
Problem List of Stroke Patients as Identified in the Problem Orientated Medical Record

In a retrospective study problem orientated physiotherapy records were examined on 156 consecutive stroke patients admitted to medical wards and referred to the physiotherapy department. The purpose of the study was to identify from the problem lists those problems physiotherapists are dealing with in stroke care. There were 1338 problems recorded, and these were divided into 16 clinically meaningful subgroups. Three of the sixteen subgroups accounted for 60.2 percent of all the problems recorded, namely lack of voluntary movement and mobility in general (25.7%), imbalance in muscle tone (19.5%), and problems in maintaining balance (15.0%). On discharge only 34.1 per cent of all problems were reported to be resolved. There was wide variation in the success rate claimed with different problems.

W. J. G. DE WEERDT

W.J.G. De Weerd, Ph.D., is a Research Physiotherapist at the Stroke Research Unit, General Hospital, Nottingham, United Kingdom.

M.A. HARRISON

M.A. Harrison, M.C.S.P., District Manager of Physiotherapy Services in Nottingham, is based at the University Hospital, Nottingham, United Kingdom.

This paper precedes the authors' paper, 'Care for Stroke Patients — Against Whose Yardstick Should We Measure', published in *Physiotherapy*, 1985, 71 298-300

For many stroke patients a substantial handicap remains after a complete stroke and since the average life expectancy of such patients is about three years (Evans 1981) this disability presents a formidable challenge to those who have to look after and treat them. Much 'therapist time' is devoted to stroke care, much of it ill-directed and probably not cost-effective (Garraway *et al* 1980). A United States government draft report on outpatient physical therapy treatment has suggested that one-third of outpatient treatments in thirty facilities studied in 1982 were unnecessary. This report cited an example of a stroke patient who continued receiving treatment over a four year period without the patient responding (*American Physical Therapy Association* 1984). It is very difficult to stand up against such claims unless proper records are kept on the

patient's progress and on the exact nature of the therapy. This may not always be easy to achieve in a busy physiotherapy department.

Papers on principles of sound practice in stroke care are continuously published (Randle *et al* 1984, Boyle 1984) but very little objective examination of patients with neurological disorders has taken place (Ashburn 1982), though the necessary evaluative tools have been published (Lincoln and Leadbitter 1979). Re-education of stroke patients must be directed towards restoring lost abilities and functions and also to achieving the highest quality of life possible (Granger 1975). To be successful the rehabilitation process has to be extended to the family and the community. The role a physiotherapist can play in stroke care is not clearly defined and must

differ greatly from one country to another. Enormous differences in the ratio of physical therapists per population are, for example, likely to have an impact on the services that can be offered. Differences are as extreme as one physical therapist for every 960 to 1000 people in Belgium and Norway to one therapist for every 620,000 people in India (World Confederation of Physical Therapy 1984).

Although in recent years much emphasis has been placed upon the team approach and an overlap of professions is widely accepted, each profession has somehow to define its specific role in stroke care and share it with other professionals. The physiotherapist will be on the front line in the rehabilitation of stroke patients. Very often he/she will be the only professional who will see the patient

on a regular basis for a long time and therefore play a special role in the rehabilitation team. To our knowledge there are so far no studies available where a detailed analysis of the role of the physiotherapist in stroke care has been attempted. This paper is proposing to address the way physiotherapists conceptualize problems, and which types of problems are the 'domain' of the physiotherapy department. This was possible because Problem Oriented Medical Records (P.O.M.R.) were used.

The system of Problem Oriented Medical Recording initiated and developed by Weed (1964, 1969, 1979) was introduced to a group of physiotherapists in Britain in 1976 by Professor N. Watts. Until 1978 physiotherapy records in the South Nottingham Health District were documented in a source orientated format. Problem Oriented Medical Recording is designed around the problems of the patients and consists of 3 basic components: (1) the P.O.M.R.; (2) the audit (or peer review); (3) the educational programme. For the purpose of this study only the P.O.M.R. will be discussed and this only in relation to physiotherapy records. In the P.O.M.R. there are 4 elements: (1) the data base; (2) the problem list; (3) the initial plan; (4) the progress notes.

This study is limited to the problem list which is the key to the P.O.M.R. It is a list of clinically significant events and highlights the factors which might affect management (Petrie and McIntyre 1979, McIntyre 1973). The problems recorded in physiotherapy notes for a defined group of stroke patients are listed in several categories. This will give some idea as to which issues physiotherapists directed their attention for this group of hospital patients. We will discuss whether keeping records in P.O.M.R. format is worth the effort or if the enthusiasm has been tempered by seeing it in oper-

ation, as has been suggested by Dunea (1978).

Methods and Materials

Subjects

The physiotherapy records of 156 stroke patients were reviewed. All patients were admitted in 1982 to the acute medical wards of the University Hospital, Nottingham, and referred to the physiotherapy department. The patients ranged in age from 40 to 95 years (mean age 71.9 years, SD = 10.2). Seventy-eight were male and 78 female. Seventy-nine had a right hemiplegia and 77 a left. Forty-seven patients (30.1%) died. The duration of stay in hospital ranged from a few days to several months.

Procedure

Because the P.O.M.R. was applied it was conceivable to compile an extensive list of all recognized problems. The problem list in the physiotherapy notes has two different columns specifying the dates when each problem was identified or active and when inactive or resolved. If at any time a solved problem became active again or new problems arose the list was further extended. No further information in this format was available after the patient had left this main hospital. Physiotherapy departments in other hospitals of the same district were using source orientated recording and other medical and paramedical departments in the same hospital were not using the P.O.M.R. Therefore no reflection of the other professions could be given in the analysis of the results.

A simple frequency count was made of all the problems recorded in the 156 records. All these problems were then summarized under 16 clinically meaningful categories and ranked in order of occurrence. One problem can only be allocated into one category at the time but theoretically it is possible to have problems in each of the sixteen categories.

For each of the 16 categories the number of problems reported to be

resolved on discharge from the main hospital was calculated.

Results

Overall 1338 problems were recorded in the physiotherapy records of 156 stroke patients. The mean number of problems per patient was 8.6 (SD = 4.1). This extensive list was summarized in 16 clinically meaningful entities which are lined up in hierarchical order of occurrence in Table 1. The first six categories made up 77.7 per cent of the entire problem index, and these comprised lack of active movement and mobility (25.7%), imbalance in muscle tone (19.5%), problems in maintaining balance (15.0%), general medical problems related to the stroke, cardiac and vascular conditions (7.2%), speech problems (5.5%) and respiratory problems (4.8%).

About one third of the problems were reported as resolved when the patient left the main hospital (see Figure 1). The problems recorded in the first month after the onset of stroke were separated from those occurring at a later stage (see Figures 2 and 3). Of all the problems set out in the first month 36 per cent were resolved before the patient left hospital, 25 per cent in the first month after the stroke and 11 per cent at a later stage. Of the problems featured later than one month

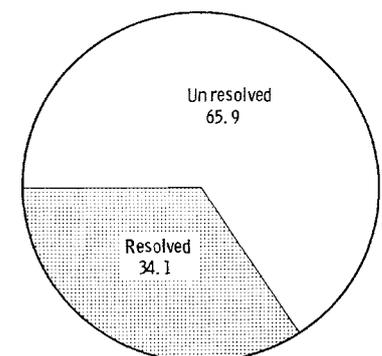


Figure 1: Percentage of the total number of problems recorded in physiotherapy problem lists and reported as resolved or unresolved on discharge. N = 1338 problems.

Problem List of Stroke Patients

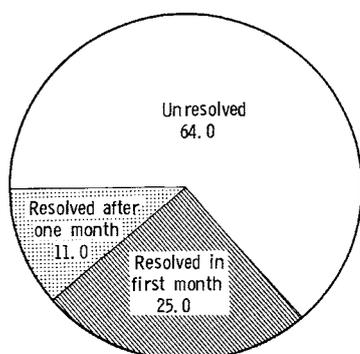


Figure 2: Percentage of the total number of problems recorded in physiotherapy problem lists identified in the first month after onset of stroke and reported as resolved or unresolved on discharge.
N = 1228 problems.

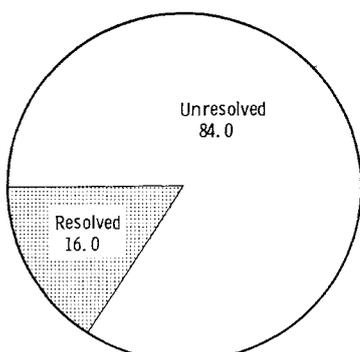


Figure 3: Percentage of the total number of problems recorded in physiotherapy problem lists identified more than one month after onset of stroke and reported as resolved or unresolved on discharge.
N = 110 problems.

post stroke a success rate of only 16 per cent was achieved. The six categories of problems recorded most frequently at this later stage are listed in Table 2. Pain-related problems (mostly painful shoulders) and general medical problems (mostly oedema in arm or leg) were more frequently recorded than the problems occurring in the first month post onset stroke.

Table 1: Categories of problems as recorded in P.O.M.R. and proportion of the total number of problems (N = 1338)

Lack of active movement and mobility in general	25.7
Imbalance in muscle tone	19.5
Problems in maintaining balance	15.0
General medical problems related to the stroke, cardiac and vascular conditions	7.2
Speech problems	5.5
Respiratory problems	4.8
Psychological and behavioural problems	4.1
Pain related problems	4.0
Loss of co-ordination and sensory impairment	3.4
Facial weakness, dribbling, swallowing problems	2.6
Altered level of consciousness	2.2
Perceptual problems	2.1
Incontinence	1.8
Difficulty with activities of daily living	1.1
Social and family problems	0.8
Miscellaneous (e.g. blindness, O.A., . . .)	0.2
	100.0

Table 2: Categories of problems recorded more than one month post stroke and relative proportion (N = 110)

Categories	Percentage of total number
Lack of active movement and mobility	23.6
Pain related problems (mostly painful shoulders)	20.0
General medical problems (mostly oedema)	16.4
Imbalance in muscle tone	12.7
Loss of co-ordination and sensory impairment	6.4
Psychological and behavioural problems	3.6
	82.7

Twelve of the problems listed in the index occurred in at least 18 per cent of patients (see Table 3). The proportion of resolved problems was high for sitting and standing balance, walking, independent mobility and decreased tone in arm and leg. Lack of voluntary movement in arm and leg, spasticity in arm and leg, facial weakness and expressive dysphasia were more frequently the remaining problems. The overall poor success rate (Figures 1-3) has to be judged in view of the on-off scale used. Partial improvements are not indicated.

Discussion

It has been stressed by Weed (1964) that no one should have the freedom to be disorganized and incomplete in collection of data and thereby bury it forever. Notes must contribute to continuity of care (Jones 1981) and present facts proving that the professional service is of acceptable standard at a minimum cost (Weed 1979, Kham and Howroyd 1976, Richardson 1979) more so because high productivity does not preclude quality (Bohannon 1984). The P.O.M.R. system has been advocated

Table 3:
Number of patients with a problem as indicated in P.O.M.R. Only problems taking place in at least 18% of all 156 patients are recorded. The percentage of problems resolved on discharge is indicated.

<i>Problems identified in P.O.M.R.</i>	<i>Number of patients with this problem recorded (and %)</i>	<i>% of problems reported to be resolved on discharge</i>
Lack of voluntary movement in the arm	97 (62%)	19
Lack of voluntary movement in the leg	91 (58%)	22
Poor standing balance	81 (52%)	65*
Decreased tone in the arm	75 (48%)	48
Poor sitting balance	62 (40%)	65*
Decreased tone in the leg	61 (39%)	51*
Poor walking	55 (35%)	56*
Increased tone in the arm	53 (34%)	25
Increased tone in the leg	47 (30%)	17
Lack of independent mobility	38 (24%)	55*
Expressive dysphasia	29 (19%)	24
Facial weakness	28 (18%)	18

*Problems solved in more than 50% of all cases.

as a clear and logical way of medical recording (Richardson 1979) and good medical records help clinical decision making. Weed was the first to realise that traditional medical records did not place sufficient emphasis on managing the patient as a whole (Jones, 1981). P.O.M.R. is felt to be superior to the source oriented record. It gives a clear cut picture as to how patients have been managed. It facilitates peer review and research. A retrospective study using P.O.M.R. has been recommended as efficient, rapid and likely to produce valid and reliable results because of the richness of data and specificity of recording. This process is known as audit and can provide information about comparative clinical standards from which educational programmes to remedy deficiencies can be designed (Lee 1982).

Having tried to use the P.O.M.R. we found several shortcomings in the system as it was operated in our department. (1) As the study was retrospective it is very difficult to know if particular problems, such as perceptual problems, either never occur, are not

recognized, or are recognized but not recorded because no treatment strategy was worked out for that particular problem, or if the patient was referred to other departments for treatment of the problem. (2) Because P.O.M.R. was used in the physiotherapy department in isolation and in only one hospital physiotherapists were tempted to include general medical problems in the problem list. For example, neck stiffness, leukaemia, aortic incompetence, myo-cardial infarction, anti-coagulation therapy and left ventricular failure were found to be recorded in the problem list. In doing so the system of P.O.M.R. was not followed through. Medical problems need to be recorded in the data base. For obvious reasons they were not followed by any treatment plan or progress notes. (3) It was sometimes found that problems discussed in the progress notes were not registered in the problem list and problems reported to be resolved in the progress notes were not updated in the inactive column. Such discrepancies make reviews tedious and time-consuming instead of efficient and time-

conserving. (4) Problems were often registered as medical rather than as functional and therefore too general to be of any value. (5) No specific criteria were set to define that a certain standard had to be met before a problem could be said to be solved. For example, in Table 3 'poor walking' was said to be resolved in 56 per cent of all stroke admissions on discharge. To be acceptable, a previously defined standard of walking should be described.

The authors feel that most of these problems could be overcome if a flow chart was added to the notes. The flow chart should give a list of problems in functional terms and define preset levels of performance. This is now in use for a trial period.

This study was not concerned with establishing whether the patients' problems were correctly identified and pursued. The main objective was to ascertain which problems appeared most frequently in the physiotherapy records and which types of problems are the 'domain' of physiotherapists. The 1338 problems were summarized into 16 subheadings and listed in order of frequency (Table 1). This inventory indicates to which issues physiotherapy attention was directed. It is, for example, no real surprise to find lack of active movement and mobility in general, imbalance in muscle tone and problems in keeping balance at the top of the list. General medical problems do not belong in the problem list at all. There was an unexpectedly high proportion of problems related to speech but, on the other hand, an improbably small proportion of problems related to simple activities of daily living and perceptual problems. An assumption one can make is that for these problems the patients were referred to other professional groups, such as speech therapists, occupational therapists or nurses. From the patients point of view, activities of daily living and selfcare are certainly of utmost importance and physiotherapist should be involved in the management of these

Problem List of Stroke Patients

problems from the very beginning. It would also be extremely interesting to compile a list of problems as perceived by the patient and to compare this with the professional opinion. It may well be that there is a large margin of difference between the two.

Conclusion

The numerous problems recorded in the physiotherapy notes of 156 stroke patients were mainly concerned with lack of active movement and mobility in general, imbalance in muscle tone and problems in maintaining balance. On discharge one third of the problems were recorded as resolved but there was a wide variation in the success rate claimed for each individual problem.

We must become more effective in our methods of treatment, willing to learn new methods and capable of assessing their value (Lane 1981). The provision of proper care for stroke patients and a meaningful and fair audit will require a definite minimum of structured input of data (Weed 1979). The P.O.M.R. has been developed and geared to facilitate and endorse a rational approach and is

therefore recommended for wider application in physiotherapy recording. Some suggestions for further improvement when applying the P.O.M.R. for stroke patients are discussed.

Acknowledgement

This project received financial support from the Stroke Appeal Committee of Nottingham.

References

- American Physical Therapy Association (1984), Extract from Progress Report, cited in News and Events, *The Australian Journal of Physiotherapy*, (1984), 30(4), 11
- Ashburn A (1982), A physical assessment for stroke patients, *Physiotherapy*, 68, 109-113
- Bohannon RW (1984), Productivity among physical therapists. an evaluation of one department, *Physical Therapy*, 64, 1242-1244
- Boyle AM (1984), The adult hemiplegic patient — a functional approach, *Nursing*, 952-954
- Dunea G (1978), Confusion orientated medical records, *British Medical Journal*, 1: 1686-1687
- Evans CD (1981), The practical evaluation of handicap after severe stroke, *Physiotherapy*, 67, 199-202
- Garraway WM, Akhtar AJ, Hockey L and Prescott RJ (1980), Management of acute stroke in the elderly follow-up of a controlled trial, *British Medical Journal*, 281, 827-829
- Granger CV, Greer DS, Liset E *et al* (1975), Measurement of outcome of care for stroke patients, *Stroke*, 6, 34-41
- Jones FA (1981), Innovations in medical records in the United Kingdom, *British Medical Journal*, 283, 1164-1165
- Kham AU and Howroyd HA (1976), Physiotherapy care audit and peer review, *Physiotherapy Canada*, 28, 163-167
- Lane RE (1981), Team leaders in stroke care — an introduction, *Physiotherapy*, 67, 194
- Lee JM (1982), Methods of collecting data, *Physiotherapy*, 68, 361
- Lincoln N and Leadbitter D (1979), Assessment of motor function in stroke patients, *Physiotherapy*, 65, 49-51.
- McIntyre N (1973), The problem oriented medical record, *British Medical Journal*, 2, 598-600.
- Petrie JC and McIntyre N (1979), *The Problem Oriented Medical Record*, Churchill Livingstone, Edinburgh.
- Randle SJ, McMyn MG and Draper MC (1984), Current Practice in stroke rehabilitation observations on desirable and undesirable practices, *New Zealand Journal of Physiotherapy*, 12, 25-26
- Richardson JA (1979), Problem oriented medical records and patient care audits in North America, *Physiotherapy*, 65, 184-185
- Weed LL (1964), Medical records, patients care and medical education, *Irish Journal of Medical Science*, 6, 271-282.
- Weed LL (1969), *Medical Records, Medical Education and Patient Care*, Case Western Reserve, University Press, Cleveland
- Weed LL (1979), Quality control and the medical record, *Archives of Internal Medicine*, 127, 101-105
- Wood-Dauphinee (1984), Team care following stroke: what does it accomplish? *Physiotherapy Canada*, 36, 17-22
- World Confederation of Physical Therapy (1984), as cited in 'Overview of P T. Statistics', *Physiotherapy Canada* (1984), 36 (1), 49