

# Acute medical admissions: changes following a sudden reduction in bed numbers at Northwick Park Hospital

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**ABSTRACT** – The aim of this study was to gather information on the consequences of hospital bed closures on acute admission patterns. Each November during 1986–1988 we carried out a survey of requests and referrals for acute medical admission to Northwick Park Hospital (NPH). Between the first study in 1986 and the second study in 1987, 15 acute medical and 16 surgical beds were closed. In 1986 the hospital was ‘full’ and closed overnight to admissions from general practitioners (GPs) on 3/25 days. In 1987 this had increased to 16/27 days and in 1988 it was closed overnight on 20/31 days. Because GPs found it unreasonably difficult to admit patients to NPH, the number of patients referred by them fell from 55.8% of all admissions to 49.8% and 44.3%, while the number of self-referred patients rose from 27.1% to 34.5% and 39.1%. An increasing proportion of elderly patients had to be admitted to acute medical beds: those over 75 years of age represented 24.8% of admissions in 1986, 43.7% in 1987, and 43.8% in 1988. These changes have had important effects on our medical practice, and we suggest that audits of this type are necessary to quantify these changes. We make suggestions for improving such medical audits in the future.

During the past 5 years many acute sector beds have been closed on the grounds of actual or impending financial deficits. These closures have led to widespread concern. Attempts have been made to analyse the effects of changes in health care funding [1] but there is little information on the consequences of reductions in the provision of medical services to patients and the effect on staff. If clinicians are to take more responsibility for the provision of health services, they must become more involved in the collection and presentation of information about all aspects of the running of their hospitals and units. We present some data arising from an audit of delivery of acute medical services and, based upon our experience, make some suggestions for improving such audits in the future.

Northwick Park Hospital serves an area with a population of 202,000 which during this study was relatively stable in numbers and age structure [2]. The hospital has 106 medical NHS beds including 14 coronary and intensive care beds, and another 14 beds dedicated to rehabilitation, dermatology and haematology. In addition, there are 80 medical and surgical ‘national beds’ allocated to the Clinical Research Centre mainly for research, 34 beds in the regional infectious diseases unit, and 50 acute geriatric beds. There are also 182 surgical, orthopaedic and gynaecological beds.

In November 1986 we had carried out a 1-month survey of requests and referrals for acute medical admission to Northwick Park Hospital (NPH). In September 1987, facing a significant projected overspending of the district budget, management closed 31 acute beds at the hospital (15 medical and 16 surgical) with effect from 11 October 1987. We repeated the survey in November 1987, to see how these changes in the acute bed pool had affected acute referral patterns and admission policies at this hospital, and again in November 1988, to establish whether the changes we had found in 1987 had long-term effects. We recognised that the effects of our own bed closures were likely to be exacerbated by the closure, during 1987–8, of 174 beds in the adjacent health authorities of Barnet, Hillingdon and Brent, of which 51 were designated general medical beds.

## Methods

During each period (3/11/86–7/12/86, 9/11/87–7/12/87, 31/10/88–30/11/88), the duty medical registrars kept a detailed record of all general practitioners’ (GPs) requests for an opinion, and the action taken in each case. Similar records were kept of all requests for admission of patients received from the emergency bed service (EBS), and of patients referred for medical admission having been first seen by accident and emergency department (A&E) staff. Patients in the latter group were either self-referred or had been sent directly by their GPs. The records were checked against the A&E and admission statistics. All patients were recorded separately to avoid individual patients being counted in more than one group.

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As a result of the change to Körner data, comparable figures for bed occupancy, turnover, length of stay and similar indicators are not available.

## Results

The hospital is declared 'closed' when no unoccupied beds remain in the medical bed pool. However, if seriously ill patients arrive at the hospital it is in practice usually possible temporarily to 'borrow' a bed from another team. This creates the problem of having to place seriously ill patients on inappropriate wards. On some occasions it has proven impossible to accommodate patients anywhere in the hospital, and it became necessary to transfer patients to other hospitals. In the past it was not uncommon for nursing staff to provide extra beds above the normal quota. This practice has now been abandoned, primarily because nursing and support staffs feel that it is not possible to provide adequate care for more than an agreed number of patients.

In 1986 complete data were available for 25 days, during which the hospital was 'full' and closed to admissions from GPs overnight on three days. In 1987 the hospital was closed overnight on 16 occasions during a study period of 27 days, while in 1988 it was closed overnight on 20 occasions during a 31 days study. The study periods varied because data collection was incomplete outside the given dates. In 1986, there were 331 requests for admission, and 267 patients (80.7%) were seen by the duty medical teams. In 1987 the teams saw 304 (86.8%) of 350 referrals, and 381 (87.2%) of the 437 referred patients in 1988 (Table 1).

Analysis of referral patterns (Table 1) showed that, in 1986, 185 (55.8%) of the total of 331 patients referred came directly from GPs. Of these, 118

(63.8%) were admitted, 35 (18.9%) were seen and referred back to the GP with advice, while 11 (5.9%) were seen and referred to an appropriate outpatient clinic (OP). A further 10 were seen by other teams (Alt team), and 2 were admitted for overnight observation (Obs). In 1986 only 9 patients referred by GPs (4.7%) were declined admission because of a shortage of beds. Self-referral to the A&E department accounted for a further 49 (27.1%) admissions. Only a small proportion (14, ie 7.7%) of the total number of admissions during this period came via the emergency bed service (EBS). The majority of EBS referrals were declined since they came from outside the hospital catchment area.

By contrast, in 1987 only 83 (49.4%) of 168 direct referrals from GPs were admitted, 36 (21.4%) had to be refused because of bed shortage, and 42 (25.0%) patients were seen and referred back to their GPs. Although the total number of EBS requests over the study periods in 1986-8 did not change greatly, being 74, 61 and 72 respectively, a greater proportion were admitted: 14 (7.7%) in 1986, 39 (17.6%) in 1987, 45 (15.9%) in 1988. This is largely explained by the dramatic increase in the number of cases being formally referred to NPH: 1 in 1986, 19 in 1987, 14 in 1988. Such patients do come from the hospital catchment area, but might in the past have been admitted to other local hospitals. This reflects the shrinking acute bed pool in neighbouring hospitals.

The changes observed in 1987 continued in 1988, when 194 patients were directly referred by GPs but only 104 (53.6%) were admitted, and 40 (20.6%) were refused on grounds of bed shortage. The proportion of patients referred directly by their GPs fell from 55.8% of the total in 1986, to 48% in 1987 and 44.3% in 1988. By contrast, self-referred medical patients to the A&E department increased from 21.7% in 1986 to 34.5% in 1987 and 39.1% of the total in 1988.

The total number of medical admissions has increased steadily over the three years: 7.2 per day in 1986, 8.2 in 1987 and 9.1 in 1988. However, even more dramatic has been the increasing proportion of elderly patients admitted: those over 75 years of age represented 24.8% of admissions in 1986, 43.7% in 1987, and 43.8% in 1988 (Table 2).

**Table 1.** Outcome of acute medical referrals in November 1986, 1987 and 1988. See text for key to abbreviations.

Request/ Seen and Seen but Declined	referrals	admitted	not	to see	OP	Alt	Obs	Total
from		admitted	admitted		team			
<i>1986 (25 days)</i>								
GP	118	35	9	11	10	2		185
EBS	14	1	55	0	4	0		74
A&E	49	12	0	3	4	4		72
	181	48	64	14	18	6		331
<i>1987 (27 days)</i>								
GP	83	42	36	5		2		168
EBS	39	13	9					61
A&E	100	14	1		2	4		121
	222	69	46	5	2	6		350
<i>1988 (31 days)</i>								
GP	104	30	40	10	6	4		194
EBS	45	8	16	0	0	3		72
A&E	134	20	0	3	1	13		171
	283	58	56	13	7	20		437

## Discussion

We have limited this study to acute medical referrals. The total number of medical patients admitted has increased steadily despite the reduction in medical beds, and this increase was only achieved by admitting patients to beds outside the acute medical pool at the cost of disrupting elective surgery and gynaecology, and with heavy usage of research and infectious diseases beds. Patients may also have suffered because it has become common for 'convalescent' patients to be moved, usually at short notice and sometimes late at night, from designated medical wards to, say, a gynaecological ward, allowing more acutely ill patients to be admitted to a more appropriately staffed ward.

**Table 2.** Patient referrals and admissions to general acute medical teams, divided by age.

	Age				Total
	<65	65-74	>75	Not recorded	
<i>1986</i>					
Admitted	79	53	45	4	181
Referred but not admitted	56	5	38	23	122
	135	58	83	27	303
<i>1987</i>					
Admitted	78	44	97	3	222
Referred but not admitted	59	18	18	33	128
	137	62	115	36	350
<i>1988</i>					
Admitted	103	52	124	4	283
Referred but not admitted	62	15	26	51	154
	165	67	150	55	437

There is inevitably a subjective element in the decision to admit a patient to hospital, as there is in the decision to refer a patient back to a colleague in general practice. We found that the reduction in acute beds has had a demonstrable effect on patterns of referral by GPs and the EBS, and on our admission practice. There are indications that the threshold for admitting GP-referred patients has been raised: compared with 1986, more patients in 1987 and 1988 were sent back to their GPs after being seen.

The greater selectivity applied to GP-referred patients has not applied to patients referred from the A&E department, who have accounted for the major increase in numbers of patients admitted in the three study periods. Much of this increase in A&E referrals may have reflected a change in practice by local GPs who have sometimes used the 999 emergency system to send patients to the hospital while, in the case of patients over 75, relatives or home helps often brought the patient directly to the A&E department. We have some preliminary evidence to suggest that the large increase in admissions via A&E during this period, from 49 (27.1%) in 1986 to 100 (45%) in 1987 and 134 (47.3%) in 1988, is a result of patients coming directly to hospital or being sent directly to hospital by their GPs, who are all well aware of the bed shortage and the problems of admitting their patients by the normal routes. Other GPs feel that it may be more efficient and less time-consuming to ask the EBS to arrange for admission rather than use the conventional method of personal contact with, and referral to, the duty medical team, which will so often result in an apologetic refusal on the grounds of bed shortage.

Doctors and managers have different ways of looking at the same figures. At first sight, a total reduction of 15 medical beds would appear modest; it could be

regarded as a reduction of only 5.5% of the total number of available beds. However, in practice, 13 of these beds were in the acute sector, and this represents an actual reduction of 16.7% in the acute bed pool. We have already mentioned the impact of medical admissions on surgical services, and this impact has been exacerbated by reductions in their own available beds. There is therefore an intimate connection between the problems of the medical and surgical services. From our figures it might seem that, despite the closures, there has been a steady increase in the number of patients admitted during each study period, from 7.2 per day in 1986 to 8.2 in 1987 and 9.1 in 1988. Thus the service may appear to be more efficient. However, this apparent efficiency is bought at the expense of normally unacceptable treatment of patients and staff. Much of the burden of organising beds for patients has been lifted from junior medical staff by the appointment of a bed manager.

This, however, has had a negative side which colleagues elsewhere might wish to consider: in recent years several medical firms had developed a team approach involving nurses, social workers, physiotherapists and occupational therapists, with a particular interest in medical sub-specialties. Regular meetings had been established to discuss problems, and the system appeared to be working well. The dispersal of patients throughout the hospital has led to the almost total destruction of this approach, and more time having to be expended by both medical and support staffs. With the decentralisation of patients from general wards with special interests, nursing staff are less able to develop and maintain special skills. Patients have therefore not had the benefit of this additional expertise.

It has recently been argued that targets and norms established by regional health authorities should be seen as little more than the starting point for negotiating bed requirements, since there are wide variations in demand for services [3]. For instance, cold weather and epidemics can have a major impact on hospital admissions, but during the study periods the weather remained consistently mild and there were no epidemics or yellow or red warnings.

It is of some concern that we have little idea of which patients are being turned away and what finally becomes of them. We have not yet followed up patients who were referred to the hospital but not admitted, nor those where GPs were asked to refer them elsewhere because of our lack of beds. This would require a further study, which has indeed been suggested to local GPs by one of us (M.G.). However, we do know that many of these patients are admitted to neighbouring hospitals even when they are patients of this hospital. Similarly, NPH has admitted an increasing number of patients already under the care of other hospitals. As a high proportion of these patients are elderly, they may find themselves in a hospital outside their geriatric catchment area and thus deprived of local facilities for rehabilitation. Furthermore, during the first period in 1986 only one patient

was formally referred to NPH by the EBS, while in 1987 this had risen to 19, and this higher number was maintained in 1988 when 14 patients were referred. GPs rightly complain about the difficulties in admitting patients to their local hospital, and so do patients and their relatives.

Another point which has emerged from this study is the effect of these changes on the morale of junior doctors working in the hospital. This has not been quantified, but primarily reflects the problems encountered in dealing with acutely ill patients who are scattered throughout the hospital. Doctors then have to deal with unfamiliar nursing staff who may themselves have difficulties in dealing with the particular needs and problems of the patients being admitted; and there is the frustration of being unable to help GP colleagues.

The large number of days on which the hospital was closed to GP referrals—3/25 in 1986, 16/27 in 1988 and 20/31 in 1988—is obviously detrimental to the training of junior doctors, and will need to be considered when junior posts are being inspected by the training committees of the colleges of physicians. Obviously these closures also have effects on the training of surgeons and anaesthetists.

Audits of this type will become increasingly important in the future. We are aware that there are limitations in the study which we performed, which need to be considered when similar audits are attempted:

1. It is possible that the periods were not representative of the normal work pattern. We believe, from information obtained from admissions statistics, that the figures obtained for 1986 are typical of admission patterns observed at other times of the year, and those for November 1987 were very similar to those observed in late October 1987, the first month in which the bed closures occurred. Similarly, figures obtained during the 1988 study period indicate that the number of admissions and closures is consistent with those observed over the preceding year.
2. There may be limitations in the accuracy of recorded data since all records were kept by a succession of duty doctors rather than by external observers. However, random checks on GP telephone calls, and a systematic analysis of all admissions over the study periods, suggest that the information collection was accurate.
3. It is important to identify precisely which patients are admitted where. For instance, analysing admis-

sions and referrals by age groups, we noted an increase in the numbers of geriatric admissions to acute medical beds during the second and third study periods (Table 2) out of proportion to an increase in the elderly population [2]. This change appears to reflect the problems under which geriatricians find themselves. Few data are available on the likely increase in bed utilisation to be expected with an ageing population, but it is clearly of importance in a study of this type.

Doctors have been slow to become involved in audits of their own practices, and those that have been done are related mostly to changes in clinical management. Such audits must continue for long periods to establish whether feedback from audit actually changes clinical behaviour [4]. Audits of the type we have performed should also become a part of hospital practice and be sustained indefinitely if they are to influence our work patterns and our practice.

A problem in audit, as in the use of performance indicators, is the difficulty which most doctors have in taking into account all the many facets involved in providing a comprehensive service for an area. It is easy selfishly to support only one part of the care system and to neglect others. However, acute care is one of the instantly demanded aspects of the health service and must be maintained. Our study suggests that the basic structure and practice of our acute service has suffered as a consequence of only a modest numerical reduction in acute medical beds.

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#### **References**

1. Beech, R., Challah, S. and Ingram, R. H. (1984) Impact of cuts in acute beds on services for patients. *British Medical Journal*, **294**, 685.
2. North West Thames Regional Health Authority. Regional Strategic Plan 1985–1994.
3. St George, D. (1988) How many beds? Helping consultants to estimate their requirements. *British Medical Journal*, **297**, 729.
4. Mitchell, M. W. and Fowkes, F. G. R. (1985) Audit reviewed: does feedback on clinical performance change clinical behaviour? *Journal of the Royal College of Physicians*, **19**, 251–4.