

Primary care funding, contract status, and outcomes: an observational study

Claire L Morgan and Hendrik J Beerstecher

ABSTRACT

Background

The introduction of the Quality and Outcomes Framework (QOF) provides a quantitative way of assessing quality of care in general practice. We explore the achievements of general practice in the first year of the QOF, with specific reference to practice funding and contract status.

Aim

To determine the extent to which differences in funding and contract status affect quality in primary care.

Design of study

Cross-sectional observational study using practice data obtained under the Freedom of Information Act 2000.

Setting

One hundred and sixty-four practices from six primary care trusts (PCTs) in England.

Method

Practice data for all 164 practices were collated for income and contract status. The outcome measure was QOF score for the year 2004–2005. All data were analysed statistically.

Results

Contract status has an impact on practice funding, with Employed Medical Services (EMS) and Personal Medical Services (PMS) practices receiving higher levels of funding than General Medical Services (GMS) practices ($P < 0.001$). QOF scores also vary according to contract status. Higher funding levels in EMS practices are associated with lower QOF scores ($P = 0.04$); while GMS practices exhibited the opposite trend, with higher-funded practices achieving better quality scores ($P < 0.001$).

Conclusion

GMS practices are the most efficient contract status, achieving high quality scores for an average of £62.51 per patient per year. By contrast, EMS practices are underperforming, achieving low quality scores for an average of £105.37 per patient per year. Funding and contract status are therefore important factors in determining achievement in the QOF.

Keywords

England; health care costs; outcome assessment (health care); primary health care; process assessment (health care); quality indicators, health care.

INTRODUCTION

In recent years, government healthcare initiatives in the UK have focused on facilitating improvements in quality of care in general practice. These initiatives culminated in the new General Medical Services (nGMS) contract in April 2004 and the Quality and Outcomes Framework (QOF), which provides a quantitative way of assessing aspects of quality in general practice countrywide for the first time.¹

Two types of contract predominate in UK general practice: General Medical Services (GMS) and Personal Medical Services (PMS). The GMS contract is a nationally negotiated contract, which dates back to the conception of the NHS. By comparison, PMS contracts are a more recent development, which offer practices a locally negotiated contract specific to the healthcare needs of the local practice population.² Under both types of contract, GPs work primarily as independent contractors.

A third type of contractual status exists in the UK whereby GPs are employed; either in PMS practices, directly by the primary care trust (PCT) or by private providers. For convenience, practices of this type (where all GPs are employed) are collectively referred to throughout this paper as Employed Medical Services (EMS).

Previous research into funding in primary care has been hampered by the complexity of funding. The Minimum Practice Income Guarantee (MPIG)

C Morgan, BA (Hons), senior researcher; H Beerstecher, artsexamen, GP principal; Canterbury Road Surgery, Sittingbourne, Kent.

Address for correspondence

Dr Hendrik J Beerstecher, Canterbury Road Surgery, 111 Canterbury Road, Sittingbourne, Kent, ME10 4JA.
E-mail: hendrick.beerstecher@nhs.net

Submitted: 20 January 2006; **Editor's response:** 8 June 2006; **final acceptance:** 2 July 2006.

©British Journal of General Practice 2006; 56: 825–829.

represents the basic funding in the new GMS contract, allowing easy comparison of funding. Any extra services are priced separately as Additional and Enhanced Services. The QOF is paid separately as value per point depending on disease prevalence and has been described elsewhere.³ Private services not provided under the NHS are charged to the patients directly.

Difficulties encountered in past research on funding and quality have mostly been overcome by the introduction of the new GMS contract and the QOF. Leese and Bosanquet examined the relation of funding and quality markers in 1989,⁴ but excluded single-handed practices. In 2004, the Audit Commission found no difference between GMS and PMS funding,⁵ but their conclusions were based on poor quality data. Campbell *et al* described the relationship between quality and contracting status in 2005.⁶ In Campbell's study PMS practices (23 of 87) were selected on the basis of a focus on quality of care, but this was not done for the GMS controls thus introducing selection bias.

The objective of this study is to examine the relationship between funding, contract status and QOF score; and to determine the extent to which differences in funding and contract status affect quality in primary care.

METHOD

Setting

We collated data on contract status, funding and QOF score for all practices in six PCTs: Brighton and Hove City; East Elmbridge and Mid Surrey; Epping Forest; Melton, Rutland and Harborough; North Eastern Derbyshire and Swale. We selected Brighton and Hove, Epping Forest, Swale and North Eastern Derbyshire PCTs due to the presence of EMS practices. Melton, Rutland and Harborough PCT was featured as having large practices⁷ and was selected for this reason. East Elmbridge and Mid Surrey was selected for having a contracting consortium of practices known as Epsom Downs Integrated Care Services Ltd to provide primary care services. All information was requested under the Freedom of Information Act (2000) and provided free of charge.

The areas covered by the six PCTs have differing sociodemographics when compared using the Index of Multiple Deprivation 2004.⁸ This measures income, employment, health, education, housing, crime, and living environment. Brighton and Hove City PCT, North Eastern Derbyshire and Swale represent the most deprived areas of those studied, ranking on the 32nd, 34th and 39th centile, whilst Melton, Rutland and Harborough PCT and

East Elmbridge and Mid Surrey PCT cover a far more affluent area, ranking on the 93rd and 98th centile. Epping Forest PCT falls between, ranking on the 75th centile.

Deprivation rankings are mirrored by the Additional Needs Index averages for each PCT: Brighton and Hove City 1.05, North Eastern Derbyshire 1.04, Swale 1.00, Epping Forest 0.92, Melton, Rutland and Harborough 0.87 and East Elmbridge and Mid Surrey 0.85. The Additional Needs Index is a measure of the Standard Mortality Ratio and Standardised Limiting Long-Term Illness.⁹

Funding

For each practice in our study, we made funding data comparable by defining basic funding as equivalent to the MPIG of GMS practices. MPIG payments are made for providing basic medical care, with extra services, for example, drug addiction care, funded separately as enhanced services. As some extra services payments were already included in the contracts of the PMS and EMS practices studied, we requested the value of their enhanced services and deducted this from their total funding figures.

Quality score

The QOF measures aspects of quality. It awards points to practices for achieving clinical (550 points) and administrative (500 points) targets. In this study, we used the total QOF score (maximum 1050 points) for analysis. The QOF was initially designed to translate evidence from clinical trials into everyday practice and therefore may fail to take into account the complexity of quality in primary care. One obvious shortcoming of the QOF is its failure to measure the quality of the consultation.¹⁰

Statistical tests

Data analysis was carried out using Microsoft

How this fits in

Past studies have focused on contract status, funding or quality of care, but these have been hampered by difficulties in obtaining reliable data and complexity of practice funding. This paper uses new quality data made available through the Quality and Outcomes Framework of the new Medical Services Contracts. For the first time, contract status and funding are assessed together in relation to quality data.

Excel® and VassarStats.¹¹ SPSS was used for stepwise multiple regression analysis. We performed Box Plot analysis based on quartiles to detect outliers.¹²

There are 12 mild outliers for funding (GMS = 10, PMS = 2) and six mild outliers for QOF (GMS = 4, PMS = 2). We removed extreme outliers for funding (GMS = 1, EMS = 2) and QOF (GMS = 1).

The EMS outliers are uncharacteristically small practices (627 and 787 patients) costing £401.77 and £392.03 per patient per year, and scoring 880 and 328 QOF points, respectively. Removal of outliers in PMS and GMS did not greatly affect our findings.

One-way analysis of variance (ANOVA) was used to compare variations in QOF scores and funding to practice contract status. Correlation and regression analysis was performed on QOF and funding. We used the contract status and funding as independent variables in a series of stepwise regression models to determine their influence on QOF score.

RESULTS

Funding and QOF scores for all practices after exclusion of the extreme outliers ($n = 160$) were analysed to determine any interrelationship and possible connection to contract status (Table 1).

Initial correlation analysis on funding and QOF score revealed no relationship between the two variables. Further analysis by contract status indicated a significant positive relationship between funding and QOF score for GMS practices, $r = 0.3431$ (95% confidence interval [CI] = 0.147 to 0.513), $P < 0.001$; and a significant negative relationship between the same variables for EMS practices, $r = -0.6442$ (95%CI = -0.906 to -0.025), $P = 0.04$. PMS practices did not show significant correlation (Figure 1).

One-way ANOVA on the funding data grouped by contract status indicated statistically significant differences in funding received per patient per year between at least one pair of the group means ($F = 75.0373$, $P < 0.001$). Post-hoc tests revealed significant differences between EMS and GMS ($P < 0.01$), EMS and PMS ($P < 0.01$) and PMS and GMS ($P < 0.01$).

One-way ANOVA on QOF scores grouped by contract status indicated statistically significant differences in scores between at least one pair of the group means ($F = 21.9128$, $P < 0.001$). Post-hoc tests revealed significant differences between EMS and GMS ($P < 0.01$) and EMS and PMS ($P < 0.01$). There was no difference between GMS and PMS QOF scores.

Table 1. Analysis of practice contract status, funding and QOF score achieved (standard deviations in parentheses).

Contract status	Average funding received per patient per year (£)	Average QOF score achieved
GMS ($n = 90$)	62.51 (4.81)	942.73 (102.31)
PMS ($n = 60$)	87.38 (20.48)	977.11 (73.39)
EMS ($n = 10$)	105.37 (28.11)	757.94 (158.79)
One-way ANOVA (F)	75.0373 ^a	21.9128 ^b

^a $P < 0.001$. ^b $P < 0.001$. GMS = general medical services. PMS = personal medical services. EMS = employed medical services.

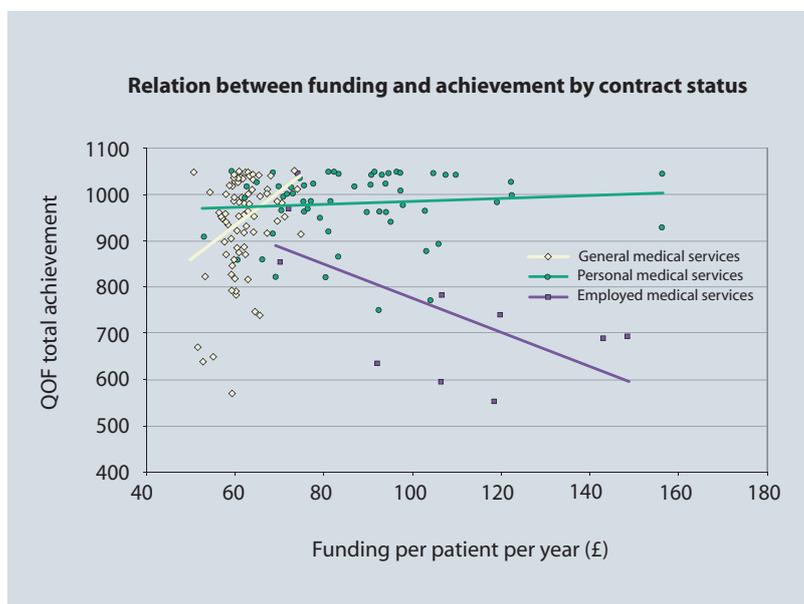


Figure 1. Basic practice funding versus quality and outcome score.

We used QOF score as the dependent variable and funding and contract status as independent variables in a stepwise multiple regression analysis on all practices ($n = 160$). The resulting model demonstrated that contract status is the most useful predictor of QOF score, but only accounts for 2% of the variation ($P = 0.04$).

As the contract status groups showed marked differences in correlation trends, a series of enter multiple regression models were run to determine the impact of funding on QOF score. Preliminary correlation analysis indicated a negative correlation between funding and QOF score for EMS practices. Stepwise multiple regression analysis on these practices ($n = 10$) revealed that funding determines 34% of the variation in QOF score and this finding is significant ($P = 0.04$). For GMS practices ($n = 90$), where there was a positive trend between funding and QOF score, funding explains

Table 2. Funding per patient per year as an independent variable for QOF score by contract status (all practices all primary care trusts).

	Unstandardised regression coefficient (95% CI)	Standardised regression coefficient	P value
GMS (<i>n</i> = 90)	7.296 (3.064 to 11.528)	0.343	0.001
PMS (<i>n</i> = 60)	Funding per patient per year is non-significant and does not explain any variation in QOF score		
EMS (<i>n</i> = 10)	-3.640 (-7.162 to -0.117)	-0.644	0.04

GMS = general medical services. PMS = personal medical services. EMS = employed medical services.

11% of the variation in QOF score ($P = 0.001$) (Table 2). Funding was not related to QOF score for PMS practices in this study ($n = 60$).

DISCUSSION

Summary of main findings

The results of our study indicate that GMS is the most efficient contract status, achieving on average 942.7 of the available 1050 QOF points for an average of £62.51 per patient per year. PMS practices were recruited from GMS with increased funding for staff in order to improve quality.² However, despite significantly higher levels of funding for PMS (£87.38 per patient per year), we could find no difference in QOF score between the GMS and PMS practices studied.

Strong opposing relationships between funding and QOF score are identified when each contract status group is observed individually. For GMS practices, the significant positive correlation between funding and QOF score highlights a general pattern of increased performance with increasing funding. This seems logical, as there would be more resources to divert to scoring quality points.

For EMS practices the trend is reversed. For an average funding of £105.37 per patient per year, an average of 757.9 QOF points were achieved. A more dysfunctional practice would logically cost more to run and this may explain the association of the declining QOF score and rising costs. The absence of financial incentives of employee physicians can also be a factor in both practice organisation and QOF score. Differences between employees and independent contractors are known in the NHS and other healthcare systems.^{13–15}

In PMS practices, there seems to be a ceiling effect, at which additional funding produces no further increase in QOF score. This is the likely

explanation why they are not performing better than GMS in terms of QOF score despite higher funding. The same might be true for higher funded GMS practices. Achievement in high scoring practices might be reflected better by centile scores exemplified by Jamie.¹⁶

Comparison with existing literature

We compared our data to that used by the Audit Commission who examined funding and contract status. The Audit Commission did not report a disparity in funding by contract status for eight PCTs (200 practices). This contrasts considerably with our results, which indicate significant differences in funding for only six PCTs.⁵

The structure of the old GMS contract narrowly defined practice funding. This is reflected in the narrow distribution of GMS income we observe in our study. For GMS practices, the expected funding range would be between £50–75 per patient per year.

The Audit Commission supplied us with data on funding and contract status used for their original report and this was analysed to determine variability in funding. This highlighted suspect data, with the GMS practices of one PCT receiving between £10.56 and £309.63 per patient per year. The Audit Commission itself reports that 'The most striking feature is the wide variation'.⁵ Flaws in funding data would obscure any existing relationship to contract status.

Strengths and limitations of the study

We did not fully account for different levels of service provision across all contract status groups. Minor variations in funding figures are possible, caused by Additional Services payments and the QOF point deduction for PMS practices. We assumed EMS and PMS provided all the usual Additional Services (for example, cytology and child health surveillance). If practices did not, we would have underestimated EMS or PMS funding. The QOF point deduction was taken into account, with the average value of £2.21 per patient per year being deducted from EMS practice funding data relating to 2005–2006. This means we slightly underestimated historic EMS funding.

Implications for future research or clinical practice

There is a strong association between funding, contract status and QOF achievement. Funding and contract status should therefore be taken into account when comparing practices for delivery on quality measures.

Our results suggest QOF scores in GMS can be

improved by addressing funding inequalities. Both PMS and EMS practices receive high levels of funding but this is not consistently reflected in higher quality scores, especially in EMS.

Further research into other factors which may influence performance in the QOF may be useful in order to obtain a more comprehensive picture of how efficiency and quality can be improved in general practice.

Funding body

Funding was not required

Ethics committee

Not applicable

Competing interests

The authors have stated that there are none

Acknowledgements

We thank the PCT FOI officers, particularly Jeffrey Harris (Swale), for the collection and provision of the data. We thank Manjit Benning of the Audit Commission for provision of their funding data. We thank friends, family and colleagues for tolerating and supporting us in the last year.

REFERENCES

1. Department of Health. *Standard General Medical Services contract*. London: Department of Health, 2005. www.dh.gov.uk/assetRoot/04/10/84/58/04108458.pdf (accessed 28 Sep 2006).
2. The PMS National Evaluation Team. *National evaluation of first wave NHS Personal Medical Services pilots*. London: Department of Health, 2002. www.dh.gov.uk/assetRoot/04/11/88/52/04118852.pdf (accessed 28 Sep 2006).
3. Roland M. Linking physicians' pay to the quality of care — a major experiment in the United Kingdom. *NEJM* 2004; **351**(14): 1448–1454.
4. Leese B, Bosanquet N. High and low incomes in general practice. *BMJ* 1989; **298**: 932–934.
5. Audit Commission. *Transforming primary care: the role of primary care trusts in shaping and supporting general practice*. London: Audit Commission, 2004. Chapter 76 to 79. <http://www.audit-commission.gov.uk/Products/NATIONAL-REPORT/8AE80592-69BC-48bc-AA1AC707CFAD8DE0/TransformingPrimaryCare.pdf> (accessed 28 Sep 2006).
6. Campbell SM, Roland M, Steiner A, *et al*. Do Personal Medical Services contracts improve quality of care? A multi-method evaluation. *J Health Serv Res Policy* 2005; **10**: 31–39.
7. Anonymous. Does size matter? *Pulse Magazine*, 2005; April 23:32–34 <http://www.pulse-i.co.uk/articles/fulldetails.asp?aid=6733&pageno=2&searchphrase=&CATEGORY=&ARTICLETYPE=&submitted=1&ISSUEDATE=111421080000> (accessed 16 Oct 2006).
8. The National Primary Care Research and Development Centre. *National Primary Care database*. Manchester: NPCRDC, 2006. http://www.primary-care-db.org.uk/ODPM_help.cfm (accessed 28 Sep 06).
9. Department of Health. *GMS statement of financial entitlements*. London: Department of Health, 2005. www.dh.gov.uk/assetRoot/04/11/35/25/04113525.pdf (accessed 28 Sep 2006).
10. Howie JGR, Heaney DJ, Maxwell M, *et al*. Developing a 'consultation quality index' (CQI) for use in general practice. *Fam Pract* 2000; **17**: 455–461.
11. Lowry R. VassarStats. <http://departments.vassar.edu/~lowry/VassarStats.html> (accessed 16 Oct 2006).
12. National Institute of Standards and Technology. *What are outliers in the data*. NIST/SEMATECH e-handbook of statistical methods. <http://www.itl.nist.gov/div898/handbook/> (accessed 28 Sep 06).
13. Beach MC, Meredith LS, Halpern J, *et al*. Physician conceptions of responsibility to individual patients and distributive justice in health care. *Ann Fam Med* 2005; **3**: 53–59.
14. Williams J, Petchey R, Gosden T, *et al*. A profile of PMS salaried GP contracts and their impact on recruitment. *Fam Pract* 2001; **18**: 283–287.
15. Beasley JW, Karsh B, Hagenauer ME, *et al*. Quality of Work Life of Independent vs Employed Family Physicians in Wisconsin: A WReN Study. *Ann Fam Med* 2005; **3**: 500–506.
16. Jamie G. QOF Database. <http://www.gpcontract.co.uk/> (accessed 28 Sep 2006).