

Residential or nursing home care? The appropriateness of placement decisions

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ABSTRACT

Routinely-collected statistics show considerable variation between local authorities in Great Britain, in the proportions of supported residents placed in nursing and residential care. This raises the question of whether this is due to variations in demand (the type of resident approaching authorities), supply (the level and type of provision available for local authorities to purchase), or policy (in terms of eligibility criteria or interpretations of need at field level). Data were used from a national longitudinal survey of individuals admitted to publicly-funded residential and nursing home care. Information was collected from 18 local authorities on a cohort of 2,544 local authority supported residents who had been admitted to residential and nursing home care. The paper examines the pattern of admissions, the characteristics of people admitted and the relationship between these characteristics and admissions to residential or nursing home care. Characteristics of the individual explained the placement of over 80 per cent of admissions. Supply factors were statistically significant but did not improve the explanatory power of the model. Survival among those admitted to a type of care that was not predicted by the model, suggested that some unmeasured aspects of prognosis may account for some of the residual variation in placements. Overall, the results indicate a reasonably high level of consistency between authorities in nursing home placement decisions. This suggests that either there is considerable variation in the types of individual approaching local authorities or, more likely, that some authorities are more successful in maintaining people for longer at home than others. In addition to maintaining people at home to a higher level of dependency, prevention of admission to residential care is likely to be associated with: interventions that address carer support, safety issues among people who are deaf, and motivation.

KEY WORDS – old age, residential care, nursing home care, predictors of placement..

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Introduction

Over two thirds of all residents in care homes for older people in Great Britain are publicly funded (Netten *et al.* 1998). Since April 1993, local authorities have been responsible for the assessment, placement and financing of all adults in publicly-funded residential-based care. With this responsibility came the requirement to decide, in collaboration with health care staff, whether individuals would be more appropriately placed in residential or in nursing home care.

The arrangements introduced in April 1993 formed part of the community care reforms, implemented following the 1989 White Paper *Caring for People* (Cm 849 1989) and the National Health Service and Community Care Act 1990. Prior to the implementation of this Act, there were two principal sources of public financial support for individuals receiving residential or nursing home care: funding from local authorities and funding from the social security system. Local authority funded residents were primarily accommodated in homes managed by local authorities, although some individuals were accommodated in homes run by voluntary organisations and, to a lesser extent, homes run by private organisations. However, local authorities were not permitted to make placements in nursing homes. Individuals in private and voluntary residential homes who were not supported by a local authority and individuals in nursing homes could apply for support through the social security system.

Although there had been a long-standing policy objective to support people in the community with home-based care, the availability of social security funds without any assessment of need was identified as a perverse incentive towards institutional care by the Audit Commission (1986). Sir Roy Griffiths' report recommended a more co-ordinated approach to the funding and management of care, placing the responsibility for the allocation of funds, the assessment of need and the co-ordination of care with the local authority social services department (Griffiths 1988). The majority of the recommendations were accepted by the Government in the 1989 White Paper (Cm 849 1989) and were introduced by the 1990 Act.

Under the new arrangements, social security benefits no longer differentiated between residential and nursing homes, and the cost to local authorities of a nursing home placement was substantially greater than the cost of a residential placement. Laing and Buisson (1993) calculated that, in April 1993, the typical net costs to a local authority of a residential and a nursing home placement for an elderly person living alone were £88 and £183 per week respectively. Thus the

incentives were put in place to encourage authorities to identify the lowest cost option for caring for people.

Local authorities manage their own residential care homes under the National Assistance Act 1948 and, in England and Wales, independent residential care and nursing homes are regulated under the Registered Homes Act 1984, although this will be superseded by the Care Standards Act 2000. Local authorities are currently responsible for registering and inspecting independent residential homes, while health authorities are responsible for registering and inspecting independent nursing homes. Residential care homes are distinguished from nursing homes in the 1984 Act as providing board and personal care only, whereas nursing homes are intended to accommodate patients requiring constant or frequent daily nursing care. Difficulties in distinguishing between nursing care and personal care and attention were recognised before the 1984 Act (DHSS 1982). In order to enable homes to provide both personal and nursing care, the 1984 Act included a provision for the dual registration of homes. However, the requirement for registration with both the local authority and the health authority was seen as bureaucratic, time wasting and costly (Burgner 1996) and, initially, the growth in dual registration was slow, although the rate of growth has increased in recent years (Department of Health 1999*a*).

The previous Government suggested combining the separate regulatory responsibilities of local authorities and health authorities into new local statutory bodies, along the lines suggested by Burgner, and that residential and nursing homes should be brought together in a single category (Cm 3588, 1997). Under the Care Standards Act, introduced by the current Government, a National Care Standards Commission will be established to apply a common set of standards to care homes, covering both residential and nursing homes. However, the types of services offered by homes will be at the discretion of the owners (Cm 4169, 1998). The same regulations and standards will be applied to local authority homes (Department of Health 1999*b*).

A major part of the rationale for moving to a single category of home is the overlap between people entering residential and nursing home care (Burgner 1996; Cm 3588, 1997). In earlier studies, overlaps in disability levels for individuals were found in the different types of home (Wade *et al.* 1983; Power 1989; Darton and Wright 1992). Some individuals in residential care homes had levels of disability which would have been more suitably catered for in nursing homes (Cooper 1985), while some individuals in nursing homes were sufficiently fit to have been catered for in residential care homes (Primrose and

Capewell 1986; Challis and Bartlett 1987). However, average levels of disability in nursing homes were higher than in residential care homes (Ernst and Whinney 1986; Humphreys and Kassab 1986; Darton and Wright 1992). Recently, Crawford *et al.* (1999) have suggested that the introduction of assessments in 1993 has led to better targeting for residential and nursing home care. However, the differential cost to a local authority of placing an individual in a nursing home may provide a strong incentive to use residential care where possible, and Burgner (1996) noted that local authorities appeared to be placing people with higher levels of dependency in residential homes.

Residents of residential care homes can receive nursing care from community nursing services, and the Royal Commission on Long Term Care (Cm 4192-I, 1999) recommended that charges for nursing care in nursing homes and dual registered homes should be abolished. This recommendation has been accepted by the Government (Cm 4818-I, 2000). The Government, however, has not accepted the recommendation that personal care costs should be exempt from means testing, on the grounds that providing personal care free for everyone would be very expensive and would not necessarily improve services.

Routinely-collected statistics show considerable variation between authorities in the proportions of people placed in each type of care. Overall, as at 31 March 1999, 33 per cent of people aged 65 and over who were supported by local authorities, were in nursing homes. However, this proportion ranged from 11 per cent in Essex to 57 per cent in Liverpool (Department of Health 2000). This raises the question whether this is due to variations in *demand* (the type of resident approaching authorities), *supply* (the level and type of provision available for local authorities to purchase), or *policy* (in terms of eligibility criteria or interpretations of need at field level).

These questions have long-term implications for both the welfare of individuals and costs to the public purse. Once admitted, it is unusual for publicly-funded residents to move homes (Bebbington *et al.* 1999) – doing so can be very disruptive for the individual – so it is important that placements are appropriate. The cost commitment is, by definition, long term and substantial: the difference between the costs of nursing and residential home care is comparable to the difference between packages of community care and residential care.

It is seen as increasingly important that the social care you are offered should not be ‘a lottery’ based on where you live. However, the wide variation in proportions of supported residents living in nursing homes suggests that where you live may affect the type of care home you are admitted to. This paper uses data obtained in a national

longitudinal survey of individuals admitted to publicly-funded residential and nursing home care. We examine the pattern of admissions, the characteristics of people admitted and the relationship between these characteristics and admissions to residential or nursing home care, in order to identify factors associated with placement in a residential or a nursing home. This allows us to consider whether the incentives that have been put in place are working and whether local authorities, in assessing the need for nursing home care, are using consistent criteria in practice. It will also provide a baseline for considering the potential changes introduced by the Care Standards Act 2000 and the NHS Plan (Cm 4818-I, 2000).

Method

The survey was commissioned by the Department of Health, specifically to help to improve the Standard Spending Assessment (SSA) formulae for allocating funds to local authorities (Bebbington *et al.* 1996). It was, however, commissioned as part of a broader study with a wide range of objectives. Together with a cross-sectional survey of homes and their residents (Netten *et al.* 1998), the survey was designed to:

- provide a baseline description of the use of residential and nursing home care by both publicly-funded and privately-funded residents;
- examine changes over time, including mortality, changes in location, and changes in dependency; and
- examine the relationship between dependency and the costs of care following the changes in community care arrangements in 1993.

The survey was designed to obtain information about people aged 65 or over who were admitted as long-stay, local authority supported, residents of residential and nursing homes. It was conducted in a stratified sample of 18 local authorities in England. Initially, 20 local authorities were selected according to type of authority, size, population density, migration rate and socio-economic status. Fourteen of the selected authorities and four replacement authorities agreed to participate, including five London boroughs, eight metropolitan districts and five counties (Netten *et al.* 1998).

The initial phase of the survey was conducted during a period of three months in the autumn of 1995. Information was collected on a cohort of 2,544 local authority supported residents admitted to residential and nursing home care. The surviving members of the cohort have been followed up at six, 18, 30 and 42 months after admission. For each person admitted, information was collected from

social workers or care managers about their previous living arrangements, the circumstances of their admission, their health and dependency characteristics, the type of home to which they were admitted and the contractual arrangements made with the home. The follow-ups concerned the survival, location, health (dependency) and funding of the original sample. The results presented in this paper are based on the initial survey of people admitted to care homes, and on information on survival up to the 30 month follow-up.

The survey collected information relating to physical dependency and mental state which could be used to estimate the Barthel Index of Activities of Daily Living (Royal College of Physicians and British Geriatrics Society 1992) and the Minimum Data Set Cognitive Performance Scale (MDS CPS, Morris *et al.* 1994)¹.

Among the 2,544 individuals admitted, 106 were recorded as having assets exceeding the capital limit for public funding (£8,000 at the time of the survey), and the information presented in this paper is based on the remaining 2,438 individuals. Although the sample contained a disproportionate number of metropolitan authorities, weighting the sample to reflect the relative numbers of local authority supported residents has very little effect on the distributions of the variables reported in this paper, and so the unweighted information is shown².

Results

Less than nine per cent of the sample were placed in local authority run homes (Table 1). Indeed, in two of the authorities there were no local authority managed homes at all. Just under half (46 per cent) of all those admitted were assessed as requiring nursing home rather than residential care. Although dual registration is an increasing form of provision, such homes represented a very small proportion of placements in the survey (seven per cent). In consequence, the terms 'home' and 'place' are used interchangeably in reporting results in this paper. The proportion of people placed in residential places varied between 33 per cent and 71 per cent in the participating local authorities.

Age and gender

Overall, 71 per cent of the people admitted were women, with a slightly higher proportion of men being admitted to nursing homes (32 per cent) compared with independent residential homes (26 per cent). Men were also more likely to be admitted from hospital than women (32 per

TABLE 1. Demographic characteristics of admissions by type of place to which admitted (percentages)

Demographic characteristics	Residential place				All places
	Local authority	Voluntary	Private	Nursing place	
Number of individuals (= 100%)	206	243	865	1124	2438
Age group					
65 to 69	2	3	3	4	3
70 to 74	8	9	8	10	9
75 to 79	15	12	15	19	17
80 to 84	31	24	26	26	26
85 and over	45	52	48	41	45
Sex					
Male	31	28	25	32	29
Female	69	72	75	68	71
Source of admission					
Domestic household	44	40	35	18	28
Sheltered housing	8	10	8	2	5
Residential care	7	8	10	12	10
Nursing home	< 1	2	2	4	3
Hospital	39	39	44	63	52
Other	0	2	2	2	1
Household composition (8 weeks before admission)					
Lived alone	67	62	62	38	51
Lived with others	29	31	24	35	30
In hospital	3	4	7	16	10
In resid./nursing home	1	2	6	11	7
Elsewhere	0	1	< 1	< 1	< 1
Household tenure (8 weeks before admission)					
Owner occupied/mortgaged	24	26	23	22	23
Rented from LA/NT/HA*	60	56	50	44	49
Privately rented	8	7	10	5	7
Other	3	3	3	2	3
Not living in household	4	8	14	27	19

*LA/NT/HA—local authority, new town or housing association.

cent of people admitted from hospital were male, compared with 26 per cent from elsewhere). People admitted from hospital and to nursing homes also tended to be younger than those admitted from elsewhere and to residential homes.

Table 1 shows the distribution of age-groups on admission by type of place. Those admitted to nursing homes had an average age of 82.5 years, compared with 83.5 among those admitted to residential care. Age was also associated with source of admission: the average age of those admitted from hospital was 82.4 years, compared with 83.7 for those from elsewhere. Although the differences in average age of

admission from hospital and to nursing homes were small, they were statistically significant ($p < 0.001$).

Source of admission

Information was collected about where people were at the point of admission and where they had been normally resident eight weeks before admission. Table 1 shows that just over half of all people admitted to a home were in hospital at the time of assessment. The majority of these were acute stays in geriatric or general medical wards. Ten per cent of the sample had been in hospital for more than eight weeks. People in hospital at the time of assessment were more likely to be admitted to nursing homes than those assessed at home. Fifty-six per cent of people discharged from hospital entered nursing homes, compared with 35 per cent of those admitted from the community.

Of those admitted from private households, 15 per cent were in some form of sheltered housing. The majority of these were rented from housing associations or local authorities (89 per cent). Very few people were admitted straight from sheltered housing to nursing homes, suggesting that this type of accommodation does not act as a substitute for residential care in any moves along the continuum of care³.

Eight weeks before assessment, over half of the people in the survey had been living alone. In a study carried out in conjunction with the 1998 General Household Survey, the proportion of people aged 80 and over living alone in the community was 56 per cent (Bridgwood 2000). Among those living in the community eight weeks before admission, those admitted to residential homes were more likely to have been living alone: 70 per cent compared with 52 per cent for those admitted to nursing homes.

Reasons for admission

Social workers were asked to identify all relevant reasons for admission from a list of 13 categories (including an 'other' category, for which they were asked to specify such 'other' reasons). These have been grouped into seven categories for the purpose of this paper (see Table 2). The results show that mental health needs were more frequently identified with residential than with nursing home admissions, and that the reverse was true for physical or functional needs. Carer-related factors, which were slightly more likely to be associated with residential admissions, were identified in 40 per cent of cases overall. Lack of motivation was associated more with residential than nursing home care.

TABLE 2. *Reasons for admission by type of place to which admitted (percentages)*

Reasons for admission	Residential place			Nursing place	All places
	Local authority	Voluntary	Private		
Number of individuals (= 100%)	206	243	865	1124	2438
Physical or functional needs	74	78	75	83	79
Mental health needs	51	49	47	39	44
Carer related factors	44	49	40	38	40
Lack of motivation	22	29	25	16	21
Housing problem	14	13	16	15	15
Social contact	4	2	3	1	2
Other	7	8	7	3	5

People may be admitted for more than one reason so percentages do not add to 100.

TABLE 3. *Disorders and diseases of persons admitted by type of place to which admitted (percentages)*

Disorders and diseases	Residential place			Nursing place	All places
	Local authority	Voluntary	Private		
Number of individuals (= 100%)	206	243	865	1124	2438
Dementia (diagnosed)	40	40	37	39	38
Arthritis	39	36	33	28	32
Stroke	18	17	17	26	21
Cardiovascular disease	21	15	19	20	19
Respiratory/chest disease	15	15	14	15	14
Deafness	19	15	15	11	14
Depression (diagnosed)	12	11	16	12	13
Fracture	9	9	10	11	10
Blindness	9	9	10	10	10
Malignancy	4	3	5	13	8
Other psychiatric disorder	5	7	6	5	6
Gastrointestinal disease	4	4	4	6	5

People may have more than one disorder or disease so percentages do not add to 100.

Disorders and diseases

The disorders and diseases specified were those that care managers were aware of when assessing the individual. As cognitive impairment was being separately assessed, they were asked to identify whether they knew that there was an official diagnosis of dementia. As Table 3 shows, dementia was the most frequently cited disorder, although not all of

TABLE 4. *Dependency of admissions by type of place to which admitted (percentages)*

Dependency characteristics	Residential place				All places
	Local authority	Voluntary	Private	Nursing place	
Number of individuals (= 100%)	206	243	865	1124	2438
Mobility					
Walk outdoors	19	15	16	4	11
Walk indoors and stairs	20	14	15	5	11
Indoors on level/with aids	35	32	31	11	23
Walk indoors with help	11	15	21	23	20
Mobile in wheelchair	11	19	13	28	20
Chair or bedfast	4	5	4	29	15
Self-care (needing assistance)					
Wash face and hands	25	36	35	67	49
Bath or wash all over	89	88	85	95	90
Dress	51	60	58	88	72
Feed self	7	12	12	38	23
Use WC	20	30	29	73	49
Transfer (bed/chair)	22	34	34	76	52
Continence					
Continent	55	44	55	24	40
Occasional accidents	33	35	31	30	31
Incontinent	12	21	14	46	29
Barthel Index (grouped)					
Low dependence (Score > 12)	59	46	52	12	34
Moderate dep. (Score 9-12)	29	30	28	19	24
Severe dep. (Score 5-8)	10	18	16	32	23
Total dependence (Score 0-4)	2	7	4	37	19
Require nursing care					
Daily dressings	16	21	17	39	28
Bedfast procedures	< 1	< 1	2	24	12
Other tasks	9	7	9	37	22
Any tasks	21	27	23	66	43

those having cognitive impairment according to the MDS CPS, had been diagnosed: 72 per cent of people identified as severely impaired and 30 per cent of those who were categorised as mildly impaired had been officially diagnosed. Arthritis was reported in a third of cases, and stroke and cardiovascular disease in a fifth. Stroke and malignancy were more frequently reported among people admitted to nursing homes, than to residential places.

Of those admitted to residential or nursing home care, 34 per cent were recorded as having one of the 12 disorders and diseases, and 59 per cent were recorded as having two or more of the conditions. The majority had two of the conditions: 34 per cent of those admitted had

TABLE 5. Cognitive impairment and behavioural problems of admissions by type of place to which admitted (percentages)

Dependency characteristics	Residential place				Nursing place	All places
	Local authority	Voluntary	Private			
Number of individuals (= 100%)	206	243	865		1124	2438
MDS CPS categories						
Intact (0)	24	19	22		18	20
Borderline intact (1)	14	16	15		10	13
Mild impairment (2)	11	12	13		9	11
Moderate impairment (3)	24	20	26		17	21
Mod. severe impairment (4)	6	9	7		10	8
Severe impairment (5)	21	23	16		32	24
Very severe impairment (6)	0	< 1	< 1		4	2
Frequency of problem behaviour						
Never/very unusual	67	60	69		65	66
Sometimes (> weekly)	23	23	19		20	20
Frequently (daily)	10	17	12		16	14

two, 17 per cent had three, six per cent had four and two per cent had more than four. Of those diagnosed as having dementia, 32 per cent were not recorded as having any of the other conditions, and the corresponding figure for those with a stroke or malignancy was 26 per cent. The remaining conditions were less likely to have been recorded as the only one of the 12 disorders and diseases listed.

Dependency

Table 4 compares the physical dependency of those assessed by the type of home to which they were admitted. As would be expected, more dependent people were admitted to nursing homes. The average Barthel score of people admitted to nursing homes was 6.7, compared with 12.5 for people admitted to residential care ($p < 0.001$). People admitted from hospital were, at the point of admission, more dependent, having an average Barthel score of 8.9, compared with 10.9 for those admitted from elsewhere ($p < 0.001$).

All types of nursing care requirements were associated with admission to nursing homes. The one most frequently identified was that of daily dressings. These were needed for over 40 per cent of people admitted to nursing homes, but were also identified for approaching 20 per cent of people admitted to residential homes. Over a quarter of nursing home admissions required assistance with bedfast procedures.

There was evidence of widespread cognitive impairment among people admitted to care homes. Table 5 shows the distribution of the MDS CPS groups and the level of behavioural problems reported. Only one third of people admitted were classified as 'intact' or 'borderline intact'. Over a third were severely impaired (groups 4 to 6). Levels of cognitive impairment were higher among those admitted to nursing homes ($p < 0.001$), but the relationship was less marked than with physical dependency characteristics: a substantial proportion of severely impaired people were admitted to residential care. Evidence of behavioural problems, such as wandering, physical or verbal abuse and antisocial acts, was not disproportionately associated with nursing home admissions.

Although people admitted to nursing homes were more dependent on average, comparing physical and cognitive impairment separately suggests a considerable level of overlap in terms of levels of dependency. Nearly a third of people admitted to nursing homes had Barthel scores of nine or over, more typical of people admitted to residential care. But of those people who had Barthel scores over 12 (relatively low dependency), a significantly higher proportion admitted to nursing homes had severe cognitive impairment (37 per cent compared with 20 per cent entering residential homes, $p < 0.001$). Nevertheless, about a fifth of people in the relatively low functional dependency group who were admitted to nursing homes had no evidence of cognitive impairment.

Factors associated with admission to residential and nursing home care

Table 6 shows the results of a series of logistic regression analyses in which the predictive power of the variables shown in Tables 1 to 5 were examined. The logistic regression analyses compare the characteristics of individuals who were admitted to a nursing home place with the characteristics of those who were admitted to a residential place. Table 6 presents estimated odds ratios, comparing the odds for each category of each independent variable with the reference category for that variable (*i.e.* the odds ratio is 1.0 for the reference category)⁴. The goodness of fit of the equations is indicated by the proportion of correct predictions and by McFadden's R^2 (McFadden 1974)⁵. Since 54 per cent of the sample had been admitted to a residential place and 46 per cent had been admitted to a nursing home place, the minimum proportion of correct predictions, 54 per cent, could be achieved by allocating all cases to residential places⁶.

Equation 1 in Table 6 shows the results of the best-fitting model in

TABLE 6. Logistic regression equations comparing individuals admitted to a nursing place with those admitted to a residential place (odds ratios)

Independent variables (Reference category in italics = 1.00)	Equation 1	Equation 2
Barthel Index of Activities of Daily Living (<i>Low dependence: score > 12</i>)		
Moderate dependence (Score 9–12)	2.40**	2.17**
Severe dependence (Score 5–8)	5.71**	4.70**
Total dependence (Score 0–4)	16.76**	13.12**
Frequency of problem behaviour (<i>Never/very unusual/sometimes</i>)		
Frequently (daily)	1.79**	1.81**
Other disorders and diseases (<i>Not reported</i>)		
Malignancy	2.82**	2.91**
Arthritis	0.68**	0.78*
Deafness	0.65**	0.67*
Nursing care needs (<i>Not reported</i>)		
Daily dressings	1.73**	1.85**
Bedfast procedures	6.11**	6.08**
Other nursing care	4.10**	3.98**
Reasons for admission (<i>Not reported</i>)		
Physical health problems	1.72**	1.79**
Family breakdown	0.51**	0.47**
Lack of motivation	0.57**	0.60**
Household composition (<i>Lived with others/not in household</i>)		
Lived alone	–	0.50**
Source of admission (<i>Domestic household/sheltered housing/other</i>)		
Residential or nursing home	–	2.43**
Hospital	–	2.33**
McFadden's R ²	0.338	0.368
Percentage of correct predictions		
Residential beds	85.7	86.7
Nursing beds	71.7	74.5
Overall	79.5	81.3

* 0.05 > p ≥ 0.01; ** p < 0.01

which variables relating to personal characteristics (age group, sex, Barthel score, confusion, problem behaviour, need for nursing care, disorders and diseases, and reasons for admission) were included. Using the Barthel score alone achieved nearly 75 per cent correct predictions. Including age group, sex, confusion and problem behaviour with the Barthel score did not improve the overall proportion of correct predictions, although sex (being female) and mild cognitive im-

pairment were significantly associated with admission to a residential place ($p < 0.01$). Inclusion of need for nursing care, disorders and diseases, and reasons for admission improved the overall proportion of correct predictions to nearly 80 per cent⁷. Equation 1 was obtained by re-estimating the equation using only the variables which achieved statistical significance at the five per cent level.

Following the development of the model using individual characteristics, the additional effects of household composition and source of admission were tested. This resulted in equation 2 in Table 6. This shows that those who had been living alone were almost twice as likely to be admitted to a residential place, while those who were living in another home or hospital were over twice as likely to be admitted to a nursing home place. The inclusion of these variables slightly altered the importance of the other variables in the equation (for example arthritis and deafness), but all of the variables were still statistically significant at the five per cent level, and the overall proportion of correct predictions was increased to over 81 per cent. A further analysis (not shown in Table 6) examined the effect of the overall supply of residential and nursing home places (obtained from Department of Health statistics) and the relative supply of residential and nursing home places. These variables were statistically significant but, again, the inclusion of these variables slightly altered the importance of the other variables in the equation, reducing the importance of the arthritis variable to just below the five per cent level of statistical significance. As a result, the proportion of correct predictions was reduced slightly, to just under 81 per cent.

Overall, it is clear from Table 6 that the model was slightly better at predicting admission to a residential place than to a nursing home place. The cut-off probability for the percentage of correct predictions in Table 6 was 0.5. Eleven per cent of people admitted were predicted to have been admitted to a residential place but were in fact admitted to a nursing home place, compared with seven per cent who were predicted to have been admitted to a nursing home place but were actually admitted to a residential place.

Authorities varied in the degree to which they placed people in the opposite type of place to that predicted by the model. Using a probability of under 0.33 to denote a low predicted probability of placement, eight local authorities made more than 10 per cent of placements in the opposite type of place to that predicted. The maximum proportion of such placements in any local authority was 20 per cent. Among these eight authorities, five made the majority of such placements in nursing places, one made the majority of such placements

TABLE 7. *Survival of individuals 30 months after admission by type of place to which admitted and type of place predicted*

Place to which admitted	Place predicted	Number of individuals	Died within 30 months (%)	Mean survival of those who died (months)
Residential	Residential	1095	57	12.3
Residential	Nursing	168	69	11.3
Nursing	Residential	260	68	8.6
Nursing	Nursing	760	82	7.7
All places	All places	2283	67	9.9

Type of place was predicted using equation 2 (Table 6) for the 2283 individuals with complete information.

in residential places, and two made similar proportions of such placements in residential and nursing home places.

Outcomes at 30 months

It was not possible to obtain information on prognosis at admission. However, the information collected in the follow-ups included the location of the individuals and, for those who had died, their date of death. Information on the location of the elderly people at the 30 month follow-up was obtained for 90 per cent of the individuals included in the admissions survey. Table 7 shows the proportion of individuals who died by 30 months, and their mean length of survival following admission, according to the type of place that they were admitted to and the type of place predicted by the logistic regression equation shown as equation 2 in Table 6.

Individuals who were predicted to have been admitted to a residential place were less likely to have died by 30 months than those predicted to have been admitted to a nursing place, whether they had been admitted to a residential, or to a nursing place. Among the former, 57 per cent of those for whom admittance to a residential place had been predicted were recorded as having died by 30 months, compared with 69 per cent who were predicted to have been admitted to a nursing home place. Among individuals who had been admitted to a nursing home place, 82 per cent of those thus predicted were recorded as having died by 30 months, compared with 68 per cent who were predicted to have been admitted to a residential home place.

The mean length of survival of those who had died was slightly longer for those who were predicted for admission to a residential place than for those who were predicted to have been admitted to a nursing place, whether they had been admitted to a residential, or to a nursing

place, but the differences were not statistically significant. For individuals admitted to a residential place, and who were recorded as having died by 30 months, the mean length of survival was 12.3 months for those thus predicted and 11.3 months for those predicted to have been admitted to a nursing place. For individuals admitted to a nursing place, and who were recorded as having died by 30 months, the mean length of survival was 7.7 months for those thus predicted and 8.6 months for those predicted to have been admitted to a residential place. Among those who were predicted to enter the opposite type of place to the one that they had been admitted to, the difference between the mean length of survival of those who had died was statistically significant ($p < 0.05$).

Discussion

The analysis provides a coherent and interpretable picture of the effect of assessment decisions on placements in residential and nursing homes. Inevitably, there are problems in using data that have been collected for one purpose for investigating another issue, no matter how closely related the issues are. The data collected in this survey were principally designed to be comparable with nationally available data in order to identify those characteristics associated with demand for care home places. Large-scale data collections of this nature do not easily allow detailed investigations of reasons for admission or the knowledge base from which social workers were making their assessments. It is not possible, for example, in this type of study to allow for such factors as unrecognised depression which has been found to be associated with a need for care services (Banerjee and Macdonald 1996). We are reliant on care managers' interpretations of events.

Considerable variation between local authorities is observed in the proportions of older people supported in care homes who are living in nursing homes. On the basis of our analysis we were able to predict correctly the placement of over 80 per cent of people at the point of admission, based on the characteristics and circumstances of the individuals themselves. Mortality rates, as would be expected if appropriate decisions were being made, were much higher among people admitted to nursing homes than among those admitted to residential homes. Moreover, mortality rates and length of stay amongst those who died within the group of those apparently placed inappropriately suggest that some unmeasured aspect of expected prognosis would account for some of the unexplained variation. This

suggests that in taking on the responsibility for placing people in nursing home care, local authorities appear to be placing people on a consistent and appropriate basis. This means, however, that the observed variation between local authorities is due primarily to factors other than local authority nursing home placement policies and practice.

Turrell *et al.* (1998) suggest that variations in the relative supply of residential and nursing homes are likely to result in some misplacement. Construction of supply indicators is hampered by the lack of geographical correspondence between local and health authorities and the use of homes beyond the local authority boundaries, particularly in London (Bebbington and Darton 1995). The supply indicators that were used were found to be statistically significant but did not improve the predicted proportion of correct placements. With the caveats about measurement of supply, this suggests that there is little evidence that authorities are being constrained in placement by factors beyond their control.

We identified above that, nationally, there is a wide variation in the proportion of local authority supported residents who are placed in nursing, as opposed to residential, homes. It is possible that the variation is due to the types of people who approach local authorities as a result of differing policies on continuing care. However, information about the low number of people discharged from homes to hospital suggests that this is unlikely (Bebbington *et al.* 1999). Socio-economic factors are more likely to be associated with the numbers of people approaching authorities than wide variations in need-related characteristics. It is more likely that the variations in the proportions placed in residential care are associated with policies and practice in maintaining people in private households. While we cannot observe the characteristics of those people who were maintained in private households, we can turn to the model for some indications of what is influencing placement decisions.

The dependency characteristics of individuals accounted for the vast majority of variations in placements. The grouped Barthel score alone achieved nearly 75 per cent of correct predictions. This suggests that those authorities with a high proportion of nursing home placements are admitting more dependent people. If we accept the argument above, this suggests that the authorities that place the highest proportion of people in nursing homes are maintaining people in private households at higher levels of dependency.

While undoubtedly the dominant factor, level of dependency is not the whole story. It is of interest to explore those factors that were

associated with admission to residential care, where potentially there may be scope for diversion from admission to a care home. The analysis revealed five factors that were associated with increased probabilities of placement in residential care (i.e. odds ratios under 1.00 in equation 2 of Table 6): arthritis, deafness, family breakdown, living alone and lack of motivation.

Once all other factors have been taken into account, a diagnosis of arthritis probably reflects high levels of impairment without an associated need for nursing care. We might hypothesise that deafness is associated with problems of communication and fears for safety, which might be susceptible to innovative intervention.

Lack of carer support is associated with living alone and family breakdown, related, well-established factors in admission to care homes (Warburton 1994). Again, we might hypothesise that some authorities are more successful than others and prepared to spend more on packages of care to support highly dependent people living alone. Within the context of the model, this would be associated with high levels of functional impairment, but not with a need for nursing care, suggesting that support that might otherwise be associated with community nursing interventions is less likely.

Perhaps of most interest, given the current policy emphasis on intermediate care and rehabilitation, is the effect of lack of motivation. High levels of functional impairment may be partly the result of lack of motivation, suggesting that this may be an appropriate target group for rehabilitation services as an alternative to admission to long-term care.

It is of interest that once functional impairment, diagnoses of disorders and conditions, and these other factors were allowed for, dementia was not a factor in predicting admission to nursing homes or residential care. Other work suggests that the same may not be true among privately-funded residents. At the same level of functional impairment, privately-funded residents with severe cognitive impairment are more likely than publicly-funded residents to be found in residential homes (Netten *et al.* forthcoming).

Overall, it would appear that the current system of incentives, largely the higher cost associated with nursing home placements, works well in terms of a consistent approach to placing people in nursing homes. However, the variations in proportions of people placed suggest that whether you are admitted to residential care or maintained at home is much more of a lottery. It remains to be seen whether new incentives in terms of performance assessment and policy emphasis and spending on rehabilitative and intermediate care, have the desired

impact in reducing admissions to long-term care. An issue for the future will also be whether the new arrangements for NHS funding of nursing care continue to promote appropriate placements in nursing homes or access to nursing care in general care homes.

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NOTES

- 1 The scores on the Barthel Index were grouped into four categories, following Granger *et al.* (1979): 0–4, 5–8, 9–12, 13–20. The seven categories of the MDS CPS were grouped into three categories: intact, code 0; mild impairment, codes 1, 2, 3; and severe impairment, codes 4, 5, 6.
- 2 For example, a goodness-of-fit test between the unweighted and weighted distributions of the grouped Barthel Index gave $X^2 = 0.344$ (3 d.f., $p > 0.95$).
- 3 It is interesting to note that people admitted from sheltered housing were no more dependent than people who lived in unsupported accommodation (average Barthel score of 12.0 compared with 11.3 in other types of private households). Of course, sheltered housing is a very inclusive term and conceals a wide range of support which was not reflected in the data collected.
- 4 The odds ratio represents the relative probability of admission to a nursing home place rather than to a residential home place for individuals with the given level of the independent variable, compared with individuals with the reference category level. For example, from equation 2, individuals with a Barthel score of four or less were estimated to be 13 times as likely to have been admitted to a nursing place than to a residential place, compared with individuals with a Barthel score of more than 12.
- 5 McFadden's R^2 is a measure of goodness of fit which is analogous to the R^2 statistic used in linear regression analysis.
- 6 Note that some individuals could not be included in this analysis. Almost all of these were in one metropolitan authority which was unable to supply information on problem behaviour. The logistic regression analyses were based on 2,283 individuals in 17 of the 18 local authorities, of whom 55 per cent had been admitted to a residential place.
- 7 In the case of need for nursing care and reasons for admission, a number of items were recorded for only a few members of the sample. The various categories of need for nursing care and reasons for admission listed in Tables 2 and 4 were entered separately. In the case of reasons for admission, this produced a slightly lower proportion of correct predictions than using the original variables and excluding the categories with very few cases. However, using these three categories of need for nursing care produced similar proportions of correct predictions as using each type of nursing care separately.

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