

The impact of nursing home patients on general practitioners' workload

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SUMMARY

Background. Although the number of people in nursing homes has risen substantially in recent years, the shift of responsibility into general practice has rarely been accompanied by extra resources. These patients may be associated with a higher general practitioner (GP) workload than others of similar age and sex.

Aim. To assess the GP workload associated with nursing home residents and its associated costs.

Method. All nursing home residents aged over 65 years and registered with nine Nottinghamshire practices during one year were matched with patients living in the community for general practice, age, and sex. Data were collected retrospectively for both groups on key workload measures. Costs for the workload measures were calculated using published estimates.

Results. Data were collected for 270 pairs of patients. Nursing home patients had more face-to-face contacts in normal surgery hours, telephone calls, and out-of-hours visits. The mean workload cost per month of a nursing home patient (assuming that one patient was seen per visit) was estimated to be £18.21 (£10.49 higher than the cost of controls). A sensitivity analysis demonstrated that potential savings in visiting costs associated with increasing the numbers of patients seen per visit were 27% for one extra patient seen per visit and 44% for four extra patients.

Conclusion. Nursing home residents were associated with higher workload for GPs than other patients of the same age and sex living in the community. Our costings provide a basis for negotiating suitable reimbursement of GPs for their additional work.

Keywords: GP workload; nursing homes; visiting costs.

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Introduction

THE number of people in private nursing homes has risen substantially in recent years.¹ Government policies,^{2,3} a decrease in National Health Service long stay hospital beds,⁴ shorter hospital stays, and an ageing population⁵ have all contributed to the increase. Although nursing home patients often have complex multiple care needs, the shift of work and responsibility into general practice has not, in most cases, been accompanied by extra resources.

There is some evidence that elderly people in nursing homes create a larger workload for their general practices than other patients of similar age and sex. In a single-practice study, Andrew⁶ has shown that nursing home residents can need substantially more consultations than other patients of a similar age. A recent prospective study in Glasgow found that nursing home residents had more than twice the number of face-to-face general practitioner (GP) contacts of community controls matched for age and sex.⁷ While GPs receive increased capitation fees for patients aged over 65 years, with a further increase for patients aged over 75 years, these payments do not depend on patients' nursing home status.

Health authorities are coming under increasing pressure to allocate more resources for the care of nursing home residents and some have increased GPs' remuneration for this care.⁸ It is important for health authorities and GPs to have more information on the costs to inform their negotiations.

The purpose of this study was to determine whether elderly nursing home patients were associated with increased workload for GPs compared with patients of similar age and sex living in the community and, if so, to estimate the cost of this additional work.

Method

Sample

A matched case-control design was used for the study. All 18 general practices using the Meditel computer system in the Nottingham Health Authority area were invited to participate. The Meditel system was specified because it permits drug costs to be calculated over specific periods, as another focus of the study investigated prescribing costs (not described here). Twelve practices agreed to participate. A postal questionnaire to these practices identified 11 as having adequate data recording of contacts with patients. From these practices, one practice at a time was randomly selected until there was a large enough sample of patients for statistical analysis.

Each practice supplied a list of nursing homes their patients used. These homes then provided lists of patients resident at any time during the study period (from 1 July 1996 to 30 June 1997). Every nursing home patient of 65 years and over was matched with a community control of the same sex and similar age registered with the same practice. We excluded patients discharged from hospitals to nursing homes under a trial 'step-down' scheme and those resident in a nursing home for less than two weeks. Where patients transferred from residential to nursing home care, data were collected only on their time as a nursing home patient.

A power calculation was performed, based on a pilot study.

This suggested that 316 patients were needed per group to detect a 20% difference in consultation rate with a power of 80% at the $P = 0.05$ level. However, data collection was discontinued when data from 270 pairs of patients (nine practices) were collected, since large differences were being found between the groups.

Data collection

Data were collected retrospectively from patients' general practice notes, using the practices' annotations to indicate the type of contact. In addition to sex and date of birth they included four measures of GP workload:

- home visits during normal surgery hours,
- surgery consultations,
- telephone contacts with patients or their representatives, and
- home visits outside normal surgery hours (including deputising service visits).

'Out-of-hours' was defined as 7.00 pm to 7.59 am on weekdays, 12.00 noon on Saturdays to 7.59 am on Mondays, and all bank holidays.

Data were collected for the matched pairs for the length of time the nursing home patient lived in the nursing home. Therefore, the sample included patients admitted after the start of the study period or who left or died before its end. Had we selected only patients resident for the entire period then this would have excluded 45% of matched pairs from the analysis. It would probably have led to an underestimate of GP costs, since the time leading up to a patient's death and the period around their admission are likely to be times of higher than normal GP input. The notes of deceased patients were obtained from the relevant health authority.

Analysis

Data were anonymised, coded, and then analysed using SPSS version 6.1.3. Nursing home patients and controls were compared, using paired t -tests, to ascertain any differences in numbers of contacts for each workload measure.

Estimates of the unit resource costs of home visits, surgery attendances, and telephone calls were obtained from a widely-cited^{9,10} programme of work funded by the Department of Health, relating to the year 1996/1997.¹¹ The estimates are based on a range of factors that contribute to the cost of providing GP services and the time that GPs spend on various activities. These factors include capital costs of premises and equipment, practice expenses, GPs' intended net income, total working time, and time spent on different types of patient contact. They exclude health authority overheads and prescribing costs. Information sources used included the GMP workload survey¹² and Inland Revenue Schedule D expenses. The cost estimates we used were:

- home visit during or outside normal surgery hours (£30),
- surgery consultation (£10), and
- telephone call (£13).

The published estimates do not distinguish between visits during and outside normal surgery hours; these are therefore costed at the same rate. Unit cost estimates for telephone calls are higher than for surgery consultations because the average call uses more GP time than an average surgery consultation.¹¹

If GPs normally see more than one patient per visit then our workload costs may be over-estimates. We undertook a sensitivity analysis to explore the effect on visiting costs of varying the numbers of patients seen during a visit. This analysis used the assumptions that, on a GP home visit, consultation and travel time take an average of 13.2 minutes and 12 minutes respectively; the £30 estimate of the cost of a home visit includes car costs (£4).¹¹

Results

Practices

Nine practices participated. Sixteen per cent of their patients were aged over 65 years, compared with 15% for all practices in the health authority area in March 1997. The mean list size of the study practices was 7361 (standard deviation [SD] = 3053) compared with a mean of 5722 for the whole health district. Their mean Jarman score was -0.98 (SD = 9.98); the overall score for the health district was 2.88. Eight practices were in suburban areas and one was in a semi-rural area. Thirty-five nursing homes participated; the number served by an individual study practice varied from two to eight.

Patients

We obtained data on 270 nursing home patients. These comprised all the nursing home patients registered with the study practices, except for those whose notes could not be found (three patients), had moved away (four patients), for whom no appropriate control could be found (one patient), or whose date of birth was unreliable (one patient).

Three-quarters of nursing home patients (206 [76%]) were women. More than half (142 [53%]) were aged 85 years or older when the study began, 97 (36%) were aged 75 to 84 years, and 31 (11%) were aged 65 to 74 years (mean age = 84.4 years, SD = 7.0). Just over half (148 [55%]) lived in a nursing home for the full study year. Nursing home patients' mean length of residence in the study year was 8.9 months (SD = 4.0) and they spent a total of 2409.5 months in the study. Seventy-six nursing home patients (28%) died during the study period; only one returned to their own home.

Each nursing home patient was matched with a control of the same sex. Ages were matched to within two years for 252 (93%) patients and to within five years for 266 (98.5%) patients.

Workload measures

Numbers and mean rates of GP contacts for nursing home patients and controls are listed in Table 1. Nursing home patients had more home visits than controls ($t = 11.47$, degrees of freedom [d.f.] = 269, $P < 0.001$). Control patients made more surgery consultations ($t = -10.34$, d.f. = 269, $P < 0.001$). When home visits and surgery consultations were combined to give total face-to-face contacts in normal working hours, nursing home patients had more contacts ($t = 4.87$, d.f. = 269, $P < 0.001$). The mean difference between groups in face-to-face contacts in normal working hours was estimated to be 0.179 contacts per patient per month (estimated 95% confidence interval [CI] = 0.11 to 0.25). More telephone calls and out-of-hours visits were made for nursing home patients than for controls ($t = 4.54$, d.f. = 269, $P < 0.001$, and $t = 3.61$, d.f. = 269, $P < 0.001$ respectively).

Estimation of costs associated with GP workload

Estimated workload costs for each kind of contact are given in Table 2. They assumed that only one patient was seen per visit. The cost sensitivity analysis (Table 3) shows potential savings associated with seeing one extra patient per visit to a nursing home are £8.19 per patient visited (a 27% saving). For four extra patients seen per visit, potential savings were £13.10 per patient visited (a 44% saving).

Discussion

Methods used in the study

We used a matched case-control design using GP records. Its ret-

Table 1. Numbers and mean rates of contacts for home visits in normal surgery hours, surgery attendances, out-of-hours visits, and telephone calls.

	Home visits in normal surgery hours	Surgery consultations	Out-of-hours visits	Telephone calls
Nursing home patients (n = 270)				
Total number of contacts	1311	65	42	203
Mean number of contacts per patient (SD)	4.86 (4.33)	0.24 (0.75)	0.16 (0.46)	0.75 (1.46)
Mean number of contacts per patient per month (estimated SD) ^{a,b}	0.544 (0.485)	0.027 (0.084)	0.017 (0.052)	0.084 (0.164)
95% CI for mean number of contacts per patient per month	0.486–0.602	0.017–0.037	0.011–0.024	0.065–0.104
Control patients (n = 270)				
Total number of contacts	392	552	11	76
Mean number of contacts per patient (SD)	1.45 (2.53)	2.04 (2.81)	0.04 (0.25)	0.28 (0.88)
Mean number of contacts per patient per month (estimated SD) ^{a,b}	0.163 (0.284)	0.229 (0.315)	0.005 (0.028)	0.032 (0.099)
95% CI for mean number of contacts per patient per month	0.129–0.197	0.191–0.267	0.001–0.008	0.020–0.043
Differences (nursing home patients minus control patients)				
Mean difference (SD)	3.40 (4.88)	-1.80 (2.87)	0.11 (0.52)	0.47 (1.70)
Mean difference in contacts per patient per month (SD) ^{a,b}	0.381 (0.547)	-0.202 (0.322)	0.012 (0.058)	0.053 (0.190)
95% CI for mean difference per month	0.316–0.447	-0.241– -0.164	0.006–0.020	0.030–0.076

^aTotal number of months that all nursing home patients spent in the study = 2409.5; mean length of time in the study = 8.9 months. ^bEstimated SDs of numbers of contacts per month = SD of numbers of contacts divided by mean length of time in residence.

Table 2. Estimated workload costs of general practitioner contacts with nursing home patients and controls.

Type of contact	Mean cost per month (£) of caring for a nursing home patient (95% CI) ^a	Mean cost per month (£) of caring for a control patient (95% CI) ^a	Mean additional cost per month (£) of a nursing home patient compared with their control (95% CI) ^a
Home visits during normal surgery hours	16.32 (14.58–18.07)	4.88 (3.86–5.90)	11.44 (9.48–13.41)
Surgery consultations	0.27 (0.17–0.37)	2.29 (1.91–2.67)	-2.02 (-2.41– -1.64)
Out-of-hours visits	0.52 (0.34–0.71)	0.14 (0.04–0.24)	0.39 (0.18–0.60)
Telephone calls	1.10 (0.84–1.35)	0.41 (0.26–0.56)	0.69 (0.39–0.98)
All workload measures	18.21 (16.34–20.08)	7.72 (6.57–8.87)	10.49 (8.39–12.60)

^aMean costs for each workload measure were calculated as: unit cost of workload measure⁹ multiplied by mean rate per patient per month for that measure. Confidence intervals (CIs) were obtained from 95% CIs in Table 1, by multiplying these by the relevant unit cost. CIs of additional costs for each measure were calculated as: unit cost of workload measure multiplied by 95% CIs of difference in contacts per patient per month for that measure.

Table 3. Variation in estimated cost of visiting a nursing home patient with numbers of patients seen per visit (£).

Assumed number of patients seen per visit	Cost of time GP spends in patient contact during a single visit ^a (£)	Total cost of visit, including travel costs ^a (£)	Total cost per person visited (£)
One patient	13.62	30	30
Two patients	13.62 x 2 = 27.24	43.62	21.81
Three patients	13.62 x 3 = 40.86	57.24	19.08
Four patients	13.62 x 4 = 54.48	70.86	17.72
Five patients	13.62 x 5 = 68.10	84.48	16.90

^aThese estimates derive from a published source of costs to the health service of GP activities.¹¹ The cost of a home visit (£30) is made up from: cost of using the car (£4), cost of travel time (£12.38), and the cost of the time spent seeing one patient (£13.62).

respective nature means that our data reflect the normal activity of GPs unaffected by the knowledge that their workload was being monitored. However, this design meant that we were unable to obtain information on the numbers of patients seen on each home visit and we were unable to measure the duration of the contacts. We were also unable to validate some aspects of the accuracy and completeness of the information supplied by the practices and nursing homes.

We were successful in obtaining data for almost all nursing home patients registered with the study practices. Apart from

their choice of computer system, the practices were representative of those in the Nottingham Health area in deprivation and proportions of patients aged over 65 years, though mean list size was somewhat higher in our sample. Nearly all practices in the study were located in the suburbs; it is possible that GPs working in rural or highly urban areas, where home visits involve more or less travelling, may differ from ours in their pattern of contacts. Negotiators may wish to take account of such local factors. Matching cases and controls at the level of the general practice will have increased the generalisability of our results by reducing

the effects of differences between practices.

Some workload items were not investigated, for example, the numbers of letters written on behalf of patients and patient care undertaken by other practice staff; this will have led to a small underestimate of costs.

Are nursing home patients associated with additional workload for their GPs?

Nursing home patients were associated with a substantially greater workload for GPs than their matched community controls for home visits, out-of-hours calls, and telephone calls. Rates for each of these workload measures were around three times higher for nursing home patients. Surgery attendances were substantially (about eight times) higher in control patients. This difference reflects the greater dependency of nursing home patients and difficulties with bringing them to the surgery. When attendances and visits were combined, nursing home patients still had substantially more GP contacts than controls (0.59 and 0.40 contacts per patient per month respectively). These were slightly higher than those found by Pell and Williams (0.45 and 0.21 contacts per patient per month respectively).⁷

Cost estimates for individual workload items

There are many possible ways of costing GP contacts.¹³ We relied on published estimates⁸ that refer to the resources used, i.e. the costs to the health service in undertaking various kinds of patient contact; only 46% of these costs relate to GP income. We believe that these give a useful impression of GP workload.

Are nursing home patients associated with higher workload costs?

Nursing home patients cost £18.21 per patient per month, £10.49 per patient per month higher than costs for controls (£7.72 per patient per month). Home visits generated by far the largest component of the extra costs.

These estimates were based on the assumption that, when GPs visit nursing homes, they visit only one patient. The sensitivity analysis found that savings might theoretically be made from increased numbers of patients seen per visit. Recent studies have suggested that multiple consultations on a single visit are common.^{7,14} Such savings would be facilitated if individual general practices undertook the care of the majority of patients in particular nursing homes. However, changing working practices in this way could result in nursing homes asking GPs to see patients whom they would not otherwise see, leading to increased workload. Further research is needed in this area.

Should GPs receive higher remuneration to compensate for the higher workload associated with nursing home patients?

Since nursing home patients are associated with a much higher workload for GPs than matched patients living in the community, we suggest that it is reasonable to reimburse them accordingly. Our costings provide a basis for informed negotiation of the amount of reimbursement. We suggest account is taken of the proportion of estimated costs that are directly related to GP income and the results of our sensitivity analysis.

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