



Clinical Guidelines for Stroke and TIA Management

A quick guide for general practice

This quick guide presents the key recommendations for stroke and TIA management for general practitioners taken from the *Clinical Guidelines for Stroke Management 2010* approved by the NHMRC and endorsed by the RACGP. Recommendations are graded in accordance with NHMRC standards (refer Table 1). The numbers attached to each recommendation relate to the reference number used in the main document which is freely available electronically (www.strokefoundation.com.au/clinical-guidelines). The guidelines should not be seen as an inflexible recipe for stroke care; rather, they provide a framework that is based on the best available evidence that can be adapted to local needs, resources and individual circumstances.

Key points

- General practitioners provide a critical role in the prevention and long term management of stroke.
- Annual assessment by a GP or specialist is recommended for stroke survivors at the end of the formal rehabilitation phase of care. This assessment should identify any ongoing rehabilitation needs (refer Section 3.5).
- TIA is a high risk event that requires rapid assessment and treatment ideally by a specialist service. The guidelines discuss options for organising care for those with TIA and developments in assessment and risk stratification (refer Section 1.1).
- Secondary prevention of stroke remains the mainstay of general practice. Additional guidelines are provided for the use of hormone replacement therapy and oral contraception in women for secondary prevention of stroke (refer Section 2.9 and Section 2.10)
- Information and assessment regarding returning to driving should be provided and recommendations have been changed in line with updated national standards (refer Section 5.2).

TABLE 1 Grading recommendations³

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 Early assessment and management

1.1 Assessment and management of TIA

Grade

- | | | |
|----|--|--------------------------------------|
| a) | All patients with suspected TIA should have a full assessment that includes a detailed history and clinical, prognostic (e.g. ABCD ² score) and investigative tests (e.g. blood tests, brain and carotid imaging and ECG) at the initial point of healthcare contact, whether first seen in primary or secondary care. | B ^{109, 110, 121} |
| b) | Patients identified as high risk (e.g. ABCD ² score >3 and/or any one of AF, carotid territory symptoms or crescendo TIA) should undergo: <ul style="list-style-type: none">• urgent brain imaging (preferably MRI with DWI), 'urgent' being immediately where available, but within 24 hours)• Carotid imaging should also be undertaken urgently in patients with anterior circulation symptoms who are candidates for carotid re-vascularisation. In settings with limited access to these investigations, referral within 24 hours should be made to the nearest centre where such tests can be quickly conducted. | B ^{121, 184, 186, 193, 194} |
| c) | Patients classified as low-risk (e.g. ABCD ² score <4 without AF or carotid territory symptoms or who present more than one week after last symptoms) should have brain and carotid imaging (where indicated) as soon as possible (i.e. within 48 hours). | B ^{121, 185, 193, 194} |
| d) | The following investigations should be undertaken routinely for all patients with suspected TIA: full blood count, electrolytes, erythrocyte sedimentation rate (ESR), renal function, lipid profile, glucose level, and ECG. | GPP |

1.2 Imaging

Grade

- | | | |
|----|--|----------------------------|
| a) | All patients with suspected stroke should have an urgent brain CT or MRI ('urgent' being immediately where facilities are available but within 24 hours). Patients who are candidates for thrombolysis should undergo brain imaging immediately. | A ^{185, 207} |
| b) | All patients with carotid territory symptoms who would potentially be candidates for carotid re-vascularisation should have urgent carotid imaging. | B ^{193, 209, 213} |
| c) | Further brain, cardiac or carotid imaging should be undertaken in selected patients: <ul style="list-style-type: none">• where initial assessment has not identified the likely source of the ischaemic event• with a history of more than one TIA• likely to undergo carotid surgery. | B ^{193, 194} |

1.3 Investigations

Grade

- | | | |
|----|--|-----|
| a) | The following investigations should be routinely carried out in all patients with suspected stroke: full blood count, electrocardiogram, electrolytes, renal function, fasting lipids, erythrocyte sedimentation rate and/or C-reactive protein and glucose. | GPP |
| b) | Selected patients may require the following additional investigations: catheter angiography, chest X-ray, syphilis serology, vasculitis screen and prothrombotic screen. These tests should be performed as soon as possible after stroke onset. Some of these tests may need to be performed as an emergency procedure in certain patients. | GPP |

1.4 Antithrombotic therapy

Grade

- | | | |
|----|--|------------------|
| a) | Aspirin should be given as soon as possible after the onset of stroke symptoms (i.e. within 48 hours) if CT/MRI scans excludes haemorrhage. The first dose should be at least 150 to 300 mg. Dosage thereafter can be reduced (e.g. 100 mg daily). | A ²⁴⁶ |
| b) | The routine use of early anticoagulation in unselected patients following ischaemic stroke/TIA is NOT recommended. | A ²⁴⁷ |

SECTION 2 Secondary prevention

2.1 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: <ul style="list-style-type: none">• stopping smoking: nicotine replacement therapy, bupropion or nortriptyline therapy, nicotine receptor partial agonist therapy and/or behavioural therapy• improving diet: a diet low in fat (especially saturated fat) and sodium but high in fruit and vegetables• increasing regular exercise• avoiding excessive alcohol (i.e. no more than two standard drinks per day).	A ³⁵⁴⁻⁵⁹ A ^{361, 363, 364, 366-69} C ^{377, 378} C ^{387, 388}
b)	Interventions should be individualised and delivered using behavioural techniques such as educational or motivational counselling.	A ^{356, 357, 359, 391}
2.2 Adherence to pharmacotherapy		Grade
a)	Interventions to promote adherence with medication regimes are often complex and should include combinations of the following: <ul style="list-style-type: none">• reminders, self-monitoring, reinforcement, counselling, family therapy, telephone follow up, supportive care and dose administration aids• information and education in hospital and in the community.	B ^{395, 396} B ^{395, 397}
2.3 Blood pressure lowering		Grade
a)	All stroke and TIA patients, whether normotensive or hypertensive, should receive blood pressure lowering therapy, unless contraindicated by symptomatic hypotension.	A ³⁹⁹
b)	New blood pressure lowering therapy should commence before discharge for those with stroke or TIA, or soon after TIA if the patient is not admitted.	B ^{402, 403}
2.4 Antiplatelet therapy		Grade
a)	Long-term antiplatelet therapy should be prescribed to all people with ischaemic stroke or TIA who are not prescribed anticoagulation therapy.	A ⁴⁰⁴
b)	Low-dose aspirin and modified release dipyridamole or clopidogrel alone should be prescribed to all people with ischaemic stroke or TIA, taking into consideration patient co-morbidities.	A ⁴¹¹
c)	Aspirin alone can be used, particularly in people who do not tolerate aspirin plus dipyridamole or clopidogrel.	A ⁴⁰⁴
d)	The combination of aspirin plus clopidogrel is NOT recommended for the secondary prevention of cerebrovascular disease in people who do not have acute coronary disease or recent coronary stent.	A ^{412, 413}
2.5 Anticoagulation therapy		Grade
a)	Anticoagulation therapy for secondary prevention for people with ischaemic stroke or TIA from presumed arterial origin should NOT be routinely used.	A ⁴¹⁵
b)	Anticoagulation therapy for long-term secondary prevention should be used in people with ischaemic stroke or TIA who have atrial fibrillation or cardioembolic stroke	A ^{416, 417}
c)	In stroke patients, the decision to begin anticoagulation therapy can be delayed for up to two weeks but should be made prior to discharge.	C ³⁸⁹
d)	In patients with TIA, anticoagulation therapy should begin once CT or MRI has excluded intracranial haemorrhage as the cause of the current event.	GPP



2.6 Cholesterol lowering	Grade
a) Therapy with a statin should be used for all patients with ischaemic stroke or TIA.	A ^{430, 431}
b) Statins should NOT be used routinely for haemorrhagic stroke.	B ^{430, 431}
2.7 Carotid surgery	Grade
Eligible stable patients should undergo carotid endarterectomy as soon as possible after the stroke event (ideally within two weeks).	A ⁴³⁷
2.8 Diabetes management	Grade
Patients with glucose intolerance or diabetes should be managed in line with national guidelines for diabetes.	GPP
2.9 Hormone replacement therapy	Grade
Following a stroke event, HRT should be stopped. The decision whether to start or continue HRT in patients with a history of previous stroke or TIA should be discussed with the individual patient and based on an overall assessment of risk and benefit.	B ⁴⁵⁸⁻⁶¹
2.10 Oral contraception	Grade
The decision whether to start or continue oral contraception in women of child-bearing age with a history of stroke should be discussed with the individual patient and based on an overall assessment of risk and benefit. Non-hormonal methods of contraception should be considered.	C ^{462, 463, 465}

SECTION 3 Organisation of services

3.1 Stroke unit care	Grade
a) All people with stroke should be admitted to hospital and be treated in a stroke unit with a multidisciplinary team.	A ⁵
b) All people with stroke should be admitted directly to a stroke unit (preferably within three hours of stroke onset).	C ³⁷
c) Smaller hospitals should consider stroke services that adhere as closely as possible to the criteria for stroke unit care. Where possible, patients should receive care on geographically discrete units.	B ^{5, 41}
d) If people with suspected stroke present to non-stroke unit hospitals, transfer protocols should be developed and used to guide urgent transfers to the nearest stroke unit hospital.	C ^{35, 36}
3.2 Telemedicine and networks	Grade
a) All health services which include regional or rural centres caring for stroke patients should use networks which link large stroke specialist centres with smaller regional and rural centres.	C ^{48, 49}
b) These networks should be used to help establish appropriate stroke services along with protocols governing rapid assessment, telestroke services and rapid transfers.	C ^{48, 49, 51}
c) Where no on-site stroke medical specialists are available, telestroke consultation should be used to assess eligibility for acute stroke therapies and/or transfer to stroke specialist centres.	B ⁴⁸⁻⁵⁰
d) Telestroke can be used to improve assessment and management of rehabilitation where there is limited access to on-site stroke rehabilitation expertise.	C ⁴⁸⁻⁴⁹
3.3 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:	C ^{48, 49, 51}
	<ul style="list-style-type: none"> • 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 • general practitioners, primary healthcare teams and community services are informed before or at the time of discharge • all medications, equipment and support services necessary for a safe discharge are organised • any continuing specialist treatment required is organised • 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. (all GPPs) 	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

3.4 Community rehabilitation and follow up services

Grade

a)	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 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

3.5 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 is 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



3.6 Goal setting		Grade
a)	Stroke survivors and their families/carers who are involved in the recovery process should have their wishes and expectations established and acknowledged.	GPP
b)	Stroke survivors 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
3.7 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
3.8 Counselling		Grade
Counselling services should be available to all stroke survivors and their families/carers and can take the form of:		
	• an active educational counselling approach	B ¹²⁶
	• information supplemented by family counselling	C ¹²⁹
	• a problem-solving counselling approach.	C ¹³⁰
3.9 Respite care		Grade
Stroke survivors and their carers/families should have access to respite care options. The respite care may be provided in their own home or in an institution.		GPP
3.10 Stroke service improvement		Grade
General practitioners should keep a register (or be able to extract this from current practice datasets) which enables audit and review of relevant stroke and TIA management.		B ¹⁴⁵

SECTION 4 Managing complications

4.1 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, and avoidance of sedating drugs and excessive alcohol.	GPP
4.2 Mood disturbance		Grade
Identification		
a)	All patients should be screened for depression using a validated tool.	GPP
b)	Patients with suspected altered mood (e.g. depression, anxiety, emotional lability) should be assessed by trained personnel using a standardised and validated scale.	B ^{800, 801, 805}
c)	Diagnosis should only be made following clinical interview.	GPP



Prevention		
d)	Psychological strategies (e.g. problem solving, motivational interviewing) can be used to prevent depression after stroke.	B ⁸⁰⁶
e)	Routine use of antidepressants to prevent post-stroke depression is NOT recommended.	B ⁸⁰⁶
Intervention		
f)	Antidepressants can be used for stroke patients who are depressed (following due consideration of the benefit and risk profile for the individual) and for those with emotional lability.	B ⁸⁰⁷
g)	Psychological (cognitive-behavioural) intervention can be used for stroke patients who are depressed.	B ⁸⁰⁷
4.3 Behavioural change		Grade
a)	The impact of chronic behavioural changes (irritability, aggression, perseveration, adynamia/apathy, emotional lability, disinhibition and impulsivity) on functional activities, participation and quality of life, including the impact on relationships, employment and leisure, should be assessed and addressed as appropriate over time.	GPP
b)	Stroke survivors and their families/carers should be given access to individually tailored interventions for personality and behavioural changes e.g. participation in anger-management therapy and rehabilitation training and support in management of complex and challenging behaviour.	GPP
SECTION 5 Community participation and long-term recovery		
5.1 Self-management		Grade
a)	Stroke survivors who are cognitively able should be made aware of the availability of generic self-management programs before discharge from hospital and be supported to access such programs once they have returned to the community.	C ^{863, 867}
b)	Stroke-specific programs for self-management should be provided for those who require more specialised programs.	GPP
c)	A collaboratively developed self-management care plan can be used to harness and optimise self-management skills.	GPP
5.2 Driving		Grade
a)	Any patient who does wish to drive should be given information about driving after stroke and be assessed for fitness to return to driving using the national guidelines (<i>Assessing Fitness to Drive</i>) and relevant state guidelines. Patients should be informed that they are required to report their condition to the relevant driver licence authority and notify their car insurance company before returning to driving.	GPP
b)	Stroke survivors should not return to driving for at least one month post event. A follow-up assessment (normally undertaken by a GP or specialist) should be conducted prior to driving to assess suitability. Patients with TIA should be instructed not to drive for two weeks.	GPP
d)	If a person is deemed medically fit but is required to undertake further testing, they should be referred for an occupational therapy driving assessment. Relevant health professionals should discuss the results of the test and provide a written record of the decision to the patient.	GPP
5.3 Leisure		Grade
	Targeted occupational therapy programs can be used to increase participation in leisure activities.	A ⁶⁰³
5.4 Return to work		Grade
	Stroke survivors who wish to work should be offered assessment (i.e. to establish their cognitive, language and physical abilities relative to their work demands), assistance to resume or take up work, or referral to a supported employment service.	GPP

5.5 Sexuality

Grade

- | | | |
|----|---|-----|
| a) | Stroke survivors and their partners should be offered: <ul style="list-style-type: none">• the opportunity to discuss issues relating to sexuality with an appropriate health professional• written information addressing issues relating to sexuality post stroke. | GPP |
| b) | Any interventions should address psychosocial aspects as well as physical function. | GPP |

5.6 Peer support

Grade

- | | | |
|--|---|-----|
| | Stroke survivors and family/carers should be given information about the availability and potential benefits of a local stroke support group and/or other sources of peer support before leaving hospital and when back in the community. | GPP |
|--|---|-----|

5.7 Carer support

Grade

- | | | |
|----|---|-----------------|
| a) | Carers should be provided with tailored information and support during all stages of the recovery process. This includes (but is not limited to) information provision and opportunities to talk with relevant health professionals about the stroke, stroke team members and their roles, test or assessment results, intervention plans, discharge planning, community services and appropriate contact details. (Grade C 125, 903) | |
| b) | Where it is the wish of the person with stroke, carers should be actively involved in the recovery process by assisting with goal setting, therapy sessions, discharge planning, and long-term activities. | GPP |
| c) | Carers should be provided with information about the availability and potential benefits of local stroke support groups and services, at or before the person's return to the community. | C 903-5, 907 |
| d) | Carers should be offered support services after the person's return to the community. Such services can use a problem-solving or educational-counselling approach. | C 126, 904, 906 |
| e) | Assistance should be provided for families/carers to manage stroke survivors who have behavioural problems. | GPP |

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.