strokefoundation

Clinical Guidelines for Stroke Management

A quick guide for physiotherapy

This summary is an implementation tool designed to raise the awareness of the recommendations most relevant to physiotherapists from the full *Clinical Guidelines for Stroke Management*. While this summary focuses on physiotherapy, stroke care is most effective when all members of the multidisciplinary team are involved. Important caveats to the recommendations are included in the preamble to each section in the main document. Readers are referred back to the main document for details regarding these caveats along with the specific research which underpins the recommendations and the designated NHMRC grades of evidence for each recommendation. In general, where the evidence is clear and trusted, or where there is consensus on the basis of clinical experience and expert opinion (Good practice point), the word 'should' has been used to indicate that the intervention should be routinely carried out. Where the evidence is less clear or where there was significant variation in opinion, the word 'can' has been used. Individual patient factors should always be taken into account when considering different intervention options. The numbers attached to each recommendation relate to the reference number used in the main document. The full guidelines can be downloaded from www.strokefoundation.com.au/clinical-guidelines.

Key points

- Physiotherapists are an important member of the multidisciplinary stroke care team.
- A minimum of one hour active practice per day for each therapy should be provided at least five days a week (refer Section 1.1.1).
- Physical activity such as mobilisation and upper limb training should be commenced as early as possible (refer Section 1.1.2 and 1.3).
- The routine use of splints or prolonged positioning of muscles in a lengthened position is NOT recommended for stroke patients at risk of contracture (refer Section 2) .
- Interventions to increase cardiorespiratory fitness should be considered (refer Section 2).

TABLE 1 Grading recommendations[3]

GRADE	DESCRIPTION
A	Body of evidence can be trusted to guide practice
B	Body of evidence can be trusted to guide practice in most situations
C	Body of evidence provides some support for recommendation but care should be taken in its application
D	Body of evidence is weak and recommendation must be applied with caution
Good practice point (GPP)	Recommended best practice based on clinical experience and expert opinion

TABLE 2

ABCD^2 TOOL[170]
A = Age: ≥ 60 years (1 point)
B = Blood pressure: ≥140 mmHg systolic and/or 90 mmHg diastolic (1 point)
C = Clinical features: unilateral weakness (2 points), speech impairment without weakness (1 point)
D = Duration: > 60 mins (2 points), 10–59 mins (1 point)
D = Diabetes (1 point)

SECTION 1 **Rehabilitation**

1.1 Amount, intensity and timing of rehabilitation		**Grade**
1.1.1 Amount and intensity of rehabilitation		
a)	Rehabilitation should be structured to provide as much practice as possible within the first six months after stroke.	A [470]
b)	For patients undergoing active rehabilitation, as much physical therapy (physiotherapy and occupational therapy) should be provided as possible with a minimum of one hour active practice per day at least five days a week.	GPP
c)	Task-specific circuit class training or video self-modelling should be used to increase the amount of practice in rehabilitation.	B [471, 472]
d)	Patients should be encouraged by staff members, with the help of their family and/or friends if appropriate to continue to practice skills they learn in therapy sessions throughout the remainder of the day.	GPP
1.1.2 Timing of rehabilitation		
a)	Patients should be mobilised as early and as frequently as possible.	B [482]
b)	Upper limb training should commence early and CIMT is one approach that may be useful within the first week after stroke.	C [474]
1.2 Sensorimotor impairment		**Grade**
1.2.1 Weakness		
	One or more of the following interventions should be used for people with reduced strength:	
	• progressive resistance exercises	B [519, 520, 522]
	• electrical stimulation	B [519, 521]
	• electromyographic biofeedback in conjunction with conventional therapy	C [519]
1.2.2 Loss of sensation		
a)	Sensory-specific training can be provided to stroke survivors who have sensory loss.	C [524–27]
b)	Sensory training designed to facilitate transfer can also be provided to stroke survivors who have sensory loss.	C [530]
1.3 Physical activity		**Grade**
1.3.1 Sitting		
	Practice reaching beyond arms length in sitting with supervision/assistance should be provided by people who have difficulty sitting.	B [542, 543]
1.3.2 Standing up		
	Practising standing up should be undertaken by people who have difficulty in standing up from a chair.	A [487, 548]

1.3.3 Standing		
	Task-specific standing practice with feedback can be provided for people who have difficulty standing.	B [487, 549, 550]
1.3.4 Walking		
a)	All people with difficulty walking should be given the opportunity to undertake tailored, repetitive practice of walking (or components of walking) as much as possible.	A [487]
b)	One or more of the following interventions can be used in addition to conventional walking training outlined in (a):	
	• cueing of cadence	B [548]
	• mechanically-assisted gait (via treadmill or automated mechanical or robotic device)	
	• joint position biofeedback	C [548]
	• virtual reality training.	C [569–73]
c)	Ankle-foot orthoses, which should be individually fitted, can be used for people with persistent drop foot.	C [560–68]
1.3.5 Upper limb activity		
a)	All people with difficulty using their upper limb should be given the opportunity to undertake as much tailored practice of upper limb activity (or components of such tasks) as possible. Interventions which can be used routinely include:	
	• constraint-induced movement therapy in selected people	A [548]
	• repetitive task-specific training	B [487]
	• mechanical assisted training	B [586]
b)	One or more of the following interventions can be used in addition to those listed above:	
	• mental practice	B [548]
	• EMG biofeedback in conjunction with conventional therapy	C [548, 584]
	• electrical stimulation	C [548]
	• mirror therapy	C [587–89]
	• bilateral training.	C [578]
1.4 Activities of daily living (ADL)		**Grade**
a)	Patients with difficulties in performance of daily activities should be assessed by a trained clinician.	A [98, 602]
b)	Patients with confirmed difficulties in personal or extended ADL should have specific therapy (e.g. task-specific practice and trained use of appropriate aides) to address these issues.	B [98, 603]
c)	Staff members and the stroke survivor and their carer/family should be advised regarding techniques and equipment to maximise outcomes relating to performance of daily activities and sensorimotor, perceptual and cognitive capacities.	GPP
d)	People faced with difficulties in community transport and mobility should set individualised goals and undertake tailored strategies such as multiple (i.e. up to seven) escorted outdoor journeys (which may include practice crossing roads, visits to local shops, bus or train travel), help to resume driving, aids and equipment, and written information about local transport options/alternatives.	B [604]
e)	Administration of amphetamines to improve ADL is NOT recommended.	B [605, 606]
f)	The routine use of acupuncture alone or in combination with traditional herbal medicines is NOT recommended in stroke rehabilitation.	B [334, 340, 607]

SECTION 2 **Managing Complications**

2.1 Spasticity		**Grade**
a)	Interventions to decrease spasticity other than an early comprehensive therapy program should NOT be routinely provided for people who have mild to moderate spasticity (i.e. spasticity that does not interfere with a stroke survivor's activity or personal care).	GPP
b)	In stroke survivors who have persistent moderate to severe spasticity (i.e. spasticity that interferes with activity or personal care):	
	• botulinum toxin A should be trialled in conjunction with rehabilitation therapy which includes setting clear goals	B [696, 698]
	• electrical stimulation and/or EMG biofeedback can be used.	C [344, 712–14]

2.2 Contracture		**Grade**
a)	Conventional therapy (i.e. early tailored interventions) should be provided for stroke survivors at risk of or who have developed contracture.	GPP
b)	For stroke survivors at risk of or who have developed contractures and are undergoing comprehensive rehabilitation, the routine use of splints or prolonged positioning of muscles in a lengthened position is NOT recommended.	B [724, 725, 727, 730, 733–35, 740]
c)	Overhead pulley exercise should NOT be used routinely to maintain range of motion of the shoulder.	C [736]
d)	Serial casting can be used to reduce severe, persistent contracture when conventional therapy has failed.	GPP

2.3 Subluxation		**Grade**
a)	For people with severe weakness who are at risk of developing a subluxed shoulder, management should include one or more of the following interventions:	
	• electrical stimulation	B [741]
	• firm support devices	GPP
	• education and training for the patient, family/carer and clinical staff on how to correctly handle and position the affected upper limb.	GPP
b)	For people who have developed a subluxed shoulder, management may include firm support devices to prevent further subluxation.	C [729]

2.4 Shoulder pain		**Grade**
	For people with severe weakness who are at risk of developing shoulder pain, management may include:	
	• shoulder strapping	B [729, 752]
	• interventions to educate staff, carers and people with stroke about preventing trauma.	GPP
a)	For people with severe weakness who are at risk of developing shoulder pain, management may include:	
	• shoulder strapping	B [729, 752]
	• interventions to educate staff, carers and people with stroke about preventing trauma.	GPP
b)	For people who develop shoulder pain, management should be based on evidence-based interventions for acute musculoskeletal pain.	GPP
c)	The routine use of the following interventions is NOT recommended for people who have already developed shoulder pain:	
	• corticosteroid injections	C [753]
	• ultrasound.	C [758]

2.5 Swelling of the extremities		Grade
a)	For people who are immobile, management can include the following interventions to prevent swelling in the hand and foot:	
	• dynamic pressure garments	C [715]
	• electrical stimulation	C [772]
	• elevation of the limb when resting.	GPP
b)	For people who have swollen extremities, management can include the following interventions to reduce swelling in the hand and foot:	
	• dynamic pressure garments	C [715]
	• electrical stimulation	C [772]
	• continuous passive motion with elevation	D [774]
	• elevation of the limb when resting.	GPP

2.6 Loss of cardiorespiratory fitness		Grade
a)	Rehabilitation should include interventions aimed at increasing cardiorespiratory fitness once patients have sufficient strength in the large lower limb muscle groups.	A [379, 776]
b	Patients should be encouraged to undertake regular, ongoing fitness training.	GPP

2.7 Fatigue		Grade
a)	Therapy for stroke survivors with fatigue should be organised for periods of the day when they are most alert.	GPP
b)	Stroke survivors and their families/carers should be provided with information and education about fatigue; including potential management strategies such as exercise, establishing good sleep patterns, avoid sedating drugs and too much alcohol.	GPP

2.8 Falls		Grade
a)	Falls risk assessment should be undertaken using a valid tool on admission to hospital. A management plan should be initiated for all those identified as at risk of falls.	GPP
b)	Multifactorial interventions in the community, including an individually prescribed exercise program, should be provided for people who are at risk of falling.	B [61]

SECTION 3 **Secondary Prevention**

3. 1 Lifestyle modification		Grade
a)	Every stroke patient should be assessed and informed of their risk factors for a further stroke and possible strategies to modify identified risk factors. The risk factors and interventions include:	
	• stopping smoking: nicotine replacement therapy, bupropion or nortriptyline therapy, nicotine receptor partial agonist therapy and/or behavioural therapy	A [354–59]
	• improving diet: a diet low in fat (especially saturated fat) and sodium but high in fruit and vegetables	A [361, 363, 364, 366–69]
	• increasing regular exercise	C [377, 378]
	• avoiding excessive alcohol (i.e. no more than two standard drinks per day).	C [387, 388]
b)	Interventions should be individualised and delivered using behavioural techniques such as educational or motivational counselling.	A [356, 357, 359, 391]

SECTION 4 **Organisation Of Services**

4.1 Safe transfer of care from hospital to community		**Grade**
a)	Prior to hospital discharge, all patients should be assessed to determine the need for a home visit, which may be carried out to ensure safety and provision of appropriate aids, support and community services.	C [59]
b)	To ensure a safe discharge occurs, hospital services should ensure the following are completed prior to discharge:	
	• patients and families/carers have the opportunity to identify and discuss their post-discharge needs (e.g. physical, emotional, social, recreational, financial and community support) with relevant members of the multidisciplinary team	GPP
	• general practitioners, primary healthcare teams and community services are informed before or at the time of discharge	GPP
	• all medications, equipment and support services necessary for a safe discharge are organised	GPP
	• any continuing specialist treatment required is organised	GPP
	• a documented post-discharge care plan is developed in collaboration with the patient and family and a copy provided to them. This may include relevant community services, self-management strategies (e.g. information on medications and compliance advice, goals and therapy to continue at home), stroke support services, any further rehabilitation or outpatient appointments, and an appropriate contact number for any queries.	GPP
c)	A locally developed protocol may assist in implementation of a safe discharge process.	GPP
d)	A discharge planner may be used to coordinate a comprehensive discharge program for stroke survivors.	D [65]

4.2 Carer training		**Grade**
	Relevant members of the multidisciplinary team should provide specific and tailored training for carers/family before the stroke survivor is discharged home. This should include training, as necessary, in personal care techniques, communication strategies, physical handling techniques, ongoing prevention and other specific stroke-related problems, safe swallowing and appropriate dietary modifications, and management of behaviours and psychosocial issues.	B [67]

4.3 Community rehabilitation and follow up services		**Grade**
a)	Health services with a stroke unit should provide comprehensive, experienced multidisciplinary community rehabilitation and adequately resourced support services for stroke survivors and their families/carers. If services such as the multidisciplinary community rehabilitation services and carer support services are available, then early supported discharge should be offered for all stroke patients with mild to moderate disability.	A [68, 69]
b)	Rehabilitation delivered in the home setting should be offered to all stroke survivors as needed. Where home rehabilitation is unavailable, patients requiring rehabilitation should receive centre-based care.	B [72, 73]
c)	Contact with and education by trained staff should be offered to all stroke survivors and families/carers after discharge.	C [77, 81]
d)	Stroke survivors can be managed using a case management model after discharge. If used, case managers should be able to recognise and manage depression and help to coordinate appropriate interventions via a medical practitioner.	C [89, 92]
e)	Stroke survivors should have regular and ongoing review by a member of a stroke team, including at least one specialist medical review. The first review should occur within three months, then again at six and 12 months post discharge.	GPP
f)	Stroke survivors and their carers/families should be provided with the contact information for the specialist stroke service and a contact person (in the hospital or community) for any post-discharge queries for at least the first year following discharge.	GPP

4.4 Long term rehabilitation		Grade
a)	Stroke survivors who have residual impairment at the end of the formal rehabilitation phase of care should be reviewed annually usually by the general practitioner or rehabilitation provider to consider whether access to further interventions are needed. A referral for further assessment should be offered for relevant allied health professionals or general rehabilitation services if there are new problems not present when undertaking initial rehabilitation, or if the person's physical or social environment has changed.	GPP
b)	Stroke survivors with residual impairment identified as having further rehabilitation needs should receive therapy services to set new goals and improve task-orientated activity.	B [104, 105]
c)	Stroke survivors with confirmed difficulties in performance of personal tasks, instrumental activities, vocational activities or leisure activities should have a documented management plan updated and initiated to address these issues	GPP
d)	Stroke survivors should be encouraged to participate long term in appropriate community exercise programs.	C [103]
4.5 Standardised assessment		**Grade**
	Clinicians should use validated and reliable assessment tools or measures that meet the needs of the patient to guide clinical decision-making.	GPP
4.6 Goal setting		**Grade**
a)	Stroke survivor and their families/carers who are involved in the recovery process should have their wishes and expectations established and acknowledged.	GPP
b)	Stroke survivor and their families/carers should be given the opportunity to participate in the process of setting goals unless they choose not to or are unable to participate.	B [5]
c)	Health professionals should collaboratively set goals for patient care. Goals should be prescribed, specific and challenging. They should be recorded, reviewed and updated regularly.	C [122]
d)	Stroke survivors should be offered training in self-management skills that include active problem-solving and individual goal setting.	GPP
4.7 Team meetings		**Grade**
	The multidisciplinary stroke team should meet regularly (at least weekly) to discuss assessment of new patients, review patient management and goals, and plan for discharge.	C [41]
4.8 Information and education		**Grade**
a)	All stroke survivors and their families/carers should be offered information tailored to meet their needs using relevant language and communication formats.	A [125]
b)	Information should be provided at different stages in the recovery process.	B [125]
c)	Stroke survivors and their families/carers should be provided with routine, follow-up opportunities for clarification or reinforcement of the information provided.	B [125]
4.9 Family meetings		**Grade**
	The stroke team should meet regularly with the patient and their family/carer to involve them in management, goal setting and planning for discharge.	C [41]
4.10 Stroke service Improvement		**Grade**
a)	All stroke services should be involved in quality improvement activities that include regular audit and feedback ('regular' is considered at least every two years).	B [141]
b)	Indicators based on nationally agreed standards of care should be used when undertaking any audit.	GPP

This summary is based on the Clinical Guidelines for Stroke Management 2010 which have been approved by the NHMRC and endorsed by the Australian Physiotherapy Association.

About the National Stroke Foundation

The National Stroke Foundation is a not-for-profit organisation that works with the public, government, health professionals, patients, carers, families and stroke survivors to reduce the impact of stroke on the Australian community.

Our challenge is to save 110 000 Australians from death and disability due to stroke over 10 years.

We will achieve this by:

- educating the public about the risk factors and signs of stroke and promoting healthy lifestyles
- working with all stakeholders to develop and implement policy on the prevention and management of stroke
- encouraging the development of comprehensive and coordinated services for all stroke survivors and their families
- encouraging and facilitating stroke research.

StrokeLine

The National Stroke Foundation's 1800 787 653 StrokeLine provides information about stroke prevention, recovery and support. Our qualified health professionals offer comprehensive information and help.

The toll free service is open business hours EST across Australia, a message service is available outside these hours.

References are available from: www.strokefoundation.com.au. This document is a general guide to appropriate practice, to be followed subject to the clinician's judgement and the patient's preference in each individual case. The guidelines are designed to provide information to assist decision-making and are based on the best evidence available at the time of development. Copies of the document can be downloaded through the National Stroke Foundation website: www.strokefoundation.com.au.