

# Primary care



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## Quality of care for elderly residents in nursing homes and elderly people living at home: controlled observational study

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### Abstract

**Objectives** To assess the quality of care given to elderly people and compare the care given to residents in nursing homes with those living in their own homes.

**Design** Controlled observational study.

**Setting** Primary care, Bristol.

**Subjects** Elderly individuals (aged  $\geq 65$  years) registered with three general practices, of whom 172 were residents in nursing homes (cases) and 526 lived at home (matched controls).

**Main outcome measures** The quality of clinical care given to patients was measured against explicit standards. Quality indicators were derived from national sources and agreed with participating general practitioners.

**Results** The overall standard of care was inadequate when judged against the quality indicators, irrespective of where patients lived. The overall prescribing of beneficial drugs for some conditions was deficient—for example, only 38% (11/29) (95% confidence interval 20% to 58%) of patients were prescribed  $\beta$  blockers after myocardial infarction. The proportion of patients with heart disease or diabetes who had had their blood pressure measured in the past two years (heart disease) or past year (diabetes) was lower among those living in nursing homes: for heart disease, 74% (17/23) *v* 96% (122/127) (adjusted odds ratio 0.18, 0.04 to 0.75); for diabetes, 62% (8/13) *v* 96% (50/52) (adjusted odds ratio 0.05, 0.01 to 0.38). In terms of potentially harmful prescribing, significantly more patients in nursing homes were prescribed neuroleptic medication (28% (49/172) *v* 11% (56/526) (3.82, 2.37 to 6.17)) and laxatives (39% (67/172) *v* 16% (85/526) (2.79, 1.79 to 4.36)). Nursing home residents were less likely to have the appropriate diagnostic Read code linked to their prescribed neuroleptic drug (0.22, 0.07 to 0.71).

**Conclusions** The quality of medical care that elderly patients receive in one UK city, particularly those in nursing homes, is inadequate. We suggest that better coordinated care for these patients would avoid the problems of overuse of unnecessary or harmful drugs, underuse of beneficial drugs, and poor monitoring of chronic disease.

### Introduction

The number of elderly patients living in nursing homes rose substantially in the late 1980s and in the 1990s, resulting in a rise in workload for general practitioner responsible for the delivery of care to residents in these homes.<sup>1 2</sup> Concern has been expressed that the reduction in provision of long stay NHS beds for elderly people has increased the demand on general practitioners in this group of patients with high morbidity and disability.<sup>1 2</sup> In response to these demands, the arrangements made by general practices for delivering care to nursing homes seems to be inconsistent and idiosyncratic.<sup>3</sup>

More widespread concern has been expressed about drug treatment in elderly people<sup>4</sup>—about the risks of excessive prescribing of, for example, inappropriate neuroleptic drugs<sup>5</sup> and about the under-prescribing of potentially beneficial drugs.<sup>4</sup>

No study has examined the overall quality of care given to elderly patients in UK primary care or has judged the quality of care against agreed, explicit standards in patients living in nursing homes compared with patients living at home. We aimed to evaluate one dimension of quality—clinical care given to patients.<sup>6</sup>

### Methods

#### Subjects

Three general practices with registered patients resident in four Bristol nursing homes agreed to participate in the study. TF provided care at one of these practices. All nursing home residents aged 65 years or over were identified from each practice's computerised list. In each practice, we randomly selected four patients who lived in their own homes to act as controls for each nursing home resident, stratifying by sex and age in 10-year bands. For strata with fewer than four controls per nursing home resident, we included all available control patients. We excluded patients with terminal illness.

#### Generation of quality indicators

We measured the quality of care given to patients against explicit quality standards or indicators, derived mostly from a recognised and recently published text-

book.<sup>7</sup> We selected the quality indicators on the basis of their relevance to general practice, and particularly care of elderly patients. We discussed and agreed with the general practitioners a set of quality indicators before starting the study (see the box on bmj.com).

### Data collection

All the practices in the study use computer and paper patient records. We examined both formats for every patient. Data were extracted using a computerised data collection form. The following data were collected: Read code and diagnosis of up to 10 current problems; up to 15 currently prescribed drugs; influenza and pneumococcal immunisation, with date measured if the patient was diabetic; record of HbA<sub>1c</sub> concentration if the patient was diabetic; blood pressure record if the patient had coronary artery disease, hypertension, or diabetes; and contraindications to aspirin or  $\beta$  blockers. Data were collected from November 2001 to February 2002.

### Statistical analysis

Associations between residence (nursing home versus living at home) and the presence of quality indicators in patients' notes were investigated by using odds ratios. Using logistic regression, we adjusted crude odds ratios for age, sex, practice, and overall morbidity (indicated by the number of current problems and current drug treatment).

## Results

We identified 172 nursing home residents and 526 controls from the three practices. Among those aged 80 years or over, fewer than four controls per nursing home resident were available, so all controls were included. Nursing home residents were older and had slightly fewer current diagnosed problems but were prescribed more drugs.

Of the 698 patients, 162 did not have any record of having either received or been offered influenza vaccination for the current winter. The likelihood of receiving influenza vaccination was not associated with place of residence (table).

The table shows the distribution of quality indicators among the nursing home residents compared with the controls. Frequency of blood pressure measurement was poorer among nursing home residents than controls both among patients diagnosed with coronary artery disease and among patients with hypertension (odds ratio 0.18 (95% confidence interval 0.04 to 0.75) and 0.20 (0.09 to 0.47) respectively). However, among patients with hypertension who had had their blood pressure measured in the past year, a higher proportion of nursing home residents than of controls had blood pressure <150/90 mm Hg, although this result was of only borderline significance. Among patients with coronary heart disease, there were no differences between the two groups for prescribing of either aspirin or  $\beta$  blockers.

In diabetic patients, recording of HbA<sub>1c</sub> concentration was worse in the nursing home residents than in the controls, although this result was again of borderline significance; recording of blood pressure was also worse (0.05 (0.01 to 0.38)). However, mean (SD) HbA<sub>1c</sub> concentrations in nursing home residents and controls (0.08 (0.02) *v* 0.08 (0.01) respectively; *P*=0.71) were similar, as were the proportions of patients with blood pressure <140/80 mm Hg. Nursing home residents were less likely than controls to have received or been offered pneumococcal vaccination (0.15 (0.03 to 0.70)), but the proportions of patients offered flu vaccine were similar.

Over a quarter (28% (49/172)) of nursing home residents were taking neuroleptic drugs, a significantly higher proportion than in the controls (11% (56/526); 3.82, 2.37 to 6.17). For patients taking neuroleptic

Distribution of quality indicators among 172 nursing home residents compared with 526 controls (patients living at home). Values are numbers (percentages) unless stated otherwise

	Nursing home residents	Patients living at home	Crude odds ratio	Adjusted odds ratio (95% confidence interval)*	P value
Offered flu vaccine	127/172 (74)	409/526 (78)	0.81	0.81 (0.53 to 1.26)	0.36
If diagnosis of coronary artery disease:					
Prescribed aspirin unless contraindicated	14/20 (70)	67/112 (60)	1.57	1.84 (0.59 to 5.70)	0.29
Blood pressure recorded in past 2 years	17/23 (74)	122/127 (96)	0.12	0.18 (0.04 to 0.75)	0.018
Prescribed $\beta$ blocker after myocardial infarction if not contraindicated	2/5 (40)	9/24 (38)	1.11	2.20 (0.17 to 28.00)	0.54
If diagnosis of hypertension:					
Blood pressure recorded in past year:	18/34 (53)	174/204 (85)	0.20	0.20 (0.09 to 0.47)	<0.001
<150/90 mm Hg	11/18 (61)	82/180 (46)†	1.88	2.56 (0.88 to 7.47)	0.09
If diagnosis of diabetes:					
HbA <sub>1c</sub> recorded in past year	7/13 (54)	44/52 (85)	0.21	0.25 (0.06 to 1.13)	0.07
Blood pressure recorded in past year:	8/13 (62)	50/52 (96)	0.06	0.05 (0.01 to 0.38)	0.004
<140/80 mm Hg	5/8 (62)	31/50 (62)	1.01	1.02 (0.22 to 5.89)	0.87
Offered flu vaccination in current winter	10/13 (77)	43/52 (83)	0.70	0.68 (0.13 to 3.45)	0.64
Offered pneumococcal vaccination	3/13 (23)	33/52 (63)	0.17	0.15 (0.03 to 0.70)	0.02
Screened for hypothyroidism if female and taking antidepressant	17/38 (45)	17/46 (37)	1.38	2.18 (0.80 to 5.96)	0.13
Prescribed thioridazine	10/172 (6)	0/526	68.04‡	(4.00 to 1167.51)§	—
Appropriate Read code recorded if prescribed neuroleptic	33/49 (67)	51/56 (91)	0.20	0.22 (0.07 to 0.71)	0.01
Appropriate Read code recorded if prescribed laxative	35/67 (52)	58/85 (68)	0.51	0.69 (0.33 to 1.43)	0.32

\*Adjusted for age, sex, practice, total number of diagnoses, and total number of drugs prescribed.

† Six results were recorded more than one year previously.

‡ Calculated by Woolf's exact method, by adding 0.5 to the value in each cell of the 2x2 table.

§ Adjusted odds ratio cannot be calculated; 95% confidence interval given is for unadjusted odds ratio.

medication, patient records were more likely to contain the appropriate diagnostic Read code if the patients were living at home (0.22 (0.07 to 0.71)). Only 10 patients in the whole study were currently being prescribed thioridazine, all of whom were nursing home residents.

Overall, about two fifths (39% (67/172)) of nursing home residents were currently prescribed a laxative, a significantly higher proportion than in the controls (16% (85/526); 2.79, 1.79 to 4.36). For patients prescribed a laxative, there was no difference in the recording of the appropriate Read code between the nursing home residents and those living at home.

## Discussion

The results of this study suggest that elderly people in one UK city are receiving inadequate care. Inadequate care takes several different forms: insufficient use of beneficial drugs; poor monitoring of chronic disease; and overuse of inappropriate or unnecessary drugs.<sup>4-8</sup> We have shown that poor monitoring of disease and unnecessary drug prescribing are more likely to occur in nursing home residents than in people living at home, even after comorbidity and amount of prescribed medication are controlled for.

### Context of other studies

In terms of prescribing beneficial treatment, the low level (38% (95% confidence interval 20% to 58%)) of  $\beta$  blocker prescribing in patients with a history of myocardial infarction is consistent with some studies<sup>9-11</sup> but not others.<sup>12</sup>

The overall prescribing of aspirin in coronary heart disease (61%) was lower than in some reports of clinical practice in the United Kingdom (reported as 80-90%),<sup>10-13</sup> but not in others.<sup>11</sup> In terms of the process of care for chronic disease, nursing home residents fared worse than their counterparts living at home for monitoring both of blood pressure and HbA<sub>1c</sub> concentration, though the nursing home patients whose blood pressure was recorded seemed to have better control.

Our study has also confirmed suggestions of inappropriate drug use in elderly people, particularly those in nursing homes.<sup>4</sup> The overall level of prescribing of neuroleptic drugs in nursing home residents (28%) was higher than levels reported in a previous survey among nursing home residents in Glasgow.<sup>5</sup> Lastly, nursing home residents were almost three times as likely to receive a laxative as those living at home. Added to the fact that nursing home residents received on average more drug treatment than those living at home, concerns about overprescription of inappropriate drugs seem more likely in relation to nursing home residents.<sup>14</sup>

### Study limitations

We did not measure other important dimensions of quality, such as access to care and how well health professionals relate to patients, particularly in terms of continuity of care.<sup>6</sup> We did not examine the temporal relation between the process of care, comorbidity, and prescribing of drugs and did not control for the number of visits to the surgery or home visits to patients. We did not measure how recently a patient

## What is already known on this topic

Doctors too often prescribe harmful drugs and too seldom prescribe beneficial drugs for elderly people

The quality of medical care for those living in nursing and residential homes has also been questioned

## What this study adds

Elderly people in one UK city receive inadequate care when judged against explicit quality indicators

Those living in nursing homes receive poorer care than those living at home in terms of underuse of beneficial drugs, poor monitoring of chronic disease, and overuse of inappropriate or unnecessary drugs

had been discharged from hospital, so a proportion of the prescribing in this study could be attributable to hospital doctors rather than general practitioners. A qualitative study design would be more appropriate for exploring elderly patients' (and their carers') expectations of care. Elderly people often have several chronic diseases and may prefer to have less suffering and an improved quality of life rather than treatment for every disease they have.<sup>4-15</sup> Lastly, the findings of this study need to be reproduced in a larger sample of practices, with follow up of patients, so that the outcome of clinical care can be assessed.

### Future research

Interventions designed to improve the care of elderly patients in institutions should reflect and assess the different ways in which general practitioners, specialists, and nurses deliver this care.<sup>1</sup> Examples include educational interventions for the prescribing of neuroleptic drugs and the continuous assessment review and evaluation (CARE) scheme, which focuses on incontinence, management of decubital ulcers, autonomy of the patient, and drug use.<sup>16</sup> Lastly, assessment of quality of care should consider the preferences of patients and their carers for drug treatments in terms of both potential benefits<sup>15</sup> and potential harm.<sup>14-16</sup>

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Ethical approval: Ethical approval for the study was obtained from the local research ethics committee.

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## Endpiece

### Memory and intelligence

The man of great memory, however, is rarely at the same time blest with the capacity of quickly and justly combining the ideas with which his mind is stored.

Dr Caleb Hillier Parry, Physician at Bath,  
in *Elements of Pathology and Therapeutics*  
(London: Underwood, 1815)

A P Radford, retired general practitioner,  
Taunton, Somerset

## A memorable patient

### You only see what you know

I was in my first year of residency at the university department of cardiology when a 58 year old woman was admitted to the ward because of slowly progressing exertional dyspnoea and fatigue. As requested by the referring physician, I made a thorough cardiological examination. Except for mildly increased serum cholesterol concentrations, she had no cardiovascular risk factors. However, she confirmed that over the past few months she had had increasing difficulty climbing the stairs to her second floor apartment. I noticed no irregularities during her physical examination, but her electrocardiogram showed first degree atrioventricular block and borderline left ventricular hypertrophy. Echocardiography showed moderate left ventricular enlargement and diffusely reduced systolic function. After ruling out relevant coronary macroangiopathy, the diagnosis was clear: dilated cardiomyopathy with congestive heart failure in clinical stage NYHA II. In order to exclude rare causes of cardiomyopathy (such as storage disease or chronic myocarditis), we took myocardial biopsy specimens. The patient was discharged with a prescription for an angiotensin converting enzyme inhibitor and given an appointment in a few weeks' time to discuss the biopsy results.

During her five days' stay on the ward, I came to know the patient as an exceptionally friendly, albeit somewhat simple, woman. She had been married for more than 25 years but had found that they could not have children. On the ward, she had been liked by the nurses and doctors alike, though on one occasion I heard the chief physician make a remark about her "dysmorphic appearance," based on her narrow face and somewhat tapering mouth.

I was delighted to see my patient again for her follow up visit. She thanked me for the competent care during her hospital stay and reported feeling much better with the new drugs. However, another doctor had told her that something was wrong with her muscles. She could not believe this because during her stay at our department everything had been examined

so carefully, and she would ask me for my expert opinion. When she handed me the doctor's report I was surprised and embarrassed. The doctor, a well known neurologist, had noticed her weakness in the legs, bilateral ptosis, her "hatchet" face, and her unusually thin hair. Together with her history of unwanted childlessness and slight intellectual impairment, he had diagnosed the "complete clinical picture of myotonic dystrophy, which might well be the underlying cause for her cardiomyopathy."

When I looked at my own discharge report, I became even more embarrassed. I had written "neurological examination unremarkable," and I had not even considered this differential diagnosis. It made me feel only a little better when I realised that even the chief physician had not recognised the obvious diagnosis and that, according to the textbook, "many cases escape recognition."

I learnt two things from this patient:

- You see only what you know. As I was not familiar with myotonic dystrophy, I couldn't recognise even this obvious example
- The term "unremarkable" in a medical report does not necessarily mean normal. It is a relative term, depending on an individual physician's diligence and experience.

Stefan Schäfer *specialist in cardiology, Aventis Pharma Deutschland, Frankfurt, Germany*

We welcome articles of up to 600 words on topics such as *A memorable patient*, *A paper that changed my practice*, *My most unfortunate mistake*, or any other piece conveying instruction, pathos, or humour. If possible the article should be supplied on a disk. Permission is needed from the patient or a relative if an identifiable patient is referred to. We also welcome contributions for "Endpieces," consisting of quotations of up to 80 words (but most are considerably shorter) from any source, ancient or modern, which have appealed to the reader.