and aggressive and who (we and Mrs N believe) should remain in hospital? He refuses medication (but is given some). The magistrate has adjourned the hearing for two months, rather than make an order for his immediate discharge. Mr N is one of many.

Incidentally, Mr Justice Powell also determined in 1986 that anorexia nervosa and alcoholism are not mental illnesses.

JOHN SNOWDON

Prince of Wales Hospital
Sydney, Australia

REFERENCES

[1]SNOWDON, J. (1983) Alternative proposals for reform of mental health legislation in Australia. *Medical Journal of Australia*, 471–474.

[2]WALLACH, I. (1986) Mental health advocacy in New South Wales. In unpublished proceedings of *Seminar: Medical and Legal Aspects of Current Mental Health Legislation*. Institute of Criminology, University of Sydney.

Medico-legal responsibilities of hospital managers

DEAR SIRS

I wish to write in support of the views expressed by Dr Evans (*Bulletin*, September 1987, **11**, 312) relating to the precipitous closure of one of the wards in an old mental illness hospital well-known in the Mersey Region. I would like to expand on the issues regarding the new Griffiths style of management and the related medico-legal consequences which I foresee.

Firstly, it is bad management practice to have to 'sneak' through such a ward closure without prior consultation. From the manager's point of view this may solve the immediate problem of progressing towards a goal of bed run-down as part of a regional strategy but the long-term effects on the confidence of members of the multi-disciplinary team and their future co-operation do not seem to have been carefully considered. Such a blinkered approach seems to be all too common from my limited contact with the new managerial style where the short-term solutions to such complicated problems are all too readily used. Part of this may be related to the fixed-term nature of such managerial contracts so that a longer term view is seldom taken of their management decisions.

There seems to be a new trend of imposed managerial solutions which often have deleterious clinical consequences for the health professionals who have to pick up the pieces afterwards. Yet I wonder if the managers have ever given careful consideration to their own medico-legal position? In the above scenario a patient could easily have attempted suicide, become seriously behaviourally disturbed or have had a relapse of his treated mental disorder—the decision for ward closure was not taken by the Responsible Medical Officer and would probably have been against his wishes. The Unit General Manager has implicitly taken over this responsibility by taking this decision into his own hands. This responsibility must surely also entail medico-legal responsibility should a claim for compensation be made by one of the patients concerned or his relatives (as the medical practitioner concerned was not involved in the ward closure).

From my own experience I have come across a situation where a ward was seriously under-staffed and numerous representations by the discipline concerned fell on deaf managerial ears. In another situation a telephone system was not just inadequate but dangerous as no emergency line was continuously available. A member of staff became seriously ill in this hospital (with no emergency medical facilities on site) and we were unable to get a line out for an emergency ambulance. Repeated representations to management produced no remedy to the situation. At this time I contacted the Medical Defence Union for advice. I was told that if the medical staff feel staffing level, resources or other working conditions are inadequate for good practice and repeated representations have been made to management, the medico-legal responsibility then rests with the managers for any resultant catastrophe. Such claims are very expensive to settle, and I wonder what effects these would have on any "savings" made. Perhaps a few such medico-legal encounters would exercise the minds (and consultation skills) of management most wonderfully!

S. P. J. LYNCH

Rainhill Hospital
Prescott, Merseyside

Discharge of long-stay psychiatric patients

DEAR SIRS

I read with interest the letter by Dr M. Evans (*Bulletin*, September 1987) regarding the effects of transferring long-stay psychiatric patients between wards. Although often a routine procedure, such transfers are inadequately studied. Shugar, Smith *et al* in Toronto[1] interviewed both patients and their relatives after such a ward relocation. They found substantial dissatisfaction: they especially complained that they had not had an adequate opportunity to influence the transfer decision.

Equally pertinent in the era of de-institutionalisation is the process of transfer from hospital. Abrahamson[2] interviewed 60 patients at Goodmayes Hospital and found that they were equally divided between those wanting to remain in hospital, wanting to leave, and being undecided or unrealistic.

In part this may be attributable to inadequate information about hospital closure plans and alternative forms of accommodation. In a study of long-stay in-patients I am conducting at Cane Hill Hospital in Surrey, 75% did not report knowing of any plans to change their accommodation, and 55% expressed the desire to remain in hospital indefinitely. It is possible to view this reluctance of patients to leave hospital as, at least in part, a realistic judgement that unless and until community-based facilities are adequately provided, remaining in hospital may be preferable. The reports of patients who have been discharged without

adequate follow-up stresses the problems in accommodation, the poor access to day-care and the incomplete understanding from neighbours that they encounter.[3] The challenge to practitioners in this field is to improve community-based facilities such that patients can accept these as offering a better quality of care.

GRAHAM THORNICROFT

The Maudsley Hospital
London SE5

REFERENCES

[1]SHUGAR, G., SMITH, I. et al (1986) Moving experiences: a model for inpatient transfer based on interviews with patients and their families. *Hospital and Community Psychiatry*, **37**, 1035–1040.

[2]ABRAHAMSON, D. & BRENNER, D. (1982) Do long-stay psychiatric patients want to leave hospital? *Health Trends*, **14**, 95–97.

[3]PETERSON, R. (1982) What are the needs of chronic mental patients? *Schizophrenia Bulletin*, **8**, 610–616.

Estimating hospital bed numbers

DEAR SIRS

May I refer to Professor Priest's letter, 'Hospital Beds, Psychiatric Patients' (*Bulletin*, November 1986, **10**, 322–323) and to the comments by Dr McGovern (*Bulletin*, April 1987, **11**, 131).

I think it may well be that I occasioned some of the figures of beds quoted because I sent to Professor Hirsch a paper that I prepared on this matter. It may be that, if that is so, my paper deserves wider circulation to help people understand the difficulties of estimating bed numbers. Of course if you argue that in-patient beds are quite unnecessary in psychiatry then we need not proceed any further but I think there is a consensus that some in-patient facilities are required.

The number of hospital beds required by a service depends upon three factors:
(1) the number of patients considered to require in-patient treatment per unit time
(2) the average length of stay
(3) how long a queue for admission is acceptable!
The number of patients requiring in-patient care, per unit time, rationally depends upon in-patient care being:
(a) more appropriate
(b) more effective
(c) more efficient
than other forms of care.

For a given service over a reasonable period of time the number of patients requiring in-patient care is finite and acceptably predictable. Once the number of patients requiring admission and average length of stay are known then the number of beds can be calculated on a rational basis. (The figure required for the calculation is *not* the number of patients actually admitted but the number considered to require admission, whether admitted or not).

At present in-patient accommodation is determined by empirical decisions, often historically based on the part of those on the spot, guided by numbers that are promulgated by authorities such as the DHSS. When clinicians, administrators, authority members and politicians discuss these matters they often adopt a commonsensical, but alas, fallacious approach. Crudely put it can be stated thus, "if bed occupancy of any unit is less than 100% then that unit is inefficient and bed numbers should be reduced until bed occupancy approaches 100%."

You could adopt such an approach for British Rail. Even at rush hour less than 50% of the platforms at Waterloo Station are occupied by trains. Let us improve efficiency and cut the number of platforms until the occupancy rate approaches 100%. Sometimes this happens because of strikes or signal failures and the result is a queue of trains waiting to get into the station of infinite length. This is only overcome by cancelling trains—sometimes every train. Common sense withers under the impact of the queuing theory. Using queuing theory of a very simple type[1] we can develop the argument.
Let P be the utilisation factor which can be expressed by:

$$P = \frac{B}{A} = \frac{\text{average stay of a single patient}}{\text{average gap between the admissions of two consecutive patients}}$$

$$A = \frac{\text{bed numbers} \times \text{days in the year}}{\text{admissions required in each year}}$$

It follows that the probability of finding a free bed is $1 - P$.

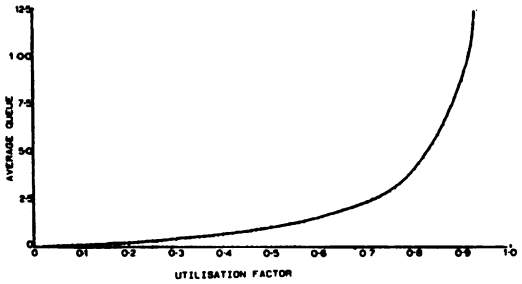

FIG. 1. Average queue size and utilisation factor

The average queue size is $P/(1-P)$ and the probability of queue size exceeding a prescribed length is $P^n + 1$. These are shown in Figure 1 and the relationship between P values and queue size in Table I.
Perhaps we could give some hypothetical examples: Let
P = utilisation factor
B = length of stay
A = average gap between the admission of consecutive patients
D = number of days in the year
G = number of admissions needed (required) each year
X = number of beds needed in unit
X′ = number of actual beds in unit
Y = actual number of admissions each year.