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(Accepted 16 August 1988)

A rehabilitation ward in a district general hospital: first three years' experience

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Abstract

The experience of the first three years' work on a ward for the rehabilitation of patients was reviewed. Adults with physical disabilities or mixed physical and psychological disabilities, including unstable or deteriorating conditions, were accepted for intensive rehabilitation. Most patients had neurological disorders. The ward policy was that each patient had considerable time with the therapist, maximum personal independence was encouraged, and multidisciplinary staff meetings were held to agree the goals of treatment.

Much effort was spent helping patients and relatives to adapt to conditions of progressive disability, but the response to questionnaires suggested that these patients as well as those who did improve received some benefit from being on the ward. Overall the benefits of the intensive rehabilitation that was offered on this ward outweighed those from short stays on medical wards.

Introduction

It is the policy of the Royal College of Physicians that rehabilitation should be a natural part of the work of every clinician, but it is also recognised that certain patients have disabilities that are so complex or unusual that they require special skills and facilities for their management, sometimes including specialist inpatient care.¹ We describe the experience on a ward designated for the management of patients with severe disability during the first three years of its existence.

The ward—The ward is in a large district general and teaching hospital serving a health district of 410 000 people. The hospital site includes regional facilities for neurology, neurosurgery, and cardiothoracic surgery; burns and spinal injury units and the artificial limb and appliance centre are sited elsewhere. The ward is on the fifth floor and comprises two six bedded bays and two single rooms and shares some

facilities with the adjacent rheumatology ward. The plan of the ward is identical with that of others in the block used for acute medical and surgical services, and there have been few modifications to cater for its special functions. An empty bay was modified into a day room, but there is still inadequate space for staff clerical tasks and for private interviewing. The main physiotherapy and occupational therapy treatment areas and a large aid and equipment centre are on the ground floor, accessible by lifts and corridors. An information service ("Help for Health") and a heavy workshop are available, but there are no industrial training facilities. Eight beds in the ward were opened in March 1984, and a further six in June 1985.

Staff—The consultant staff initially comprised the professor of rehabilitation (a neurologist) and a senior lecturer in rehabilitation with a special interest in rheumatology. A second senior lecturer, also a neurologist, took up his post in January 1986. Junior medical staff include a lecturer (registrar) and a senior house officer and preregistration house officer who are shared with the department of rheumatology. Seven whole time equivalent qualified nurses and two auxiliary nurses are supervised by a full time ward sister. Two physiotherapists and one occupational therapist have a full time commitment to the ward. (For comparison the 172 general medical beds in the hospital are served by four physiotherapists and 1.5 whole time equivalent occupational therapists, 112 geriatric beds by two physiotherapists and 2.3 whole time equivalent occupational therapists, and 75 neurological and neurosurgical beds by three physiotherapists, occupational therapy being provided by referral only.) A speech therapist, a clinical psychologist, an activities organiser, and two hospital based social workers (employed by the local authority social services department) have a half time commitment to the ward. There are also electronic and mechanical engineering technicians available.

Functions of the ward—The principal purpose of the

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ward is to provide individual therapy aimed at optimising function in patients with physical or mixed physical and psychological disability. From March 1984 to February 1987 it was used for the following purposes: rehabilitation 200 patients (59% of total of 337), investigations 91 (27%), disability assessment 20 (6%), specific procedure 18 (5%), surgical aftercare six (2%), and nursing care two (1%). During this study some patients were admitted for medical investigation only, but such patients are now accommodated on an adjacent ward. Patients admitted for investigation usually stayed only a few days, undergoing procedures such as lumbar puncture, myelography, computed tomography, and neurophysiological testing, and many had little or no disability. For others who were already greatly disabled the ward provided a convenient residence for their short stay. Among patients admitted for disability assessment were those who required special modifications to seating or wheelchairs, special communication aids, or experimental surgical implantation of thalamic stimulators for tremor. Many of these very disabled patients came from a considerable distance and admission to the ward allowed them to be adequately assessed. Specific procedures included motor point injections, nerve blocks, and intrathecal alcohol injections for severe muscle spasticity. Severely disabled patients were sometimes admitted for minor surgery such as dental clearance or urethral sphincterotomy, when they would otherwise have been housed on wards where staff were unfamiliar with their particular needs.

The patients

Patients were referred from other wards or from outpatients clinics (table I). Patients were accepted if they were considered capable of participating in and benefiting from individual treatment by the nursing and therapy staff. It is notable that potentially unstable medical conditions (such as epilepsy or insulin dependent diabetes mellitus) and progressively worsening conditions (such as motor neurone disease) were not considered contraindications to admission. Children and the frail elderly were not admitted because there were established local services for these groups. Patients were not accepted for respite, crisis, or long term residential care; these functions were undertaken by a separate young disabled unit.

The 200 rehabilitation admissions during the first three years comprised 183 patients, 11 admitted twice and three admitted three times. There were 101 men and 82 women. Their ages ranged from 15 to 80 years, mean 48.7 (table II).

Although the ward was intended to provide a district service, because the hospital is a regional centre for neurology and neurosurgery many patients were referred from elsewhere in the region after short term treatment in the neurological centre. For most of these patients an inpatient rehabilitation service was not available locally. Of the 183 patients, 115 came from within the Southampton Health District and 61 from elsewhere in the Wessex region. The remaining seven patients were referred from outside the region.

The diagnostic categories of the 183 patients were: stroke 39 patients (21%), multiple sclerosis 35 (19%), head injury 31 (17%), intracranial tumour 10 (6%), other brain disease 26 (14%), diseases of the spinal cord, peripheral nerves, and muscle 29 (16%), and musculoskeletal disorders 13 (7%). The ward did not invite referral of patients with particular types of disabilities, nor was there a strong selection bias in favour of neurological conditions. It seems, therefore, that most of the admissions were patients with neurological disease because they were perceived by referring doctors to be most in need of the services offered.

Few patients with rheumatological conditions were admitted, but there was a well established rheumatology ward that offered a range of rehabilitative treatments. No patients with cardiac and respiratory disabilities were referred, and patients with amputations were rarely referred.

The patients had a wide range of disability. Patients in 177 admissions for which adequate records could be traced were scored according to the Barthel index² on admission, and there was a full range from 0 (complete dependence in 10 physical functions) to 100 (complete independence in these functions) (table III). The distribution was, however, greatly skewed towards the higher scores, with a median value of 80.

TABLE III—Functional abilities of patients at admission to and discharge from the rehabilitation ward

	On admission (n=177)	At discharge (n=174)*
	No (%)	No (%)
Dressing:		
Independent	98 (55)	122 (70)
Requiring some help	66 (37)	42 (24)
Dependent	10 (6)	9 (5)
Unknown	3 (2)	1 (1)
Feeding:		
Independent	121 (68)	136 (78)
Requiring some help	44 (25)	27 (16)
Dependent	12 (7)	11 (6)
Walking:		
Independent	87 (49)	120 (69)
Help from one person	40 (23)	16 (9)
Unable to walk	50 (28)	38 (22)
(able to use wheelchair if unable to walk)	37 (21)	30 (17)
Continence of urine:		
Fully continent	114 (64)	123 (71)
Occasional incontinence	33 (19)	31 (18)
Catheter in situ	20 (11)	18 (10)
Incontinent	10 (6)	2 (1)
Expressive speech:		
Normal	123 (69)	126 (72)
Abnormal	48 (27)	42 (24)
None	6 (3)	6 (3)
Intellectual function:		
Normal	125 (71)	123 (71)
Abnormal	43 (24)	41 (24)
Unknown†	9 (5)	10 (6)
Memory function:		
Normal	117 (66)	116 (67)
Abnormal	50 (28)	48 (28)
Unknown†	10 (6)	10 (6)

*Excludes the three patients who died on the ward.

†In most cases severe dysphasia was the reason for "unknown" intellectual and memory state.

Programme of rehabilitation

The policies developed during these three years are still being followed. After the patient is assessed by the appropriate member of the staff a problem list is made, emphasising difficulties with activities of daily living, mobility, sphincter function, and psychological function. After a discussion, which usually includes the patient and relatives, a list of long term goals for each problem is set. The entire rehabilitation team meets formally once a week to discuss the progress of each patient, at which time short term goals are set and a provisional timetable for their achievement.

Each patient is allocated individual treatment each weekday with the various therapists according to their perceived needs. A timetable for each patient is drawn up at the beginning of each week and a copy kept by the bed for reference. Most therapy is undertaken in the respective main departments or in the dayroom, and patients are encouraged to make their own way to therapy sessions with a minimum of prompting or help. Group therapy is used mainly for recreational purposes. At all other times the nursing staff encourage personal independence, even when this is achieved only slowly and laboriously. Relatives are encouraged to be present during nursing and therapy procedures in order to appreciate the patients' abilities and to learn

TABLE I—Source of 200 admissions (183 patients) to the rehabilitation ward, March 1984 to February 1987

	No (%)
Home	99 (49.5)
Southampton hospitals:	
Wards:	
Medical	33 (16.5)
Surgical	5 (2.5)
Orthopaedic	14 (7.0)
Neurological	6 (3.0)
Neurosurgical	15 (7.5)
Others	12 (6.0)
Other hospitals	9 (4.5)
Other sources (nursing homes etc)	7 (3.5)

TABLE II—Age distribution of 183 patients admitted to the rehabilitation ward, March 1984 to February 1987

Age (years)	No of patients
10-20	9
21-30	22
31-40	31
41-50	30
51-60	40
61-70	42
71-80	9

specific skills. No therapy is undertaken at weekends, and patients whose physical condition and social circumstances permit go home. This is seen as a useful stage in the transition to full home care. Simple electronic and mechanical devices are specifically constructed for individual patients when needed and tested on the ward.

SETTING GOALS AND RECORDING PROGRESS

Setting, recording, and, where necessary, modifying goals for functional recovery is laborious and time consuming but nevertheless very important. To maintain a sense of purpose staff need to know explicit goals. For patients and relatives understanding the aims of the stay on the ward provides motivation and also helps to avoid disappointment. Most patients who have expressed dissatisfaction with their stay were considered to have had unrealistic goals that could not be achieved.

The results of the initial assessments and weekly progress reports are recorded in the form of a score for each of several daily living activities, a method now in common use.²³ This also provides a goal for each activity. Although such a system provides simple summary indexes of disability, it is insensitive to minor changes in functional state and is incapable of expressing fully the complexity of each patient's disability.

The stay on the ward though sometimes of several months' duration, is for many a small portion only of their history of disability, whether improving or deteriorating. Clearly, the system of goal setting and recording needs to be continued into the long term outpatient follow up. Many of our patients with improving or static conditions have been discharged well before reaching their ultimate functional state but continue outpatient treatment and review.

Not surprisingly, there is often uncertainty or disagreement among the staff about what a patient might be expected to achieve. In these cases the views of the person with the greatest relevant experience usually prevail. Disagreement between staff and patients is less common but sometimes troublesome. Patients who have lower expectations than the staff sometimes complained of being bullied, and those with higher expectations are disappointed and sometimes bitter. A difference of opinion between staff and the patient about the overall success of the admission not infrequently occurs.

OUTCOME

During the first three years after the ward was opened patients remained for between one and 320 days (median 21 days) (table IV). The shortest admission times are partly accounted for by patients who took their own discharge.

Table V shows the eventual destinations of patients according to their source of referral. In the case of patients admitted from home it was rarely necessary to find them permanent alternative accommodation, and in only one case was a patient (severely demented with multiple sclerosis) abandoned on the ward by his family. Most patients who were transferred from other wards were able to go home or to live permanently with relatives. Only three were returned to their referring wards, in each case because of a new acute condition. No patients were returned to a short stay ward because they failed to progress, even though this was a formal policy of the rehabilitation ward.

Table III shows some aspects of the functional state of the 174 surviving patients for whom adequate information was available. The Barthel index showed an improvement in 63 patients, no change in 110, and a decline in four (including the three patients who died on the ward who were considered to have a Barthel score of 0 at death). The range of improvement was

TABLE V—Destination of patients in 200 admissions for rehabilitation according to source of admission

Place of discharge	Source			Total
	Home	Hospital ward	Nursing home or other	
Home	93	81	0	174
Hospital ward	3	6	0	9
Nursing home or other	1	6	7	14
Died	2	1	0	3
Total	99	94	7	200

from five to 55 points, with a median value among those who improved of 20 points. The index takes no account of changes in the quality or speed of functional activities, nor does it include an assessment of speech or mental function. We scored speech and mental functions on a four point scale reflecting the extent to which disability interfered with therapeutic and social activities, but it was difficult to achieve consistency of use with this scale, and for the analysis all the "abnormal" categories were combined. The results set out in table III do not permit firm conclusions about the true amount of change in these functions. Staff spent much time enabling patients and relatives to adapt to established disorders of speech, intellect, memory, and behaviour, and any benefit thus obtained is difficult to quantify by a summary scoring system.

Many patients were able to leave the ward before their projected optimal level of function had been achieved, and their subsequent progress will be presented in a further report.

Patients' views of the ward

An attempt was made to contact former patients by postal questionnaire six months or more after they had left the ward to elicit their views about their experiences. Of 161 such patients, 29 were known to have died, were untraceable, or were reported by their general practitioner to be unfit to receive a questionnaire. Of the remaining 132 who were contacted, 84 (64%) replied. The relatively low response rate may partly be explained by the high proportion of individuals with mental impairment or dysphasia. When asked about their reactions to other disabled patients—Did you find the presence of other patients with disabilities encouraging or unpleasant?—most expressed positive (37; 44%) or neutral (22; 26%) feelings. A few said it was unpleasant (10; 12%) or had mixed feelings (seven; 8%). Eight (10%) did not reply.

The views of patients about the success or otherwise of their hospital stay and their subsequent progress were considered according to three broad prognostic groups—those with conditions likely to improve spontaneously (such as stroke or recent head injury), to remain static (such as spinal cord injury), or to deteriorate (such as multiple sclerosis or Parkinson's disease) (tables VI and VII). The replies suggest the expected gradient of responses from improving to deteriorating conditions. Nevertheless, even among those with deteriorating conditions a substantial minority of those admitted considered themselves improved as a result.

As expected, objective improvement as reflected by an increase in the Barthel score during admission was found more often among those who considered themselves subjectively improved and among those who felt that the purpose of their admission had been achieved.

The results of the questionnaire need to be interpreted with some caution. "Open" questioning was used, and the assignment of responses to various categories required the assessor to use some subjective

TABLE IV—Duration of stay for patients in 200 admissions for rehabilitation, March 1984 to February 1987

Duration (days)	No
0-10	34
11-20	64
21-30	27
31-40	16
41-60	17
61-80	10
81-100	12
Over 100	20

TABLE VI—Responses to a postal questionnaire, by prognostic group. Numbers of patients showing an improvement in Barthel score during admission are shown for comparison

Reply	Improving conditions		Static conditions		Deteriorating conditions		All conditions	
	(a) No (% of group) giving each answer	(b) No (% of column (a)) showing improvement in Barthel score	(a) No (% of group) giving each answer	(b) No (% of column (a)) showing improvement in Barthel score	(a) No (% of group) giving each answer	(b) No (% of column (a)) showing improvement in Barthel score	(a) No (% of group) giving each answer	(b) No (% of column (a)) showing improvement in Barthel score
<i>Do you think your condition changed as a result of your stay on the ward?</i>								
Improved in hospital	26 (76)	17 (65)	9 (56)	1 (11)	13 (38)	4 (31)	48 (57)	22 (46)
No change in hospital	8 (24)	5 (63)	7 (44)	1 (14)	19 (56)	3 (16)	34 (40)	9 (26)
Deteriorated in hospital	0	—	0	—	0	—	0	—
Don't know	0	—	0	—	2 (6)	0	2 (3)	0
All replies	34 (100)	22 (65)	16 (100)	2 (13)	34 (100)	7 (21)	84 (100)	31 (37)
<i>Do you think that the purpose of your admission was achieved?</i>								
Purpose of admission achieved	21 (62)	16 (76)	11 (69)	2 (18)	15 (44)	3 (20)	47 (56)	21 (45)
Purpose of admission not achieved	3 (9)	0	3 (19)	0	12 (35)	2 (17)	18 (21)	2 (11)
Don't know	10 (29)	6 (60)	2 (13)	0	7 (21)	2 (29)	19 (23)	8 (42)
All replies	34 (100)	22 (65)	16 (100)	2 (13)	34 (100)	7 (21)	84 (100)	31 (37)

TABLE VII—Responses to a postal questionnaire by prognostic group. How are you now? Are you worse, the same, or better than when you were in hospital? Figures are numbers (and percentages)

	Improving conditions	Static conditions	Deteriorating conditions	All patients
Better	28 (82)	8 (50)	7 (21)	43 (51)
Same	3 (9)	4 (25)	12 (35)	19 (23)
Worse	3 (9)	3 (19)	11 (32)	17 (20)
No reply	0	1 (6)	4 (12)	5 (6)
Total	34 (100)	16 (100)	34 (100)	84 (100)

judgment. It is possible that patients with the most negative experiences would be less likely to respond than the remainder, so causing the results to be biased in favour of the ward. In addition, patients may have wished to perceive benefit or improvement where none in fact occurred rather than admit to a persisting or worsening disability and may have wished to please the ward staff by providing positive replies.

Lessons learnt

PHYSICAL ENVIRONMENT

Minor problems arose as a result of the physical structure of the ward. Most patients found the facilities acceptable, but wheelchair users found the lavatories cramped and the electrical sockets sited too high on the wall. Most patients were unconcerned by the relatively stark and "unhomely" surroundings, only two remarking that a less hospital oriented unit would have been preferable. The journey through corridors and by lifts to the therapy areas was in some ways inconvenient but could also serve as a mobility goal during patients' recovery. The ward had no self contained suite or flat for testing independent living skills. A small sideroom for this purpose was not adequate because the facilities were too limited and was opposite a nursing station.

PROBLEMS OF SOCIAL INTERACTION

We were worried that newcomers to the ward would be upset by the presence of others with severe disability and, in some cases, deteriorating conditions. This was rarely the case, and in general a healthy community spirit prevailed. Important exceptions to this were brain damaged patients who were aggressive or showed antisocial behaviour. Two such patients were unacceptable to other patients and many of the staff, and they could not be segregated because of the structure of the ward. We were unable to continue accepting independently mobile patients with such severe behavioural disorders, although patients with moderate degrees of behavioural disturbance conse-

quent upon organic brain disease continue to be accepted and treated.

PATIENT MIX AND STAFF WORKLOAD

Initially, occasions arose when many heavily dependent patients were resident on the ward at the same time, which caused severe strain on the nursing staff. We therefore began assessing the patients' level of dependency before admitting them to the ward, which allowed admissions to be better planned.

The policy of accepting patients with deteriorating or medically unstable conditions occasionally caused problems. Sometimes we misjudged the likely rate of decline, and patients became seriously or even terminally ill while on the ward, so that they were no longer in need of rehabilitation. Many staff thought that this was an inappropriate use of the ward, but we were reluctant to refer the patients elsewhere when the disease was in an advanced stage. On other occasions medical complications interfered with rehabilitation.

COUNSELLING OF PATIENTS AND RELATIVES

Both patients and their relatives had an enormous need for discussion and counselling about their disabilities and prognosis, and a great deal of time was spent by all members of staff on this. Advice and counselling had often been lacking on the referring wards, where staff had to give priority to acute care.

STRESS IN STAFF MEMBERS

Initially there was a "honeymoon period" in which the morale of the staff was high and expectations high but confused. As the difficulties and complexities of team work with this group of patients started to sink in morale tended to seesaw. The greatest stresses occurred when there were temporary staff shortages and when angry, disconsolate relatives, who were unable to recognise the practicalities imposed by our staff levels, vented their grief and frustration on staff, usually on the more junior nurses.

To avoid stress we have insisted on having an adequate number of nurses, on having regular staff meetings to discuss all aspects of the running and resources of the unit, on listening to and involving fully the patients' families in the work of the unit, on agreeing a written operational policy, on rotating the chairmanship of the team meetings through all seven professions, and on having occasional series of small group discussions on stress and behaviour modification (both ours and theirs) led by an experienced clinical psychologist. We also hold regular social events attended by all grades and professions.

The success of these strategies may be gauged by the

fact that the turnover of nurses in the rehabilitation unit at the end of the period under review was less than in any other medical ward of the hospital.

Conclusions

A ward that caters for patients with a variety of disabilities has now been operating in a large district general hospital for over three years. The patients referred to this service have almost exclusively had severe or complex neurological disability, or both. The policy of accepting patients with unstable or deteriorating conditions requires clear understanding and agreement about ward policy and the objectives of the admission, but the reports later received from the patients themselves lead us to believe that this policy is worth while.

Accurate initial diagnostic and functional assessment, regular review, and setting realistic, agreed goals for treatment during both the inpatient phase and prolonged follow up are increasingly seen to be of paramount importance. The processes by which these are achieved have evolved considerably and will undoubtedly continue to do so.

As the information presented in this paper is uncontrolled it does not establish that the therapy and training undertaken by the patients altered the natural

course of their conditions. It is difficult to evaluate the effectiveness of measures intended to accelerate or extend the process of rehabilitation because the patients are difficult to match, therapy cannot be administered in a blinded fashion, and objective evaluation of results is imperfect. Nevertheless, some progress has been made in the assessment of stroke units,^{4,6} and an important future aim of the ward will be to assess objectively the treatment of disabling conditions.

We thank Ted Cantrell, Cyrus Cooper, Sally Gore, Nina Melville, Tony Thompson, Steve Wilkinson, and Martine Wright for helpful comments on the paper and Belinda Hatch for word processing.

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(Accepted 26 August 1988)

Use and abuse of performance indicators

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Abstract

An audit was performed by this department after allegations by the regional health authority of low productivity. It was found that the health authority had underestimated the number of operations performed in 1983 by only 5%, but an inexact classification and grading of operations had led to errors in the performance indicators of 19.8% for the "weighted number of operations" and 34.5% for the "number of major operations per consultant." When the throughput of orthopaedic departments in districts was compared by the regional health authority it was found that such errors in performance indicators had been further compounded by the inconsistent use of population data and incorrect data on medical staffing.

Medical practitioners and the health authorities are alerted to this amplification of inaccurate data. Other methods for assessing trauma and orthopaedic surgery are proposed, such as a simplification of the Office of Population Censuses and Surveys classification of surgical operations, grading operations based on time spent in the operating theatre, and provision of computer programs to code for diagnosis and operation when writing discharge summaries.

Introduction

Surgical audit is not new. Previous studies have usually been conducted internally for clinical research and as such were concerned with diagnosis, treatment, and complications.¹⁻³ By contrast, after the National Health Service Management Enquiry⁴ external audit by health authorities has become more frequent but with the different purpose of assessing performance in terms of workload and use of resources.

When data for the number of patients treated

surgically are ranked into major, intermediate, or minor categories of operation, weighted, and then related to population, hospital beds, or manpower the data become a "performance indicator." The first set of performance indicators was introduced in 1983,⁵ and faced with limited resources managers are making increasing use of such indicators to compare output and to set future targets.

Under the NHS planning system each health authority is required every five years to produce a 10 year strategic plan. The plan produced by the South East Thames Regional Health Authority for 1985-94⁶ contained statements alleging low performance in replacing hips in this and other health districts in the region, based on figures for 1983.

The trauma and orthopaedic department of this district was so surprised by these unqualified allegations that it was prompted to perform its own audit and examine the existing methods of assessing performance. The trauma and orthopaedic department of Camberwell Health District serves a catchment population of 230 100 for acute admissions. There are four consultants, two senior registrars, two registrars, and four house officers. Trauma, which accounts for half the total number of admissions, is managed at King's College Hospital (50 beds), while elective orthopaedic admissions are managed at Dulwich Hospital (40 beds).

Methods

TRAUMA AND ORTHOPAEDIC OPERATIONS

The operation registers for 1983 were examined and the number, type, and duration of operations noted.

Existing classification and grading of operations

Operations were initially classified and graded according to the current practice of the regional

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