Peer reviewed article

Rehabilitation in acute stroke patients in German-speaking Switzerland

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Summary

Principles: The aim of this study was to obtain an overview of stroke-specialised rehabilitation facilities in German-speaking Switzerland, as well as the numbers of stroke patients treated. It also focused on the mode of goal-setting and evaluation, and the use of instruments to assess the patient's state and progress.

Method: Out of 28 stroke rehabilitation facilities, 21 participated in a structured telephone interview. Of these, 18 institutions provided full data.

Results: The results show that the facilities (n = 18) vary considerably in numbers of patients treated per year (Ø 124, range 7–500) and length of stay (Ø 40 ± 17.23). Goal-setting and evaluation, including the setting of short term and long term goals, is a common feature. They differ, however, in terms of patient involvement, processes and professions participating in goal-setting and evaluation. A variety of instruments are used for patient assessment at admission and during rehabilitation. Admission to rehabilitation does not rely on standardised patient health status assessment.

Conclusions: Stroke rehabilitation in German-speaking Switzerland embraces a heterogeneous landscape with respect to use of instruments, goal-setting and evaluation process and patient involvement. To facilitate comparison, the same core instruments for assessment and evaluation should be selected and consistently applied. Also, the admission criterion "potential for rehabilitation" should be transformed into a universally and scientifically valid term. The effect of patient involvement in goal-setting on rehabilitation outcome has not yet been investigated. Thus no recommendations can be made for the moment.

Key words: *stroke; rehabilitation; goal-setting; goal evaluation*

Introduction

Stroke is one of the leading causes of death in industrial countries [1–3]. It is the leading cause of acquired disability in adults and has an enormous socioeconomic impact on patients, their families and health services [4–7]. In Switzerland the incidence has been estimated at 150/100 000 [8].This would mean that about 9000 people a year in Switzerland suffer a clinical firsttime stroke. The latest data relate to first ever ischaemic stroke in a geographically defined Swiss region and show an incidence of 143/100 000 [9]. For Germany the incidence is 182/100 000 [10], while that for Austria, where no data are available due to lack of a national stroke register, is estimated at 200–300/100 000 [7]. The variations reported here are reflected in findings from other European regions [11–13] and may be explained by the differing prevalence of risk factors in the general population [14].

Stroke has an acute onset but leaves many survivors with lasting disabilities of moderate to large extent [5, 8, 15, 16] in about one third of all stroke cases [4]. Rehabilitation is considered the predominant approach to helping the individual stroke patient to return to optimal effectiveness in daily life [17–19]. There is evidence that participation in an organised multidisciplinary stroke rehabilitation

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unit achieves better results than the usual care provided on general wards, in outpatient services or in the community [20, 21]. Multidisciplinary team meetings are a key component in providing a forum for patient introduction to the team, multidisciplinary assessment, problem identification, setting of short term and long term rehabilitation goals, and decision-making [20].

The British National Guideline for Stroke recommends assessing and reassessing patients by standardised instruments. Further, meaningful short term and long term goals should be set which involve the patient and his family if appropriate [22] These recommendations are in line with US Clinical Practice Guideline No.16 Post-Stroke Rehabilitation[1] [23]. Unfortunately no national guideline is available to provide information on existing recommendations in Switzerland.

For German-speaking Switzerland no data have been found on the number of stroke-specialised rehabilitation institutions and the annual number of acute stroke patients who are rehabilitated in these facilities. Likewise, no details exist regarding the use of instruments to measure the course of rehabilitation, nor on established rehabilitation practice in goal-setting and goal evaluation. The aim of this study was to shed light on this topic by posing the following questions:

1. How many facilities rehabilitate stroke patients in German-speaking Switzerland, and what are the figures regarding patient numbers and length of stay?
2. What assessment systems are used to evaluate the patient's state?
3. Are goal-setting and goal evaluation applied in stroke rehabilitation?
4. What persons are explicitly involved in this area?

Method

The study has a descriptive design using a questionnaire. It was set up as a telephone interview of the nursing directors of rehabilitation centres with a structured questionnaire.

Research population

Each stroke-specialised rehabilitation facility in German-speaking Switzerland formed part of the research population. At first an extensive web search was done to identify all neurological rehabilitation facilities in general. Search engines utilised were "Google" (CH Version) and "Metager". The following search terms were used: "rehabilitation" (AND "neurology" OR "stroke") When using "Metager" the search was limited to Switzerland. Two websites in particular provided key information: www.krankenhaus.ch and www.vrks.ch[2]. All links (leading to rehabilitation facilities and acute hospitals) were screened for rehabilitation.

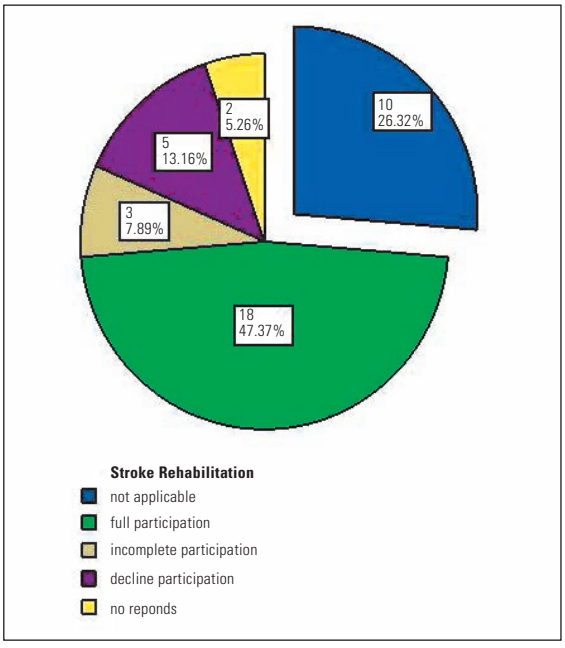


Figure 1

Distribution of facilities inquired (n = 38/100%).

The individual institutions' web sites were then screened for neurological rehabilitation and figures. If the web site contained clues to neurological rehabilitation this institution was included. Where the information was ambiguous, the institution was included for further clarification during the initial contact. The preliminary list of rehabilitation facilities was then checked for completeness with four professionals in neurological rehabilitation and acute settings. They found the list to be complete.

Sample

By searching the internet and interviewing key persons, 38 institutions were identified in German-speaking Switzerland which most probably give treatment to this group of patients. 28 institutions confirmed that they rehabilitate acute stroke patients. Of these, five declined to participate in the survey, citing in particular the disclosure of sensitive organisational data involved. Two more did not reply despite reminders. Data of 21 facilities was collected. Since three facilities had no authority to give full particulars, complete data from 18 institutions were eventually obtained and analysed (figure 1).

Rehabilitation takes place either in specialised rehabilitation clinics (n = 11) or in specialised departments attached to acute hospitals (n = 7). While stroke patients are rehabilitated on designated wards in rehabilitation clinics, the majority of rehabilitation facilities (n = 11) embrace a variety of patient groups (e.g. cardiological, orthopaedic, geriatric, traumatology groups).

Interview and questionnaire

A 14-item questionnaire was constructed (table 1) and then presented to four professionals in nursing management for face validity. They considered the questions complete and clearly worded.

The nursing directors in each rehabilitation facility were contacted by mail. Information on the survey was provided and the questionnaire attached. The letter an-

1 This guideline is currently outdated, see: http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=hstat6.chapter.27305, last retrieval 29. Dec. 2005.

2 Amended to www.swiss-reha.com.

Table 1
Interview questions.

1. How many stroke patients did you rehabilitate in 2003?
2. What was the average length of stay of this patient group in 2003?
3. Where did these patients come from? (particular canton)
4. How were these patients distributed to the particular canton?
5. What admission criteria must stroke patients fulfil to be admitted to your institution for rehabilitation (e. g. severity of stroke, certain extent of functional and / or cognitive abilities)
6. Do you set rehabilitation goals in your clinic?
7. Are the set goals rather short-term and / or long-term goals? (short-term: within the next 4 weeks, long-term: within the next 3 months)
8. Could you please give us two examples each of short and long-term goals?
9. Which professional group sets the goals with whom? (Professional directly with the patient concerned, within a specific professional group, in the interdisciplinary team etc.)
10. Who starts and guides this process?
11. If several professionals set goals, how are the goals coordinated and by whom?
12. Do you evaluate the goals? (Who, when, how and how often?)
13. What instruments do you use to assess stroke patients at admission (e.g. NIHSS; FIM etc.)
14. What instruments do you use to evaluate the patient's progression?

1. Wie viele Patientinnen und Patienten mit einem Schlaganfall wurden in Ihrer Klinik im Jahr 2003 rehabilitiert?
2. Wie lange war die durchschnittliche Aufenthaltsdauer dieser Patientengruppe im Jahr 2003?
3. Aus welchen Kantonen kamen diese Patientinnen und Patienten zu Ihnen?
4. Wie viele Patientinnen und Patienten waren das pro Kanton?
5. Welche Aufnahmekriterien müssen Schlaganfallpatientinnen und -patienten erfüllen, um in Ihrer Klinik zur Rehabilitation aufgenommen zu werden? (z.B. Schweregrad des Schlaganfalls, bestimmtes Ausmass an körperlichen und / oder kognitiven Fähigkeiten usw.)
6. Werden in Ihrer Klinik Rehabilitationsziele festgelegt?
7. Handelt es sich bei den festgelegten Zielen eher um kurzfristige und / oder langfristige Ziele? (Kurzfristig: innerhalb der nächsten 4 Wochen; langfristig innerhalb der nächsten 12 Wochen)
8. Können Sie uns bitte je zwei Beispiele für festgelegte kurz- und langfristige Ziele nennen?
9. Welcher Fachbereich legt die Ziele mit wem fest? (Fachperson direkt mit den Betroffenen, innerhalb einer Berufsgruppe, miteinander im interdisziplinären Team usw.)
10. Wer beginnt und wer leitet diesen Prozess?
11. Falls verschiedene Fachpersonen Ziele festlegen: werden die Ziele koordiniert und von wem?
12. Werden die Ziele evaluiert? (Von wem, wann, auf welche Weise und wie häufig?)
13. Mit welchen Instrumenten arbeiten Sie zur Beurteilung von Schlaganfallpatienten bei Eintritt? (z.B. NIHSS, FIM usw.)
14. Welche Instrumente verwenden Sie zur Beurteilung des Verlaufs?

nounced a telephone contact to check whether stroke patients were rehabilitated in the institution. On confirming this, they were invited to participate in the survey and an appointment for the telephone interview was made. If the nursing director judged another professional in the facility to be more qualified to give this information a reference was given. All interviewees drew on internal data and statistics. The questions regarding statistics generated unequivocal answers. However, answers to questions regarding procedures had to be clarified and differentiated in most cases during the interview. It became clear that much information was identically worded but differed in meaning or vice versa, and varied from place to place [24], e.g. there was no unique definition of the term "rehabilitation potential". On the other hand, "rehabilitation conference" and "interdisciplinary discussion" meant the same, the periodical meeting of professionals involved in the individual patient's rehabilitation process.

The mode of the telephone interview facilitated dialogue and allowed clarification of the answers. The telephone interviews were conducted by the two researchers involved, who were familiar with the research questions and background of the study. During analysis they discussed the interview results in detail.

Data analysis

Descriptive analyses were performed using the SPSS Statistical Package Version 12.0.1. Answers to open questions concerning short-term and long-term goals were analysed by quantitative content analysis and used as nominal data.

Results

Patient numbers and length of stay

Each institution primarily serves a target area of its own site and the neighbouring cantons. Details on catchment areas cannot be given due to the promised confidentiality.

The average number of rehabilitated stroke patients was 124 in the year 2003, ranging from 7–500 a year in the individual facility. Eleven facilities (61.1%) rehabilitate up to 100 patients a year. Three institutions (16.6%) treat up to 200 patients and four facilities (22.2%) between 200 and 500 patients.

Length of stay was 40 days on average, ranging from 10–90 days (SD 17.23). The differences in length of stay can be explained by the type of rehabilitation. One facility provided short term rehabilitation only, while another concentrated on patients with neuropsychological disorders requiring a longer stay.

Admission criteria

For admission no institution uses standardised assessment instruments. Half of the participant institutions employ the admission criterion "rehabilitation potential" of the patients concerned. There is no standardised definition of this term. The other half does not quote on "rehabilitation potential" and admits patients on the basis of medical conditions, e. g. "stable cardiovascular condition" or "spontaneous respiration".

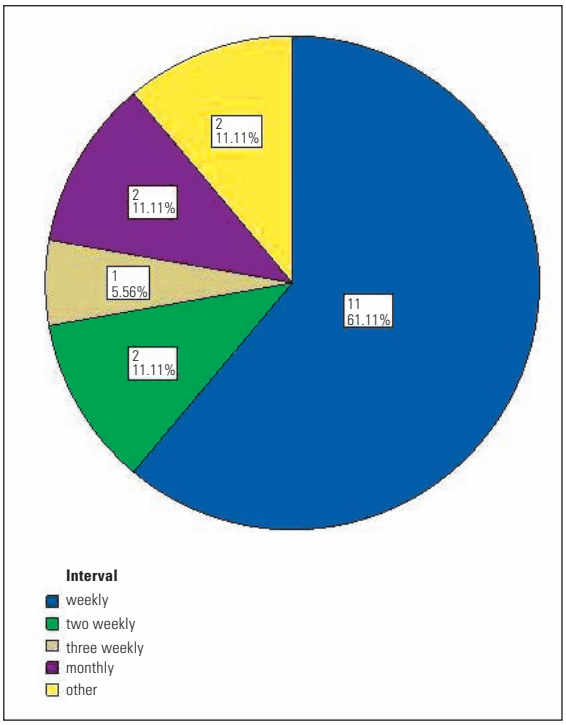


Figure 2

Interval of goal evaluation (n = 18/100%).

Process of goal-setting, coordination and evaluation

The goal-setting approach is employed by each institution in an analogous manner. Goals are set within two different time frames, and are termed short term goal or long term goal respectively. Short term goals are set stepwise to be attained during the inpatient period. Long term goals refer to the time after discharge and correspond to the various short term goals.

In all participant settings (n = 18) short term goals are in line with activities of daily living. Functional abilities and skills are most important, focusing on mobility, personal hygiene, elimination and nutrition.

In all cases (n = 18) long term goals focus on discharge to the patient's place of provenance whenever possible. The informants stated that patients must acquire functional abilities that are geared to their domestic environment, e.g. climbing stairs, independent bathing and dressing. The domestic environment will be adapted to the patient's functional potential and devices are supplied. Personnel resources will be evaluated and if necessary recruited. This relates to significant others and outpatient care.

A multidisciplinary approach to set the rehabilitation goals is standard practice in all settings (n = 18). The procedure in setting, coordinating and evaluating rehabilitation goals differs between facilities. Responsibility for this process attaches to physicians except in two facilities. In these the process is linked to the position of a rehabilitation coordinator or to a nurse. The following professions at the minimum are involved in the process of goal-setting and goal evaluation in all settings: nurses, physicians, physiotherapists, occupational therapists and speech therapists (n = 3). In other institutions one (n = 4) or more (n = 11) professions are involved. These are neuro-psychologists and/or social workers.

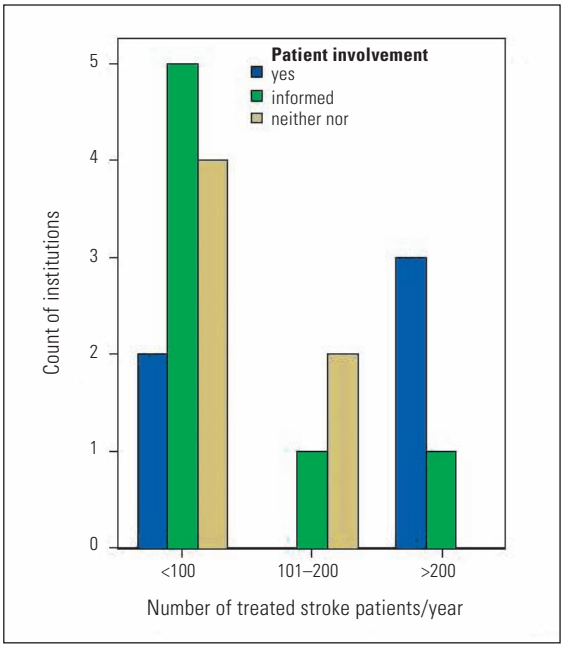
The stipulated rehabilitation goals are periodically evaluated in every institution. The evaluation intervals are between one and several weeks (figure 2).

In contrast to the multidisciplinary goal-setting activities, the current practice of goal evaluation follows a monodisciplinary, profession-specific approach. The process of goal evaluation is within the province of each profession in charge, e.g. physiotherapy for mobility training. To evaluate progress each profession uses its specific assessment instruments. All results are then fed back to the multidisciplinary team for possible adaptation.

Involvement of patients and significant others

Figure 3

Patients' involvement and number of treated stroke patients/year.



In five facilities patients are directly involved in the goal-setting process. In a further seven institutions they are explicitly informed of the goals set by the professionals beforehand. The third option (n = 6), in which patients are neither directly involved in goal-setting nor informed afterwards, seems to be more commonly practised in settings with a patient ratio <200/year. On the other hand, there is no direct patient involvement in facilities with a patient ratio between 100 and 200 patients/year (figure 3). Thus the number of stroke patients treated per year cannot be unequivocally related to the mode of patient involvement practice.

Significant others are directly involved in goal-setting simultaneously with the patient in only two facilities. In a further six facilities they will be informed while patients themselves are either directly involved or informed of stipulated goals (table 2).

Assessment systems

The patient's status at admission and during rehabilitation is assessed with various instruments (table 3). They can be grouped into four domains: functionality, severity of stroke, quality of life, profession-specific tests. The most used instrument to assess functionality is the "functional independence measure" (FIM) (n = 11). Other institutions use the Barthel Index (BI) and/or the Extended Barthel Index (EBI) for this purpose. The International Classification of Functionality (ICF), though developed for classification, is often used (n = 6) but always in combination with one of the instruments mentioned above. Only five facilities reassess the severity of stroke (Rankin Scale, NIHSS), and only two assess quality of life (SF-36). For profession-specific rating the choice of instruments varies. Except for nursing-specific instruments (AEDL, LEP, Nursing Diagnosis),

Table 2

Involvement of patients and significant others.

		Patient Involvement			
		Directly involved	**Informed**	**Neither/nor**	**Total**
Involvement of significant others	Directly involved	2	0	0	2
	Informed	2	3	0	5
	Neither/nor	1	4	6	11
Total		5	7	6	18

Table 3

Assessment systems.

	Applied at admission only	**Applied during course only**	**Applied at admission and during course**
	Frequency	**Frequency**	**Frequency**
FIM			11
BI			3
EBI			5
ICF			6
Rankin			1
NIHSS	1		3
SF-36		1	1
Profession-specific *	2	1	8
Nurse-specific	3	1	4

* e. g. Mini Mental State Exam, Tinetti, Olson Motorcup, Jesevic Hand Grip, Early Functional Assessment

which are applied in a standardised way, i.e. with each patient, the application of all other profession-specific instruments is not standardised but depends on the individual case and the appraised necessity.

Discussion

The data collected reveal an inhomogeneous stroke rehabilitation landscape in German-speaking Switzerland, showing both common features and differences. All participant facilities reported working with rehabilitation goals adopting a multidisciplinary approach through the practice of team conferences. These issues have been introduced in the last decade in response to published recommendations.

The participant institutions differ in numbers of stroke patients treated per year and in the rehabilitation focus. The differing lengths of stay reported here cannot only be explained by the varying focus in stroke-specific rehabilitation, e.g. neuropsychological vs. functional rehabilitation, but probably also by varying patient profiles. Each stroke patient has unique combinations of problems and strengths which render rehabilitation an extremely complex process [24]. Patients' characteristics play a key role, not only in terms of physiological variables but also in terms of psychological characteristics, and exert a strong impact on the rehabilitation process, outcomes and quality of life [25–30]. Lengths of stay may also be strongly influenced by the local health system [31].

Multiple general instruments exist to measure aspects of health status and functional abilities, as well as stroke-specific measures. Nevertheless, admission relies on subjective evaluation of "potential for rehabilitation" and also depends on organisational conditions. In contrast, rehabilitation outcomes are frequently evaluated with standardised instruments.

"Potential for rehabilitation" seems to be a widely used clinical term. The lack of a conceptual and operational definition implies that this term is not used consistently among health care professionals. It could be assumed to approximate to the Algorithm for Placement for Rehabilitation Care after Stroke [23], which requires a medically stable patient showing a certain level of impairment but who can be expected to participate in therapies. The quality of judgement at this early stage of rehabilitation will depend greatly on precise information about the course of the patients' acute phase. Thus good cooperation between acute hospitals and stroke rehabilitation facilities is indispensable in enhancing comprehensive treatment strategies.

Different instruments are used to assess a patient's status on admission, progress during rehabilitation and outcome. In all institutions the focus lies on the appraisal of functional abilities and skills, and different instruments are used for this purpose. The internationally established instruments FIM [32] [33] and Barthel Index [34] or Extended Barthel Index [35] are most widely used here. Stroke has a lasting impact on the patients' quality of life [36, 37] and, in its turn, rehabilitation aims to enhance this parameter considerably. It is measured in two settings only. Both the presence of several instruments and the lack of defined admission criteria hamper scientific evaluation of stroke rehabilitation data across institutions.

The interviews show a trend towards using the "International Classification of Functionality" [38] more often, not only to assess patient status but to organise interdisciplinary communication and cooperation with respect to goal-setting and goal evaluation [39, 40].

All participant rehabilitation institutions work with the concept of goal-setting and goal evaluation. There is no insight yet into whether the concept is consistently understood and applied. What is known from the survey is that the individual goal-setting processes are alike in their multidisciplinary approach and main procedures: assessment, goal-setting, reassessment, and goal adaptation. Remarkably, physicians predominantly coordinate the main pocedures. However, the mode and frequency of patient assessments during rehabilitation vary between institutions. The statement as one sentence possibly emphasise a relation not supposed.

The direct involvement of patients and their significant others in the process of goal-setting is uncommon. If involved at all, patients and their significant others are usually merely informed of the rehabilitation goals, a policy contrary to the guidelines' recommendations [22] and not in line with the concepts of patients' self-management and responsibility for themselves [41, 42].

The differences ascertained in admission criteria, use of instruments, and in the process of goal-setting and goal evaluation complicate direct comparison of these aspects in rehabilitation outcomes of stroke patients. The observed lack of consensus and of standardised scientifically based approaches would indicate an urgent need for generally accepted recommendations or guidelines in stroke rehabilitation facilities of German-speaking Switzerland.

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