis**

3.12 Recommendations 1.4.2, 1.4.5 and 1.4.6 advise when children and young people with suspected diabetic ketoacidosis should be sent immediately to a hospital with acute paediatric facilities.

3.13 Expert clinical opinion suggests that the recommendations represent a significant change in practice. They help speed up the recognition, diagnosis and referral for treatment of diabetic ketoacidosis.

3.14 The recommendations may initially lead to more emergency hospital admissions. However, they would help reduce costs associated with the treatment of more serious adverse events resulting from delayed diagnosis.

**Potential savings**

3.15 The National Paediatric Diabetes Audit 2011–12 report on hospital admissions and complications reported that approximately 400 children and young people were diagnosed with diabetic ketoacidosis at the same time as being diagnosed with diabetes. If diabetes is recognised earlier, some cases of diabetic ketoacidosis might be avoided. Each hospital admission for diabetic ketoacidosis (HRG PA67Z) avoided could save
£1,000–1,400 (see NHS England's guide to the enhanced tariff option for 2015–16).

4 Other considerations

4.1 Users of this statement should read the NICE guidance on continuous subcutaneous insulin infusion for the treatment of diabetes mellitus (NICE technology appraisal 151).
About this costing statement
This costing statement accompanies the NICE guideline on diabetes (type 1 and type 2) in children and young people.

Issue date: August 2015

This statement is written in the following context
This statement represents the view of NICE, which was arrived at after careful consideration of the available data and through consulting healthcare professionals. It should be read in conjunction with the NICE guideline. The statement is an implementation tool and focuses on those areas that were considered to have potential impact on resource utilisation.

The cost and activity assessments in the statement are estimates based on a number of assumptions. They provide an indication of the potential impact of the principal recommendations and are not absolute figures.

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