

Research

Determinants of primary medical care quality measured under the new UK contract: cross sectional study

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Abstract

Objective To identify factors associated with the quality of primary medical care incentivised under the new UK general medical services contract.

Design Cross sectional study.

Setting NHS Ayrshire and Arran area, Scotland.

Participants 60 general practices.

Main outcome measures Quality scores reflecting the total points achieved on the 10 clinical domains and holistic care. Univariate and multivariate regression analyses were used to relate quality scores to measures of population characteristics, urban-rural location, general practitioner characteristics, clinical team size and composition, practice characteristics, and income from other sources.

Results Deprivation was associated with higher scores. Quality scores increased with the size of the clinical team. Practices with higher income from other sources had lower quality scores. Practices that were accredited, had training status, or contained younger general practitioners had higher quality scores, but these effects were explained by other associated factors. 53% of the variation in quality scores was explained by a multivariate model, which included measures of deprivation, clinical team size and composition, and financial incentives.

Conclusions Population characteristics showed little association with the quality of primary medical care incentivised under the UK general medical services contract. Larger clinical teams delivered higher quality clinical care, but the nurse-doctor composition of the clinical team did not influence quality. Practices that were more likely to respond to financial incentives because of previous behaviour or lower income from other sources recorded higher quality. If generalisable, the results suggest that initiatives to improve primary medical care quality should focus on the structure and resourcing of providers.

Introduction

The new contract for general medical services introduced in 2004 constitutes the biggest change in UK primary medical care for many decades. Substantial financial rewards are now linked to achievements in clinical and non-clinical quality.¹ This reform reflects international interest in using financial incentives as a method of improving primary care.² A previous study of quality when it was not explicitly incentivised found clinical quality for three chronic conditions to be higher with longer consultation times and in larger practices.³ A follow-up study found substantial improvements in quality between 1998 and 2003, just before

quality became incentivised.⁴ We provide the first analysis of the determinants of incentivised quality.

Methods

We analysed data for 60 of the 61 practices in the NHS Ayrshire and Arran area, which has a population of about 367 000. It is broadly representative of Scotland, with a slightly older and more deprived population, and considerable remoteness, including two inhabited islands. We derived quality scores reflecting the total points achieved on the 10 clinical domains and holistic care (reflecting performance on the third worst clinical domain) for 2004-5 in the UK general medical services contract.

Using linear regression analysis, we estimated the univariate associations between possible determinants of quality and the quality score. Univariate analyses show general patterns, but multivariate analysis identifies the unique contribution of each factor, keeping other factors constant. We identified statistically significant factors in the multivariate model using forward stepwise selection. We considered many factors and have a relatively small sample. Consequently our results may be sensitive to outliers. See [bmj.com](http://www.bmj.com/) for similar results from more complex analyses that are less sensitive to the distribution of scores.

Results

The mean (standard deviation) quality score was 612 (59) out of a possible maximum of 650. Deprivation was associated with higher scores (table). Practices with older general practitioners had lower scores. Quality scores increased with clinical team size (measured by the whole time equivalent number of principals, non-principals, and practice nurses). Former fundholder, Royal College of General Practitioners accredited, and training practices had higher quality scores. Practices with higher global sum payments per registered person (allocated for workload on a weighted capitation formula) had lower quality scores. Fifty three per cent (F test, $F_{7, 52} = 4.24$; $P < 0.001$) of the variation in quality scores was explained by a multivariate model, which included measures of deprivation, clinical team size and composition, and financial incentives.

Discussion

Quality scores for the 10 clinical domains and holistic care in the UK general medical services contract were higher for deprived



Results from complex analyses are on [bmj.com](http://www.bmj.com/)

Univariate and multivariate analyses of associations between quality scores measured under the new general medical services contract and possible determinants of quality

Possible determinant of quality scores	Univariate models			Multivariate model*	
	Association†	P value	% variation in quality scores explained‡	Coefficient†	P value
Population characteristics:					
Material deprivation¶	Positive	0.040	3.2	Positive	0.038
Standardised chronic illness rate**	Positive	0.060	2.2	Not selected	—
Proportion of population aged more than 64 years	Negative	0.110	5.4	Not selected	—
Urban-rural location††:					
Small town	Negative	0.385	5.0§	Not selected	—
Rural area	Negative	0.284		Not selected	—
General practitioner characteristics:					
Proportion women	Negative	0.745	0.4	Not selected	—
Mean age (years)	Negative	0.005	10.8	Not selected	—
Clinical team size‡‡:					
Small (≥4 and <6 whole time equivalents)	Positive	0.005	29.0§	Positive	0.010
Medium (≥6 and <10 whole time equivalents)	Positive	0.001		Positive	0.005
Large (≥10 whole time equivalents)	Positive	<0.001		Positive	0.001
Clinical team composition:					
Non-principal proportion of clinical team	Positive	0.113	3.8	Positive	0.003
Nurse proportion of clinical team	Positive	0.819	0.2	Not selected	—
Practice characteristics:					
Royal college accreditation	Positive	0.022	9.1	Not selected	—
Training practice	Positive	<0.001	7.6	Not selected	—
17C (salaried) contract	Negative	0.946	0.0	Not selected	—
Ex-fundholding practice	Positive	0.013	6.8	Positive	0.009
Income from other sources:					
Global sum payment (£, per capita)	Negative	0.028	18.4	Negative	0.023

*Statistically significant variables selected using forward-stepwise procedure. Variables not selected are indicated. †Estimated coefficients available at bmj.com. ‡Measured using R² statistic.

§Refers to group of variables.

¶Scottish Index of Multiple Deprivation 2004. **Scottish Census 2001. ††Scottish Executive urban-rural classification. Reference group: located in urban settlements. ‡‡Reference group: very small clinical team (<4 whole time equivalents).

areas, larger clinical teams, and practices more likely to respond to financial incentives. The size and composition of the clinical team was the most important determinant. Practices with fewer than four whole time equivalent clinicians had lower quality recorded. Once we controlled for other factors, practices with higher proportions of non-principals performed better, possibly because they are more recently trained. Although nurses may keep more complete records than doctors,⁵ higher proportions of clinical input from nurses were not associated with higher quality scores. None the less, more practice nurses increase clinical team size and this increased quality.

Financial variables were important. The higher quality of former fundholders may reflect greater interest in financial incentives. The negative effect of global sum payments suggests a weakened incentive effect when income is higher from other parts of the contract. Concerns have been that the new contract will increase inequalities in health care,^{2 6} but we found that deprivation was positively associated with quality. Factors associated with quality but that were not significant once we controlled for other factors were accreditation, training status, and average age of general practitioner. The structure and resourcing of the practices with these characteristics accounted for the quality of their care.

Managers of healthcare systems worldwide are seeking to maximise their cost effectiveness, and the results of the new UK contract will attract much interest.² Our study was based on a small sample in a particular area but, if generalisable, suggests that the structure and resourcing of primary providers of medical care should be the focus of policy makers seeking to improve quality.

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Ethical approval: Not required.

- 1 Investing in general practice—the new general medical services contract. www.nhsconfed.org/docs/contract.pdf (accessed 8 Aug 2004).
- 2 Roland M. Linking physicians pay to quality of care—a major experiment in the UK. *N Engl J Med* 2004;351(14):1448-54.
- 3 Campbell SM, Hann M, Hacker J, Burns C, Oliver D, Thapar A, et al. Identifying predictors of high quality care in English general practice: observational study. *BMJ* 2001;323:784-7.

What is already known on this topic

The new UK contract for general medical services links substantial financial rewards to quality

Before the new contract, clinical quality was known to be higher with longer consultations and in larger practices

What this study adds

We provide the first analysis of the determinants of quality incentivised under the new contract

Incentivised quality is higher for deprived areas, larger clinical teams, and practices more likely to respond to financial incentives

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 - 5 Horrocks S, Anderson E, Salisbury C. Systematic review of whether nurse practitioners working in primary care can provide equivalent care to doctors. *BMJ* 2002;324:819-23.
 - 6 McElduff P, Lyratzopoulos G, Edwards R, Heller RF, Shekelle P, Roland M. Will changes in primary care improve health outcomes? Modelling the impact of financial incentives to improve quality of care in the UK. *Qual Saf Health Care* 2004;13:191-7.
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