

# STROKE REHABILITATION

*Rehabilitation is an important aspect of the management of stroke.*

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Stroke is the most common neurological condition necessitating admission to hospital, with significant rates of mortality and morbidity. Risk factors for the development of stroke are well known, some of the more common being smoking, uncontrolled hypertension, diabetes and hypercholesterolaemia. Some or all of these risk factors are of major importance in South Africa's various peoples. From the point of view of public health, stroke prevention is of major importance. This involves extensive education programmes and lifestyle modification advice. However, once a patient develops vascular disease and suffers the consequences of this in the form of stroke, ischaemic heart disease and peripheral vascular complications, therapeutic measures are appropriate. These include treatment of the acute event and any medical complications, followed by an attempt to rehabilitate the patient to the point of independent living and, where possible, resumption of work.

The purpose of this article is to discuss the rehabilitation of patients who have suffered from ischaemic or haemorrhagic strokes. Issues to be discussed will centre around the management of acute stroke with particular emphasis on the techniques of rehabilitation.

Rehabilitation of patients who have had strokes begins in the acute post-stroke phase. The initial medical priorities are to make the correct diagnosis and to attend to any co-morbid problems, such as hypertension and diabetes. Therapy for ischaemic strokes almost always requires the use of antiplatelet therapy or, where necessary, anticoagulation. More recently, thrombolytic and vascular interventional modes of treatment have become available.

In the present setting of medicine in South Africa (particularly in the private sector), the sequence of events that follow admission to hospital is partly dictated by the medical funding industry. Length of stay in hospital following acute stroke is often limited by the medical aid and the right to intensive neurological rehabilitation is also to some extent dictated by the medical funder.

Ideally, after suffering an acute stroke, the patient should be treated in a dedicated stroke unit. It has been clearly shown that rates of morbidity and mortality are lower in these units compared with those in general medical wards. The length



of stay should be determined by the particular circumstances of the patient (and not the protocols of the medical funder).

Rehabilitation should be seen as a continuous process, starting in the acute phase immediately after the stroke, and

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continuing as long as the patient is progressing and until the condition stabilises. This may take as long as 2 years. All aspects of therapy need to be available to the patient, namely physiotherapy and occupational and speech therapy. Once the patient's condition is stable, he/she should be transferred to a dedicated stroke rehabilitation centre. There are several rehabilitation units in South Africa. For various reasons (largely financial), the existing units are geared to treat not only stroke patients, but also patients with spinal injuries, head injuries and other medical conditions such as Guillain-Barré syndrome and orthopaedic problems. It is in the *acute rehabilitation* unit that intensive therapy begins.

The goals of therapy are determined by the nature of the patient's condition and the circumstances particular to that person. Wherever possible, independent living and return to pre-morbid existence is the ultimate goal of therapy. In less fortunate patients who will not recover sufficiently for this, it is important to strive for reintegration into family/community life with the *least possible burden of care* for the family. Where this is not possible, appropriate

placement and the training of caregivers becomes a realistic objective.

Although rehabilitation is a continuous process from onset of stroke through to a time when the patient has achieved maximum function, the different phases of management can be practically divided into three segments:

- acute post-stroke phase (hospitalisation)
- intensive rehabilitation (rehabilitation unit)
- long-term therapy.

This final phase usually occurs once the patient goes home and begins to reintegrate back into home life and possibly returns to work.

### ACUTE POST-STROKE REHABILITATION

This phase usually occurs in hospital and, as mentioned above, should ideally be in a dedicated stroke unit under the care of a neurologist.

#### Therapy priorities

- In the acute post-stroke phase, endurance will often be poor and therapy will have to be adjusted accordingly.
- Respiratory function should be assessed to ensure that there is adequate protection of the airway and that the risk of respiratory infection is minimised.
- Aspiration of saliva and food/liquid is a fairly common problem, particularly in brain-stem strokes but also in large-hemisphere strokes.
- Look out for the possibility of pseudobulbar palsy in patients who have had previous strokes.
- It is advisable to use a speech therapist to assess swallowing. If there is any doubt about the patient's safety, a barium swallow may help to identify aspiration. Where these facilities are not readily available it is preferable to use nasogastric feeding until the situation is clarified. Frequent suctioning of saliva and attention to posture will also provide protection to the respiratory tract.
- Regular use of nebulisation and chest physiotherapy plays an important

role in this and later stages of therapy. The physiotherapist will also assist with positioning the patient with special attention to the hemiparetic chest to encourage adequate ventilation.

- If chest infections do occur, early detection and rapid treatment with appropriate antibiotics is important.
- If swallowing is impaired, a choice must be made between nasogastric tube feeding or percutaneous endoscopic gastrostomy (PEG) feeding. If the problem is going to be a short-term one then a nasogastric tube may be the best option. If a long-term problem is anticipated then insertion of a PEG is advisable. Both types of tube feeding usually require the use of commercially prepared liquid feeds. Accurate calorie and fluid volumes are easy to determine but these feeds are costly. It is important to inform visitors and family members of the patient's swallowing problems and that they should not feed the patient – a very tempting habit for caring family members.
- Action should be taken from the very beginning to prevent pressure sores. The techniques of frequent turning, appropriate mattress selection and above all vigilance are well known but sadly not always well practised. Apart from anything else, increased patient morbidity and higher cost are major consequences of pressure sores – prevention is not that difficult.
- Aphasia (or dysphasia) is a common consequence of stroke. The resultant frustration is enormous for the patient, the family and the nursing staff. Early intervention by the speech therapist using communication devices may be helpful. This should start in the early phase of rehabilitation.
- Evaluation by speech and occupational therapists to assess the degree of cognitive impairment will also be useful in planning future therapy.
- If patients are not able to move, passive movements should begin early to prevent stiffening of joints and later contractures.
- Once the patient's condition is stable and all the medical problems have been attended to the patient may be moved to a rehabilitation unit.

*Once the patient is mobile and reasonably safe, therapy may be continued as an outpatient.*

*Botulinum toxin has become a very important tool in the treatment of spasticity.*

### INTENSIVE REHABILITATION

As mentioned above, on admission to the rehabilitation unit, the patient's endurance may be limited. Frequent rests from therapy and interspersing different modes of therapy may be useful ways of overcoming this problem. Although the issues discussed in the previous section are still applicable, the main aim of (physical) therapy now centres around mobility, self-care and safety. Specific techniques employed by therapists are beyond the scope of this article. However, a broad outline of the methods and aims is given below.

#### From the physiotherapist's perspective

- Early mobilisation facilitates ventilation and may help to prevent hypostatic pneumonia.
- Positioning onto the affected side helps develop awareness of that part of the body.
- Where possible, feeding should be done with the patient sitting out of bed. If this is not possible then sitting upright in bed is recommended.
- Frequent changes in posture help to re-establish tone.
- Careful support of the weak arm on pillows helps to prevent painful shoulder subluxation.
- Mobilisation – in the most severely affected patients, sitting balance is the first step in mobilisation. Later, encouragement to stand may require the use of either a tilt table or a standing frame. This will progress to assisted ambulation in parallel bars and later to assisted walking. The use of an AFO, walking frame or crutch will be decided by the therapist.

#### From the occupational therapist's perspective

- Early assessment of the home environment will enable any modifications to be done before the patient is discharged.
- Understanding the family structure will also facilitate planning of future care that may be required.
- Cognitive deficits should be assessed and appropriate programmes initiated to overcome particular problems.
- Therapy to improve awareness and concentration is started.
- Self-care is important. Participation in activities of daily living is encouraged.
- Upper-limb mobility and strengthening are important.
- As therapy progresses, the prospects of the patients returning to work need to be considered. If premorbid function is not regained, then the type of work should be modified or retraining planned to enable the patient to undertake some form of gainful employment.
- A full work assessment may be required, but this is usually done at a much later stage.
- Decisions on medical boarding should never be taken lightly and, where possible, should be delayed until a clear and accurate prognosis can be given.

#### From the speech therapist's perspective

- As already mentioned, early intervention to assess swallowing safety and communication skills is vital.
- If the patient has language difficulties, various communication techniques, e.g. alphabet and picture charts, can be used.
- Observation of blinking, head nodding or shaking may also be useful.
- It is important to involve all people associated with the patient. Language should be kept simple (without being condescending).
- Information overload should be avoided (don't ask more than one question at a time and allow the patient adequate time to respond).
- Try not to speak on behalf of the

patient and use eye contact when talking to him/her.

- Be aware of word finding and naming difficulties. Use a list of important people's names or where possible have pictures of family members to aid identification.
- Assessment of and attention to numeracy are important.
- Difficulty with sequencing as well as memory problems need to be dealt with.
- Problem-solving skills also need to be assessed.
- Assistance with articulation may be important in some patients who have had brain-stem and cerebellar strokes.

### TEAM WORK

The importance of rehabilitation being a team effort cannot be understated. In addition to the therapists mentioned above, input from the following disciplines is extremely useful.

#### Dietician

- To assist with implementation of an appropriate low-cholesterol diet.
- To counsel on a diabetic diet where necessary. Family members need to be involved.
- To advise on type and implementation of tube feeds where necessary.
- To assist with build-up or weight-reducing diets where appropriate.

#### Social worker

Social workers play a very important role in many aspects of rehabilitation including:

- providing emotional support for the family
- placement in an appropriate facility where necessary
- liaising with the patient's employer.
- application for disability grant and pension
- assisting families with financial issues.

#### Psychologist

- Will assist in dealing with various family dynamics and adjustment to new circumstances.
- Psychological assessment of cognitive function and depression is very important and, where necessary,

counselling must be provided for both patients and their families.

### LONG-TERM REHABILITATION

Although effective, acute 'in-patient' rehabilitation is expensive. The criteria for discharge vary. Once the patient is mobile and reasonably safe, therapy may be continued as an outpatient. Programmes that have been followed in the rehabilitation unit are explained to family and carers and should be continued at home. If there are specific needs, referral to outpatient therapists is arranged. If recovery has been incomplete, training of carers is done in the unit before the patient is discharged. If there is no alternative, placement in a frail care or step-down facility is arranged. This may be temporary or permanent.

### Frequent problems

- **Spasticity** is a common consequence of strokes. It is often troublesome and may interfere with functional movement. Sometimes, however, spasticity may be beneficial. Increased tone in a very weak leg may provide enough support to enable the patient to begin ambulation. If increased tone is having a negative effect, various therapeutic measures may be considered. Occupational and physiotherapists may use stretching techniques and positioning to minimise the problem. If spasticity is threatening to cause contracture, splints are used. In more severe cases medication (e.g. baclofen, dantrolene or diazepam) can be used to treat increased tone. However, it should be pointed out that all 3 of these agents have potentially unpleasant side-effects and are probably not that effective. Of the 3, baclofen is the most widely used. These drugs are expensive, and the prescribing physician should familiarise him or herself with all the risks associated with their use.

Botulinum toxin has become a very important tool in the treatment of spasticity. Its benefits are that it can be used strategically, i.e. where it is specifically needed. In the upper limb, for example, spastic muscles that are interfering with a particular function can be targeted. The cost is quite high and the effect lasts only 3 - 4 months but sometimes the benefits are well worth the cost.

- **Incontinence.** Bladder and bowel problems are quite frequently seen after stroke. There may be true loss of sphincter control or, in aphasic patients, inability to call for help may present as incontinence. These problems need to be treated appropriately and with specific attention to patient dignity and comfort. There are few nursing issues which evoke as much family agitation as failure to adhere to basic common decency. Incontinence in stroke is often a temporary problem.

### Patient education

The importance patient of education cannot be overemphasised. The relatively long stay in the rehabilitation unit provides an ideal opportunity to reinforce all the lifestyle changes that are required.

### CONCLUSION

The ideal facility for patients who have had strokes is an acute admission (dedicated) stroke unit where specialised investigation and treatment can be given. The involvement of therapists with expertise in this field who will attend to the patient from admission to the time of final discharge complements the stroke unit service. It has been shown that in these facilities the length of stay is shorter, rates of mortality and morbidity lower, burden of care less and, not least, final outcome, better.

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### Further reading

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### IN A NUTSHELL

Stroke is a common neurological condition with significant rates of morbidity and mortality.

Ideally the best solution would be to educate the public to prevent the disease. Once a patient has had a stroke the most cost-effective method of treatment is to admit that patient to a dedicated stroke unit.

Treatment of the acute illness should be combined with intensive rehabilitation, which begins soon after admission, and is followed through to a point where the patient can be safely discharged home.

Good rehabilitative therapy reduces caregiver burden and improves quality of life for the patient.

The period of therapy should be combined with patient and family education aimed at preventing further vascular disease.