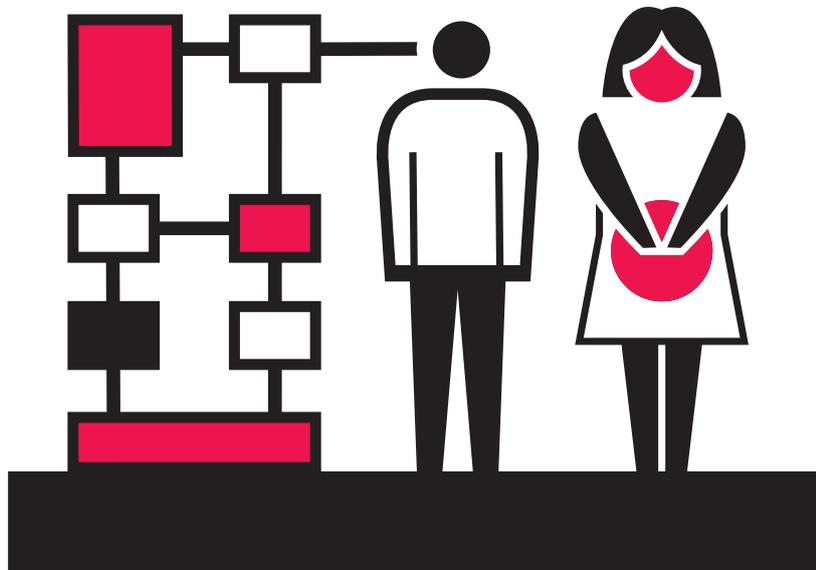


Evidence in brief:

Do quality improvements in primary care reduce secondary care costs?

Findings from primary research into the impact of the Quality and Outcomes Framework on hospital costs and mortality

February 2011



© 2011 Health Foundation

*Evidence in brief: Do quality improvements
in primary care reduce secondary care costs?*
is published by the Health Foundation,
90 Long Acre, London, United Kingdom,
WC2E 9RA

ISBN 978-1-906461-25-6

Contents

Commentary from the Health Foundation	5
Introduction	6
What was involved?	8
Our findings	10
Where can I find out more?	12

For more information read the full report:

Evidence: Do quality improvements in primary care reduce secondary care costs?

Authors

Stephen Martin¹
Peter C Smith²
Hugh Gravelle³
Nigel Rice³

Institution

1. Department of Economics, University of York
2. Imperial College Business School, London
3. Centre for Health Economics, University of York

Contact

Peter Smith
Email: peter.smith@imperial.ac.uk

Commentary

At the Health Foundation we regard the efficient use of resources as a core dimension of quality of care and we commissioned this work to add to the knowledge base underpinning the decision making of clinicians, managers and policy makers.

This study examined the extent investment in primary care through the Quality and Outcomes Framework (QOF) might contribute to reduced secondary care costs. The authors demonstrate an association between how a GP practice scores on the QOF indicators for care of people who have had a stroke and the costs for hospital care for stroke for patients from that practice. The researchers are rightly cautious in their interpretation of the findings – association is not the same as causation – but nevertheless the findings represent an important step forward in understanding how investment in prevention might lead to reduced future spending on care.

The reasons for the strong association for stroke care are less clear. It is possible that stroke patients are receiving a lower proportion of all the recommended components of high quality care and that poor quality care more quickly leads to increased demand for hospital services than for the other conditions in the QOF clinical domains. The analysis suggests that a single-point increase in QOF stroke scores, across England, might be associated with 2,385 fewer deaths in a year. And as the UK has one of the poorest fatality rates for stroke among Organisation for Economic Co-operation and Development (OECD) countries, further efforts to improve

the quality of care in this area are crucial.

Policy makers should examine these findings and carefully consider what aspects of care should be incentivised and how these are best measured with a strong focus on those outcomes that are important to patients. The study also raises important questions about the effectiveness of financial levers; how these work in practice and how they link to professional motivation.

While the results relating to stroke are important but not necessarily immediately actionable, the study markedly advances the methods in this complex field. Linking primary care and secondary care databases is a more difficult activity than it might appear and requires a sophisticated understanding of both health services and statistics. The Health Foundation is pleased to be making a contribution to leading edge work such as this.

We are continuing to fund leading academics carrying out research into value for money. The research teams are using a wide range of techniques including retrospective analysis of QOF results, hospital episode statistics, national registries and programme budgeting data, alongside prospective approaches to analyse the comparative value of the different components of care pathways across primary, secondary and tertiary care.

We hope that this and our future work will give commissioners information that helps inform prioritisation decisions, as they address the challenge of improving quality for patients in a demanding financial climate.

Introduction

Many policy-makers believe if patients receive timely interventions and approaches based on preventive medicine and disease management, health outcomes will improve and care will ultimately cost less. But current research evidence of this is, at best, equivocal. Preventive interventions can increase costs and many are not even cost-effective when compared to more conventional clinical interventions.

Research suggests that if resources are to be used wisely, there is a need to focus on preventive interventions that are carefully targeted at relevant at-risk groups, or those with established chronic conditions.

What is the QOF framework?

The Quality and Outcomes Framework (QOF) was an ambitious attempt to embed preventive measures into the health system. It was introduced in 2004 as part of the new General Medical Services Contract.

The new contract was meant to benefit patients and the wider NHS. By stimulating an improvement in chronic disease management, QOF was expected to lead to a fall in avoidable hospital admissions.

The QOF rewarded GP practices with financial incentives for ensuring preventive quality in primary care. Indicators – 146 indicators initially, later revised to 135 – were developed to measure quality against incentives.

The indicators were designed to measure quality across 11 clinical sub-domains (later increased to 19). The researchers chose to study eight of these:

- asthma
- chronic obstructive pulmonary disease
- coronary heart disease
- diabetes
- hypertension
- hypothyroidism
- mental health
- stroke.

Roughly half were clinical indicators and typically referred to the regularity of monitoring in primary care. For example, whether a patient's blood pressure had been recorded in the last 15 months.

Until now, research has focused largely on whether QOF has succeeded in altering clinical practice, rather than on whether it has led to reduced health service costs or improved health outcomes.

With our research, we sought to investigate whether specific attempts to deliver quality improvements in primary care have led to reduced hospital costs and reduced mortality.

Our research looked at the impact of GPs' achievement of QOF targets on secondary care costs and mortality.



This study looks at eight common chronic clinical conditions: asthma, chronic obstructive pulmonary disease, coronary heart disease, diabetes, hypertension, hypothyroidism, mental health and stroke

Key findings

Our research has found an association between achievement of QOF indicators and some measurable reduction in costs for hospital care and mortality outcomes.

This association is particularly strong for stroke care. Over the four-year period studied (2004/05 to 2007/08), it is estimated improvements in primary care for stroke, (measured by a 10 per cent increase in mean practice QOF stroke score), may have reduced secondary care costs by some £165 million.

The research also suggests that QOF attainment in one clinical area could have a positive impact on hospital costs in other clinical areas. Therefore, studies that examine the impact of improved quality by looking at the benefits for only one disease might seriously underestimate the total benefits of that quality improvement.

These findings should be interpreted cautiously. Although we believe higher achievement of QOF scores may be contributing to reduced hospital costs, this study does not establish causality.

In addition, the reduction of hospital costs needs to be considered alongside increased costs to primary care and other health services. The findings do not necessarily suggest that improved primary care will reduce total lifetime healthcare costs.

However, this research makes an important contribution to a number of topical initiatives, including the merits of prevention and early intervention, and shifting care from secondary settings to primary care.

Over the four-year period studied, it is estimated improvements in primary care for stroke, may have reduced secondary care costs by £165 million

What was involved?

The QOF is possibly the most advanced attempt to embed preventive medicine and disease management into primary care. When it was designed, considerable effort was made to ensure that it was aligned with best contemporary clinical practice – to the extent that evidence permitted.

The research

Our study was carried out by researchers from the Centre for Health Economics and the Department of Economics at York University, and from Imperial College Business School, London.

We sought to investigate the extent the initiative may have affected hospital costs or mortality outcomes. We did not seek to evaluate the QOF initiative or assess the cost-effectiveness of specific QOF interventions.

How was the analysis carried out?

We examined new data sources covering 50 million English citizens and employed advanced statistical methods. The approach included analysis of different models, single year and multi-year data comparisons.

This data brought together patient registration data and patient-level hospital episode statistics (HES) for each patient registered with an English practice on 1 April 2007.

This approach enabled us to study whether patient hospital costs in 2007/08 are associated with yearly QOF scores dating back to 2004/05, conditional on certain characteristics – for example, the patient’s age and gender and their recent use of hospital services.

PREVENTIVE MEDICINE AND DISEASE MANAGEMENT

The intention of disease management is to ensure that at-risk groups, or those with established chronic conditions, are offered timely interventions and advice that increase their future health prospects and reduce expected future health services expenditure.

Total hospital costs were split across 23 programme budget categories, allowing analysis of the impact of GP practice QOF scores on each patient’s hospital costs for individual care programmes.

Finally, the dataset also recorded whether the patient died during the 12-month period from 1 April 2007 to 31 March 2008. This allowed us to examine the association between the quality of primary care and the probability of death, and how many fewer deaths might be expected if the quality of care were increased, even by a small amount.

Comprehensive details of the dataset can be found in the full report, *Evidence: Do quality improvements in primary care reduce secondary care costs?*, along with a thorough explanation of our methods and how the analysis was conducted.



Given that 500 variables were unwieldy, and most of these proved to be statistically insignificant, we developed a simpler, more manageable model of hospital expenditure that was still statistically valid and informative

How were the data used?

There were a number of challenges to using the data effectively. The data encompassed more than 500 variables, with three broad categories of factors capable of influencing expenditure and outcomes:

- individual needs characteristics
- local population needs variables
- local supply variables.

There was a technical challenge to isolate the impact of QOF on costs (and outcomes) after adjusting for all other possible factors.

We developed a base model of the factors affecting NHS hospital spending on individuals (excluding mental health and maternity services), and focused this on a sample of the study population (about five million people).

We sought to identify the quantitative relationship between patient hospital costs and our extensive set of possible influences on cost.

Simplifying the model

Given that 500 variables were unwieldy, and most of these proved to be statistically insignificant, we developed a simpler, more manageable model of hospital expenditure that was still statistically valid and informative.

It retained the individual-level variables, leading to the selection of seven local needs variables and three local supply variables, including one QOF attainment score for 2005/06 for the quality of stroke care.

TYPES OF CHARACTERISTICS

Individual needs include the patient's age, sex, previous diagnoses and intensity of hospital use, while supply-side factors include waiting times and QOF attainment scores.

Local population needs include over 160 variables reflecting socioeconomic characteristics of a small area and disease prevalence.

Local supply variables are a set of 130 variables reflecting QOF achievement scores, and such factors as access to healthcare facilities and waiting times.

Focusing on 2007/08, we refined our modelling to consider the possibility that hospital costs during the period might be associated with the quality of primary care in more than one year.

Comprehensive details can be found in the full report, Evidence: Do quality improvements in primary care reduce secondary care costs?, available via our website www.health.org.uk

Our findings

Our results suggest that QOF is associated with material but limited gains for reducing hospital costs and mortality.

We feel these results offer solid grounds for believing that QOF improvements are contributing to the gains, although our study does not go as far as to prove the relationship between cause and effect.

The stroke QOF score dominates our models. It is possible that the stroke QOF score is an indicator of overall primary care quality; it correlates highly with overall QOF attainment.

Reducing secondary care costs

We have observed an interesting relationship between mean practice QOF scores and reduced secondary care costs.

Our findings suggest that the true estimate of impact of QOF on costs can be observed with the stroke QOF score. With this clinical condition, a one-percentage-point increase in the QOF score has been associated with a £16.5 million annual reduction in total patient costs. Over the period studied (2004/05 – 2007/08) the mean practice QOF stroke score increased by 10 percentage points, therefore suggesting that annual secondary care costs may have decreased by about £165 million as a result of increased primary care quality.

This means that a one-point increase in the stroke QOF achievement rate will be associated with a fall of £0.44 per person in hospital costs.

THE STROKE QOF SCORE EXAMPLE

Research findings have suggested that the stroke care indicators are prominent because poor primary care for people who have had a stroke is more likely to lead to a hospital admission, more quickly than for the conditions in the other QOF clinical areas.

Its dominance, and the role stroke QOF score plays in the model of circulatory disease costs, also suggests that stroke quality metrics are capturing specific aspects of preventive care that have a measurable impact on outcomes.

With a population of 50 million people, this one-point increase would be associated with a reduction in annual total hospital costs of £22.15 million.

Although this is a modest sum when compared with the total secondary care spend, this is consistent with the claim that health improvements in the quality of primary care are associated with reductions in the cost of secondary care.

We considered whether the reduction in hospital costs can be attributed to some treatments moving out of hospitals and into primary care; however, careful scrutiny of QOF indicated few opportunities to substitute primary care for treatments formerly delivered in hospitals. Therefore, QOF indicators are more likely to reflect improvements in clinical practice and outcomes in primary care.



The results for the 2007/08 stroke score suggest that a one-point improvement in QOF attainment is associated with 2,385 fewer annual deaths across the population

We are not able to estimate directly the costs to primary care and other health services for securing the improvement. It is worth noting that the additional QOF incentive payments associated with a one-point improvement in stroke achievement are very small compared to the associated hospital cost savings.

We emphasise that we are not claiming that improved primary care will reduce total lifetime healthcare costs; the majority of disease prevention strategies can generate additional costs.

Our analysis does not consider for example, the additional pharmaceutical and primary care costs associated with meeting QOF stroke targets, nor the impact of total lifetime healthcare costs if the patient lives longer as a result of better primary care.

The effect on mortality

We modelled the probability of death and found very similar results to the hospital cost models, with the stroke attainment scores again dominating.

The results for the 2007/08 stroke score suggest that a one-point improvement in QOF attainment is associated with 2,385 fewer annual deaths across the population.

Impact on other clinical areas

We re-estimated the base model, replacing the QOF stroke achievement rate with the achievement rate for each of the other seven clinical areas. None was statistically significant.

QOF INDICATORS

QOF indicators were designed to measure quality across common chronic clinical conditions. The study focused on eight of these: asthma; diabetes; chronic obstructive pulmonary disease; coronary heart disease; hypertension; hypothyroidism; mental health; stroke.

However, when we substituted the overall clinical QOF population achievement rate, we achieved a very similar pattern to the stroke result but with a lower level of significance.

The close association between the results for the stroke QOF score and the overall QOF score may indicate that stroke achievement reflects general primary care quality, rather than quality only in stroke care.

Broader discussion of the findings has suggested that the stroke care indicators are so prominent because poor primary care for people who have had a stroke is more likely to lead to a hospital admission more quickly than for the conditions in the other clinical domains of the QOF.

Incentive payments associated with a one-point improvement in stroke achievement are very small compared to the associated hospital cost savings

Where can I find out more?

The full report, *Evidence: Do quality improvements in primary care reduce secondary care costs?*, from which this summary is derived is available to download free of charge from the Health Foundation website at:

www.health.org.uk/publications

The full report includes details of the statistical methods used, together with data tables reporting the figures resulting from different models.

Stay informed

The Health Foundation works to continuously improve the quality of healthcare in the UK. If you would like to stay up to date with our work and activities, please sign up for our email alerts at:

www.health.org.uk/updates

You can also follow us on Twitter at:

www.twitter.com/HealthFdn

The Health Foundation is an independent charity working to continuously improve the quality of healthcare in the UK.

We want the UK to have a healthcare system of the highest possible quality – safe, effective, person-centred, timely, efficient and equitable. We believe that in order to achieve this, health services need to continually improve the way they work.

We are here to inspire and create the space for people, teams, organisations and systems to make lasting improvements to health services.

Working at every level of the healthcare system, we aim to develop the technical skills, leadership, capacity, knowledge, and the will for change, that are essential for real and lasting improvement.

The Health Foundation
90 Long Acre
London WC2E 9RA
T 020 7257 8000
F 020 7257 8001
E info@health.org.uk

Registered charity number: 286967
Registered company number: 1714937

www.health.org.uk

ISBN 978-1-906461-25-6
© 2011 Health Foundation