Clinical Guidelines for Stroke Management

Summary – General Practice

This summary is a quick reference to the recommendations in the Clinical Guidelines for Stroke Management most relevant to general practice.

General practitioners play a critical role in the prevention, diagnosis, and long-term management of stroke. Education of staff in the Face, Arm, Speech, Time (F.A.S.T.) stroke recognition message and to redirect any calls about suspected acute stroke to 000. All patients with suspected stroke or TIA should be managed as a time-critical emergency. Secondary prevention measures should be discussed with stroke survivor with a particular focus on lifestyle modifications, such as smoking cessation, appropriate diet and regular physical activity. Rehabilitation and community integration needs to be reinforced and supported with the stroke survivor and their family/carer.

While this summary focuses on specific recommendations, stroke care is the most effective when all members of an interdisciplinary team are involved. For the comprehensive set of recommendations that covers the whole continuum of stroke care, please refer to further information on InformMe https://informme.org.au/Guidelines/Clinical-Guidelines-for-Stroke-Management.

The Stroke Foundation in partnership with Cochrane Australia is testing a model of continually reviewing and updating recommendations for the Clinical Guidelines for Stroke Management in response to new evidence on a monthly basis. For changes to recommendations based on new research evidence, please refer to further information on InformMe https://informme.org.au/Guidelines/Living-guidelines-for-stroke-management

The Clinical Guidelines uses an internationally recognised guideline development approach called GRADE (Grading of Recommendations Assessment, Development and Evaluation) and an innovative guidelines development and publishing platform known as MAGICapp (MAking Grade the Irresistible Choice). GRADE ensures a systematic process in developing recommendation, which are based on the balance of benefits and harms, quality of evidence, patient values, and resource considerations. MAGICapp enables transparent display of this process and access to additional practical information for recommendation implementation.

Recommendations

Each recommendation is given a strength based on GRADE. GRADE methodology includes four factors to guide the development of a recommendation and determine the strength of that recommendation.

- The balance between desirable and undesirable consequences
- Confidence in the estimates of effect (quality of evidence)
- Confidence in values and preferences and their variability (clinical and consumer preferences)
- Resource use (cost and implementation considerations).

The GRADE process uses only two categories for the strength of recommendation, based on how confidence the guideline developers are in that the "desirable effects of an intervention outweigh undesirable effect […] across the range of patients for whom the recommendation is intended" (GRADE Handbook):

- **Strong recommendations:** where guideline developers are certain that the evidence supports a clear balance towards either desirable or undesirable effects; or
- **Weak recommendations:** where guideline developers are not as certain about the balance between desirable and undesirable effects as the evidence base isn't as robust.

These strong or weak recommendations can either be for or against an intervention. If the recommendation is AGAINST an intervention this means it is recommended NOT to do that intervention.

Consensus-based recommendations: statements have been developed based on consensus and expert opinion (guided by any underlying or indirect evidence) for topics where there is either a lack of evidence or insufficient quality of evidence on which to base a recommendation but it was felt that advice should be made.

Practice points: for questions outside the search strategy (i.e. where no systematic literature search was conducted), additional considerations are provided.

Recommendations are presented as at December 2020 with a note if it has changed since the 2017 recommendations and are also presented in Chapter order for easier reference to the relevant section of the full Clinical Guidelines.

For the full list of references, please refer to the individual MAGICapp chapters through InformMe https://informme.org.au/Guidelines/Clinical-Guidelines-for-Stroke-Management.

Chapter 1 of 8: Pre-hospital care

Pre-hospital care

Strong recommendation

All stroke patients potentially eligible for reperfusion therapies should have an ambulance dispatched as an immediate response and be managed as a time critical emergency. (Berglund et al 2012)

Strong recommendation

a. Ambulance services should preferentially transfer suspected stroke patients to a hospital capable of delivering reperfusion therapies as well as stroke unit care. (O'Brien et al 2012)

b. Ambulance services should pre-notify the hospital of a suspected stroke case where the patient may be eligible for reperfusion therapies. (O'Brien et al 2012)

Info Box

Practice Point

General practitioners are encouraged to educate reception staff in the FAST stroke recognition message and to redirect any calls about suspected acute stroke to 000.

Chapter 2 of 8: Early assessment and diagnosis

Transient ischaemic attack

Strong recommendation

- All patients with suspected transient ischaemic attack (TIA), i.e. focal neurological symptoms due to focal ischaemia that have fully resolved, should have urgent clinical assessment. (Lavallee et al. 2007; Rothwell et al. 2007) *(Refer to the 'Practical Information' section for further useful information)*
- Patients with symptoms that are present or fluctuating at time of initial assessment should be treated as having a stroke and be immediately referred for emergency department and stroke specialist assessment, investigation and reperfusion therapy where appropriate. (Lavallee et al 2007; Rothwell et al. 2007)
- In pre-hospital settings, high risk indicators (e.g. crescendo TIA, current or suspected AF, current use of anticoagulants, carotid stenosis or high $ABCD^2$ score) can be used to identify patients for urgent specialist assessment. (Lavallee et al. 2007; Rothwell et al. 2007)

Strong recommendation

When TIA patients present to primary care, the use of TIA electronic decision support, when available, is recommended to improve diagnostic and triage decisions. (Ranta et al. 2015)

Weak recommendation AGAINST

In TIA patients, use of the $ABCD^2$ risk score in isolation to determine the urgency of investigation may delay recognition of atrial fibrillation and symptomatic carotid stenosis in some patients and should be avoided. (Wardlaw et al. 2015)

Strong recommendation

All TIA patients with anterior circulation symptoms should undergo early carotid imaging with CT angiography (aortic arch to cerebral vertex), carotid Doppler ultrasound or MR angiography. Carotid imaging should preferably be done during the initial assessment but should not be delayed more than 2 days (see Imaging).

Weak recommendation

Patients with TIA should routinely undergo brain imaging to exclude stroke mimics and intracranial haemorrhage. MRI, when available, is recommended to improve diagnostic accuracy (see Imaging).

Strong recommendation

Patients with suspected TIA should commence secondary prevention therapy urgently (see Secondary Prevention).

Strong recommendation

- All patients with TIA should be investigated for atrial fibrillation with ECG during initial assessment and referred for possible prolonged cardiac monitoring as required (see Cardiac Investigations).
- TIA patients with atrial fibrillation should commence anticoagulation therapy early after brain imaging has excluded haemorrhage, unless contraindicated (see Anticoagulant therapy in Secondary Prevention).

Practice statement

Consensus-based recommendations

- All patients and their family/carers should receive information about TIA, screening for diabetes, tailored advice on lifestyle modification strategies (smoking cessation, exercise, diabetes optimisation if relevant – see Secondary prevention), return to driving (see Driving in Community participation and long-term care) and the recognition of signs of stroke and when to seek emergency care.
- All health services should develop and use a local TIA pathway covering primary care, emergency and stroke specialist teams to ensure patients with suspected TIA are managed as rapidly and comprehensively as possible within locally available resources.

Assessment of suspected stroke

Strong recommendation

All suspected stroke patients who have been pre-notified to the stroke or ED team, and who may be candidates for reperfusion therapy, should be met at arrival and assessed by the stroke team or other experienced personnel. (Meretoja et al. 2012; Meretoja et al. 2013)

Weak recommendation

The use of clinical screening tools to identify stroke by ED staff is recommended where an expert stroke team is unable to immediately assess a patient. (Jiang et al. 2014; Whiteley et al. 2011)

Info box

Practice points

- Initial diagnosis should be reviewed by a clinician experienced in the evaluation of stroke.
- Stroke severity should be assessed and recorded on admission by a trained clinician using a validated tool (e.g. NIHSS).
- A blood glucose reading should be taken to improve specificity (hypoglycaemia can present as a 'stroke mimic').

Chapter 3 of 8: Acute medical and surgical management

Stroke unit care

Strong recommendation

All stroke patients should be admitted to hospital and be treated in a stroke unit with an interdisciplinary team. (Langhorne 2020)

Info box

Practice points

- All stroke patients should be admitted directly to a stroke unit (preferably within three hours of stroke onset).
- For patients with suspected stroke presenting to non-stroke unit hospitals, transfer protocols should be developed and used to guide urgent transfers to the nearest stroke unit hospital.
- Where transfer is not feasible, smaller isolated hospitals should manage stroke services in a manner that adheres as closely as possible to the criteria for stroke unit care. Where possible, stroke patients should receive care in geographically discrete units.

Strong recommendation

All acute stroke services should implement standardised protocols to manage fever, glucose and swallowing difficulties in stroke patients. (Middleton et al. 2011)

Chapter 4 of 8: Secondary prevention

Adherence to pharmacotherapy

Weak recommendation

Interventions to promote adherence with medication regimens may be provided to all patients with stroke. Such regimens may include combinations of the following:

- reminders, self-monitoring, reinforcement, counselling, motivational interviewing, family therapy, telephone follow-up, supportive care and dose administration aids (Lawrence et al 2015; Mahtani et al 2011; Nieuwlaat et al 2014; Haynes et al 2008)
- development of self-management skills and modification of dysfunctional beliefs about medication (O'Carroll et al 2014; Kronish et al 2014)
- information and education in hospital and in the community (Lawrence et al 2015; Mahtani et al 2011; Nieuwlaat et al 2014).

Blood pressure lowering therapy

Acute blood pressure management

Practice statement

Consensus-based recommendations

- All patients with acute stroke should have their blood pressure closely monitored in the first 48 hours after stroke onset.
- Patients with acute ischaemic stroke eligible for treatment with intravenous thrombolysis should have their blood pressure reduced to below 185/110 mmHg before treatment and in the first 24 hours after treatment.
- Patients with acute ischaemic stroke with blood pressure >220/120/mmHg should have their blood pressure cautiously reduced (e.g. by no more than 20%) over the first 24 hours.

Weak recommendation AGAINST

Intensive blood pressure lowering in the acute phase of care to a target SBP of <140mmHg is not recommended for any patient with stroke. (Bath and Krishnan 2014)

Weak recommendation

In patients with intracerebral haemorrhage blood pressure may be acutely reduced to a target systolic blood pressure of around 140mmHg (but not substantially below). (Tsivgoulis et al 2014; Qureshi et al 2016)

Weak recommendation

Pre-existing antihypertensive agents may be withheld until patients are neurologically stable and treatment can be given safely. (Bath and Krishnan 2014)

Long term blood pressure management

Strong recommendation

- All patients with stroke or TIA, with a clinic blood pressure of >140/90mmHg should have long term blood pressure lowering therapy initiated or intensified. (Zonneveld et al 2018; Ettehad et al 2016)
- Blood pressure lowering therapy should be initiated or intensified before discharge for those with stroke or TIA, or soon after TIA if the patient is not admitted. (Zonneveld et al 2018; Ettehad et al 2016)
- Any of the following drug classes are acceptable as blood pressure lowering therapy; angiotensin-converting-enzyme inhibitor, angiotensin II receptor antagonists, calcium channel blocker, thiazide diuretics. Beta-blockers should not be used as first-line agents unless the patient has ischaemic heart disease. (Zonneveld et al 2018; Mukete et al 2015)

Weak recommendation

- In patients with a systolic blood pressure of 120-140mmHg who are not on treatment, initiation of antihypertensive treatment is reasonable, with best evidence for dual (ACEI/diuretic) therapy. (Ettehad et al 2016; Kitagawa et al 2019; Katsanos et al 2017)
- The ideal long term blood pressure target is not well established. A target of <130mmHg systolic may achieve greater benefit than a target of 140mmHg systolic, especially in patients with stroke due to small vessel disease, provided there are no adverse effects from excessive blood pressure lowering. (Kitagawa et al 2019; Ettehad et al 2016)

Management of atrial fibrillation

Strong recommendation

- For patients with ischaemic stroke or TIA, with atrial fibrillation (both paroxysmal and permanent), oral anticoagulation is recommended for long-term secondary prevention. (Saxena et al 2004; Saxena 2004; Ruff et al 2014)
- Direct oral anticoagulants (DOACs) should be initiated in preference to warfarin for patients with non-valvular atrial fibrillation and adequate renal function. (Ruff et al 2014)
- For patients with valvular atrial fibrillation or inadequate renal function, warfarin (target INR 2.5, range 2.0-3.0) should be used. Patients with mechanical heart valves or other indications for anticoagulation should be prescribed warfarin. (Tawfik et al 2016)

Practice statement

Consensus-based recommendations

For patients with ischaemic stroke, the decision to begin anticoagulant therapy can be delayed for up to two weeks but should be made prior to discharge.

Info box

Practice points

- Concurrent antiplatelet therapy should not be used for patients who are anticoagulated for atrial fibrillation unless there is clear indication (e.g. recent coronary stent). Addition of antiplatelet for stable coronary artery disease in the absence of stents should not be used.
- For patients with TIA, anticoagulant therapy should begin once CT or MRI has excluded intracranial haemorrhage as the cause of the current event.
- For patients with ischaemic stroke due to atrial fibrillation and a genuine contraindication to long-term anticoagulation, percutaneous left atrial appendage occlusion may be a reasonable treatment to reduce recurrent stroke risk.

Antiplatelet therapy

Strong recommendation

Long-term antiplatelet therapy (low-dose aspirin, clopidogrel or combined low-dose aspirin and modified release dipyridamole) should be prescribed to all patients with ischaemic stroke or TIA who are not prescribed anticoagulation therapy, taking into consideration patient co-morbidities. (Rothwell et al 2016; Niu et al 2016; Sandercock et al 2014)

Strong recommendation

All ischaemic stroke and TIA patients should have antiplatelet therapy commenced as soon as possible once brain imaging has excluded haemorrhage unless thrombolysis has been administered, in which case antiplatelet therapy can commence after 24-hour brain imaging has excluded major haemorrhagic transformation. (see Antithrombotic therapy in Acute medical and surgical management)

Strong recommendation

Aspirin plus clopidogrel should be commenced within 24 hours and used in the short term (first three weeks) in patients with minor ischaemic stroke or high-risk TIA to prevent stroke recurrence. (Hao et al. 2018) (see Antithrombotic therapy in Acute medical and surgical management)

Strong recommendation AGAINST

The combination of aspirin plus clopidogrel should not be used for the long-term secondary prevention of cerebrovascular disease in people who do not have acute coronary disease or recent coronary stent. (Zhang et al 2015; Greving et al 2019)

Strong recommendation AGAINST

Antiplatelet agents should not be used for stroke prevention in patients with atrial fibrillation. (Connolly et al 2011)

Weak recommendation Draft

In patients with spontaneous (or primary) intracerebral haemorrhage who were previously prescribed antiplatelet therapy for secondary prevention of cardiovascular and/or cerebrovascular disease, restarting antiplatelet therapy after the acute phase is reasonable.

Cholesterol lowering therapy

Strong recommendation

All patients with ischaemic stroke or TIA with possible atherosclerotic contribution and reasonable life expectancy should be prescribed a high-potency statin, regardless of baseline lipid levels. (Manktelow et al 2009; Tramacer et al 2019)

Strong recommendation

In patients with ischaemic stroke, cholesterol lowering therapy should target LDL cholesterol < 1.8 mmol/L for secondary prevention of atherosclerotic cardiovascular disease. (Amarenco et al 2020)

Weak recommendation AGAINST

Statins should not be used routinely for intracerebral haemorrhage. (Manktelow et al 2009; Amarenco et al 2006)

Weak recommendation AGAINST

Fibrates should not be used routinely for the secondary prevention of stroke. (Zhou et al 2013; Wang et al 2015)

Carotid surgery

Strong recommendation

- Carotid endarterectomy is recommended for patients with recent (<3 months) non-disabling carotid artery territory ischaemic stroke or TIA with ipsilateral carotid stenosis measured at 70-99% (NASCET criteria) if it can be performed by a specialist team with audited practice and a low rate (<6%) of perioperative stroke and death.
- Carotid endarterectomy can be considered in selected patients with recent (<3 months) non-disabling ischaemic stroke or TIA patients with symptomatic carotid stenosis of 50–69% (NASCET criteria) if it can be performed by a specialist team with audited practice and a very low rate (<3%) of perioperative stroke and death.
- Carotid endarterectomy should be performed as soon as possible (ideally within two weeks) after the ischaemic stroke or TIA.
- All patients with carotid stenosis should be treated with intensive vascular secondary prevention therapy.

(Bangalore et al 2011, Rerkasem et al 2020)

Weak recommendation

- Carotid endarterectomy should be performed in preference to carotid stenting due to a lower perioperative stroke risk. However, in selected patients with unfavourable anatomy,

symptomatic re-stenosis after endarterectomy or previous radiotherapy, stenting may be reasonable.

- In patients aged <70 years old, carotid stenting with an experienced proceduralist may be reasonable.

(Muller et al 2020)

Weak recommendation AGAINST

In patients with asymptomatic carotid stenosis, carotid endarterectomy or stenting should not be performed. (Galyfos et al 2019; Raman et al 2013; Muller et al 2020)

Strong recommendation AGAINST

In patients with symptomatic carotid occlusion, extracranial/ intracranial bypass is not recommended. (Powers et al 2011; Fluri et al 2010)

Cervical artery dissection

Strong recommendation

Patients with acute ischaemic stroke due to cervical arterial dissection should be treated with antithrombotic therapy. There is no clear benefit of anticoagulation over antiplatelet therapy. (CADISS 2015)

Cerebral venous sinus thrombosis

Strong recommendation

Patients with cerebral venous sinus thrombosis (CVST) without contraindications to anticoagulation should be treated with either body weight-adjusted subcutaneous low molecular weight heparin or dose-adjusted intravenous heparin, followed by warfarin, regardless of the presence of intracerebral haemorrhage. (Coutinho et al 2011; Misra et al 2012; Afshari et al 2015)

Practice statement

Consensus-based recommendations

- In patients with CVST, the optimal duration of oral anticoagulation after the acute phase is unclear and may be taken in consultation with a haematologist.
- In patients with CVST with an underlying thrombophilic disorder, or who have had a recurrent CVST, indefinite anticoagulation should be considered.
- In patients with CVST, there is insufficient evidence to support the use of either systemic or local thrombolysis.
- In patients with CVST and impending cerebral herniation, craniectomy can be used as a life-saving intervention.
- In patients with the clinical features of idiopathic intracranial hypertension, imaging of the cerebral venous system is recommended to exclude CVST.

Diabetes management

Info box

Practice point

Patients with glucose intolerance or diabetes should be managed in line with Diabetes Australia Best Practice Guidelines.

Patent foramen ovale management

Strong recommendation

Patients with ischaemic stroke or TIA and PFO should receive optimal medical therapy including antiplatelet therapy or anticoagulation if indicated. (Romoli et al 2020; Sagris et al 2019)

Strong recommendation

In patients with ischaemic stroke aged <60 in whom a patent foramen ovale is considered the likely cause of stroke after thorough exclusion of other aetiologies, percutaneous closure of the PFO is recommended (Turc et al 2018, Saver et al 2018).

Hormone replacement therapy

Practice statement

Consensus-based recommendations

In patients with stroke or TIA, continuation or initiation of hormone replacement therapy is not recommended, but will depend on discussion with the patient and an individualised assessment of risk and benefit. (Boardman et al 2015; Yang et al 2013; Marjoribanks et al 2012; Nudy et al 2019)

Oral contraception

Weak recommendation

For women of child-bearing age who have had a stroke, non-hormonal methods of contraception should be considered. If systemic hormonal contraception is required, a non-oestrogen containing medication is preferred. (Roach et al 2015; Plu-Bureau 2013; Peragallo et al 2013; Li et al 2019)

Practice statement

Consensus-based recommendations

For women of child bearing age with a history of stroke or TIA, the decision to initiate or continue oral contraception should be discussed with the patient and based on an overall assessment of individual risk and benefit.

Lifestyle modifications

Info box

Practice point

All patients with stroke or TIA (except those receiving palliative care) should be assessed and informed of their risk factors for recurrent stroke and strategies to modify identified risk factors. This should occur as soon as possible and prior to discharge from hospital.

Diet

Info box

Practice point

- Patients with stroke or TIA should be advised to manage their dietary requirements in accordance with the Australian Dietary Guidelines. (NHMRC 2013)
- All patients with stroke should be referred to an Accredited Practising Dietitian who can provide individualised dietary advice.

Physical activity

Info box

Practice point

Patients with stroke or TIA should be advised and supported to undertake appropriate, regular physical activity as outlined in one of the following existing guidelines:

- Australia's Physical Activity & Sedentary Behaviour Guidelines for Adults (18-64 years) (Commonwealth of Australia 2014) OR
- Physical Activity Recommendations for Older Australians (65 years and older) (Commonwealth of Australia 2014).

Obesity

Info box

Practice point

Patients with stroke or TIA who are overweight or obese should be offered advice and support to aid weight loss as outlined in the Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults, Adolescents and Children in Australia. (NHMRC 2013)

Smoking

Info box

Practice point

Patients with stroke or TIA who smoke should be advised to stop and assisted to quit in line with existing guidelines, such as Supporting smoking cessation: a guide for health professionals. (RACGP 2019)

Alcohol

Info box

Practice point

People with stroke or TIA should be advised to avoid excessive alcohol consumption (>4 standard drinks per day) in line with the Australian Guidelines to Reduce Health Risks from Drinking Alcohol. (NHMRC 2020)

Chapter 5 of 8: Rehabilitation

Early supported discharge services

Strong recommendation

Where appropriate home-based coordinated stroke services are available (see Practical information section), early supported discharge services should be offered to stroke patients with mild to moderate disability. (Langhorne et al. 2017)

Home-based rehabilitation

Weak recommendation

Home-based rehabilitation may be considered as a preferred model for delivering rehabilitation in the community. Where home rehabilitation is unavailable, stroke patients requiring rehabilitation should receive centre-based care. (Rasmussen et al. 2016; Hillier et al. 2010)

Goal setting

- Health professionals should initiate the process of setting goals, and involve stroke survivors and their families and carers throughout the process. Goals for recovery should be client-centred, clearly communicated and documented so that both the stroke survivor (and their families/carers) and other members of the rehabilitation team are aware of goals set. (Sugavanam et al. 2013; Taylor et al. 2012)
- Goals should be set in collaboration with the stroke survivor and their family/carer (unless they choose not to participate) and should be well-defined, specific and challenging. They should be reviewed and updated regularly. (Sugavanam et al. 2013; Taylor et al. 2012)

Participation restrictions

Activities of daily living

Strong recommendation

- Community-dwelling stroke survivors who have difficulties performing daily activities should be assessed by a trained clinician. (Legg et al. 2017)
- Community-dwelling stroke survivors with confirmed difficulties in personal or extended ADL should have specific therapy from a trained clinician (e.g. task-specific practice and training in the use of appropriate aids) to address these issues. (Legg et al. 2017)

Weak recommendation AGAINST

For older stroke survivors living in a nursing home, routine occupational therapy is not recommended to improve activities of daily living function. (Sackley et al. 2015)

Weak recommendation AGAINST Draft update

Acupuncture is not routinely recommended to improve activities of daily living. (Yang et al. 2016)

Strong recommendation AGAINST

Administration of amphetamines to improve activities of daily living is not recommended. (Martinsson et al. 2007)

Weak recommendation AGAINST Draft update

Selective serotonin reuptake inhibitors should not be used to reduce disability. (Legg et al. 2019; AFFINITY collaborators 2020; EFFECTS collaborators 2020)

Weak recommendation

For stroke survivors, selective serotonin reuptake inhibitors may be used to improve performance of activities of daily living. (Mead et al. 2012)

Weak recommendation AGAINST

Brain stimulation (transcranial direct stimulation or repetitive transcranial magnetic stimulation) should not be used in routine practice to improve activities of daily living and only used as part of a research framework. (Elsner et al. 2020; Hao et al. 2013)

Weak recommendation

For stroke survivors, virtual reality technology may be used to improve activities of daily living in addition to usual therapy. (Laver et al. 2017)

Communication difficulties

Assessment of communication deficits

Info box

Practice point

- All stroke survivors should be screened for communication deficits using a screening tool that is valid and reliable.
- Those stroke survivors with suspected communication difficulties should receive formal, comprehensive assessment by a specialist clinician to determine the nature and type of the communication impairment.

Aphasia

Info box

Practice point

Treatment for aphasia should be offered as early as tolerated.

Strong recommendation

For stroke survivors with aphasia, speech and language therapy should be provided to improve functional communication. (Brady et al. 2016)

Weak recommendation

For stroke survivors with aphasia, intensive aphasia therapy (at least 45 minutes of direct language therapy for five days a week) may be used in the first few months after stroke. (Brady et al. 2016)

Weak recommendation

Brain stimulation (transcranial direct current stimulation or repetitive transcranial magnetic stimulation), with or without traditional aphasia therapy, should not be used in routine practice for improving speech and language function and only used as part of a research framework. (Ren et al. 2014; Elsner et al. 2015)

Info box

Practice points

Where a stroke patient is found to have aphasia, the clinician should:

- Document the provisional diagnosis.
- Explain and discuss the nature of the impairment with the patient, family/carers and treating team, and discuss and teach strategies or techniques which may enhance communication.
- Identify goals for therapy, and develop and initiate a tailored intervention plan, in collaboration with the patient and family/carer.
- Reassess the goals and plans at appropriate intervals over time.
- Use alternative means of communication (such as gesture, drawing, writing, use of augmentative and alternative communication devices) as appropriate.

All written information on health, aphasia, social and community supports (such as that available from the Australian Aphasia Association or local agencies) should be available in an aphasia-friendly format.

Info box

Practice point

- Stroke survivors with chronic and persisting aphasia should have their mood monitored.
- Environmental barriers facing people with aphasia should be addressed through training communication partners, raising awareness of and educating about aphasia to reduce negative attitudes, and promoting access and inclusion by providing aphasia-friendly formats or other environmental adaptations. People with aphasia from culturally and linguistically diverse backgrounds may need special attention from trained healthcare interpreters.
- The impact of aphasia on functional activities, participation and quality of life, including the impact upon relationships, vocation and leisure, should be assessed and addressed as appropriate from early post-onset and over time for those chronically affected.

Chapter 6 of 8: Managing complications

Spasticity

Weak recommendation

For stroke survivors with ***upper*** limb spasticity, Botulinum Toxin A in addition to rehabilitation therapy may be used to reduce spasticity, but is unlikely to improve activity or motor function. (Foley et al 2013; Gracies et al 2014)

Weak recommendation

For stroke survivors with ***lower*** limb spasticity, Botulinum Toxin A in addition to rehabilitation therapy may be used to reduce spasticity but is unlikely to improve motor function or walking. (Wu et al 2016; McIntyre et al 2012; Olvey et al 2010)

Weak recommendation AGAINST

For stroke survivors with spasticity, acupuncture should not be used for treatment of spasticity in routine practice other than as part of a research study. (Lim et al 2015)

Weak recommendation

For stroke survivors with spasticity, adjunct therapies to Botulinum Toxin A, such as electrical stimulation, casting and taping, may be used. (Stein et al 2015; Mills et al 2016; Santamato et al 2015)

Weak recommendation AGAINST

For stroke survivors, the routine use of stretch to reduce spasticity is not recommended. (Harvey et al 2017)

Contracture

Strong recommendation AGAINST

For stroke survivors at risk of developing contracture who are receiving comprehensive, active therapy the routine use of splints or stretch of the arm or leg muscles is not recommended. (Harvey et al 2017)

Practice statement

Consensus-based recommendations

- For stroke survivors, serial casting may be trialled to reduce severe, persistent contracture when conventional therapy has failed.
- For stroke survivors at risk of developing contracture or who have developed contracture, active motor training or electrical stimulation to elicit muscle activity should be provided.

Subluxation

Weak recommendation

For stroke survivors at risk of shoulder subluxation, electrical stimulation may be used in the first six months after stroke to prevent or reduce subluxation. (Vafadar et al 2015; Lee et al 2017)

Weak recommendation AGAINST

For stroke survivors at risk of shoulder subluxation, shoulder strapping is not recommended to prevent or reduce subluxation. (Appel et al 2014)

Practice statement

Consensus-based recommendation

For stroke survivors at risk of shoulder subluxation, firm support devices (e.g. devices such as a laptray) may be used. A sling maybe used when standing or walking.

Practice statement

Consensus-based recommendation

To prevent complications related to shoulder subluxation, education and training about correct manual handling and positioning should be provided to the stroke survivor, their family/carer and health professionals, and particularly nursing and allied health staff.

Pain

Shoulder pain

Weak recommendation

For stroke survivors with shoulder pain, shoulder strapping may be used to reduce pain. (Appel et al 2014)

Weak recommendation

For stroke survivors with shoulder pain, electrical stimulation may be used to manage pain. (Qiu et al 2019)

Weak recommendation

For stroke survivors with shoulder pain, shoulder injections (either sub acromial steroid injections for patients with rotator cuff syndrome, or methylprednisolone and bupivacaine for suprascapular nerve block) may be used to reduce pain. (Adey-Wakeling et al. 2013; Rah et al. 2012)

Weak recommendation

For stroke survivors with shoulder pain and upper limb spasticity, Botulinum Toxin A may be used to reduce pain. (Singh et al 2010)

Weak recommendation

For stroke survivors with shoulder pain, acupuncture in addition to comprehensive rehabilitation may be used to reduce pain. (Liu et al 2019)

Practice statement

Consensus-based recommendations

For stroke survivors with severe weakness who are at risk of developing shoulder pain, management may include:

- shoulder strapping;
- education of staff, carers and stroke survivors about preventing trauma;
- active motor training to improve function.

Info box

Practice point

For stroke survivors who develop shoulder pain, management should be based on evidence-based interventions for acute musculoskeletal pain.

Swelling of the extremities

Practice statement

Consensus-based recommendations

For stroke survivors with severe weakness who are at risk of developing swelling of the extremities, management may include the following

- dynamic pressure garments;
- electrical stimulation;
- elevation of the limb when resting.

Practice statement

Consensus-based recommendations

For stroke survivors who have swelling of the hands or feet management may include the following:

- dynamic pressure garments;

- electrical stimulation;
- continuous passive motion with elevation;
- elevation of the limb when resting.

Fatigue

Practice statement

Consensus-based recommendations **Draft update**

- Therapy for stroke survivors with fatigue should be organised for periods of the day when they are most alert.
- Stroke survivors and their families/carers should be provided with information, education and strategies to assist in managing fatigue.
- Potential modifying factors for fatigue should be considered including avoiding sedating drugs and alcohol, screening for sleep-related breathing disorders and depression.
- While there is insufficient evidence to guide practice, possible interventions could include cognitive behavioural therapy (focusing on fatigue and sleep with advice on regular exercise), exercise and improving sleep hygiene.

Incontinence

Urinary incontinence

Weak recommendation

- All stroke survivors with suspected urinary continence difficulties should be assessed by trained personnel using a structured functional assessment. (Martin et al 2006)
- For stroke survivors, a portable bladder ultrasound scan should be used to assist in diagnosis and management of urinary incontinence. (Martin et al 2006)

Weak recommendation

- Stroke patients in hospital with confirmed continence difficulties, should have a structured continence management plan formulated, documented, implemented and monitored. (Thomas et al 2008)
- A community continence management plan should be developed with the stroke survivor and family/carer prior to discharge, and should include information on accessing continence resources and appropriate review in the community. (Thomas et al 2008)
- If incontinence persists the stroke survivor should be re-assessed and referred for specialist review. (Thomas et al 2008)

Weak recommendation

For stroke survivors with urge incontinence:

- anticholinergic drugs can be tried (Nabi et al 2006);
- a prompted or scheduled voiding regime program/ bladder retraining can be trialled (Thomas et al 2015; Thomas et al 2008);
- if continence is unachievable, containment aids can assist with social continence.

Practice statement

Consensus-based recommendations

For stroke patients with urinary retention:

- The routine use of indwelling catheters is not recommended. However if urinary retention is severe, intermittent catheterisation should be used to assist bladder emptying during hospitalisation. If retention continues, intermittent catheterisation is preferable to indwelling catheterisation.
- If using intermittent catheterisation, a closed sterile catheterisation technique should be used in hospital.
- Where management of chronic retention requires catheterisation, consideration should be given to the choice of appropriate route, urethral or suprapubic.
- If a stroke survivor is discharged with either intermittent or indwelling catheterisation, they and their family/carer will require education about management, where to access supplies and who to contact in case of problems.

Practice statement

Consensus-based recommendation

For stroke survivors with functional incontinence, a whole-team approach is recommended.

Practice statement

Consensus-based recommendation

For stroke survivors, the use of indwelling catheters should be avoided as an initial management strategy except in acute urinary retention.

Faecal incontinence

Weak recommendation

- All stroke survivors with suspected faecal continence difficulties should be assessed by trained personnel using a structured functional assessment. (Harari et al 2004)
- For stroke survivors with constipation or faecal incontinence, a full assessment (including a rectal examination) should be carried out and appropriate management of constipation, faecal overflow or bowel incontinence established and targeted education provided. (Harari et al 2004)

Weak recommendation

For stroke survivors with bowel dysfunction, bowel habit retraining using type and timing of diet and exploiting the gastro-colic reflex should be used. (Venn et al 1992; Munchiando et al 1993)

Practice statement

Consensus-based recommendations

For stroke survivors with bowel dysfunction:

- Education and careful discharge planning should be provided.
- Use of short-term laxatives may be trialled.
- Increase frequency of mobilisation (walking and out of bed activity) to reduce constipation.
- Use of the bathroom rather than use of bed pans should be encouraged.
- Use of containment aids to assist with social continence where continence is unachievable.

Mood disturbance

Mood assessment

Info box

Practice points

- Stroke survivors with suspected altered mood (e.g. depression, anxiety, emotional lability) should be assessed by trained personnel using a standardised and validated scale.
- Diagnosis should only be made following clinical interview.

Treatment for Emotionalism

Weak recommendation

For stroke survivors with emotionalism, antidepressant medication such as selective serotonin reuptake inhibitors (SSRIs) or tricyclic antidepressants may be used. (Allida et al 2019)

Prevention of depression

Weak recommendation AGAINST

For stroke survivors, routine use of antidepressants to prevent post-stroke depression is not recommended. (Allida et al 2020)

Weak recommendation

For stroke survivors, psychological strategies (e.g. problem solving, motivational interviewing) may be used to prevent depression. (Allida et al 2020)

Treatment for depression

Strong recommendation

For stroke survivors with depression or depressive symptoms, antidepressants, which includes SSRIs should be considered. There is no clear evidence that particular antidepressants produce greater effects than others and will vary according to the benefit and risk profile of the individual. (Mead et al 2012; Hackett et al 2008)

Weak recommendation

For stroke survivors with depression or depressive symptoms, structured exercise programs, particularly those of high intensity, may be used. (Eng et al 2014)

Weak recommendation

For stroke survivors with depression or depressive symptoms, acupuncture may be used. (Zhang et al 2010)

Weak recommendation AGAINST

For stroke survivors with depression, non-invasive brain stimulation (transcranial direct stimulation or repetitive transcranial magnetic stimulation) should not be used in routine practice and only used as part of a research framework. (Tian et al 2011)

Falls

Practice statement

Consensus-based recommendations

- For stroke patients, a falls risk assessment, including fear of falling, should be undertaken on admission to hospital. A management plan should be initiated for all patients identified as at risk of falls.
- For stroke survivors at high risk of falls, a comprehensive home assessment for the purposes of reducing falling hazards should be carried out by a qualified health professional. Appropriate home modifications (as determined by a health professional) for example installation of grab rails and ramps may further reduce falls risk.

Weak recommendation

For stroke survivors who are at risk of falling, multifactorial interventions in the community, including an individually prescribed exercise program and advice on safety, should be provided. (Denissen et al 2019; Gillespie et al 2012)

Chapter 7 of 8: Discharge planning and transfer of care

Information and education

Strong recommendation

- All stroke survivors and their families/carers should be offered information tailored to meet their individual needs using relevant language and communication formats. (Forster et al 2012)
- Information should be provided at different stages in the recovery process. (Forster et al 2012)
- An approach of active engagement with stroke survivors and their families/carers should be used allowing for the provision of material, opportunities for follow-up, clarification, and reinforcement. (Forster et al 2012)

Info box

Practice points

- Stroke survivors and their families/carers should be educated in the FAST stroke recognition message to maximise early presentation to hospital in case of recurrent stroke.
- The need for education, information and behaviour change to address long-term secondary stroke prevention should be emphasized (refer to Secondary Prevention).

Discharge care plans

Strong recommendation

Comprehensive discharge care plans that address the specific needs of the stroke survivor should be developed in conjunction with the stroke survivor and carer prior to discharge. (Johnston et al 2010; Goncalves-Bradley et al 2016)

Info box

Practice point

Discharge planning should commence as soon as possible after the stroke patient has been admitted to hospital.

Practice statement

Consensus-based recommendation

A discharge planner may be used to coordinate a comprehensive discharge program for stroke survivors.

Practice statement

Consensus-based recommendations

To ensure a safe discharge process occurs, hospital services should ensure the following steps are completed prior to discharge:

- Stroke survivors and families/carers have the opportunity to identify and discuss their post-discharge needs (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 necessary continuing specialist treatment required has been organised.
- A documented post-discharge care plan is developed in collaboration with the stroke survivor and family and a copy provided to them. This discharge planning process may involve relevant community services, self-management strategies (i.e. 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 post-discharge queries

A locally developed protocol or standardised tool may assist in implementation of a safe and comprehensive discharge process. This tool should be aphasia and cognition friendly.

Patient and carer needs

Practice statement

Consensus-based recommendation

Hospital services should ensure that stroke survivors and their families/carers have the opportunity to identify and discuss their post-discharge needs (including physical, emotional, social, recreational, financial and community support) with relevant members of the interdisciplinary team.

Home assessment

Practice statement

Consensus-based recommendation

Prior to hospital discharge, all stroke survivors 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.

Carer training

Weak recommendation

Relevant members of the interdisciplinary team should provide specific and tailored training for carers/family before the stroke survivor is discharged home. This training should include, as necessary, personal care techniques, communication strategies, physical handling techniques, information about ongoing prevention and other specific stroke-related problems, safe swallowing and appropriate dietary modifications, and management of behaviours and psychosocial issues. (Forster et al 2013)

Chapter 8 of 8: Community participation and long-term care

Self-management

Weak recommendation

- Stroke survivors who are cognitively able and their carers 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.
- Stroke-specific self-management programs may be provided for those who require more specialised programs.
- A collaboratively developed self-management care plan may be used to harness and optimise self-management skills.

(Fryer et al 2016; Pedersen et al 2020)

Driving

Practice statement

Consensus-based recommendations

- All stroke survivors or people who have had a transient ischaemic attack should be asked if they wish to resume driving.
- Any person wishing to drive again after a stroke or TIA should be provided with information about how stroke may affect his/her driving and the requirements and processes for returning to driving. Information should be consistent with the Austroads standards and any relevant state guidelines.
- For private licenses, stroke survivors should be instructed not to return to driving for a minimum of four weeks post stroke. People who have had a TIA should be instructed not to drive for two weeks. (Austroads standards 2016)
- For commercial licenses, stroke survivors should be instructed not to return to driving for a minimum of 3 months post stroke. People who have had a TIA should be instructed not to drive for four weeks. (Austroads standards 2016)
- A follow-up assessment should be conducted by an **appropriate specialist** to determine medical fitness prior to return to driving. (Austroads standards 2016)
- If a stroke survivor is deemed medically fit but has residual motor, sensory or cognitive changes that may influence driving, they should be referred for an occupational therapy driving assessment. This may include clinic based assessments to determine on-road assessment requirements (for example modifications, type of vehicle, timing), on-road assessment and rehabilitation recommendations.

Weak recommendation

For stroke survivors needing driving rehabilitation, driving simulation may be used. Health professionals using driving simulation need to receive training and education to deliver intervention effectively and appropriately, and mitigate driving simulator sickness. (George et al 2014; Classen et al 2014)

Practice statement

Consensus-based recommendations

On-road driving rehabilitation may be provided by health professionals specifically trained in driving rehabilitation.

Community mobility and outdoor travel

Weak recommendation

Stroke survivors who have difficulty with outdoor mobility in the community should set individualised goals and get assistance with adaptive equipment, information and referral on to other agencies. Escorted walking practice may be of benefit to some individuals and if provided, should occur in a variety of community settings and environments, and may also incorporate virtual reality training that mimics community walking. (Barclay et al 2015; Logan et al 2014)

Leisure

Weak recommendation

For stroke survivors, targeted occupational therapy programs including leisure therapy may be used to increase participation in leisure activities. (Dorstyn et al 2014; Walker et al 2004)

Return to work

Weak recommendation

- All stroke survivors should be asked about their employment (paid and unpaid) prior to their stroke and if they wish to return to work.
- For stroke survivors who wish to return to work, assessment should be offered to establish abilities relative to work demands. In addition, assistance to resume or take up work including worksite visits and workplace interventions, or referral to a supported employment service should be offered. (Ntsiea et al 2015)

Sexuality

Practice statement

Consensus-based recommendations

Stroke survivors and their partners should be offered:

- the opportunity to discuss sexuality and intimacy with an appropriate health professional; *and*
- written information addressing issues relating to sexual intimacy and sexual dysfunction post stroke.

Any discussion or written information should address psychosocial as well as physical function.

Support

Peer support

Weak recommendation

Stroke survivors and their families/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. (Kruithof et al 2013)

Carer support

Strong recommendation

Carers of stroke survivors should be provided with tailored information and support during all stages of the recovery process. This support 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. Support and information provision for carers should occur prior to discharge from hospital and/or in the home and can be delivered face-to-face, via telephone or computer. (Legg et al 2011; Eames et al 2013)

Practice statement

Consensus-based recommendations

- Carers should receive psychosocial support throughout the stroke recovery continuum to ensure carer wellbeing and the sustainability of the care arrangement. Carers should be supported to explore and develop problem solving strategies, coping strategies and stress management techniques. The care arrangement has a significant impact on the relationship between caregiver and stroke survivor so psychosocial support should also be targeted towards protecting relationships within the stroke survivors support network.
- Where it is the wish of the stroke survivor, carers should be actively involved in the recovery process by assisting with goal setting, therapy sessions, discharge planning, and long-term activities.
- 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.
- Assistance should be provided for families/carers to manage stroke survivors who have behavioural problems.

For access to the full Clinical Guidelines and further information refer to InformMe https://informme.org.au/Guidelines/Clinical-Guidelines-for-Stroke-Management.