

Putting NICE guidance into practice

Costing statement: type 1 diabetes in adults

Implementing the NICE guideline on type 1 diabetes in adults (NG17)

Published: August 2015

Summary

This costing statement looks at the resource impact of implementing the NICE guideline on [type 1 diabetes in adults](#) in England. The guideline is an update of NICE guideline CG15 (published July 2004) and replaces the guidance for adults.

A local costing template has been produced to support this costing statement that enables organisations in England, Wales and Northern Ireland to estimate the impact locally. This statement focuses on the recommendations that are likely to have the greatest resource impact. There may be costs associated with:

- Offering all adults with type 1 diabetes a structured education programme.
- Supporting adults with type 1 diabetes to aim for a target HbA1c level of 48 mmol/mol (6.5%) or lower.
- Supporting adults with type 1 diabetes to test their blood glucose levels at least 4 times a day, and up to 10 times a day.

The local costing template that accompanies this statement allows the user to input assumptions about future self-monitoring frequency. Once these assumptions have been added to the template, the potential resource impact of implementing the guidance is generated.

The recommendations may also result in some longer-term savings, such as:

- Possible savings of about £2,200 per person over 10 years from providing structured education with a DAFNE programme.
- Possible lifetime savings of about £3,500 per person through achieving an HbA1c level of 48 mmol/mol (6.5%) compared with 58.5 mmol/mol (7.5%).

Diabetes services recommended in the guideline are commissioned by clinical commissioning groups and NHS England. These services are delivered by GPs and primary and community healthcare providers. Complications of diabetes mainly affect services delivered by secondary care providers.

1 Introduction

- 1.1.1 This costing statement aims to help organisations plan for the financial implications of implementing NICE guidance.
- 1.1.2 We anticipate that the guideline will have resource implications. Organisations are encouraged to evaluate their own practices against the recommendations in the guideline and assess costs and savings locally using the accompanying [costing template](#).
- 1.1.3 Diabetes services recommended in the guideline are commissioned by clinical commissioning groups and NHS England. These services are delivered by GPs and primary and community healthcare providers. Complications of diabetes mainly affect services delivered by secondary care providers.

2 Background

2.1 *Epidemiology of type 1 diabetes*

- 2.1.1 Type 1 diabetes develops if the body cannot produce insulin. According to figures from [diabetes UK](#), around 10% of all people with diabetes have type 1 diabetes. Therefore approximately 280,000 of the 2.8 million adults recorded as having diabetes in England by the [Health and Social Care Information Centre](#) in 2013 had type 1 diabetes.
- 2.1.2 Type 1 diabetes can appear at any time in a person's life. The life expectancy for someone with type 1 diabetes is on average reduced by 20 years. According to the [National Diabetes Audit 2010–2011 report on complications and mortality](#), about 24,000 people with diabetes in England and Wales die early from causes that could have been avoided through better management of their condition.

2.1.3 Type 1 diabetes can lead to a number of short-term and long-term complications, most of which occur as a result of high blood glucose levels.

2.1.4 Early detection and effective management of type 1 diabetes and its complications are important to prevent or limit long-term problems. The guideline emphasises the importance of educating people on how to manage their diabetes in order to help prevent complications.

2.2 *Current service provision*

2.2.1 Adults with type 1 diabetes manage many aspects of their own care, including injecting insulin, monitoring blood glucose levels and adjusting insulin doses.

2.2.2 Adults with type 1 diabetes need regular monitoring for complications of diabetes. When these occur, active management is needed.

2.2.3 Adults with type 1 diabetes need education and support from healthcare professionals with expertise in insulin physiology and therapeutics in order to manage their diabetes effectively.

3 Analysis of the potential resource impact

3.1 *Recommendation 1.3.1: structured education*

Offer all adults with type 1 diabetes a structured education programme of proven benefit, for example the [DAFNE \(dose-adjusted for normal eating\) programme](#). Offer this programme 6–12 months after diagnosis.

Background

3.1.1 If diabetes is left untreated it can lead to serious complications, some of which can be life threatening. To achieve a reduction in the number of people dying from diabetes and its complications,

changes in lifestyle and improvements in self-management are needed.

3.1.2 A diabetes education course can help a person manage their diabetes and live a full and largely unrestricted life. Offering a programme of structured diabetes education was recommended in NICE guideline CG15. However, expert clinical opinion suggests that many adults with type 1 diabetes do not receive this in a timely manner and there is a need for more availability of structured education.

3.1.3 According to [Diabetes UK](#), evidence shows that people who attend a diabetes education course tend to be better able to manage their diabetes and experience fewer serious complications.

3.1.4 The [DAFNE programme](#) provides 38 hours of structured group education. It is delivered by specially trained diabetes specialist nurses and dietitians to groups of between 6 and 8 people over a consecutive 5-day period on an outpatient basis.

3.1.5 According to information received from DAFNE (see table 1), the number of adults with type 1 diabetes attending the DAFNE programme has fallen over the past 4 years.

Table 1 Number of adult participants in DAFNE programmes over 4 years

Year	Total number of participants in England and Ireland	Number of participants in England	Percentage decrease in participants from previous year
2011–2012	3,790	2,981	
2012–2013	3,756	2,955	-1%
2013–2014	3,725	2,930	-1%
2014–2015	3,571	2,809	-4%
Total	14,842	11,676	

Potential costs

3.1.6 The costs of introducing the DAFNE programme to a diabetes service are shown in table 2.

Table 2 Costs payable to DAFNE for participation in the DAFNE programme 2015–16

Activity	Year 1 costs (£)	Comments
Training: 2 educators and 1 doctor	3,000	Training costs are only applicable in the first year unless the service decides to train additional educators or doctors
Central contribution (for 2 educators)¹	4,152	Infrastructure and development plus internal quality assurance and audit costs
Programme set-up costs per service²	522	Costs are in the first year only, unless additional sets or replacements are needed. Includes patient resources for first 2 programmes
Total	7,674	Based on 2 educators at the service

¹Central contribution costs will vary depending on the number of educators.
²Other costs may apply in addition to the set-up costs.

3.1.7 Between April 2014 and March 2015, approximately 2,800 adults with type 1 diabetes attended a DAFNE programme in England.

3.1.8 In 2014, there were 59 DAFNE services in England. If each of these were to run 15 programmes per year with 8 participants in each group, about 7,000 adults could be trained each year under current provision.

3.1.9 Assuming programme uptake increases by 0.5% of adults with type 1 diabetes each year, raising uptake to 7,000 adults may take 3 years. This would result in a cost impact of £1.4 million from year 3 onwards (see table 3 below and the type 1 diabetes in adults [costing template](#) for more information).

Table 3 Potential cost impact of increasing structured education

Year	Number of participants in England	Potential cost impact (£000)
2015–2016	4,221	475
2016–2017	5,628	950
2017–2018	7,035	1,400

Potential savings

3.1.10 An [economic report by the York Health Economics Consortium](#) estimated mean cost savings as a result of a reduction in complications of diabetes to be £3,238 per patient over 10 years. The cost savings would be offset by the mean cost per patient over 10 years of delivering the DAFNE programme and NHS costs associated with standard care. Therefore, it is estimated that the DAFNE programme would save commissioners £2,237 per patient over 10 years (see table 4) and would break even after approximately 4.5 years.

Table 4 Estimated mean saving per patient of delivering the DAFNE programme

Mean cost saving per person as a result of a reduction in complications of diabetes	Mean cost per person of delivering the DAFNE programme	Mean cost per person of NHS costs	Estimated saving per person as a result of delivering the DAFNE programme
£3,238	£545	£456	£2,237

3.1.11 If there is a 0.5% increase in the number of adults with type 1 diabetes attending structured education over the next 3 years, this could result in potential long-term savings of more than £9 million over 10 years (see table 5).

Table 5 Potential savings as a result of structured education

Year	Number of participants in England	Potential savings over 10 years (£000)
2015–2016	4,221	3,200
2016–2017	5,628	6,300
2017–2018	7,035	9,500

3.2 Recommendation 1.6.6: target HbA1c level of 48 mmol/mol

Support adults with type 1 diabetes to aim for a target HbA1c level of 48 mmol/mol (6.5%) or lower, to minimise the risk of long-term vascular complications.

Background

3.2.1 HbA1c develops when haemoglobin joins with glucose in the blood and becomes glycated. By measuring a person's HbA1c levels, clinicians are able to get an overall picture of what their average blood glucose levels have been over the previous 2–3 months.

3.2.2 This is important for adults with diabetes, because the higher the HbA1c level the greater the risk of developing diabetes-related complications.

3.2.3 NICE guideline CG15 suggested a target HbA1c level of below 58.5 mmol/mol, 7.5%, for long-term blood glucose control. The updated guideline suggests aiming for a target HbA1c level of 48 mmol/mol (6.5%) or lower.

3.2.4 The types of therapies that can help adults with type 1 diabetes to control their blood glucose levels include:

- multiple daily injection therapy
- insulin pump therapy.

Potential costs

3.2.5 According to figures from diabetes.co.uk, about 6% (approximately 16,900) of adults with type 1 diabetes use an insulin pump. The

[costing template](#) for the NICE technology appraisal guidance on continuous subcutaneous insulin infusion for the treatment of diabetes mellitus puts the cost of an insulin pump, insulin and consumables, together with an annualised pump cost (based on a 4-year life span), at approximately £2,700 per person per year.

- 3.2.6 The same costing template puts the cost of multiple daily insulin injections (including insulin, consumables and an annualised injection pen cost) at approximately £890 per person. This is a cost difference of about £1,800 per person between the 2 types of therapies.
- 3.2.7 If the total number of adults with type 1 diabetes using insulin pump therapy increased from 6% (costing approximately £45.2 million) to 7% (costing approximately £50.2 million), this would result in a cost impact of £5 million for England.

Potential savings

- 3.2.8 An economic analysis was conducted to estimate the costs and health outcomes associated with achieving an HbA1c level of 48 mmol/mol (6.5%) compared with 58.5 mmol/mol (7.5%). A reduction of £3,500 in healthcare costs was estimated over a person's lifetime (see the [full guideline](#) for more information).

3.3 Recommendation 1.6.11: self-monitoring

Support adults with type 1 diabetes to test their blood glucose at least 4 times a day, and up to 10 times a day if any of the following apply:

- the desired target for blood glucose control, measured by HbA1c level (see recommendation 1.6.6), is not achieved
- the frequency of hypoglycaemic episodes increases
- there is a legal requirement to do so (such as before driving, in line with the Driver and Vehicle Licensing Agency [DVLA] [At a glance guide to the current medical standards of fitness to drive](#))
- during periods of illness

- before, during and after sport
- when planning pregnancy, during pregnancy and while breastfeeding (see the NICE guideline on [diabetes in pregnancy](#))

if there is a need to know blood glucose levels more than 4 times a day for other reasons (for example, impaired awareness of hypoglycaemia, high-risk activities).

Background

- 3.3.1 Self-monitoring of blood glucose levels should be regarded as an integral part of management for all adults with type 1 diabetes. Access to blood glucose testing strips and meters should not be restricted.
- 3.3.2 Testing blood glucose levels 4 times a day is considered to be current practice. Expert clinical opinion is that approximately 90% (about 253,000) of adults with type 1 diabetes self-monitor 4 times a day. Expert clinical opinion suggests that about half of these people will be satisfied with this, but the other half may wish to increase testing to up to 7 times a day.
- 3.3.3 The frequency of self-monitoring in the future is expected to vary widely and the local costing template that accompanies this costing statement allows the user to input assumptions about future self-monitoring frequency. Once these assumptions have been added to the template, the resource impact of implementing the guidance is generated. Potential scenarios are modelled in table 7.

Potential costs

- 3.3.4 A box of 50 blood glucose testing strips costs approximately £7.00 ([NHS electronic drug tariff](#)); table 6 shows the potential costs for adults with type 1 diabetes testing up to 10 times a day.

Table 6 Cost of blood glucose testing strips

Number of tests per day	Number of boxes per year	Annual cost (£)
4	30	205
5	37	250
6	44	300
7	52	350
8	59	400
9	66	450
10	73	495

3.3.5 Table 7 shows the potential cost impact if half of the 90% of people who currently self-monitor 4 times a day increased their blood glucose testing to between 5 and 7 times a day, while the other 50% keep testing 4 times a day.

Table 7 Cost impact of increasing the number of blood glucose tests

Number of people	Number of tests per day	Annual cost of tests (£)	Annual cost impact (£000)
127,000	5	250	5,980
127,000	6	300	11,970
127,000	7	350	18,800

Potential savings

3.3.6 Blood glucose testing can lead to a reduction in HbA1c levels and lower the risk of serious complications of type 1 diabetes. It can also reduce symptoms of depression and help people to be more confident about self-managing their diabetes.

3.3.7 Improved control of blood glucose levels may result in further savings from a decrease in emergency department attendances and GP appointments.

3.3.8 It is also common for people with severe hypoglycaemia to be seen by ambulance crews. According to the [admissions avoidance and diabetes: guidance for clinical commissioning groups and clinical teams](#) report, there are between 70,000 and 100,000 emergency call-outs per annum in the UK. It is estimated that a saving of

around £240 could be made for every call out for severe hypoglycaemia prevented.

Other considerations

- 3.3.9 This recommendation should encourage the most cost-effective prescribing of blood glucose testing strips.

About this costing statement

This costing statement accompanies the NICE guideline on [type 1 diabetes in adults: diagnosis and management](#) and should be read in conjunction with it. See [terms and conditions](#) on the NICE website.

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. The statement is an implementation tool and focuses on the recommendations that were considered to have a significant impact on national resource use.

Assumptions used in the statement are based on assessment of the national average. Local practice may be different from this, and the impact should be estimated locally.

Implementation of the guidance is the responsibility of local commissioners and providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity and foster good relations. Nothing in this costing tool should be interpreted in a way that would be inconsistent with compliance with those duties.

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