Estimating health and productivity gains in England from selected interventions

Executive summary

Gwyn Bevan, Mara Airoldi, Alec Morton and Mónica Oliveira, London School of Economics

Jennifer Smith, South Central Strategic Health Authority

February 2007
QQUIP and the Value for Money project

QQUIP (Quest for Quality and Improved Performance) is a five-year research initiative of The Health Foundation. QQUIP provides independent reports on a wide range of data about the quality of healthcare in the UK. It draws on the international evidence base to produce information on where healthcare resources are currently being spent, whether they provide value for money and how interventions in the UK and around the world have been used to improve healthcare quality.

The Value for Money component of the QQUIP initiative provides a series of reports that enable comparisons to be made between the scale of benefits and costs across a number of different disease groups. It also provides a methodological framework for examining the costs and benefits of national policies for treatment of conditions such as coronary heart disease and mental health.

For more information visit www.health.org.uk/QQUIP

Acknowledgements

This study was funded by The Health Foundation. We are grateful for comments from anonymous reviewers. Unless stated otherwise, all of the data cited in the text refer to England rather than the United Kingdom.
For more information

A print copy of the full report - *Estimating health and productivity gains in England from selected interventions* - is available from:

The Health Foundation
90 Long Acre
London WC2E 9RA
Telephone: 020 7257 8000
Facsimile: 020 7257 8001

**Email:** QQUIP@health.org.uk

Electronic copies are available online at:

**Internet:** www.health.org.uk/QQUIP
Executive summary

Introduction

Over the last decade the British Labour Government has presided over unprecedented increases in levels of spending on the National Health Service (NHS). But Opposition parties now claim that this record growth in NHS expenditure has been misspent, and some commentators are already predicting that the next British general election will be fought over the productivity of public services. In anticipation of this, the Prime Minister Tony Blair has emphasised the urgency with which the NHS must deliver efficiency from its huge extra investment: between 2003/04 and 2007/08, NHS expenditure is planned to increase each year by more than 7 per cent in real terms from about £60bn in 2003/04 to £90bn in 2007/08. Hence, if NHS productivity is to increase, the average annual monetary value of growth in output over this period needs to exceed £6bn.

In response to the Atkinson Review into government output and productivity, the NHS will increasingly be subject to a new way of measuring its productivity to assess whether the ‘increased spending on the NHS has been justified in terms of cost-weighted activity and improvements in quality of care (including gains in health). Work so far has put a monetary value of £30k on gains in health, measured in Quality-Adjusted Life Years (QALYs).

Ministers, officials and managers of strategic health authorities and primary care trusts need to understand the impacts of their policies and priorities both on the health of populations and on the new way of measuring NHS productivity. But standard approaches of setting priorities require development to provide such information.

An approach to estimating health and productivity gains

Researchers from The Health Foundation's Quest for Quality and Improved Performance (QQUIP) have developed an approach for analysing the relative scale of benefits of health policies to help assess where money might be spent to greatest effect. Their approach builds on the convergence of recent methodological developments for measuring the impacts of health policy interventions on target populations. The method involves analysing the impacts of a policy intervention in terms of various measures of the current Burden of Disease (BoD) and the BoD that is ‘avoidable’ from the intervention, measured by:

- deaths
- Years of Life Lost (YLLs): the difference between age at the time of ‘avoidable’ death and the expected life of someone of that age in England
- Years Lived with a Disability (YLDs)
- Disability-Adjusted Life Years (DALYs): the sum of YLLs and YLDs, with and without discounting.

Using their method it is also possible to estimate:

- gains in Quality-Adjusted Life Years (QALYs), which the researchers assumed to be broadly equal to discounted DALYs
- the monetary values of ‘avoidable’ deaths and gains in QALYs
- the net costs of an intervention
Executive summary

The researchers chose three interventions as a means of testing whether their approach can be generalised:

- improving prescribing statins to reduce high cholesterol: premature mortality from coronary heart disease (CHD) is high in England in comparison to other causes of death, and also in comparison to rates of CHD in other countries. The researchers developed models to estimate the benefits and costs of two policies to improve prescribing: to achieve the guidelines of the National Service Framework (NSF) for CHD, which aims to reduce levels of cholesterol for patients assessed as having a high risk of a CHD event, and simply to reduce levels of high cholesterol.

- utilising intensive glucose control to better manage Type 1 diabetes: levels of control of glycosylated haemoglobin (HbA1c) are poor for over 80 per cent of the population with Type 1 diabetes aged between 6 and 24. Good glycaemic control reduces the risks of long-term consequences of diabetes such as blindness, kidney failure and nerve damage. The researchers developed two models to estimate benefits and costs of implementing intensive glucose control to improve glycaemic control for all Type 1 diabetics under two scenarios: in the short run (up to five years), whatever the stage of disease, and in the long run (in a ‘steady state’) at the onset of the disease.

- meeting the target of the National Suicide Prevention Strategy (NSPS) for England to reduce the number of suicides: suicide is relatively common in young people and accounts for more deaths than traffic accidents. The NSF for Mental Health identified various risk factors for suicide and policies for prevention. The researchers estimated the benefits and costs of achieving the target for reducing suicide as set out in the strategy.

Findings

Improving prescribing statins

Estimated annual benefits from achieving CHD NSF guidelines include:

- 13,000 fewer deaths
- 490,000 fewer YLLs
- 470,000 fewer undiscounted DALYs (with an increase of 20,000 YLDs)
- 210,000 more QALYs (or discounted DALYs)
- £15 billion from ‘avoidable’ deaths
- £6bn from QALYs gained.

Achieving the CHD NSF guidelines would cost an estimated £500 million (direct costs) and £55m (net costs) annually. The estimates of the benefits of prescribing statins simply to reduce levels of high cholesterol are less reliable but are about double those of achieving the CHD NSF guidelines. Improving prescribing for cholesterol therefore looks alone to have potential to deliver the scale of gains in output to match the massive increases in NHS expenditure and have a significant impact on the productivity of the NHS.
Executive summary

Utilising intensive glucose control

Estimated annual benefits include:

<table>
<thead>
<tr>
<th>First five years</th>
<th>Steady state</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 10 fewer deaths</td>
<td>400 fewer deaths</td>
</tr>
<tr>
<td>• 400 fewer YLLs</td>
<td>13,000 fewer YLLs</td>
</tr>
<tr>
<td>• 1,400 fewer YLDs</td>
<td>10,000 fewer YLDs</td>
</tr>
<tr>
<td>• 1,800 fewer undiscounted DALYs</td>
<td>23,000 fewer undiscounted DALYs</td>
</tr>
<tr>
<td>• 1,400 more QALYs (or discounted DALYs)</td>
<td>17,000 more QALYs</td>
</tr>
<tr>
<td>• £10m from ‘avoidable’ deaths</td>
<td>£400m from ‘avoidable’ deaths</td>
</tr>
<tr>
<td>• £40m from QALYs gained</td>
<td>£500m from QALYs gained</td>
</tr>
</tbody>
</table>

The direct annual costs of intensive glucose control for Type 1 diabetes are estimated to be about £370m. In the first five years the net annual costs are estimated to be about £340m, which would exceed the monetary value of the benefits. In the steady state, the estimated net annual costs are about £250m, which is less than the monetary value of the benefits. Therefore, intensive glucose control is likely to worsen NHS productivity if introduced to all diabetic patients in the short run (with net annual loss of £300m), but improve NHS productivity if introduced at the age of onset in the long run (with net annual gain of £250m). However, neither would have a significant impact on the productivity of the NHS.

Meeting the target of the NSPS

Estimated annual benefits include:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• 600 fewer deaths</td>
<td></td>
</tr>
<tr>
<td>• 23,000 fewer YLLs (and undiscounted DALYs)</td>
<td></td>
</tr>
<tr>
<td>• 10,000 more QALYs (or discounted DALYs)</td>
<td></td>
</tr>
<tr>
<td>• £700m from ‘avoidable’ deaths</td>
<td></td>
</tr>
<tr>
<td>• £300m from QALYs gained</td>
<td></td>
</tr>
</tbody>
</table>

The annual costs of implementing the strategy are approximately £20m, which has a minimal impact on the estimated monetary value of QALYs gained (£300m): however, while this would improve NHS productivity, it would not have a significant impact.

Overall findings

This approach has been designed to enable those responsible for the formulation of health policies to understand the impacts of these policies on both the health of national/local populations and the new measures of NHS productivity. Our approach allows comparisons both across and within disease groups.
Research implications

Conducting this research has revealed three issues that need to be taken into account when examining the impact of health policies.

First, the research has shown that estimating impacts of interventions on the new measures of NHS productivity reveals inadequacies in the data that are routinely collected and in the evidence that is reported. These difficulties do not invalidate the principal findings of this research but they do point to the kinds of improvements that are required for better estimates to be made.

Second, assessing interventions in terms of their impacts on NHS productivity will tend to prioritise interventions for common diseases where prevalence is high and there are significant benefits from treatment (as is the case for statins). However, there are often other reasons than productivity for investing in a disease area, and this should not be the only criterion used.

Third, the two ways of giving monetary values of benefits of policies in measuring gains in NHS productivity – the value of a statistical life (at over £1m) and by QALYs (at £30,000/QALY) – can lead to very different results.
References


Department of Health (2000a), NHS expenditure Plans 2002-03, HMSO, 2002 (pp30-32)


References


