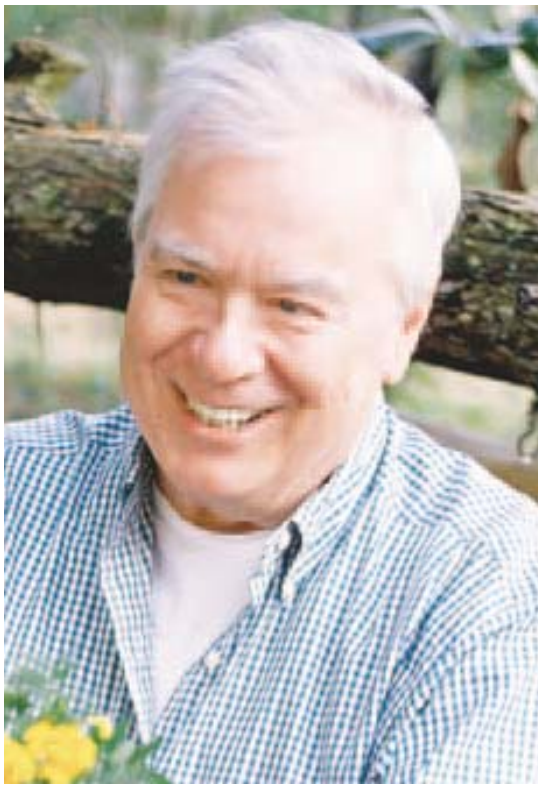
Road to Recovery

Key factors for elderly stroke patients



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In this article:

1. **What are the benefits of stroke rehabilitation units?**
2. **How to identify rehabilitation outcome predictors.**
3. **How does age affect rehabilitation?**

Case Study

Mr. S. suffered a non-hemorrhagic stroke five days ago. The lesion is moderate in volume; located on the left side (he is right-handed); and encompasses the prefrontal area, subcortex, and the region around Broca's area. The distal portion of the right upper extremity is paralyzed, but he can move his lower extremity. He is severely dysarthric, presents with dysphagia, and shows clear signs of discouragement. The admissions coordinator asks you if he is a candidate for rehabilitation because there is room available.

Despite major advances in our understanding of the pathophysiology and prevention of stroke, we are still faced with the irreversible damage that patients must learn to live with once the event has occurred. Approximately 4.1% of all individuals over 65 years live at home with sequelae of stroke. In view of our aging population, this would seem to indicate an increase in the incidence of stroke. Given the financial austerity health care is now facing, we must be able to recognize factors that indicate the prognosis for rehabilitation following a stroke. This allows us to set realistic objectives, and properly refer each patient to an appropriate resource.

Stroke Rehabilitation

What is the natural course?

Functional rehabilitation relates to the consequences of illness on a person's daily activities. Its main objective is to seek maximum autonomy, and encourage the development of patients' residual physical, cognitive, and emotional potential, regardless of the degree of impairment. This can be done in various settings, from the acute care hospital to the actual rehabilitation unit. An interdisciplinary approach is favoured, and is usually the basis for action taken to achieve rehabilitation objectives.

When gauging the relevance of rehabilitation, the natural course of stroke has to be understood. It is estimated that approximately 50% of patients will recover their functional autonomy, 35% will have sequelae that partially limit their autonomy, and 15% will remain dependent. Functional recovery is rapid during the first two weeks after damage has occurred and does not seem to reach a ceiling, even though little improvement is realized after six months. For a list of the various levels of recovery, please see Table 1.

Table 1
Patient Recovery Statistics

At three months:

- 64% can walk alone
- 61% can dress themselves
- 54% can feed themselves
- 65% are continent
- 68% are able to move around
- 65% will have returned home (77% at one year)
- 27% will be in a geriatric unit (14% will still be there at one year)

- 84% under the age of 65 will recovery their autonomy following a stroke vs. 52% over the age of 65
- 90% under the age of 65 will live at home (depending on age) vs. 66% of those over the age of 65

Table 2
Treatment outcomes in rehabilitation units

- 20% decrease in institutionalization
- 16% increase in returns home
- 21% decrease in mortality
- estimated 25% decrease in hospital stays

What are the benefits of rehabilitation units?

Although post-stroke rehabilitation can take place in more than one setting, it still appears that functional rehabilitation units have the best results. A number of studies confirm this conclusion, including Jørgensen et al. who compare the outcome of treatment in a rehabilitation unit versus a standard medical unit (Table 2).[1] The beneficial effects of the rehabilitation unit seem to go hand in hand with the use of a standardized assessment program, early initiation of rehabili-

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tation, management oriented towards specific objectives, supervision by a multidisciplinary team, and regular assessment of gains made.

How to predict rehabilitation outcome

A number of factors have been suggested as predictors of rehabilitation outcome. Although some of these factors have shown their value in studies with appropriate methodology, the predictive value of others is doubtful (Table 3).

Age

A multicentre European study conducted by Di Carlo et al. reported that prior to their stroke, patients over 80 years old were more handicapped, and had a more serious clinical presentation.[2] At the same time, these elderly individuals underwent fewer diagnostic tests and therapeutic interventions. Disability and handicap predictive factors for those over 80 years old were pre-stroke placement, severity of the paralysis, urinary incontinence, and dysphagia. Predictors for those who were younger, however, were comorbidity, severity of paralysis, incontinence, and dysphagia. The study raises questions because, as can be seen in clinical practice, age often justifies a less aggressive approach which may well affect the impact of studies designed to measure the effect of rehabilitation in a normal clinical context. A number of studies thus report a negative association between age and rehabilitation outcome.

A review of the literature by Jøngbloed concludes that the prognostic value of age is not

Age should not be used as a predictor of rehabilitation outcome.

Stroke Rehabilitation

Table 3
Key predictive factors of rehabilitation outcome

• age
• gender
• comorbidity
• stroke severity
• stroke type and location
• type of neurologic impairment
• cognitive problems
• urinary incontinence
• family support
• functional and balance scales
• admission time
• rehabilitation settings
• medication, and imaging

clear. It also concludes that it is difficult to differentiate between the effect of age and that of accompanying comorbidities.[3] A recent study by Bagg et al. showed that age was not related to the change in function indicated by the functional independence measure (FIM).[4] Consequently, age should not be used as a predictor of rehabilitation outcome and access to rehabilitation for the elderly must not be restricted based on age alone.

Gender

Most studies do not demonstrate any relationship between gender and stroke outcome.[3] Some studies tend to show a favourable outcome in males, perhaps because they were accompanied by a spouse. It is also more common for females to reside in a nursing home prior to their stroke, reflecting a prior loss of autonomy.

Comorbidity

Stroke antecedents have a negative impact on rehabilitation, possibly because of cumulative neurologic, cognitive and function deficits.[3,5] The predictive value of other conditions is less certain. Multiple comorbidities have a greater impact on the outcome than a single comorbidity.[6]

Stroke severity

Measurement of stroke severity varies from study to study, making interpretation difficult. It seems to be agreed that an altered state of consciousness during the first 48 hours and significant neurologic impairment have a negative influence on rehabilitation outcome.[3,5] It should be remembered that patients can potentially recover from even severe stroke, particularly if neurologic recovery is present after one week.

Type of stroke and location

Lacunar strokes appear to have the most favourable prognosis for recovery. Although hemorrhagic stroke initially has an elevated mortality rate, it also seems to have a good potential for recovery, but requires prolonged rehabilitation.[6] The impact of stroke lateralization on outcome is less clear. Jøngbloed reported in his

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review of the literature that there was no association between stroke side and autonomy at discharge.[3]

Type of neurologic impairment

Motor Impairment

The prognostic value of the severity of paralysis is debated in the literature. Jøngbloed states that the variety of ways used to measure severity limits any conclusions that can be drawn.[3] Several authors conclude that motor impairment does have a predictive value. These include Kwakkel who, in his review, reiterated the prognostic value of the degree of motor impairment with respect to the functional outcome of rehabilitation.[5]

Perceptual Deficits

The presence of visual neglect seems to have a negative effect on rehabilitation and is, above all, a good indicator of a prolonged stay in the setting concerned. Jøngbloed also considered visual/spatial deficits as adverse factors to rehabilitation.[3]

Cognitive problems

The presence of cognitive impairment upon admission to rehabilitation seems to be a predictor of functional gain. Patients with lower mini-mental state exams (MMSE) performance make fewer gains, and their rehabilitation prognosis is unfavourable. It should, however, be noted that individuals with cognitive impairment can, nonetheless, benefit from rehabilitation. Other studies will be necessary to determine the degree of cognitive impairment that truly limits the rehabilitation process.

Incontinence

Several studies report the value of urinary incontinence as a predictor of rehabilitation outcome. Jøngbloed states that urinary and fecal incontinence upon admission indicates a poor prognosis.[3] Barer noted that patients who have regained continence at one month had more than an 80% chance of living at home in six months, even if they were over 80 years old.[7] There was also a relationship between bladder control and motor/function recovery: the improvement in continent patients was significantly higher than in those who were still incontinent at one month.

Stroke Rehabilitation

What would I do?

- Rehabilitation is a complex process, and a number of its mechanisms have not yet been elucidated. Demographic, pathologic, functional, and social factors have been considered in an attempt to determine the prognosis of rehabilitation.
- These factors must be seen early on (two to three weeks) following a stroke to retain their validity. These factors are helpful in setting rehabilitation objectives and making decisions to refer patients to a more intensive or less intensive rehabilitation facility. They are, however, only guidelines, and do not fully address rehabilitation outcomes.
- It can be stated that a patient with several risk factors will require an extended period of rehabilitation and will achieve a lower functional level, with all the consequences that denotes for referral.
- We believe that patients with several poor prognostic factors should be referred directly to a nursing home once they become stabilized.

Family and social support

There is a strong presumption that strong family and social support have a positive effect on functional rehabilitation and speed of recovery, but there is still no clear scientific evidence concerning this.

Functional and balance scales

Functional Scores

Jøngbloed mentions, in his critique of the literature, that there was a positive correlation between the functional score at admission and at discharge.[3] However, it appears that the relationship between this score and improvement in function during rehabilitation is less clear.[3]

Ween et al. reported the usefulness of the FIM in predicting rehabilitation outcome. In this study, it was virtually a certainty that a patient admitted with an FIM higher than 80 would return home; whereas an FIM lower than 40 at admission was associated with a stay in a nursing home. A score of over 60 at admission was associated with a higher functional gain during rehabilitation. Based on these observations, Ween et al. suggested the following: patients with an FIM higher than 80 should be rehabilitated at home; those with an FIM lower than 40 should receive less intensive rehabilitation; and the 40 to 80 group should be referred for intensive rehabilitation.[6]

Balance Scores

Balance difficulties when sitting are a predictor of a poor rehabilitation outcome.[5]

Rehabilitation admission period

Post-stroke rehabilitation is more rapid and most effective during the first months.

Rehabilitation setting

As mentioned, function rehabilitation units improve functional prognosis, shorten hospital stays, and decrease mortality. These data are valid for patients with moderate to severe deficits. Few studies have compared rehabilitation units with rehabilitation methods other than those used in a standard medical unit.

Medication

Pharmacologic agents that increase brain noradrenaline levels appear to have a beneficial effect on motor recovery. Methylphenidate is one agent that uses this mechanism and seems to improve symptoms of depression, as well as functional independence. A recent study suggests that levodopa in combination with physiotherapy can accelerate motor recovery in hemiplegic patients. Conversely, other drugs, such as benzodiazepines, dopaminergic receptor antagonists, anticonvulsants, clonidine, and prazosin, have a harmful effect on rehabilitation because of their modulation of gamma-aminobutyric (GABA) or noradrenaline metabolism.

Imaging

Although interesting, the data presented do not justify the use of imaging in predicting the functional outcome of stroke because of cost and limited access. CME

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Suggested Reading

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