Work of a rehabilitation medicine service

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Abstract

The results of the work of the Edinburgh Rehabilitation Medicine Service in one year were evaluated. Over 1400 new patients were seen, of whom 525 were in hospital at the time. Patients most often referred were those who had had cardiovascular accidents, back pain, lower limb amputations, and head injuries and those convalescing after heart surgery. Most patients had several problems. Many were referred so that they could obtain wheelchairs or other appliances, or for assessment of their ability to drive. Only 3% of the referrals were considered inappropriate. Of the inpatients, 455 (87%) returned home after treatment, but 13 (2%) did not respond satisfactorily to rehabilitation. Twelve per cent (18% of the inpatients) were referred from other health boards, suggesting a need for similar facilities elsewhere.

Introduction

In 1972 the Mair report recommended that rehabilitation medicine should be designated a new specialty in Scotland.¹ Services in Lothian developed in response to this, the first patients being treated in 1975. Four consultants oversee the service, which includes two hospitals, a community physiotherapy clinic, and a wheelchair and driving assessment centre. A general practitioner supervises a community rehabilitation service in west Lothian. Each consultant works with a team comprising junior medical staff, nurses, occupational therapists, and physiotherapists. Social work, speech therapy, and psychology services are shared among these teams. There is a disabled living centre at one of the hospitals. Bioengineering services are available but do not form part of the rehabilitation medicine establishment. There is a close liaison with other specialties, particularly neurosurgery, orthopaedics, and cardiology, and a similar liaison is developing with urology; we also work closely with the social services and voluntary agencies. The overall pattern is similar to a "Regional Disability Unit" as described in the Royal College of Physicians' report *Physical Disability in 1986 and Beyond*.²

Any new service should be assessed before it is introduced all over the country but this presents difficulties.¹ End points such as mortality have only limited relevance, and recording unemployment rates has lost much of its usefulness in today's economic circumstances. A unit's activity may, however, be assessed; the allocation of scores for activities of daily living, the number of patients who return home, and the complication rates give some idea of the quality of the service. We therefore undertook a study to answer the following questions: What type of patients are referred for rehabilitation? How long do they wait for, and undergo, treatment? What services do they use? Do they make progress? What impedes progress? The last two questions will be answered fully in a subsequent paper.

Patients and methods

All new patients seen in one calendar year were entered into the study. Patients still under treatment on 30 December were followed up until discharge or until 30 June the following year, when we stopped collecting data.

The group studied comprised, firstly, inpatients, day patients, and outpatients at the two hospitals, each patient being classified only once by the most intensive type of treatment received; secondly, outpatients seen by a physician at either the community physiotherapy clinic or the assessment centre; thirdly, patients from the community rehabilitation service; lastly, patients seen at other hospitals or in their own homes.

When patients were first seen demographic data were recorded and acute problems noted. A "problem" (which could be physical, psychological, or social) included anything that affected assessment. A simple question on outcome (improved, unchanged, worse, do not know, other) was included; patients seen only once were always assigned to "do not know" unless definite evidence on outcome became available. For inpatients and day patients independence in the activities of daily living was assessed (by a method adapted from that of Smith⁴) at entry to and discharge from the rehabilitation unit.

Forms were completed by medical staff, often after discussion with other members of the team, and were reviewed by CR or YA to ensure consistency. The results were analysed with the statistical package for the social sciences (SPSS).

TABLE II—Most common reasons for referral

	No of patients	(% Of total No of patients)
Cerebrovascular accident	178	(13)
Non-inflammatory back pain	171	(12)
Assessment after heart surgery	111	(8)
Assessment for a wheelchair	99	(7)
Soft tissue pain	95	(7)
Lower limb amputation	61	(4)
Degenerative joint disease	54	(4)
Neck pain	53	(4)
Head injury	50	(4)
Assessment of ability to drive	41	(3)
Multiple sclerosis	41	(3)
Assessment after myocardial infarction or angina, or both	37	(3)
Total No	991	(72)

Results

There were 1418 new referrals during the year; data on 44 patients were insufficient and they were excluded, leaving 1374 (97%) for analysis. There were 525 inpatients (38%), 624 outpatients (45%), and 78 day patients (6%). Of the total, 37 (3%) were seen at the community rehabilitation service and 97 (7%) elsewhere. Hospital units referred half and general practitioners 45%. Our responsibility is for patients in

TABLE I—Ages at time of referral of 1374 patients about whom sufficient information was obtained for analysis

Age (years)	No (%) of patients
0-19	78 (6)
20-29	104 (8)
30-39	142 (10)
40-49	214 (16)
50-59	256 (19)
60-64	146 (11)
65-69	119 (9)
≥70	278 (20)
Not known	37 (3)

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the Lothian districts, but 165 (12%), including 93 inpatients (18% of all inpatients), lived outside the area.

Patients—Age distribution is shown in table I. Schoolchildren were usually referred so that they could obtain wheelchairs. Numbers of men and women were almost equal. The most common reasons

TABLE III—Psychological and social problems in patients also presenting with physical ailments

	No of patients*	(% Of total No of patients)
Anxiety	163	(12)
Depression	134	(10)
Personality difficulties	121	(9)
Intellectual impairment	85	(6)
Acute confusional states	36	(3)
Unemployment	261	(19)
Marital or family problems	249	(18)
Social isolation	192	(14)
Difficulty in finding suitable housing	176	(13)
Financial problems	129	(9)

*Some patients had more than one problem.

TABLE IV—Occupation at time of referral

	No (%) of patients
Full time employment	301 (22)
Part time employment	41 (3)
Unemployed	155 (11)
Off sick for 3 months or more	63 (5)
Housework	185 (13)
Students	61 (4)
Retired (age)	360 (26)
Retired (medical grounds)	143 (10)
Other	15 (1)
Not known	50 (4)
Total	1374 (100)

TABLE V—Numbers of physical, psychological, and social problems in 1374 patients

No of problems	Physical problems		Psychological problems		Social problems	
	No of patients	(% Of total No of patients)	No of patients	(% Of total No of patients)	No of patients	(% Of total No of patients)
None	27	(2)	745	(54)	653	(48)
1	543	(40)	507	(37)	443	(32)
2	330	(24)	110	(8)	184	(13)
3	232	(17)	11	(1)	70	(5)
4	130	(10)	1	(0.07)	21	(2)
5	112	(8)	0		3	(0.2)

Length of stay in hospital of four diagnostic groups. Each group is represented by a single point at the middle of each time interval (horizontal axis)

for referral are listed in table II. Certain conditions occurred more often than listed here; thus 178 patients who had had cerebrovascular accidents were referred for management of acute strokes, but 79 were referred so that they could obtain wheelchairs or other appliances.

Most patients had more than one physical problem; the three systems most often affected were neurological (48%), locomotor (48%), and cardiovascular (25%). Complications included urinary incontinence in 63 patients, faecal incontinence in 16, and pressure sores in 13. Of the 61 patients seen after lower limbs had been amputated, 21 had stumps that were not healing satisfactorily.

Psychological and social problems were reasons for referral in comparatively few patients (41 and 25 cases, respectively) but were present in two thirds of those presenting with physical ailments (table III).

Nine hundred and fifty four (69%) of the patients had lived with their families before referral, but 285 (21%) had lived alone, including 42 (3%) who required assistance to remain in the community. Only 30 (2%) had been in institutions. There was an excess of social classes IV and V in the population of Lothian districts. Occupations are shown in table IV. If students, persons over retirement age, and those with household duties are excluded, 301 (42%) of the remainder were in full time employment, and 143 (20%) had retired on medical grounds.

The numbers of physical, psychological, and social problems are shown in table V. Certain physical and psychological problems commonly occurred together—for example, 19% of patients with back pain were depressed, and 16% suffered from anxiety. Anxiety was also recorded in 27% of those referred for rehabilitation after cardiac surgery or heart attacks.

Rehabilitation—At first assessment 36 (3%) new referrals were judged inappropriate; this group had a

significantly higher percentage of patients aged over 65 ($p<0.05$) and a larger proportion with dementia ($p<0.01$). Of the remainder, 230 (17%) were seen only once and advice given; 1152 (80%) were accepted for further management.

Most outpatients ($n=462$, 74%) were seen within a month, and 88 (14%) within one week, of receipt of the request. One hundred and two patients (16%) had longer delays for reasons beyond our control.

Many inpatient admissions were preplanned in association with elective surgery. Of the remainder, 166 (51%) were admitted within a week, and 283 (86%) within a month. Of the inpatients, 107 (20%) were fit for discharge within 10 days and a further 132 (25%) within three weeks. The median duration of stay was between three and four weeks. Twenty six patients (5%) remained more than three months. Inpatient stay varied depending on the diagnosis: four common problems are shown in the figure. Prolonged inpatient stay was associated with difficulty in finding suitable housing ($p<0.001$, contingency coefficient test) but not with other social factors. Psychological factors did not necessarily extend admission—for example, among patients with heart diseases there was no

TABLE VI—Outcome of rehabilitation for 1374 patients (525 inpatients)

	All patients		Inpatients	
	No	(%)	No	(%)
Returned home	1190	(87)	455	(87)
Rehoused	12	(1)	7	(1)
Returned to hospital of referral because rehabilitation failed	13	(1)	13	(2)
Sent to other acute hospital	18	(2)	21	(4)
Sent to sheltered housing, Eventide Home, or hospital for long term care	10	(1)	9	(2)
Died	14	(1)	13	(2)
Other	94	(7)	5	(1)
Not known	23	(2)	2	(0)

difference in the speed of rehabilitation between those with and without symptoms of anxiety.

Outcome after treatment is shown in table VI. Patients were returned to acute units after incidents such as further cerebrovascular accidents. Follow up of the 13 patients in whom rehabilitation failed showed that only three ultimately returned home. We did not review 314 (48%) inpatients and day patients, who were followed up by the referring units. Of the inpatients, 82 (16%) attended the day hospital or had paramedical treatment after discharge from the ward; 111 (21%) were seen as outpatients (half of them only once), and 40 (8%) were reviewed in other ways—for example, in their homes.

Every patient was seen by a physician. All inpatients were treated by nurses, 522 (97%) received physiotherapy, and 427 (79%) occupational therapy. Selected patients were seen by a social worker 114 (21%), speech therapist 105 (20%), or clinical psychologist 49 (9%). Among outpatients 345 (46%) saw a physiotherapist, 55 (8%) were assessed for prostheses or other aids, and 48 (6%) saw an occupational therapist. Other professionals saw less than 5% of all outpatients. More patients used home helps (66 compared with 32) and voluntary agencies (25 compared with six) after rehabilitation than before. Some services, including community nursing, were used less frequently.

Overall, 819 patients (60%) improved after treatment, 223 (16%) were unchanged, 20 (1%) were worse, in 259 (19%) the outcome was not known, and 53 (4%), including 14 patients who died, have been classified as "other." Patients assessed as "worse" all had progression or recurrence of their disease.

Assessments of ability to cope with activities of daily living were available for 529 inpatients and day patients (88%). The pattern of improved independence varied among diagnoses (table VII). Improvements in these abilities were greater among those with lower leg amputations and hemiplegia than among patients with back pain; in patients with heart disease the results were intermediate. Overall assessments of outcome were compared with scores of ability to cope with activities of daily living where available. Patients graded as "improved" all had better scores, those graded "worse" had poorer scores, and those graded "unchanged" showed only small changes—usually a slight improvement.

Discussion

The Mair report defined rehabilitation as "restoration of the patient to their fullest physical, mental and social capacity."¹ This unit has done what Mair envisaged. The range of diagnoses was extensive, and, except for inflammatory arthritis and chronic respiratory diseases (which are treated elsewhere in Edinburgh), was similar to that in the disabled British population in general.⁵ The Mair report predicted that many patients would need a "psychosociosomatic" approach; the high incidence of psychological and social problems reported here is comparable with that in previous reports about disabled people.^{6,7} Unlike Mair's expectation, however, employment rehabilitation was not a primary aim because most of our employable patients were unemployed before their current illness. Return to work is often influenced less by medical rehabilitation than by social factors.⁸

Many patients improved after treatment, but in evaluating a service other factors must be considered. Straightforward comparisons with other rehabilitation units are unsatisfactory, as selection criteria and illnesses treated may vary. We aimed to assess patients who might benefit from the facilities in the unit; should an individual patient fail to make sufficient progress to be discharged, he returned to his referring unit to await placement. As only 3% of referrals were judged to be inappropriate for admission we did not feel that we accepted only patients with the greatest potential for improvement.

Improvements in ability to cope with the activities of daily living occurred for most of our inpatients and outpatients, but little has been published about the changes in disability with treatment with which we may compare our figures. The proportion walking independently after strokes, however, is in accord with published figures.⁹ The present study does not of course address the question of whether these improvements were spontaneous or the result of rehabilitation.

Lengths of stay depend in many specialties principally on diagnosis,¹⁰ but our data support the experience of others that difficulties in finding suitable housing delay discharge. This must be taken into account in comparisons of units. Early discharge may result in heavy burdens on community resources, but our results do not suggest that this happened during the study period; community services were used by fewer people after discharge than before.

We therefore consider the efficacy of our service to be acceptable, but we are concerned that even a small number of patients waited a long time for assessment. In addition, selection criteria used by our colleagues for referring patients to our unit are not clear. The high incidence of anxiety in patients with heart disease suggests that this may be a factor in their referral.

This study is to some extent an audit of our work. Donabedian¹¹ divided audit into structure, process, and outcome, but these are closely interrelated¹² and our study comprises aspects of all three, which is necessary in any assessment of rehabilitation. Rehabilitation covers physical, psychological, and social aspects of treatment; evaluation must include each of these. Many audits in other specialties compare performance with predetermined standards. This aids analysis, but any standards in rehabilitation medicine will need to be revised as more accounts of practice in the specialty are published. Information presented here has already proved valuable in planning future developments, but the full value of auditing will only be shown if, on repeat assessment, improvements can be documented.

The current debate on the future of rehabilitation medicine indicates that the proposals of the Mair report have not been widely accepted; other Scottish

TABLE VII—Improvement in mobility and daily living activities by diagnosis

	Before rehabilitation		After rehabilitation	
	No	(%)	No	(%)
Patients with hemiplegia (n=127):				
Able to do own toilet independently	42	(33)	81	(70)*
Able to walk without help	36	(28)	85	(75)*
Patients with amputations (n=51):				
Able to transfer from wheelchair to toilet independently	20	(39)	28	(67)†
Patients with heart disease (n=81):				
Able to climb stairs	56	(69)	81	(100)

*One hundred and fourteen patients scored after rehabilitation.

†Forty two patients scored after rehabilitation.

health boards have not established broadly based units similar to our own. The Edinburgh experience may assist regional health authorities in England in planning the implementation of the recent recommendations of the Royal College of Physicians,² but our results cannot be fully assessed until other units perform similar exercises.

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Hands across the equator: the Hereford/Muheza link

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Seen from an English cathedral city, Africa is far off, exotic, and unknown, its people thought to be mostly poor and in need of basic medical care. Seen from Tanzania, England is remote and alarming, its people prosperous and healthy. We two physicians, one at Hereford County Hospital and one at Hospitali Teule, Muheza, Tanzania, have tried to bring the health workers in our communities together with two aims: that each should learn something about the other's way of life, and that some practical help should be given by the richer community to the poorer one. The idea was warmly approved by the Herefordshire Health Authority and in 1985 we began to arrange visits.

Now, in 1988, the Muheza/Hereford link is securely established, and each year four health workers from each medical community visit the other for six to eight weeks. The workers already exchanged have included nurses, doctors, engineers, pharmacists, medical assistants, a dentist, and a laboratory scientist (table).

Visitors to Hereford and Muheza

	From Muheza	From Hereford
Sept 1985	Senior midwifery tutor	Community dentist
	Senior theatre nurse	Laboratory scientist
May 1986	Senior midwife	Radiographer
	Medical assistant (eyes)	Community nursing tutor
Sept 1986	Senior nursing tutor	Works officer (engineer)
	Psychiatric nurse	Consultant obstetrician and gynaecologist
May 1987	Nurse anaesthetist	Medical engineer
	Medical assistant (paediatrics)	Ward sister (paediatrics)
Sept 1987	Medical assistant (casualty)	
	Assistant medical officer (eyes and general surgery)	
Jan 1988	Pharmacist	Pharmacist
		Theatre sister
May 1988	Obstetrician and gynaecologist	Staff nurse (intensive care)
	Nursing officer (clinical instructor)	

The two communities

Muheza district, population 225 000, is in Tanga Province in north eastern Tanzania about 48 km from the Indian Ocean and 576 km south of the equator. The town lies below the Usumbara mountains, and the district is fertile, beautiful, and well watered. It has both a railway and a road that can be used in all weathers. Until 1980 Muheza district had separate small government and mission hospitals; they then amalgamated in new buildings and became the Hospitali Teule with eight wards and 200 beds. The Tanzanian government pays all the salaries in the hospital, and the mission and a charity in London provide Muheza with some extra resources. Hereford

diocese supports one student nurse in the training school, and British medical students make "elective" visits.

Malaria and schistosomiasis are serious problems. Onchocerciasis is common in the mountains and filariasis on the plain. Many patients have diarrhoea and sexually transmitted diseases. Carcinoma of the oesophagus and the nephrotic syndrome are also common. Obstructed hernias often cause surgical emergencies, and there are many accidents and skin infections. The extent of human immunodeficiency virus (HIV) infection is not known, but usually there are three or four inpatients with clinically diagnosed AIDS at any time.

Muheza district, which has a larger population than Herefordshire, is served by Hospitali Teule, two rural health centres, and 26 dispensaries staffed by medical assistants and rural medical aids, as well as nurse/midwives and maternal and child health aids. Herefordshire is in the west of England on the Welsh border and has a population of 145 000. It has a district general hospital on two main sites in the city, a separate hospital for patients with mental diseases, one for eye diseases, seven small hospitals (each 24 to 36 km from Hereford) and a private hospital, as well as many general practitioners, and community nurses, midwives, and social workers.

Travel and finance

We have been given generous help by the Commonwealth Foundation (which has given over £4000 each year for travel expenses) and the Lennox Boyd Memorial Trust (which has given over £2000). The Herefordshire Health Authority has provided free accommodation for visitors and accounting and administrative help. In addition, at the start of the link there were small donations from several drug companies. The cost of the link, excluding the help provided by the health authority and the hospitality and kindness of individual people in Muheza and Hereford, has been held under £6000 for eight visits each year.

Experiences

Why do they go and what do they gain? Staff go for experience, to learn, to study a project, sometimes to teach, for the adventure of visiting a different culture, and also to return home with ideas for improvements. These extracts from reports and letters give a flavour of the experiences in Muheza of English staff.

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