Costing Care Pathways

Understanding the cost of the diabetes care pathway

A briefing from ACCA and the Audit Commission
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EXECUTIVE SUMMARY

The NHS needs to make efficiency savings of up to £20 billion by 2015 to meet increasing demand and other cost increases. The pressure on the NHS to provide better results for less money has never been greater. Many have seen revising care pathways as a way of bringing together these two aims. Developing care pathways that are less complex, involve fewer appointments or referrals and are more clearly defined can result in higher quality, more patient-focused, care. Taking a more holistic, multidisciplinary approach to care pathways with better sharing of information and improved planning of patients’ care might be expected to reduce costs. But while many NHS organisations are enthusiastic about improving patient journeys, very little evidence has been gathered on the financial impact of these changes.

Our early fieldwork focused on how NHS organisations were costing care pathways. The results were unsurprising. We found examples of organisations that had altered care pathways to the benefit of patients, but none that fully understood the cost implications of doing so. Evaluating provision posed similar difficulties, regardless of type or location of pathway. As might be expected, poor data was the most common concern. To address this we decided to look at the data available and see how reliable it was for costing a care pathway.

This briefing shows, using diabetes as an illustration, how organisations can use nationally available data to chart spending at a high level on healthcare for various conditions. This information can then be used to help track changes in provision and the impact on costs. It also provides a benchmark to help show how costs vary. It shows where gaps exist in the data and therefore where caution needs to be taken when comparing financial performance and the impact of changing services.

We focused on diabetes because developing care pathways for long-term conditions is increasingly common, and diabetes is one of the most costly diseases in the UK. Others have estimated that the NHS spends approximately £25 million a day treating people with diabetes1.

We found that:

- the variation in primary care trust (PCT) spending on diabetes care may not be as large as suggested by programme budgets
- the biggest driver of costs is diabetes medication which accounts for three quarters of the total cost of diabetes care
- average PCT inpatient spend varies from £19 to £175 per diabetic patient
- the community and outpatient cost showed the greatest variation, but the data was not sufficiently accurate to use in our analysis.

The government’s Health and Social Care Bill2 proposes a shift of commissioning responsibility from PCTs to GP consortia. Clinicians will become responsible for commissioning care for their patients and will need to understand the financial impact of delivering services in different ways. The Audit Commission and the Association of Chartered Certified Accountants (ACCA) have worked together to produce this briefing to help with this.

This briefing is not a definitive guide to costing a care pathway. It is intended to help commissioners make progress. We have also produced a tool available at www.audit-commission.gov.uk/diabetescostcomparisons to help commissioners monitor and evaluate the cost of diabetes care in their area and to make comparisons with others.

1. Diabetes in the UK 2010: Key Statistics on Diabetes, Diabetes UK, March 2010
2. The Health and Social Care Bill, January 2011
Ten years ago, ACCA published a series of booklets exploring how patient-centred care pathways were implemented in the acute sector, and how finance managers might calculate the cost of delivering them. Reviewing care pathways has grown in popularity over recent years owing to a greater focus on patient-centred care and the need to improve efficiency as demand for services steadily increases. Preparing the NHS to meet these pressures has been the focus of policy for several years, as set out in the Next Stage Review, Practice Based Commissioning, and Care Closer to Home. The Health and Social Care Bill will give GP consortia responsibility for commissioning in the future.

Tighter resources will mean greater emphasis on identifying the costs of making care more local and patient-centred. ACCA joined with the Audit Commission to look into progress made since its earlier work was published. While the original work concentrated on pathways in acute care, we increased the scope to look at a variety of locally defined pathways.

We found very little published evidence of successful costing by pathway, which gave limited support to any claims of increased value for money. We planned to visit several organisations and look at the approaches they had taken to cost and evaluate new care pathways. We hoped to identify some good practice to share.

Our attempts to identify suitable sites were hindered because many organisations we contacted had done little to assess the current costs of provision or the impact of any changes to the pathway.

We visited six organisations that had worked on costing their pathways. The pathways ranged from a simple screening programme run by an NHS trust, to a multidisciplinary chronic pain service that included social care input.

All of the pathways we looked at were based on moving care out of hospital and into more local settings such as community centres, GP surgeries, and even patients’ homes. There was also a desire to organise patient care to reduce the number of appointments and referrals for each patient, and to improve the availability of clinical information to both clinicians and patients.

While some of the organisations we visited were rearranging care based on existing providers and systems, others were seeking to commission entirely new arrangements.

Despite the variety of care being provided, all organisations faced common difficulties. Administrative and system support were not adequate. This included insufficient staff to process paperwork and inadequate electronic patient record systems. There were problems retrieving information due to the different approaches taken by departments, problems with sharing information and a lack of clarity about recorded information.

The biggest barrier, however, was insufficient and poor quality data across outpatient, prevention and community services. This caused particular difficulty as organisations were usually seeking to rearrange and move care into these areas. It was not possible for them to work out the cost of existing provision for a disease category, nor make any meaningful comparisons with future activity.

Costing care pathways is difficult. Many organisations will therefore be making commissioning decisions without sufficient, reliable data. As a result we decided to see whether it was possible to use available national data to produce reliable indicators to support organisations in commissioning decisions about new pathways.

In order to illustrate our approach, we looked at care for patients with diabetes mellitus. We chose to concentrate on diabetes because it is:
• a popular area for pathway development
• fast growing, both in terms of population and patient cost
• estimated to cost £9 billion per year, accounting for 10% of all NHS spending.

Appendix 1 gives an indication of the complications that diabetes mellitus can cause.

We started by examining programme budgets and then looked at the data sets underlying them. In order to make comparisons between PCTs, for each data set we divided the total cost for the PCT by the number of patients registered with diabetes in that PCT. We have called this the ‘per patient’ cost throughout. The disease registers – including that for diabetes – are collected through the Quality and Outcomes Framework.

References:
3. High Quality Care for All: NHS Next Stage Review, Lord Darzi of Denham, June 2008
4. Clinical Commissioning: Our Vision for Practice Based Commissioning, Department of Health, March 2009
5. Delivering the Care Closer to Home – Meeting the Challenge, Department of Health, July 2008
6. The Health and Social Care Bill, January 2011
7. Diabetes in the UK 2010: Key Statistics on Diabetes, Diabetes UK, March 2010
The Department of Health requires PCTs to provide a breakdown of what they spend on various healthcare conditions, known as programme budgets. There are 23 different categories and the DH provides guidance on how the cost should be calculated. Information is collected on the costs assigned to diabetes (Figure 1), a subsection of the endocrine, nutritional and metabolic problems category.

Figure 1 shows the large variance among PCTs on what they spend on patients with diabetes. The highest spend per patient is over three and a half times more than the lowest. As the breakdown of national data made it difficult to find out what caused these variances, we decided to look at how these budgets are calculated and if they could usefully be used as a costing tool.

The programme budget methodology itself recognises that the task of calculating costs on specific disease areas is ‘not straightforward, and may require a degree of estimation’. Many of the problems faced by the organisations we visited are replicated in calculating programme budgets. For example, outpatient records do not require a primary diagnosis code, so accurately identifying, say, patients with diabetes receiving podiatry is impossible. Community services are mapped using sampling techniques and local knowledge. Differences in the ability to accurately cost outpatient and community services may account for some of the apparent variation, although there may be little difference in actual expenditure.

GP costing and coding information is not sufficient for GP contract costs to be calculated at programme level.

Programme budgets are helpful in providing an overall picture and are useful for some acute activities, particularly when used in conjunction with other data sets. Unfortunately, the cross-sector nature of diabetes care makes it harder to use programme budgets for benchmarking. They could be used by a PCT to get a picture of what it spends on diabetes care, but the data would need to be interpreted with care.

Some ingredients of the programme budget are more robust, with nationally available data collected on a consistent basis. We have analysed these, and combined them to create a tool to allow organisations to identify standard comparable costs in the pathway. This can form a baseline for commissioners to track progress on some elements of diabetes care. Since these elements are universal across the NHS in England, and not dependent on how the pathway is defined, comparisons can also be made with other organisations.

We looked at three main elements:

- the quality and outcomes framework (QOF), which assigns funding to general practice according to achievement against various quality indicators
- prescribing data, which includes the spend on drugs prescribed in primary care for treating diabetes
- inpatient costs, which is the cost to the PCT of patients admitted to hospital with diabetes as their primary diagnosis.

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8. Programme Budgeting Costing Methods, Department of Health, August 2010
The Quality and Outcomes Framework (QOF) is a voluntary programme for rewarding and incentivising GP practices in England. Points are awarded for achievement against a range of indicators. For each point it scores, the practice receives a payment weighted to its size and demography. The higher the score, the higher the financial reward.

Under the 2009/10 QOF arrangements, 100 points are directly related to aspects of diabetic care. For example, recording the body mass index of patients with diabetes in the previous 15 months could earn a surgery up to three points if they manage to do so for more than 40% of their eligible population. Other indicators include the proportion of patients who have achieved certain blood glucose levels and those who have had neuropathy testing. The points available for diabetes account for 10% of all points available through the QOF.

The data on QOF points achieved by PCTs is available from the NHS Information Centre website. The information on how much each PCT spends on rewarding practices for diabetes-related QOF indicators was obtained from the Department of Health.

Figure 2 shows the amount paid through QOF for each PCT as an average per patient with diabetes. It shows that there is little variation – the maximum variation being about £6 per patient. For over 50% of PCTs there is less than a £2 variation in spending per patient with diabetes.

This small variation is consistent with the findings of the recent Audit Commission briefing *Paying GPs to Improve Quality*⁹. However, the report also found weaknesses in how PCTs monitored and audited payments to ensure probity and value for money. It is also possible for GPs to exclude patients from the data. This means that the equality of cost across PCTs may not show the true picture or represent equality of service provision.
4. DRUG COSTS

NHS Prescription Services collect prescription information, covering prescriptions issued in primary care and dispensed in the community. For our analysis we looked at the net ingredient costs (NIC) for drugs listed in section 6.1 (Drugs used in Diabetes) of the British National Formulary.

The NHS Information Centre reports that the NIC of prescribing for diabetes in 2009/10 accounted for 7.7% of the total cost of all primary care prescribing. This has increased from 5.8% in 2004/05. Both the NIC and number of items prescribed have risen by over 40% in that period, as drugs become more expensive and the incidence and identification of diabetes increases10.

Figure 3 shows that the average PCT spend per patient on prescriptions varies from £214 to £344.

Insulins, oral anti-diabetics and blood glucose monitoring equipment accounted for more than 99% of spend on drugs used in 2009/10. There is variation among PCTs on the proportions spent on these drugs, with insulin accounting for between 38 and 58% of all prescription costs (Figure 4). This could be due to differences either in the volume or in the type – and therefore the cost - of insulin being prescribed. The NHS Information Centre reported that the proportion of the more expensive human analogue insulin prescribed varied between PCTs, from 35 to 95% of all other insulin prescribed in 2009/1010.

Figure 4: The proportion of spend on different drugs prescribed by PCTs

There are opportunities to make savings in prescriptions. Well managed care can delay those with type 2 diabetes progressing to insulin dependency, and early intervention with pre-diabetic patients can delay or even prevent their need for diabetes related medication. As with other drugs, encouraging prescribers to specify generic rather than branded drugs can help bring down costs, providing overall savings for the NHS.

Patients with diabetes are admitted to hospital for both elective and emergency care. To evaluate the spending on acute care we used Hospital Episode Statistics (HES) data to identify patients admitted with diabetes as their primary diagnosis. We combined this with the relevant tariffs to calculate the cost. Every area of acute care recorded some activity. Figure 5 below shows the breakdown of care into different healthcare resource group (HRG) chapters. Chapters containing treatments specifically for diabetes (for example, diabetes mellitus, diabetes with lower limb complications, and diabetes with hypoglycaemic emergency in chapters K and P) account for 54% of spending in our analysis of inpatient care. A further 38% was spent treating the eyes and vascular system (chapters B and Q). Figure 5, right, shows that the majority of treatments for patients with diabetes as a primary diagnosis fall into these limited number of areas.

Average inpatient spending varies from £19 to £175 per diabetic patient, but over half of PCTs spent within £26 per patient of one another, as shown in Figure 6.
However, as Figure 7 shows, PCTs spending the most on emergency care are not always those spending the most per patient on inpatient care. The proportion of spending on elective care varies between PCTs and those spending more on elective care tend to be spending more in total per patient. It also shows that the variation in spending on elective care is much greater than variation in spending on emergency care. This suggests that although reducing emergency admissions is beneficial in terms of the patient experience, the cost savings may be less than expected.

While our analysis focuses on patients with diabetes as a primary diagnosis, the cost to the NHS of patients with diabetes as an additional complication should not be overlooked. The NHS Diabetes briefing Improving Emergency and Inpatient Care for People with Diabetes\textsuperscript{14} reported that patients with diabetes stay in hospital longer, whatever the cause of admission. This can be improved by introducing a specialist inpatient diabetes service. Productivity Concerns for Service Design – Diabetes\textsuperscript{15} states that specialist services can reduce excess bed days for people with diabetes by 30%.

\textsuperscript{14} Improving Emergency and Inpatient Care for People with Diabetes, NHS Diabetes, March 2008

\textsuperscript{15} Productivity Concerns for Service Design (Beta) – Diabetes, Map of Medicine, July 2010
Adding together the costs we identified in our analysis shows that while there is still variance between PCTs, it is much less than the variance shown in programme budgets (see Figure 8). In our analysis, the PCT spending most per patient spent only two thirds more than the PCT spending least. Using this method, the lowest spender was £287 and the highest £480. Over half of PCTs spent between £351 and £397 per patient.

When reviewing care pathways, attention is often focused on reducing admissions to hospital. Our analysis shows that, for diabetes, inpatient admissions are not the dominant driver of costs. Prescription costs are the most significant element. They account for three quarters of the average per patient cost.

To illustrate, a 5% reduction in spending on inpatients would secure a saving of less than £6 million. A 5% reduction in spending on primary care prescriptions would save the NHS £32 million. Not only is there a difference in scale of savings, but greater efficiency in prescription costs would produce real savings to the NHS. Reducing inpatient activity would have a limited impact unless wards could be closed and staff numbers reduced.

We decided not to include outpatient activity in our analysis of comparative costs, although it is important in diabetic care, because of concerns about the data. Recording primary diagnosis is not mandatory for outpatient attendances, so activity cannot be reliably mapped to a particular disease. As a result, spending recorded under diabetes medicine in 2009/10 varied by PCT from three pence to £195 per patient.

Our cost analysis represents an average of 70% of the costs identified in programme budgets. However, as Figure 8 shows, the relationship between the two is not clear. The highest spending PCTs in our analysis are not always the highest using programme budgets.

Source – Audit Commission analysis of 2009/10 Department of Health QOF payments information; 2009/10 NHS Information Centre PCT prescribing data; 2009/10 HES data; 2009/10 Department of Health National Tariff Information

Figure 8: The variation in average spending per patient by PCT
Figure 9 also shows that the variation in the proportion of programme budget costs excluded from our analysis is much greater than the variation in the proportion included. This shows the problems organisations face when using programme budgets for comparing costs in diabetes care. It is not clear what the additional costs in programme budgets cover over and above those in our analysis or whether they have been collected on a consistent basis because of local differences in interpretation and cost allocation. It is therefore difficult to know whether differences in overall programme budget spend are down to variation in provision and efficiency, or simply to different approaches to cost allocation.

Source – Audit Commission Analysis of 2009/10 Department of Health QOF Payments Information; 2009/10 NHS Information Centre PCT prescribing data; 2009/10 HES data; 2009/10 Department of Health National Tariff Information
Our initial aim was to identify the progress that organisations have made in calculating the cost of delivering care pathways in the ten years since ACCA published its original guidance. We found little progress had been made. The most important barrier to progress in the organisations we visited was the lack of reliable data. To address this, we looked at ways they could use existing nationally available data to measure progress, and compare themselves against other PCTs.

Costing care and treatment for particular conditions or diseases is difficult. However, the three elements we used account for on average 70% of the programme budget costs, which may help organisations get some of the way to clearly identifying costs for treating diabetes.

We have developed a tool using our analysis to enable PCTs to evaluate their own spending and to compare with others. The tool can be found at [www.audit-commission.gov.uk/diabetescostcomparisons](http://www.audit-commission.gov.uk/diabetescostcomparisons).

When looking at the Audit Commission/ACCA tool, organisations may also want to look at the National Diabetes Information Service (NDIS), which includes a comprehensive range of diabetes data, tools and information: [www.diabetes-ndis.org/](http://www.diabetes-ndis.org/)

The Yorkshire and Humber Public Health Observatory (YHPHO) has also developed a range of tools and profiles providing a wider range of information, including data on outcomes and prevalence: [www.yhpho.org.uk/default.aspx?RID=8467](http://www.yhpho.org.uk/default.aspx?RID=8467).

Community and outpatient care data is not good enough. This has implications for setting outpatient tariffs and the new commissioning arrangements. Good decisions cannot be made without knowing how costs will change and whether value for money will be achieved. Opportunities to improve care in areas that are not part of the pathway should not be overlooked.

Due to the prevalence of co-morbidities, there are more inpatient admissions for people with diabetes rather than for diabetes.

It will take time to improve the quality of data needed to cost care pathways accurately. However, the financial implications of revisions to pathways should not be ignored, and any assumptions made should be clear.

Moving care out of hospitals and into the community might be intuitively better for patients, but it has so far proven very difficult to cost or measure.

16. Improving Emergency and Inpatient Care for People with Diabetes, NHS Diabetes, March 2008
Depression – people with diabetes are twice as likely to suffer from depression than the general population, and those who have diabetes and depression are twice as likely to die from a blood sugar related illness than those with only diabetes.

Hyperglycaemic State – there were over 28,000 emergency admissions to hospitals in England in 2009/10 for patients experiencing hyperglycaemia. This is caused when blood glucose levels are very high, and can lead to coma and death.

Nephropathy – 1 in 3 diabetics will develop kidney disease, and diabetes is the single most common cause of end stage renal disease.

Ketoacidosis – consistently high blood glucose levels in patients using insulin can cause blood to become acidic. This can cause coma and even death. Approximately 5 in every 1000 insulin users are admitted for ketoacidosis and coma each year.

Neuropathy – nerve damage may affect up to 50% of patients with diabetes, which can cause chronic pain, incontinence and sexual dysfunction.

Amputations – over 70 amputations a week in England on patients registered with Type 2 diabetes, of which 80% are estimated to be avoidable. This could cost the NHS up to £50m a year.

Retinopathy – excess glucose and high blood pressure can damage the blood vessels to the retina, and is the leading cause of blindness of adults of working age in the UK.

Cardiovascular disease – a major cause of death and disability in people with diabetes, accounting for 44% of fatalities in people with Type 1 diabetes, and 52% in people with Type 2.

Pregnancy complications – babies born to women with diabetes are five times as likely to be stillborn, and three times as likely to die in their first months of life.

Explanation of Diabetes – diabetes occurs when the body does not produce enough insulin or the insulin produced does not work properly. Insulin is a hormone, produced by the pancreas, that enables the body to absorb glucose which provides energy for the body to function properly.

Type 1 diabetes:
• is not preventable
• accounts for 10% of all adults with diabetes; and
• must be treated with insulin injections.

Type 2 diabetes:
• is preventable in some cases and the risk of developing can be reduced by lifestyle changes
• accounts for 90% of all adults with diabetes; and
• can be treated with a healthy diet and exercise and/or medication.