The potential use of a 5-day ward in a medical unit: audit by peer review

BEVERLEY J. HUNT, MRCP, MRCPPath, Senior Registrar in Haematology
SALLY C. DAVIES, MSc, MRCP, MRCPPath, Consultant in Haematology
Central Middlesex Hospital, Park Royal, London

As the cost of health care escalates, strategies are needed to rationalise the use of resources. The staff of the Central Middlesex Hospital (CMH) acute medical unit considered different ways of reducing expenditure without detriment to the quality or quantity of inpatient care and concluded that conversion of a full-time 7-day ward to a 5-day ward (Monday to Friday) might allow savings in nursing and overhead costs without alteration in medical care if enough suitable patients could be transferred to it from 7-day wards.

CMH is an urban district hospital which has 14 consultant physicians with 140 beds, having an occupancy rate of 81% in 1987. CMH serves Brent, an inner London urban borough with marked social deprivation. It has a multi-racial community with 6.6% of its residents born in the Caribbean, 5.3% in East Africa and 7.7% in the Indian subcontinent [1]. Some of the clinical problems seen at CMH are a reflection of this multi-ethnic population; for example, imported tropical disease, especially malaria, is common, and the haemoglobinopathy clinic is one of the largest in the UK.

Five-day wards have operated successfully in place of full-time wards in many surgical units including CMH, but such wards have rarely been used for medical patients apart from the occasional programmed investigation unit [2]. This study was therefore undertaken to assess the potential use of a 5-day ward by the acute medical unit. It was performed using the novel method of peer review with medical senior registrars and nursing staff auditing the medical admissions.

Method

All admissions to the acute medical unit over a period of one week in August (week 1) and one week in December 1987 (week 2) were studied as examples of periods of different clinical activity. The unit is supported by acute and chronic geriatric units which were not included in this study. All 14 consultants gave permission for their patients to be studied in week 2, and 13 for week 1.

The 5 senior registrars from the medical unit, whose specialties included accident and emergency medicine, endocrinology and diabetes, gastroenterology, haematology and respiratory medicine, audited the patients. Any two of them visited all the medical inpatients and assessed them together each day after 4 pm. Every patient’s diagnosis, day of admission, reason for admission and demographic data were recorded. Each patient was discussed with the chief ward nurse and a consensus of opinion between the reviewing senior registrars as to the patient’s suitability on that day for a medical 5-day ward was recorded. The patient’s suitability was assessed by their medical and social conditions, using clinical judgement rather than fixed criteria. This procedure was repeated each day so that for each patient a profile of the daily peer-group reviews was built up over the week.

When the results were analysed, patients were classed as suitable for a 5-day ward only if peer review considered a patient ‘suitable’ on most of the days that that patient had been reviewed. Emergency admissions were considered suitable only if admitted on a weekday and, similarly, elective admissions only if medically fit enough or having appropriate social circumstances for week-end discharge.

Results

Demographic details

In both weeks there were more male than female admissions: 82 men (55.8%) in week 1 and 105 (59.3%) in week 2. The age distribution is shown in Fig. 1. The mean length of stay was 12.0 days (standard deviation 16.3 days, range 1-135 days, 95% confidence limits 6.8-17.9 days) in the summer week and was not significantly shorter than the average winter stay of 17.1 days (standard deviation 30.05 days, range 1-181 days, 95% confidence limits 14.8-21.5 days).

Most patients were admitted from the casualty department: 66.6% of admissions in week 1 and 60% in week 2. In both weeks 19.8% of admissions were elective, 8-9% were at the request of a local general practitioner and 1.1-2.0% were transferred from another hospital. In week 2, 9.0% were admitted from outpatient clinics, contrasting with only 3.4% in week 1.
Analysis of suitable patients

In week 1, 147 patients admitted under the care of 13 consultants compared with 177 admissions under 14 consultants in week 2. In week 1, 30 patients (20.4%) were judged suitable for the 5-day ward compared with 40 patients (22.2%) in week 2. Table 1 shows the variety of primary disease with which each patient presented, and the types of admissions judged suitable for a 5-day ward. Within the group of patients considered suitable for the 5-day ward, 50% in week 1 and 35% in week 2 were emergency admissions. Table 2 shows the outcome for the ‘suitable’ patients.

Assessment of the assessors

The accuracy of the assessors in predicting the suitability of patients for a 5-day ward is shown in Table 3. There was disagreement between the doctors in 13 cases (8.8%) in week 1 and in 4 cases (2.3%) in week 2, with a changing clinical picture from day to day in 5 patients in week 1 and 2 in week 2.

Factors preventing patients being short-stay patients

The opinion of the senior registrars as to why patients were staying longer than 14 days is shown in Table 4.

Patients considered ‘suitable’ but unable to go home on Friday afternoon were noted with the reasons for failure of discharge. The primary reason for a patient remaining in hospital longer than 14 days was classed by the assessors as (i) medical (disease state alone necessitated a continuous stay), (ii) medical and social, (iii) purely social (awaiting social services assessment or care), or (iv) ‘awaiting placement’ (accepted by another unit but waiting for a bed to become available there).

The amount of agreement between the group of senior registrars and their accuracy in judging suitability, as vindicated by subsequent events, was assessed.

Discussion

This study shows that it should be possible to use a 5-day ward in place of a full-time ward in an urban district general hospital of 140 medical beds. In the periods studied, 20.4–22.6% of medical patients were considered suitable for admission to a 5-day ward without any change in the quality of their care. At the time of assessment, 13–18% were already fully suitable. Allowing for patients who inevitably need to stay longer than originally assessed owing to complications of their primary disease, and making adjustment for elective weekend admissions and discharges, 27 patients (18.4%) in week 1 and 38 patients (21.5%) in week 2 would have been suitable.

It is therefore possible to convert at least one 20-bedded 7-day ward at CMH into a 5-day ward without reduction in patient throughput or quality of care. Once a ward has been converted, assessment of the suitability for admission of each patient will need to be performed by the admitting medical officers in the casualty department and thus should not increase the junior doctors’ workload, while the increased ‘hassle factor’ of efficiently organising admissions to a 5-day ward would probably be more than compensated by reducing their weekend workload. The change to a 5-day ward will result in significant financial savings of at least £30,000 per annum in the nursing budget alone (personal communication, Neil Goodwin, unit general manager). Moreover, when our surgical 5-day ward was introduced, there was an improvement in nursing recruitment because the hours of work were socially more acceptable; the same could also be expected in a 5-day medical ward.

Elective admissions can be efficiently arranged for a 5-day unit [2]. A 5-day unit can also be used prospectively for selected emergency medical admissions between Monday and Thursday, since we found that 35–50% of patients judged suitable for the 5-day ward were in fact emergency admissions; examples include
Table 1. Principal diagnosis and/or treatment categories of patients and their suitability for a 5-day ward.

| Principal diagnosis and/or treatment categories | Patients seen (total no.) | Patients suitable for a 5-day ward |
|-----------------------------------------------|--------------------------|----------------------------------|
| Cardiology                                    |                          |                                  |
| Ischaemic heart disease                       | 37                       |                                  |
| Congestive cardiac failure                    | 10                       | 2                                |
| Left ventricular failure                      | 9                        |                                  |
| Valvular heart disease                        | 5                        |                                  |
| Investigation of arrhythmias, shortness of breath etc. | 7                       | 4                                |
| Dermatology                                   |                          |                                  |
| Psoriasis and pemphigus                       | 3                        |                                  |
| Endocrinology                                 |                          |                                  |
| Diabetes and its complications                | 21                       | 2                                |
| Investigations                                | 1                        | 1                                |
| Gastroenterology                              |                          |                                  |
| GIT haemorrhage                               | 14                       | 7                                |
| Investigation of abdominal pain               | 15                       | 8                                |
| GIT malignancies                              | 6                        | 1                                |
| Liver failure                                 | 6                        |                                  |
| Alcohol withdrawal/fits                       | 4                        |                                  |
| Colitis                                       | 5                        | 1                                |
| Investigation of weight loss                  | 4                        | 3                                |
| Oesophageal dilatation                        | 1                        | 1                                |
| Parental nutrition                            | 1                        |                                  |
| Haematology                                   |                          |                                  |
| Thromboembolic disease                        | 8                        | 3                                |
| Transfusion                                   | 3                        | 2                                |
| Haematological malignancies                   | 4                        | 2                                |
| Sickle cell disease                           | 2                        |                                  |
| Investigation of anaemia                      | 1                        | 1                                |
| Venesection                                   | 1                        | 1                                |
| Infectious diseases                           |                          |                                  |
| AIDS                                          | 2                        |                                  |
| Bacterial infections                          | 3                        | 1                                |
| Tuberculosis                                  | 2                        |                                  |
| Malaria                                       | 2                        |                                  |
| Neurology                                     |                          |                                  |
| Cerebrovascular accidents                     | 18                       |                                  |
| Cord lesions/multiple sclerosis               | 7                        | 2                                |
| Cerebral space-occupying lesions              | 6                        | 1                                |
| Investigations                                | 7                        | 7                                |
| Dementia                                      | 6                        |                                  |
| Parkinson’s disease                           | 3                        |                                  |
| Respiratory medicine                          |                          |                                  |
| Chronic obstructive airways disease           | 27                       | 1                                |
| Asthma                                        | 18                       | 2                                |
| Carcinoma of the lung                         | 18                       | 5                                |
| Primary pneumonia                             | 4                        | 1                                |
| Investigations                                | 3                        | 1                                |
| Rheumatology                                  |                          |                                  |
| Collagen vascular diseases                    | 8                        | 1                                |
| Back pain                                     | 9                        | 2                                |
| Other                                         |                          |                                  |
| Psychiatric, self-neglect and social          | 7                        | 1                                |
| Self-poisoning                                | 6                        | 5                                |
| Total                                         | 324                      | 70                               |

Each patient has been categorised by the primary diagnosis, using only approximate guidelines to give an idea of the range and frequency of clinical problems seen. They were not necessarily treated by the appropriate specialist consultant.

Table 2. Outcome of those patients judged suitable for a 5-day ward

| Suitability                                                                 | Number (%)         |
|----------------------------------------------------------------------------|--------------------|
| Fully suitable at week of assessment                                        | 20 (13.6)          |
| Suitable with weekend leave                                                  | 4 (2.7)            |
| Judged suitable but stayed >5 days                                           | 3 (2.0)            |
| Inevitable, ie medical complications                                         | 2 (1.13)           |
| Adjustible, ie                                                              |                    |
| (a) due to social reasons                                                    | 1 (0.7)            |
| (b) for lack of transport                                                   | 1 (0.7)            |
| (c) elective admission that could have been planned for a better day         | 1 (0.56)           |
| (d) medical inefficiency                                                     | 1 (0.7)            |
| Total                                                                       | 30 (20.4%)         |

Table 3. Assessing the assessors. Week 1 = (1); week 2 = (2)

| Assessors’ judgement | Truly suitable | Not suitable |
|-----------------------|----------------|--------------|
| Judged suitable:      | 27 (1) 38 (2) (A) | 3 (1) 3 (2) (B) |
| Judged not suitable:  | 3 (1) 3 (2) (C)  | 111 (1) 131 (2) (D) |

Sensitivity = A/(A+C) = 90.0% 92.7%
Specificity = D/(B+D) = 97.4% 97.8%
Accuracy = (A+D)/(A+B+C+D) = 93.9% 94.4%
PPV = A/(A+B) = 90.0% 92.7%
NPV = D/(C+D) = 97.4% 97.8%

PPV: the positive predictive value, ie the proportion of patients correctly judged suitable for the 5-day ward.

NPV: the proportion of patients who were correctly considered ‘not suitable’ for the 5-day ward.

Table 4. Assessment by the senior registrars of why patients stayed longer than 14 days.

| Factors preventing patients being short-stay patients |
|-------------------------------------------------------|
| Stay (days)                                           | Medical | Med/Soc | Social | Total |
| 14-29                                                 | 20      | 4       | 3      | 27    |
| 30-100                                                | 22      | 2       | 3      | 30    |
| >100                                                  | 10      | 0       | 2      | 12    |
| Total                                                 | 64      | 10      | 8      | 92    |

*Including waiting for sheltered accommodation.
patients requiring treatment for chest infection, haematemesis, diabetic control and self-poisoning. We also predict that there will be no additional pressure on other beds at the weekend, despite the patients who would inevitably stay longer than the intended time. Even better use of the acute medical unit could be made if there were more support from the social services and transport departments, since 25% of the patients with admissions greater than 14 days were only there for social reasons or because they were awaiting a placement elsewhere.

It may be argued that it may not be possible to apply the results of this study to other hospitals since CMH has some unique problems because of the multi-racial and socially deprived population it serves. We believe that it should be even easier to use an all-purpose medical 5-day ward in a less socially deprived area because there is likely to be better home support, although the character and drive of the medical staff in CMH, with its high demands on beds, may produce a more rigorous approach to discharging patients. Indeed, many of the staff were aware through personal experience of a more relaxed approach to the discharge of patients in other hospitals where demands on beds were not so heavy.

The short periods of time we chose to study can be criticised as not being representative of the whole year; however, this study was time-consuming and therefore was restricted for practical expedience to 2 weeks. The closeness of the figures and high concordance in outcome in both weeks in different seasons suggest that these periods were representative.

This study was performed using peer review by junior medical and nursing staff, a novel method of auditing [3]. Doctors are responsible for ensuring the quality of their patients’ care and, consequent on their clinical decisions, for the consumption of resources. It is therefore important that they should be prepared to participate in audit of the clinical resources at their disposal. Peer review as a method of medical review has not been favoured as yet in the UK although it is the norm in North America [4]. Senior registrars in medical specialties are ideally placed to perform this type of study since they are involved in both acute medical admissions and administrative problems.

The senior registrars participating in this study came from different specialist training backgrounds. Despite this, there was a high degree of concordance in their individual judgements as to each patient’s suitability for admission to a 5-day ward. Disagreement existed in 8.8% of the week 1 cases but in only 2.3% of cases discussed in week 2. The high degree of accuracy shown by the senior registrars shows that peer review does appear to be an excellent way of predicting patient suitability for a 5-day ward. The improvement in selection between week 1 and week 2 may have been due to the ‘Hawthorne effect’—performance improving because the subjects are being studied [5]—but it may also have been due to learning by experience. Elsewhere a prospective study of emergency tests requested by house officers showed a progressive drop in demand as clinical experience was gained [6]. Similarly, the skills required to select appropriate patients for a 5-day medical ward would probably improve further once such a ward was in regular use.

This study was time-consuming, requiring an average of 90 min from each of two senior registrars each day. It was, however, easy to perform and is a practical way of auditing admissions. It also allows medical staff to take an active part in management decisions affecting their work practices. Despite previously reported resistance to clinical audit [7], we were impressed by the willingness of consultants to submit their clinical care freely to peer review.

In conclusion, we feel that conversion of a full-time ward to an all-purpose 5-day ward is practicable in an acute medical unit. It would provide a more cost-effective unit without impairment of quality of care, although for efficient use better support from transport and social services is required. Peer review by medical staff is an effective, accurate and attractive way of auditing admissions.

Acknowledgements

We wish to thank Dr Fiona Moss, Dr Pamela Nash, Dr John Parr, Dr Robin Spiller and the nursing staff for their time and clinical judgement, the medical consultants for allowing us to audit their patients, Neil Goodwin, the unit general manager, for support and encouragement, Dr Jackie Spiby from the Department of Community Medicine, North West Thames Regional Health Authority, and especially Dr John Gabbay of the Department of Community Medicine, Parkside Health Authority, for helpful comments and advice.

References

1. Karmi, G. (1989) The care of ethnic minorities at a district level: a survey in NW Thames region in 1987. Awaiting publication.
2. Longson, D. and Young, B. (1973) The Manchester Royal Infirmary programmed investigation unit. British Medical Journal, iv, 528.
3. Heath, D. A. (1981) Audit in general medicine. Journal of the Royal College of Physicians of London, 15, 197.
4. Van’t Hoff, W. (1985) Audit reviewed: medical audit in North America. Journal of the Royal College of Physicians of London, 19, 53.
5. Roethlisberger, F. J. and Dickson, W. J. (1939) Management and the worker. Cambridge, Mass.: Harvard University Press.
6. Sandler, G. (1984) Do emergency tests help in the management of acute medical admissions? British Medical Journal, 289, 973.
7. Baron, D. N. (1983) Can’t audit? Won’t audit? British Medical Journal, 286, 1229.