

Effect on a geriatric service of opening a 25-bed ward on the district general hospital site: an audit

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ABSTRACT—Notes and discharge summaries of 2,560 patients were analysed in a pre-planned study to determine how the establishment of a 25-bed assessment ward on the district general hospital (DGH) site affected the work of a geriatric unit that had previously had no DGH beds. Throughput, changes in referrals and practice, and changes in outcome were measured using a computerised programme which examined the work of the unit for a year before and a year after the opening of the assessment ward. There were no changes in overall bed numbers or staffing, so changes were likely to be the direct result of establishing the DGH beds. The second year of the study showed a 33% increased throughput, with increased referrals from the accident and emergency department and evidence of more active investigation and treatment and a tendency towards a shorter length of stay. There was an increased number of transfers from all departments to the geriatric department for rehabilitation and a shortened time interval to transfer. Admissions to the general medical unit for patients aged 65–74 and 75+ did not change.

Over the past 10 years there has been an increasing emphasis on the need for a large proportion of geriatric beds to be on the district general hospital (DGH) site. This aim is included in regional strategic plans [1] and has been supported by the Royal College of Physicians working party on medical care for the elderly [2] and the DHSS guidelines of 1971 [3].

The rationale for this is in part theoretical and in part based on analyses of effective geriatric services by retrospective studies of hospital activity analysis and SH3 returns (annual returns from each hospital to DHSS detailing inpatient and outpatient numbers in each specialty). Evans [4], in an assessment of three units which achieved prompt admission and low dependence on long-stay beds [5–7], noted that they all had a strikingly high percentage (mean 85%) of their beds on the DGH site. Rai *et al.* [8] found that a

geriatrician working on the DGH site can achieve a short length of stay without increased readmission or mortality rates, and Mitchell *et al.* [9] indicated that making more DGH beds available for geriatric patients can increase throughput. Because of the nature of these data, it is not possible to analyse in any great detail the impact of DGH siting on the activities of the geriatric unit.

In Canterbury the opportunity to undertake a more detailed assessment arose when, for the first time, beds on the DGH site became available with the opening of a 25-bed acute geriatric assessment ward (Harvey ward) at the Kent and Canterbury Hospital in June 1984.

The aim of the present study was to find out whether provision of beds on the DGH site for the first time (without overall bed or staff increases) would alter the activity of the geriatric service. No such study has been previously reported.

Background

The Canterbury and Thanet health district has, for geographical reasons, a bipolar division of geriatric care with two separate services based on Thanet and Canterbury. This study was concerned only with the Canterbury service. The Canterbury part of the district includes the towns of Faversham, Whitstable, Herne Bay and Sandwich, with a total population of 140,000 (32,600 aged 65+; 15,400 aged 75+). Prior to June 1984 the hospital geriatric facilities were provided at:

Nunnery Fields Hospital: 127 beds (acute, rehabilitation, long stay)
Herne Hospital, Herne Bay: 119 beds (long stay)
Bensted Hospital, Faversham: 24 beds (long stay)

Nunnery Fields Hospital is half a mile from the DGH site but 24-hour junior medical cover is provided. Such services as radiography are not available on site, patients having to go by ambulance for this investigation.

In June 1984 it was decided to admit all geriatric

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Admissions to general medical unit

	65-74	75+	%
June 1981-May 1982	811	604	75
June 1982-May 1983	755	512	68
June 1983-May 1984	695	514	74
June 1984-May 1985	810	591	73

referrals to the newly opened Harvey ward at Kent and Canterbury Hospital. The ward is on the same site as a major accident and emergency department, and the DGH includes full medical and surgical facilities, radiology and pathology on site. While in this ward, the patients' condition was assessed, investigated and a management plan defined. Patients requiring rehabilitation were then transferred to Nunnery Fields Hospital within an average of 7 days.

At the same time as Harvey ward opened in Kent and Canterbury Hospital, a 25-bed ward at Herne Hospital was closed. The nursing staff were transferred to Harvey ward, so there was no change in bed numbers or nurse staffing levels. The junior doctors at Nunnery Fields Hospital were redeployed to cover both Harvey ward and Nunnery Fields Hospital, and an additional half SHO (combined with radiotherapy) was provided for Harvey ward. No extra consultant staff were appointed, and no increase in physiotherapy, occupational therapy or speech therapy occurred during the period under review.

The fact that there was little other change provided an excellent opportunity to study the single effect of redistributing geriatric beds on to the DGH site.

Methodology

This study was planned during 1983, one year before the opening of Harvey ward. The research assistant systematically examined the case notes and discharge summaries of patients admitted to the Canterbury geriatric unit in the year before the opening and in the first operational year of the new ward.

For each admission a 70-box sheet of data was completed. The data included each patient's hospital number, computer number, home, age, sex, general practitioner, consultant, source of referral (Table 2), medical (Table 3) and social reasons for admission, social circumstances, special investigations, three principal diagnoses (coding based on the International Classification of Diseases), time interval between referral by other units and transfer to the geriatric wards, mortality, length of stay, destination on discharge (Table 5), and change in social circumstances.

Length of stay, in calendar days, included stay in any or all of assessment, rehabilitation or long-stay wards; in addition, if the patient returned to the geriatric ward, the overall stay included any time spent in general medical or surgical wards, or in special hospitals. Readmission during a trial discharge was regarded as part of the original admission if the bed had been kept

reserved for that patient. Length of stay was defined as short (up to 14 days), medium (15-31 days) or long (more than 32 days).

Change of social circumstances reflected any alteration in the degree of the patients' (in)dependence as compared with their pre-admission status.

The data were analysed on a Vax computer, using the software package SPSSX (statistical package for social sciences) version 2, at the health services research department of the University of Kent at Canterbury. Data for general medical admissions were obtained from the hospital activity analysis (HAA).

Results

Altogether 2,617 patients were admitted during the two years under study. Case notes were available for 2,560 patients (a loss of 2.2%). In the first year (4 June 1983 to 3 June 1984) there were 1,101 admissions, and in the second year (4 June 1984 to 3 June 1985) the number increased by 33% to 1,459. The age distribution (Table 1), sex and social circumstances of the patients were similar in both years.

The sources of admissions to the geriatric unit are shown in Table 2. The principal increases were in those admitted by direct referral by general practitioner (+146, +22%), from accident and emergency (+93, +94%) and referred by other departments within the DGH, ie stroke patients, amputees etc (+81, +56%). In addition to the overall increase in workload, there were more admissions from A&E in year 2 (13% of all admissions) than in year 1 (9% of all admissions), and slightly more transfers from other departments (15% of all admissions in year 2 compared with 13% of all admissions in year 1). In both years only 8% of all admissions followed domiciliary visits.

The opening of Harvey ward was also associated with a quicker transfer of patients from other departments to the geriatric unit; the percentage of all such transfers occurring within 1 week rose to 74% in year 2 compared with 50% in year 1.

The reasons for admission are shown in Table 3. More patients were admitted in year 2 for acute medical conditions (+55, +10%), assessment and investigation (+246, +70%) and rehabilitation (+47, +27%).

Table 1. Age distribution of patients

Age	Number of patients admitted (and as % of yearly total)	
	Year 1	Year 2
≤65	20 (1.8%)	29 (2.0%)
66-70	84 (7.6%)	88 (6.0%)
71-75	170 (15.4%)	208 (14.3%)
76-80	274 (24.9%)	359 (24.6%)
81-85	292 (26.5%)	411 (28.2%)
86-90	184 (16.7%)	259 (17.7%)
90+	77 (7.0%)	105 (7.2%)
	1,101	1,459

Table 2. Sources of admissions to the geriatric unit

	Number of patients (and as % of yearly total)		Change (+ or -) in number of patients (year 2 v year 1)	
	Year 1	Year 2		
GP by telephone	659 (59.9%)	805 (55.2%)	+146	(+22%)
Via accident & emergency	99 (9.0%)	192 (13.2%)	+93	(+94%)
Transfer from Kent & Canterbury	144 (13.1%)	225 (15.4%)	+81	(+56%)
Via outpatients, day hospital	43 (3.9%)	55 (3.8%)	+12	(+28%)
Following domiciliary visit	93 (8.4%)	111 (7.6%)	+18	(+19%)
Planned relief	16 (1.5%)	14 (1.0%)	-2	(-12%)
Other	47 (4.3%)	57 (3.9%)	+10	(+21%)
	<i>1,101 (100%)</i>	<i>1,459 (100%)</i>	<i>+358</i>	<i>(+33%)</i>

Table 3. Medical reasons for admission to the geriatric unit

	Number of patients (and as % of yearly total)		Change (+ or -) in number of patients (year 2 v year 1)	
	Year 1	Year 2		
Acute illness	536 (49%)	591 (41%)	+55	(+10%)
Assessment/investigation	354 (32%)	600 (41%)	+246	(+70%)
General assessment	150 (14%)	315 (22%)	+165	(+110%)
Falls and 'turns'	103 (9%)	138 (9%)	+35	(+34%)
Impaired mobility	74 (7%)	62 (4%)	-12	(-16%)
Confusion	18 (2%)	76 (5%)	+58	(+322%)
Incontinence	9 (1%)	9 (1%)		
Rehabilitation	171 (16%)	218 (15%)	+47	(+27%)
Terminal care	11 (1%)	11 (1%)		
Long-stay care	14 (1%)	12 (1%)	-2	
Other	2	4	+2	
Social only	13 (1%)	23 (2%)	+11	(+85%)
	<i>1,101 (100%)</i>	<i>1,459 (101%)</i>		

The most marked change was the increase in those admitted for assessment and investigation, rising to 41% of the total admissions in year 2 compared with 32% of all admissions in year 1. The importance of social factors did not change between the two years (Table 4).

Specialist opinions (Table 4) were much more readily available once the geriatric assessment ward was on the main hospital site. For example, surgical opinions were obtained for 79 patients in year 2 compared with 25 in year 1 (+54, +216%). Similarly, 24-hour ambulatory cardiac monitoring was undertaken on 20 patients in year 2 compared with 2 patients in year 1 (+18, +900%). Blood transfusions were performed in 69 patients in year 2 compared with 24 patients in year 1 (+45, +188%).

There was a shift towards shorter lengths of stay in year 2 (Table 4): patients staying in hospital less than 15 days rose to 70% in year 2 compared with 62% in year 1, while the proportion staying longer than 32 days dropped from 16% in year 1 to 10% in year 2. The percentage of patients readmitted within 1 month was 2% in both years.

The mortality rate in year 2 was 29% compared with 36% in year 1 (Table 5). More patients returned to their own homes or to residential care in year 2 (63%) compared with year 1 (57%). The proportion going to nursing homes remained unchanged between the two years, and there was a net increase of only 4 nursing home places in the Canterbury sector during this time.

Discussion

The most striking effect to emerge from this study was the 33% increase in the number of patients in the second year. Analysis of the workload of the geriatric department over preceding years showed total admissions of between 900 and 1,100 patients (Fig. 1) and indicates that the dramatic increase seen with the opening of Harvey ward was not part of an already established trend. Clearly more beds were available for acute admissions and for rehabilitation in year 2 when 25 long-stay beds had been replaced by 25 acute assessment beds. However, with this increase the number of beds available for acute and assessment admissions

Table 4. Social factors, specialist opinions, and length of stay

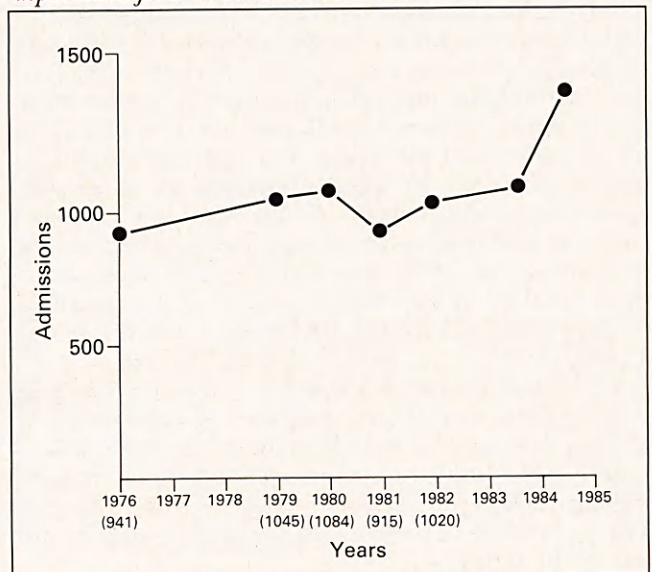
	Number of patients (and as % of yearly total)		Change (+ or -) in number of patients (year 2 v year 1)
	Year 1	Year 2	
Social reason for admission			
Very important	27 (2%)	36 (2%)	
Important	132 (12.0%)	172 (12.0%)	
Unimportant	940 (85.0%)	1,250 (86.0%)	
Not known	2	1	
Specialist opinions			
Surgical opinion	25	79	+54 (+216%)
Blood transfusion	24	69	+45 (+188%)
24-hour tapes	2	20	+18 (+900%)
Length of stay overall			
Short stay, 8-14 days	681 (61.9%)	1,021 (70.0%)	+340 (+50%)
Medium stay, 15-31 days	247 (22.5%)	287 (19.7%)	+40 (+16%)
Longer stay, 32 days or more	172 (15.6%)	150 (10.3%)	-22 (-13%)

Table 5. Destination of patients on discharge from unit

	Number of patients (and as % of yearly total)		Change (+ or -) in number of patients (year 2 v year 1)
	Year 1	Year 2	
Own home ± spouse	490 (44.5%)	683 (46.8%)	+193 (+39%)
Sheltered accommodation	35 (3.2%)	46 (3.2%)	+11 (+31%)
Residential (private or part 3)	98 (8.9%)	187 (12.8%)	+89 (+91%)
Nursing home	41 (3.7%)	52 (3.6%)	+11 (+27%)
Dead	392 (35.6%)	422 (28.9%)	+30 (+8%)
Other	45 (4.1%)	85 (5.8%)	+130 (+12%)
Still in hospital at end of study period, ie 6/12 later			
% long-stay	12 (1.1%)	16 (1.1%)	+4
Still in long-stay hospital	3 (0.3%)	2 (0.2%)	-1
	100%	101.2%	

changed from 127 to 152, a 20% increase which does not explain the observed increase in workload. Furthermore, there was not any evidence of an increased readmission rate to explain the increase in numbers. There was therefore a greater throughput in the geriatric department associated with siting of beds at the DGH in exchange for closing the same number of long-stay beds. This general effect supports the observations of Evans [4] and Mitchell *et al.* [9].

The more detailed analysis of activity in the department associated with the redeployment of beds showed other changes in practice. Although over 50% of admissions continued to come from GP referral by telephone, there was a striking rise in the admissions from A&E. This emphasised the benefit of increased proximity since transfer from the A&E department required simply an internal transfer in year 2 compared with the need for ambulance transfer in year 1. Furthermore, in year 1, once a transfer to Nunnery Fields had occurred from A&E, it became less easy to do investigations such as X-ray, gastroscopy etc, should the need arise. The increased intake from A&E

Fig. 1. Annual number of admissions to the geriatric department from 1976 to 1985.

enhanced the acute aspect of the geriatric service and benefitted the medical firms by avoiding inappropriate admissions to their beds with subsequent delays when transfer to the geriatric department was requested.

The more acute nature of the work done associated with a presence on the DGH site can be seen in the greater number of surgical opinions, blood transfusions, gastroscopies etc. They put increased demands and costs on services in the DGH, and this factor needs to be borne in mind in setting up such a facility. However, the increased cost is associated with a greater throughput and better outcome. A further indication of the acute nature of the work was that, in the vast majority of cases each year, social factors were regarded as being unimportant as a cause for admission.

A further striking change in the activity of the department was the 56% increase in patients admitted from other departments in the hospital, and the increased speed at which they were transferred. Again the benefit of increased throughput associated with having a ward on the DGH site released more rehabilitation beds into which patients from other wards could be transferred. This enabled patients to have their rehabilitation in a more appropriate environment, and also augmented the efficacy of the medical and surgical wards and hence of the DGH as a whole.

Changes in outcome were noted, including lower mortality, shorter lengths of stay in hospital and more patients achieving relative independence. While other factors may play a role in these improvements, it is encouraging to note that such benefits may in part be related to the provision of beds on the DGH site.

This study has enabled us to analyse in more detail the observations of others and has given objective evidence to support the often advocated belief that the most efficient and effective way of providing a geriatric service is to base it on the DGH site. These results have been achieved despite only a limited presence on the DGH site, and it is reasonable to surmise that greater benefits would accrue from transfer of all acute/assess-

ment and rehabilitation beds to the DGH site. Such benefits not only provide better care for the patients but also help to improve access to the geriatric department from the community and enhance the efficiency of the DGH as a whole.

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