Needs and Opportunities in Rehabilitation

Rehabilitation after stroke: 1—What is the potential?

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After a year at home doing nothing a man of 66 was admitted to a rehabilitation centre for help with the many problems left by his stroke 18 months before. He had in fact spent most of the first six months in a specialist stroke rehabilitation unit; but in the second centre, between 18 and 24 months from the stroke, he recovered considerably and has continued to progress ever since. Now, five years after the stroke and still helped by having two week "booster" admissions every three months, this man who had appeared irrecoverably without speech is talking again.

Potential for recovery

This happy example illustrates some central issues in rehabilitation: what is the potential for recovery and the scope for intervention, and how can resources be used to best effect? "We have been nihilistic about stroke management for too long," says Mulley.¹ The old approach was to help the victim of a stroke to find ways of coping by using only those abilities and parts of the body that remained undamaged. This approach is clearly important, but there is now emphasis on techniques of retraining that aim at restoring if possible some of the lost functions.

There are various theories about the brain mechanisms concerned: notably restoration of function of partially damaged neurones and reorganisation of the nervous system so that new pathways take over some of the functions of the damaged parts of the brain. Different mechanisms may operate at different stages; in addition, the patient may learn new strategies for doing things.^{2,3} It has been suggested, in the context of physiotherapy, that retraining can set up new "engrams" in the brain, but that to reach maximum performance an action must be repeated hundreds of thousands or millions of times as in the normal development of skills—and that failure to provide this in rehabilitation may explain much of its failure.⁴ This is speculative, and it is not certain whether strictly neurological recovery is increased by therapy. However that may be, rehabilitation aims at two things: restoring, at least in part, lost or impaired functions and teaching new ways of coping.

The other side of the picture is that therapy may continue long after a patient has ceased to benefit.⁵ At the same time many patients who might profit from some form of rehabilitation are having none, and there is little prospect of greatly increased resources. It is therefore too glib, argues a report on the research aspects of rehabilitation after brain damage, to press simply for "more resources": we need to know what resources are needed and where and at what stage they will do most good. This means better evaluation of what is done—with standardised methods of assessing handicaps and valid comparisons of methods of treating them, and also rational strategies for reducing dependency and improving social functioning.⁶

Meanwhile the problem is enormous even if only a proportion of

patients need rehabilitation, with 200 hospital admissions for stroke a year per 100 000 population at present and an estimated prevalence of disabled survivors of 250 per 100 000.⁶ Workers emphasise that the good ideas and exciting developments in stroke rehabilitation, to which I refer in these two articles, by no means represent British practice as a whole. A very small minority of patients have access to a rehabilitation unit or to a consultant with any training in rehabilitation who would have the time or the knowledge to put such ideas into practice. I return to this theme at the end of the next article.

The problems

Major problems are the nature and duration of recovery, both spontaneous and in response to treatment, in the many different types of patient; the optimum timing and nature of the different treatments (including who gives them and where) and their optimum intensity and duration for each patient; and the best ways of providing services and deploying resources in the widest sense. Many studies have been reported but uncertainties remain. Apart from inadequacies of study design,⁷ many personal and family factors contribute to the final human outcome. Patients may do less in real life than they are shown to be capable of in hospital⁸; those with apparently similar conditions and management respond to treatment in different ways—and patients may view their problems and their progress very differently from their therapists.⁹

A salutary reminder of the burden of long term suffering comes from a study of patients who had been severely enough affected by their strokes to receive an intensive course at a specialist rehabilitation centre up to eight years previously.¹⁰ Two thirds still had problems with self care, nearly half had restricted mobility, and a quarter had communication problems. In addition, over half had an adverse personality change—with depression common in both the patients and their spouses. Stroke is after all a family problem.^{2,11} Thus however well the treatments and formal services are matched to a patient's obvious disabilities there will be need for continued support for the family as a whole,¹² for renewed help for the patient as required, and for varied local services,^{10,13} both statutory and voluntary, including family support schemes, day centres and hospitals, intermittent "relief" admissions and holidays, and clubs and other schemes (box).

Early rehabilitation

Rehabilitation includes preventing the patient getting worse—for instance, careful handling and positioning to stop shoulder damage, spasticity and contractures, and pressure sores developing. Bobath physiotherapy is one technique that concentrates on correct positions for the body in paralysis.¹⁴ With attention to such things the patient has the chance of the best possible spontaneous recovery and the best response to whatever specialised rehabilitation techniques might be effective. Physiotherapists, many workers urge, should be brought in right at the start, preferably on the first day, for passive movement and optimum positioning.¹⁵ Nurses should

also be trained in the management of paralysis,¹⁵ and they can also encourage early attempts at self care; without special training traditional nursing care may fail to reinforce occupational therapy where this is available. A Swedish comparative study suggested that an "activation" programme of nursing care, with special training for the nurses, in addition to the usual therapies improved function in the first month.¹⁶ A stroke rehabilitation unit I visited, with many "early" patients, has close collaboration between nurses and therapists.

The point that has been emphasised to me over and over again is "working together"—the need for all categories of staff to have the same aims, clearly defined, and to combine their efforts at all stages of rehabilitation. The number and complexity of the problems of many patients make this all the more important. It is, however, much more difficult to achieve in a general medical ward, and the multidisciplinary case conference that can be so important is said to be rare in a general ward.

"Stroke units" have been set up as a response to unsatisfactory early management and assessment of rehabilitation needs in general wards.¹⁷ They are also thought to create a less depressing and more positive milieu. At a conference held to assess their effectiveness close collaboration of staff emerged as a common feature, together with imaginative educational and support schemes for patients and for their relatives; the clientele tended to have afflictions of moderate severity, and to stay for two to three months.¹⁷ Hard evidence of their efficacy was difficult to obtain, though there had been a comparison with patients in a general ward of Edinburgh Royal Infirmary^{18,19}; but directors were convinced that their stroke units were an effective way of deploying resources, there being little extra cost. They recommended 15-20 beds for a population of 250 000.¹⁷ The Edinburgh study found that although there was no intensive rehabilitation in the stroke unit, and although there were shorter stays and fewer hours of therapy in total, more patients returned to independence on discharge than from the ordinary medical ward; yet the two groups had similar degrees of neurological impairment at discharge.^{18,19} Treatments started much sooner and nearly all the patients had occupational therapy, as against under half of those in the medical ward. One year after the stroke, however, the lead had disappeared, and the authors urge that "all links in the chain of stroke rehabilitation" should be maintained after discharge; in particular, families may be over-protective and need guidance.²⁰ The question of specialised versus mixed wards for patients with stroke is thought to need further study.

Later rehabilitation

Later rehabilitation ranges from a little outpatient physiotherapy to five days a week of a comprehensive outpatient programme or residential course at a rehabilitation centre for many weeks or months. Intensive or otherwise, a course may follow immediately after discharge, or only after weeks or months, depending largely on waiting lists. What is worrying is an interregnum during which the unhelped patient may develop bad habits and apathy. Here it is especially important for relatives to be encouraged to supervise a home exercise programme and perhaps other activities.

Reviewing seven studies of comprehensive programmes, Lind concluded that most functional improvement was due to spontaneous recovery and that rehabilitation had little to add in most cases; specialised rehabilitation facilities were usually therefore unnecessary for effective treatment.⁷ But he made the proviso that a few selected patients with "marginal" functional impairments could be helped, by individually tailored programmes, towards modest improvements that could mean independence instead of institutional care. An outpatient study at Northwick Park Hospital, Harrow, gave a clear positive result. It suggested that the more intensive the rehabilitation was the greater the recovery of independence and the less the deterioration.²¹

This "dose dependent" effect was not confirmed by the Bristol stroke unit.²² The Northwick Park study, however, found that remarkably few were suitable for the rehabilitation programme:

Stroke clubs

Over 350 stroke clubs, affiliated to the Chest, Heart and Stroke Association, exist in the United Kingdom and the association is keen to encourage more. Most clubs meet weekly, and there is a wide range of activities and outings. Besides providing a social outlet for members and perhaps relatives, many activities are designed to increase confidence and stimulate interest, including help with new hobbies for handicapped people. Activities to promote rehabilitation, such as music and movement sessions, language games and so on, and tasks of everyday life, may be included; and some clubs have the help of local therapists. The association has a leaflet called *Starting a Stroke Club* and is happy to guide anyone embarking on such a venture. Details from the CHSA (Tavistock House North, Tavistock Square, London WC1H 9JE), which has publications and a film on stroke. In addition, some speech therapists run speech clubs; while volunteer clubs for people with language problems are associated with the CHSA's Volunteer Stroke Scheme (see next article).

only about 10% of those admitted to hospital and 14% of those who were considerably disabled at discharge.²³ The rest either were not bad enough or were judged too frail for the outpatient programme (though many geriatricians would not see frailty as a bar to rehabilitation). The disabilities were not on the whole very severe. The size of the problem, it was concluded, is therefore exaggerated and proper rehabilitation for those who need it a realistic policy.²³ Little physical or speech improvement was found after three to six months; patients themselves tended not to notice improvement—they did less than they were capable of,²⁴ like the patients reported from Manchester by Andrews.⁸

In the Bristol study most recovery occurred in the first three months but two patients improved substantially during a second period of rehabilitation starting after six months.²⁵ The authors suggest several possible reasons for not finding statistically significant progress more than three months after the stroke: measurements may have been too insensitive, treatment may have been not intensive enough or not given at the right time, or deterioration in other ways may have masked a real benefit. In the Manchester series most recovery was in the first six months²⁶; thereafter it was modest and mainly in people with severe impairment. The greatest late improvements were in mobility and in walking—with social and environmental perhaps stronger than physical factors. After a year 30% of survivors were still dependent.

There are clearly plenty of questions to be answered still. Evaluation of rehabilitation methods holds many pitfalls, not least because some patients would recover anyway and others would never do so. In addition, there are different standpoints from which to assess benefit: what is real and meaningful to the patient and family may be just as valid a starting point as the doctor's or therapist's assessment,⁹ but is perhaps less often considered.

One consultant I talked to was critical of the evidence that the need for intensive rehabilitation and the benefits from it are limited. Formal rehabilitation is often too early, she believed, because speech impairment is a limiting factor—the whole process of physiotherapy, for example, may be impeded by lack of speech and comprehension—and this may bias the results of the studies. One physiotherapist thought that an active rehabilitation programme was often hindered during the early "bereavement" period that may follow a stroke.

"Make life worth living" and "Make sure there's something to get out of bed for" are principles that have been emphasised to me. Some consultants and other workers I have met believe that more attention needs to be given to things other than physical improvement. For example, to work for another few degrees' range of movement may finally be to squander precious hours. Isaacs urges that rehabilitation should not be seen simply as a matter of "pressing

Two hemiplegic men playing draughts with both hands at the Stroke Rehabilitation Unit, St Pancras Hospital, London. The floor is marked out as a draughts board for "bilateral foot draughts."

on in the hope of achieving more and more recovery, but that assessments should be made and targets set in the light of the patient's whole life."²⁷ Help with emotional distress, especially depression and anxiety, should be an obvious need, but it may be missed in someone who cannot speak. "Treat the patient as a person, and then the relatives will as well" was something one consultant emphasised. Morale may be raised by making sure that a patient succeeds.^{4 28} Giving thought to recreations is an important aspect of this. More energetic effort to solve housing problems is another "must." In a follow up study one third of patients still had to use a commode for want of an accessible toilet six years after their stroke (R Langton Hewer, personal communication).

Depression is common after stroke²⁴ and may be severe and persistent.²⁹ But it is seldom treated and often not even diagnosed.² There are two possibilities, which need not be mutually exclusive—that it is a failure of adaptation to the stroke and that counselling may help, and that in at least some cases it is a chemical effect (the more anterior the lesion the worse the depression).²⁹ Treatment with a tricyclic antidepressant has indeed been found to improve the depression,²⁹ though side effects and contraindications may limit its use (see correspondence²⁹). Referral to a psychiatrist (in 13.5% of a series of younger patients with stroke and head injury) has been tried at Rivermead Medical Rehabilitation Centre, Oxford.³⁰ The psychiatrist's chief role was to help staff use their own skills to deal with the problems, which included those of the family—who could help or hinder the rehabilitation process. A major difficulty is spotting depression (and assessing treatment for it) in patients who may be aphasic and in whom symptoms such as sleeplessness and constipation may plausibly be ascribed to physical consequences of stroke and not depression. Another problem is deciding when depression is a natural reaction that may take its course and when it calls for treatment. The subject of treatment is thought to need urgent research.²

Motivation is clearly vital in rehabilitation. In a recent study poor motivation and mood two weeks after a stroke were highly correlated with failure to benefit much from rehabilitation and with a bad outcome a year later.³¹ The authors believe that this needs more intensive study. If confirmed would this finding point to a more rigorous selection of patients or to new emphasis on psychological help?

In the next article I will look at speech therapy and briefly at memory training, together with the general provision of services.

I am grateful for help from many people, especially Dr Margaret Agerholm, Heenan House Rehabilitation Centre, Hackney, London; Drs R Langton Hewer and D T Wade, Neurological Unit, Frenchay Hospital, Bristol; Professor B Isaacs, Department of Geriatric Medicine, University of Birmingham; Dr D G Jenkins, Wolfson Medical Rehabilitation Unit, Atkinson Morley's Hospital, London; Professor Bryan Jennett, Faculty of Medicine, University of Glasgow; Professor D L McLellan, Department of Rehabilitation, University of Southampton; Dr G P Mulley, Department of

Medicine (Elderly), St James's University Hospital, Leeds; Mrs Cecily Partridge, Physiotherapy Research, King's College, London; Dr Elizabeth Rushworth, Rivermead Medical Rehabilitation Centre, Oxford; Dr Anne-Marie Tupper, Stroke Rehabilitation Unit, St Pancras Hospital, and Camden Road Medical Rehabilitation Centre, London, and other staff; Dr Marcia Wilkinson, formerly director of the Regional Neurological Unit, Eastern Hospital, London.

References

- Mulley GP. Avoidable complications of stroke. *J R Coll Physicians Lond* 1982;16:94-7.
- Mulley GP. *Practical management of stroke*. London: Croom Helm, 1985.
- Miller E. *Recovery and management of neuropsychological impairments*. Chichester: John Wiley and Sons, 1984.
- Kottke FJ. Neurophysiologic therapy for stroke. In: Licht S, ed. *Stroke and its rehabilitation*. New Haven: Elizabeth Licht Publisher, 1975:256-324. (Physical Medicine Library, Vol 12.)
- Brocklehurst JC, Andrews K, Richards B, Laycock PJ. How much physical therapy for patients with stroke? *Br Med J* 1978;i:1307-10.
- Jennett B, chairman of coordinating group. Research aspects of rehabilitation after acute brain damage in adults. *Lancet* 1982;ii:1034-6.
- Lind K. A synthesis of studies on stroke rehabilitation. *J Chron Dis* 1982;35:133-49.
- Andrews K, Stewart J. Stroke recovery: he can but does he? *Rheumatol Rehabil* 1979;18:43-8.
- Partridge CJ. Recovery from conditions involving physical disability. *Physiotherapy* 1984;70:233-5.
- Coughlan AK, Humphrey M. Presenile stroke: long-term outcome for patients and their families. *Rheumatol Rehabil* 1982;21:115-22.
- Mulley G. *Stroke. A handbook for the patient's family*. London: Chest, Heart and Stroke Association, 1981. (50p plus postage.)
- Holbrook M. *Stroke: social and emotional outcome*. *J R Coll Physicians Lond* 1982;16:100-4.
- Hewer RL, Holbrook M. The Bristol Stroke Unit. *Health Trends* 1983;15:15-8.
- Bobath B. *Adult hemiplegia: evaluation and treatment*. 2nd ed. London: Heinemann Medical Books, 1978.
- Chin PL. Physical techniques in stroke rehabilitation. *J R Coll Physicians Lond* 1982;16:165-9.
- Hamrin E. Early activation in stroke: does it make a difference? *Scand J Rehab Med* 1982;14:101-9.
- Isaacs B. Stroke illness in older people. *Continuing Medical Education* 1984;2:57-60.
- Garraway WM, Akhtar AJ, Prescott RJ, Hockey L. Management of acute stroke in the elderly: preliminary results of a controlled trial. *Br Med J* 1980;280:1040-3.
- Smith ME, Garraway WM, Smith DL, Akhtar AJ. Therapy impact on functional outcome in a controlled trial of stroke rehabilitation. *Arch Phys Med Rehabil* 1982;63:21-4.
- Garraway WM, Akhtar AJ, Hockey L, Prescott RJ. Management of acute stroke in the elderly: follow-up of a controlled trial. *Br Med J* 1980;281:827-9.
- Smith DS, Goldenberg E, Ashburn E, et al. Remedial therapy after stroke: a randomised controlled trial. *Br Med J* 1981;282:517-20.
- Wade DT, Skilbeck CE, Hewer RL, Wood VA. Therapy after stroke: amounts, determinants and effects. *Int Rehabil Med* 1984;6:105-10.
- Sheikh K, Mead TW, Brennan PJ, Goldenberg E, Smith DS. Intensive rehabilitation after stroke: service implications. *Commun Med* 1981;3:210-6.
- Sheikh K, Smith DS, Mead TW, Brennan PJ. Methods and problems of a stroke rehabilitation trial. *Occupational Therapy* 1978; August: 262-5.
- Skilbeck CE, Wade DT, Hewer RL, Wood VA. Recovery after stroke. *J Neurol Neurosurg Psychiatry* 1983;46:5-8.
- Andrews K, Brocklehurst JC, Richards B, Laycock PJ. The rate of recovery from stroke—and its measurement. *Int Rehabil Med* 1981;3:155-61.
- Isaacs B. Rehabilitation for the elderly. *Int Rehabil Med* 1984;6:v-vi.
- Anderson TP, Kottke FJ. Stroke rehabilitation: a reconsideration of some common attitudes. *Arch Phys Med Rehabil* 1978;59:175-81.
- Lipsey JR, Robinson RG, Pearson GD, Rao K, Price TR. Nortriptyline treatment of post-stroke depression: a double-blind study. *Lancet* 1984;ii:297-300. (See also correspondence, 1984;ii:519-20, 803.)
- Holland LK, Whalley MJ. The work of the psychiatrist in a rehabilitation hospital. *Br J Psychiatry* 1981;138:222-9.
- Henley S, Petit S, Todd-Pokropek A, Tupper A. Who goes home? Predictive factors in stroke recovery. *J Neurol Neurosurg Psychiatry* 1985;48:1-6.

What advice should be given to an expatriate population about regular antimalarial prophylaxis?

Any answer to this question is bound to be in general terms since three important factors are unknown: the degree and type of local endemicity of malaria; the living conditions and awareness of malaria of the expatriate population; and how much risk of malaria the individual members are prepared to take. The first factor may be determined from a proper malaria survey of the locality, given that in Africa at an altitude of over 3000 ft (914 m) malaria becomes rare. As a rule, whenever the spleen and parasite rate of the population sample of the indigenous children is over 10%, the area is considered as endemic and long term chemoprophylaxis of the expatriate population is strongly advised. This applies particularly if their houses are unscreened and if the individual methods of protection from mosquitoes—bed nets, space spraying of rooms, and wearing of proper clothing, such as slacks, after sunset—are not well observed. Those who often travel in the country and are more exposed to the infection should certainly follow an effective prophylactic regimen. Those who do not wish to use chemoprophylactic antimalarials take a much greater risk and should seek medical advice whenever any symptoms of febrile disease occur. Women and children are at a greater risk, even in areas where the endemicity of malaria is low.—L J BRUCE-CHWATT, emeritus professor of tropical hygiene, London.