

# Characteristics of general practices involved in undergraduate medical teaching

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## SUMMARY

**Background:** The movement of medical education into the community has accelerated the development of a new model of general practice in which core clinical services are complemented by educational and research activities involving the whole primary care team.

**Aim:** To compare quality indicators, workload characteristics, and health authority income of general practices involved in undergraduate medical education in east London with those of other practices in the area and national figures where available.

**Design of study:** A comprehensive survey of undergraduate and postgraduate clinical placements and practice-based research activity within general practice.

**Setting:** One-hundred and sixty-one practices based in East London and the City Health Authority (ELCHA).

**Method:** Cross-sectional survey comparing routinely-collected information on practice resources, workload, income, and performance between teaching and non-teaching practices.

**Results:** In east London, teaching practices are larger partnerships with smaller list sizes, higher staff costs, and better quality premises than non-teaching practices. Teaching practices demonstrate significantly better performance on quality indicators, such as cervical cytology coverage and prescribing indicators. Patient-related health authority income per whole time equivalent (WTE) general practitioner (GP) is significantly lower among teaching practices. A multiple regression analysis was used to explore the association between teaching status and income. Eighty-eight per cent of the variation in patient-related income could be explained by the combination of list size, list turnover, removals at doctor's request, quality of premises, and immunisation and cytology rates.

**Conclusion:** This study demonstrates that practice involvement in undergraduate education in east London is associated with higher scores on a range of organisational and performance quality indicators. The lower patient-related income of teaching practices is associated with smaller list sizes and may only be partially replaced by teaching income. Lower vacancy rates suggest that teaching practices are more attractive to doctors seeking partnerships in east London.

**Keywords:** undergraduate medical education; practice characteristics.

## Introduction

THE past five years have seen a shift in national policy to enable more medical school teaching at undergraduate level to take place in general practice and community settings.<sup>1,2</sup> This has required the rapid enlistment of large numbers of general practices able and enthusiastic to engage with student teaching. This development has been part of a move from traditional ways of working and learning in primary care and towards the new model of a 'learning practice', in which all members of the primary care team can be collectively involved in teaching, learning, and research.<sup>3,4</sup> The amount of teaching time required by 'core' teaching practices demands a shift from the previous informal arrangements between medical schools and practices and towards a more formal and business-like structure that recognises the costs of teaching to the practice economy. In turn, the medical school can make demands on the practices, requiring assurance of quality in both teaching and clinical work.

We recently undertook a comprehensive survey of undergraduate and postgraduate clinical placements, and practice-based research activity, within general practices in East London and the City Health Authority (ELCHA), which includes the London boroughs of Tower Hamlets, Hackney, and Newham.<sup>5</sup> A principal objective of the project was to identify factors relating to workload, funding, quality of practice, and development of premises that are likely to have an impact on the long-term sustainability of education and research within general practice. This report uses routinely available health authority data to document the comparison between practices that teach undergraduates and those that do not. Our hypothesis was that teaching practices would show evidence of better quality clinical practice, but would receive less health authority income.

## Method

### Data collection

The study was based in the East London and the City Health Authority area. Routinely collected workload, organisational, financial, and prescribing data for all 161 practices was obtained from the ELCHA information department for the period April 1998 to March 1999. The 'adjusted lists for real-ly equitable distribution' (ALFRED) formula was used to define practice list size. This calculates notional additional patients to allow for the extra workload generated by patients in areas of high deprivation.<sup>6</sup> Details of undergraduate teaching practices were obtained from a recent survey of undergraduate and postgraduate clinical placements.<sup>5</sup> Additional information on practice vacancies was provided by the Medical Practices Committee (MPC) for England and Wales. The MPC exists to regulate the distribution of gener-

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**HOW THIS FITS IN***What do we know?*

In the past 10 years there has been an expansion in the number of UK general practices engaged in a wide range of community placements for undergraduate medical students. Since 1996 practices have received financial reimbursement from the Service Increment For Teaching (SIFT) or its equivalent in Scotland.

*What does this paper add?*

Using routinely collected health authority data, this study, conducted in a deprived, more cultural urban environment demonstrates that practice involvement in undergraduate teaching is associated with lower vacancy rates and improved organisational development and performance quality indicators. The results have important workforce and financial implications for developing primary care organisations and the possible evolution to 'teaching' primary care trusts.

al practitioners (GPs) nationally, to prevent this from becoming inequitable.<sup>7</sup> One of the authors has been serving on this committee and has provided both published and unpublished data.<sup>6,7,8</sup>

The premises classification was developed for ELCHA during a district-wide survey<sup>9</sup> in 1996/1997, with classifications being updated for practices that have moved since that time. Classes 1 and 2 are good premises that meet all current standards for premises and cost-rent calculations, with class 1 having additional facilities to deliver contemporary primary care activities beyond the core clinical services. Classes 3, 4, and 5 all have premises that fall below the minimum standard or cost-rent standard, but differ substantially in their ability to improve without relocation, class 3 having good potential for development.

**Statistical analysis**

Prior to the initial descriptive analysis, we disregarded two locum-run practices for which there were multiple missing data. All the variables in the analysis had non-normal distributions, so non-parametric tests were used for univariate exploratory analysis. For the multiple regression analysis 155 practices with complete datasets were used. The outcome variable for practice income had a skewed distribution that required transformation. Models were constructed using stepwise backward elimination of variables, using a significance level of 5%. Categorical variables were analysed using the first category as baseline against which the other categories were compared. Statistical analyses were undertaken in STATA and Minitab.

**Results****Partnership vacancies**

Data from the MPC<sup>8</sup> for 1998 indicates a vacancy rate (percentage of total whole time equivalent posts not filled) for England and Wales of 2.78%. The vacancy rate for ELCHA in the same survey was 5.41%, demonstrating that recruitment is significantly more difficult in east London than the national average (chi-squared test on actual frequencies = 8.689,  $df = 1$ ,  $P = 0.003$ ). Table 1 illustrates the most recent

figures for ELCHA (March 1999). Non-teaching practices had more than double the vacancy rate of teaching practices. Since the numbers involved were relatively small, this contrast just failed to reach statistical significance ( $\chi^2 = 3.023$ ,  $df = 1$ ,  $P = 0.08$ ).

**Practice quality indicators**

Table 2 illustrates that teaching practices, in comparison with non-teaching practices, tend to be larger training practices with smaller lists per partner and greater staff costs. They perform significantly better on quality markers for prescribing, immunisation, and cervical cytology, but gain a significantly lower health authority income from patient-related services. Figure 1 shows that they also tend to practice from higher-quality premises ( $\chi^2 = 16.28$ ,  $df = 4$ ,  $P = 0.003$ ).

**Patient-related income factors**

Univariate analysis examining health authority patient-related income, workload, and practice quality indicators was conducted using simple linear regression models. Of the workload factors, Table 3 shows that 79% of the variance in practice income can be accounted for by list size alone. Among the organisational factors, higher staff costs and better performance on immunisation rate and cytology coverage were significantly associated with lower income. The explanatory variables from Table 3 were then used in the multivariate analysis. Using patient-related income as the outcome variable, 88% of the variation between practices could be explained by a model that included list size, list turnover, removals at doctors' request, immunisation rate, cytology coverage, and premises quality (adjusted  $R^2 = 88.1\%$ , constant = 0.0051,  $F = 155.61$ ,  $P < 0.0001$ ). The relative contribution of these factors to the explanation of variance can be assessed from Table 3, which shows that list size is the dominant factor, with other factors contributing about 10% to the explanation of variance.

**Discussion**

The data presented here, largely obtained from administrative sources routinely collected within health authorities, demonstrate that in comparison with other ELCHA practices, the undergraduate teaching practices perform better on clinical quality indicators relating to prescribing and preventive care. Teaching practices maintain smaller lists per whole time equivalent principal and, because list size remains the major determinant of patient-related health authority income, this income is significantly diminished. Is this income adequately replaced by payment for teaching? Sessional placement payments are made to all practices for their teaching work. Teaching-related income also includes a 'facilities' component to support infrastructure costs, which goes to a minority of 'hub' practices that have undertaken to fulfil 75 teaching sessions a year. During 1998/1999 the average payment to ELCHA teaching practices (placements and facilities combined) was £8317. This ranged from £18 278 for hub practices to £1800 for those involved in a small number of teaching sessions and can be compared with the average shortfall in health authority income of £12 197 (Table 2).

Table 1. Partnership size and vacancy rate for practices in ELCHA.

	Teaching practices	Non-teaching practices
Number of practices	47	120
Number of WTE <sup>a</sup> GPs	173	215
Number of vacancies	6	17
Vacancy rate (%)	3.47%	7.91%

<sup>a</sup>Whole time equivalent

Table 2. Comparison of practice indicators between teaching and non-teaching practices in ELCHA.

	Number of practices	Teaching practices <sup>b</sup> (n = 44)	Non-teaching practices <sup>b</sup> (n = 115)	Significance test (rank-sum test)	P-value
<b>Workload</b>					
ALFRED adjusted List size/WTE <sup>b</sup>	159	2189	2808	Z = 3.77	<0.001
Partnership size	159	4	1	Z = -5.52	<0.001
List turnover	159	26.12	22.1	Z = -2.96	0.003
Training status	Yes 24 No 135	Yes 18 No 26	Yes 6 No 109	$\chi^2 = 31.6$ df = 2	<0.001
<b>Organisation</b>					
Staff costs reimbursement/WTE (70% of costs)	159	33,833	30,878	Z = -1.9	0.05
% Immunisation rate for under 2-year olds	159	85.3	71.9	Z = -1.46	0.14
% Cervical cytology in at-risk population	159	78.9	71.8	Z = -4.88	<0.001
Asthma preventer/bronchodilator items ratio	159	1.86	2.36	Z = 5.46	<0.001
% Generic prescribing	159	68.3	55.9	Z = -6.73	<0.001
Removals at doctor's request (as proportion of list size)	159	0.06	0.16	Z = 1.56	0.11
<b>Income</b>					
Patient-related HA income/WTE principal	159	74033	86230	Z = 2.622	0.009

<sup>a</sup>Median values; <sup>b</sup>adjusted lists for really equitable distribution<sup>1</sup>.

Table 3. Associations between patient-related health authority income and a range of workload and quality markers for 155 practices in ELCHA<sup>a</sup>.

	Median value	Range	Variance (%)	P-value
<b>Workload</b>				
ALFRED <sup>b</sup> adjusted List size/WTE	2577	1126–6866	79	<0.001
Partnership size	2	1–8	11	<0.001
List turnover	23.6%	7.3%–113.7%	0	0.82
Removals at doctors' request (as proportion of list size)	0.13	0–4.1	3	0.01
Training status	Yes 24 No 135	n/a	7	0.001
Undergraduate teaching status	Yes 44 No 115	n/a	2	0.04
<b>Organisation</b>				
Staff costs reimbursement/WTE (70% of costs)	31144	6249–93691	-36	<0.001
% Immunisation rate for under 2 year-olds	74.4%	0%–100%	-4	0.007
% Cervical cytology in at-risk population	75.6%	39%–90.1%	-3	0.02
Asthma preventer/bronchodilator items ratio	2.13	0.92–6.39	0	0.8
% Generic prescribing	58.5%	33.3%–77.9%	0	0.14
Premises quality	n/a	1–5	-1	0.6

<sup>a</sup>Using linear regression to identify the proportion of variation between practices accounted for by each factor; <sup>b</sup>adjusted lists for really equitable distribution<sup>1</sup>.

It is encouraging to see that teaching practices are likely to attract suitable candidates for vacant GP posts more rapidly than is the norm for east London as a whole. How far this is due to their larger size, their quality of clinical care, better premises, or the diversity of their activities remains to be determined. One factor that might lead to improved care is a tendency toward longer consultations<sup>5,10</sup> and fewer prescriptions<sup>10</sup> during clinical teaching.

At present, undergraduate teaching practices within east

London have no formal selection process, but tend to be self-selecting and to be retained on the basis of informal feedback and demonstrable enthusiasm. Support to these practices is given through the provision of equipment and training for teaching. However, the majority of postgraduate training practices are also undergraduate teaching practices. All training practices have undergone a formal accreditation process that examines quality of practice alongside measures of educational commitment and expertise.

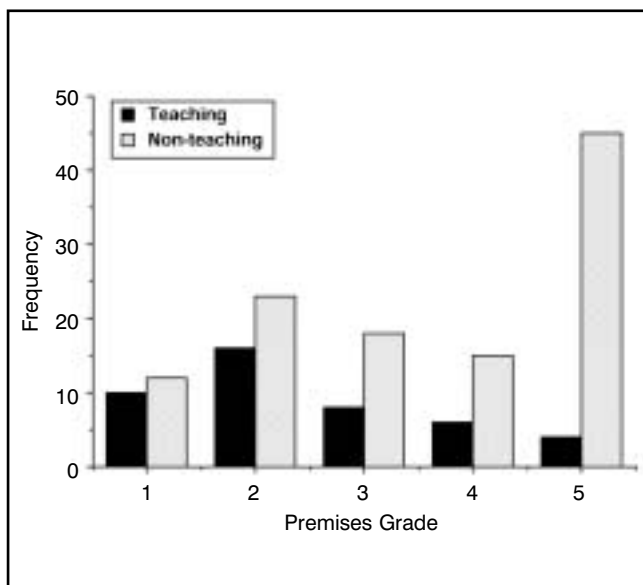


Figure 1. Quality classification of ELCHA premises.

Perhaps the time has come to develop an accreditation process for undergraduate teachers alongside that for training practices and the emerging accreditation scheme for research practices.<sup>11,12</sup>

Our data also illustrate some of the consequences of linking income so strongly to list size. Among east London practices we are able to show that quality markers such as immunisation rates and cytology coverage are associated with

lower levels of health authority income. The future agenda of general practice depends upon the delivery of an explicit and improving quality of clinical care. If this is to be rewarded, then there will need to be a visible shift from per capita income toward an emphasis on payment for clinical quality.

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