

Clinical Guidelines for Stroke Management 2017

Summary – Nursing

This summary is a quick reference to the recommendations in the *Clinical Guidelines for Stroke Management 2017* most relevant to nurses.

While this summary focuses on relevant aspects of care that nurses usually take responsibility for, 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/en/Guidelines/Clinical-Guidelines-for-Stroke-Management-2017>.

What do these recommendations mean for nurses?

Nurses have key contributions to make across all recommendations.

Many of these recommendations can be nurse-initiated working in conjunction as part of the interdisciplinary team. Other recommendations may be primarily initiated by other team members but require critical input from nurses.

The extent of nurses' contribution to implementing individual recommendations will vary depending on how your stroke service is resourced, how care is organised and individual nurses' scope of practice.

Key points:

Nurses are an integral member of the interdisciplinary team across the whole stroke care continuum. The important responsibilities of nurses' include:

- Rapid assessment of patients with suspected stroke and facilitating appropriate diagnostic and early intervention processes (e.g. thrombolysis, aspirin).
- Ensuring timely screening or assessment processes of patients with acute stroke, such as dysphagia, nutrition and hydration status, cognitive and perceptual deficits, communication deficits, mood, and rehabilitation needs.
- Monitoring and responding to routine aspects of acute or subacute care, e.g. temperature, blood pressure, glucose level, oxygen level, skin integrity.
- Providing care to patients with stroke in consideration of their deficits as agreed in consultation with other allied health and medical team members.
- Identifying and managing common complications
- Working with other members of the team to maximise the amount and value of rehabilitation to achieve the goals set with the patient with stroke.
- Coordinating and reinforcing secondary prevention measures including lifestyle modification education, as required.
- Coordinating discharge and follow-up services, and ensuring sufficient information, education, training, and support is provided to patients with stroke and their carers prior to discharge.

The *Clinical Guidelines for Stroke Management 2017* is an update of the previous clinical guidelines published in 2010 and is based on the best evidence available. The new Clinical Guidelines use an internationally recognised guideline development approach called GRADE (Grading of Recommendations Assessment, Development and Evaluation) and an innovative guideline development and publishing platform known as MAGICapp (Making Grade the Irresistible Choice). GRADE ensures a systematic process in developing recommendations, 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 recommendations, based on how confident the guideline developers are in that the “desirable effects of an intervention outweigh undesirable effects [...] 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 for the 2010 and 2017 versions to note changes easily, and are also presented in Chapter order for easier reference to the relevant section of the full Clinical Guidelines.

2010 Clinical Guidelines	2017 Clinical Guidelines
Nurses who work in the Emergency Department triage have a critical role in responding to pre-notification and initiating rapid assessment processes procedures when a patient with suspected stroke arrives at hospital.	
Chapter 2: Stroke recognition and pre-hospital care	Chapter 1: Pre-hospital care
Stroke patients should be assigned a high priority by ambulance services.	Strong recommendation Updated All stroke patients should be managed as a time critical emergency. The dispatch of ambulances to suspected stroke patients who may be eligible for reperfusion therapies requires the highest level of priority.
Health and ambulance services should develop and use pre-notification systems for stroke.	Strong recommendation Updated <ul style="list-style-type: none"> • Ambulance services should preferentially transfer suspected stroke patients to a hospital capable of delivering reperfusion therapies as well as stroke unit care. • Ambulance services should pre-notify the hospital of a suspected stroke case where the patient may be eligible for reperfusion therapies.
Ambulance services should preferentially transfer suspected stroke patients to a hospital with stroke unit care.	
Chapter 3: Early assessment and diagnosis	Chapter 2 of 8: Early assessment and diagnosis
Transient ischaemic attack	Transient ischaemic attack
All patients with suspected TIA should have a full assessment that includes a detailed history and clinical, prognostic (e.g. ABCD2 score) and investigative tests (e.g. blood tests, brain and carotid imaging and ECG) at	Strong recommendation Updated

<p>the initial point of healthcare contact, whether first seen in primary or secondary care.</p>	<ul style="list-style-type: none"> • 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. • 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. • In pre-hospital settings, high risk indicators (e.g. crescendo TIA, current or suspected AF, current use of anticoagulants, carotid stenosis or high ABCD² score) can be used to identify patients for urgent specialist assessment.
	<p>Strong recommendation New</p> <p>When TIA patients present to primary care, the use of TIA electronic decision support, when available, is recommended to improve diagnostic and triage decisions.</p>
	<p>Weak recommendation AGAINST New</p> <p>In TIA patients, use of the ABCD² 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.</p>
<p>Patients identified as high risk (e.g. ABCD² score >3 and/or any one of AF, carotid territory symptoms or crescendo TIA) should undergo:</p> <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, 	<p>Strong recommendation Updated</p> <p>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.</p>

<p>referral within 24 hours should be made to the nearest centre where such tests can be quickly conducted.</p>	
	<p>Weak recommendation Updated Patients with TIA should routinely undergo brain imaging to exclude stroke mimics and intracranial haemorrhage. MRI, when available, is recommended to improve diagnostic accuracy.</p>
	<p>Strong recommendation New Patients with suspected TIA should commence secondary prevention therapy urgently.</p>
	<p>Strong recommendation New</p> <ul style="list-style-type: none"> • All patients with TIA should be investigated for atrial fibrillation with ECG during initial assessment and referred for possible prolonged cardiac monitoring as required. • TIA patients with atrial fibrillation should commence anticoagulation therapy early after brain imaging has excluded haemorrhage, unless contraindicated.
	<p>Practice statement Consensus-based recommendations New</p> <ul style="list-style-type: none"> • 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), return to driving 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.
Patients classified as low-risk (e.g. ABCD2 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).	-
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.	-
Rapid assessment in the emergency department	Rapid assessment in the emergency department
Initial diagnosis should be reviewed by a clinician experienced in the evaluation of stroke.	Strong recommendation Updated 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.
Emergency department staff should use a validated stroke screening tool to assist in rapid accurate assessment for all people with stroke.	Weak recommendation Updated 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.
Stroke severity should be assessed and recorded on admission by a trained clinician using a validated tool (e.g. NIHSS or SSS).	Info Box Practice points Updated • Initial diagnosis should be reviewed by a clinician experienced in the evaluation of stroke.

	<ul style="list-style-type: none"> • 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’).
	Investigations
Imaging	Imaging - Brain imaging
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.	<p>Strong recommendation Updated</p> <p>All patients with suspected stroke who are candidates for reperfusion therapies should undergo brain imaging immediately. All other suspected stroke patients should have an urgent brain CT or MRI (‘urgent’ being immediately where facilities are available and preferably within 60 minutes).</p>
	<p>Weak recommendation Updated</p> <p>In patients with suspected stroke and TIA, MRI is more sensitive and specific than non-contrast CT and is the preferred modality when diagnostic confirmation is required.</p>
	<p>Practice statement Consensus-based recommendation New</p> <p>Either CT or MRI are acceptable acute imaging options but these need to be immediately accessible to avoid delaying reperfusion therapies.</p>
	<p>Strong recommendation New</p> <p>If using CT to identify hyperdense thrombus, thin slice (< 2 mm) non-contrast CT should be used rather than the standard 5 mm slices to improve diagnostic sensitivity for vessel occlusion.</p>

	<p>Weak recommendation New</p> <p>CT perfusion imaging may be used in addition to routine imaging to improve diagnostic and prognostic accuracy.</p>
<p>A repeat brain CT or MRI and acute medical review should be considered urgently when a patient's condition deteriorates.</p>	<p>Info Box Practice points Updated</p> <ul style="list-style-type: none"> • If a patient with stroke develops neurological deterioration, immediate clinical assessment and further brain imaging (CT or MRI) should be considered. • Routine brain imaging approximately 24 hours after reperfusion therapies have been administered is recommended to identify haemorrhagic transformation and delineate the extent of infarction, both of which are important when making decisions about antithrombotic therapy and DVT prophylaxis.
	<p>Imaging – Vascular imaging</p>
<p>All patients with carotid territory symptoms who would potentially be candidates for carotid re-vascularisation should have urgent carotid imaging.</p>	<p>Strong recommendation Updated</p> <ul style="list-style-type: none"> • All patients who would potentially be candidates for endovascular thrombectomy should have vascular imaging from aortic arch to cerebral vertex (CTA or MRA) to establish the presence of vascular occlusion as a target for thrombectomy and to assess proximal vascular access. • All other patients with carotid territory symptoms who would potentially be candidates for carotid re-vascularisation should have early vascular imaging to identify stenosis in the ipsilateral carotid artery. CT angiography (if not already performed as part of assessment for reperfusion therapies), Doppler ultrasound or contrast-enhanced MR angiography are all reasonable options depending on local experience and availability.
<p>Further brain, cardiac or carotid imaging should be undertaken in selected patients:</p> <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. 	
	<p>Info Box Practice points New</p>

	<ul style="list-style-type: none"> • In ischaemic stroke and TIA patients, routinely imaging the entire vasculature from aortic arch to cerebral vertex with CTA or MRA is encouraged to improve diagnosis, recognition of stroke aetiology and assessment of prognosis. • The administration of intravenous iodinated contrast for CT angiography/perfusion, when clinically indicated, should not be delayed by concerns regarding renal function. Post-hydration with intravenous 0.9% saline is advisable.
	<p>Info Box Practice point New</p> <p>Vascular imaging should not be performed for syncope or other non-focal neurological presentations.</p>
	<p>Cardiac investigations</p>
	<p>Weak recommendation New</p> <p>Initial ECG monitoring should be undertaken for all patients with stroke. The duration and mode of monitoring should be guided by individual patient factors but would generally be recommended for at least the first 24 hours.</p>
	<p>Strong recommendation New</p> <p>For patients with embolic stroke of uncertain source, longer term ECG monitoring (external or implantable) should be used.</p>
	<p>Weak recommendation Updated</p> <p>Further cardiac investigations should be performed where clarification of stroke aetiology is required after initial investigations. In patients with ischaemic stroke, echocardiography should be considered based on</p>

	individual patient factors. Transoesophageal echocardiography is more sensitive for suspected valvular, left atrial and aortic arch pathology.
Chapter 4: Acute medical and surgical management	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.
	Info Box Practice points <ul style="list-style-type: none"> • 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 New All acute stroke services should implement standardised protocols to manage fever, glucose and swallowing difficulties in stroke patients.
	Assessment for rehabilitation
	Info Box Practice points New

	<ul style="list-style-type: none"> • Every stroke patient should have their rehabilitation needs assessed within 24–48 hours of admission to the stroke unit by members of the interdisciplinary team, using the Assessment for Rehabilitation Tool. • Any stroke patient with identified rehabilitation needs should be referred to a rehabilitation service. • Rehabilitation service providers should document whether a stroke patient has rehabilitation needs and whether appropriate rehabilitation services are available to meet these needs.
	Palliative care
	<p>Strong recommendation</p> <p>Stroke patients and their families/carers should have access to specialist palliative care teams as needed and receive care consistent with the principles and philosophies of palliative care.</p>
	<p>Practice statement Consensus-based recommendations</p> <ul style="list-style-type: none"> • For patients with severe stroke who are deteriorating, a considered assessment of prognosis or imminent death should be made. • A pathway for stroke palliative care can be used to support stroke patients and their families/carers and improve care for people dying after stroke.
	Reperfusion therapy
Thrombolysis	Thrombolysis
Intravenous rt-PA in acute ischaemic stroke should only be undertaken in patients satisfying specific inclusion and exclusion criteria.	Strong recommendation Updated

<p>Intravenous rt-PA should be given as early as possible in carefully selected patients with acute ischaemic stroke as the effect size of thrombolysis is time-dependent. Where possible, therapy should commence in the first few hours but may be used up to 4.5 hours after stroke onset.</p>	<ul style="list-style-type: none"> • For patients with potentially disabling ischaemic stroke who meet specific eligibility criteria, intravenous alteplase (dose of 0.9 mg/kg, maximum of 90 mg) should be administered. • Thrombolysis should commence as early as possible (within the first few hours) after stroke onset but may be used up to 4.5 hours after onset.
<p>Intravenous rt-PA should only be given under the authority of a physician trained and experienced in acute stroke management.</p>	<p>Info Box Practice points Updated</p> <p>Thrombolysis should be undertaken in a setting with appropriate infrastructure, facilities and network support (e.g. via telemedicine) including:</p> <ul style="list-style-type: none"> • access to an interdisciplinary acute care team with expert knowledge of stroke management, who are trained in delivery of thrombolysis and monitoring of patients receiving thrombolytic therapy • a streamlined acute stroke assessment workflow (including ambulance pre-notification, code stroke team response and direct transport from triage to CT scan) to minimise treatment delays, and protocols available to guide medical, nursing and allied health acute phase management • immediate access to imaging facilities and staff trained to interpret images
<p>Thrombolysis should only be undertaken in a hospital setting with appropriate infrastructure, facilities and network support including:</p> <ul style="list-style-type: none"> • access to an multidisciplinary acute care team with expert knowledge of stroke management • who are trained in delivery and monitoring of patients receiving thrombolytic therapy • pathways and protocols available to guide medical, nursing and allied health acute phase • management, in particular acute blood pressure management • immediate access to imaging facilities and staff trained to interpret images. 	

<p>A minimum set of de-identified data from all patients treated with thrombolysis should be recorded in a central register to allow monitoring, review, comparison and benchmarking of key outcomes measures over time.</p>	<ul style="list-style-type: none"> • routine data collected in a central register to allow monitoring, benchmarking and improvements of patient outcomes over time for those treated with reperfusion. <p>The patient and caregivers should be involved in the decision to give thrombolysis whenever possible and this discussion of risk and benefit documented in the medical record. However, as a time-critical emergency therapy, thrombolysis should not be delayed if the patient does not have the capacity to consent and there are no legal representatives present. Clinicians should follow local health department policies regarding consent for emergency treatment in patients who are unable to consent for themselves.</p>
<p>The commencement of aspirin for patients who have received thrombolysis should be delayed for 24 hours (usually after a follow-up scan has excluded significant bleeding).</p>	<p>-</p>
<p>Neurointervention</p>	<p>Neurointervention</p>
	<p>Strong recommendation New</p> <p>For patients with ischaemic stroke caused by a large vessel occlusion in the internal carotid artery, proximal cerebral artery (M1 segment), or with tandem occlusion of both the cervical carotid and intracranial arteries, endovascular thrombectomy should be undertaken when the procedure can be commenced within six hours of stroke onset.</p>
	<p>Strong recommendation New</p> <p>Eligible stroke patients should receive intravenous thrombolysis while concurrently arranging endovascular thrombectomy, with neither treatment delaying the other.</p>

	<p>Strong recommendation New</p> <p>In selected stroke patients with occlusion of the basilar artery, endovascular thrombectomy should be undertaken.</p>
	<p>Practice statement <u>Consensus-based recommendations</u> New</p> <p>For stroke patients, endovascular thrombectomy may be considered in the following situations based on individual patient and advanced imaging factors:</p> <ul style="list-style-type: none"> • commencement of procedure beyond 6 hours (but within 24 hours) from stroke onset • occlusion in more distal middle cerebral artery branches (M2 segment). <p>Endovascular thrombectomy should be performed by an experienced neurointerventionist with recognised training in the procedure.</p>
Intra-arterial (IA) thrombolysis within six hours can be used in carefully selected patients.	-
Each large tertiary centre should consider establishing facilities and systems for IA thrombolysis.	-
There is insufficient evidence to recommend the use of mechanical clot removal in routine clinical practice. Consideration should be given to enrolling patients in a suitable clinical trial evaluating this intervention.	-
Dysphagia	Dysphagia
Patients should be screened for swallowing deficits before being given food, drink or oral medications.	Practice statement <u>Consensus-based recommendation</u> New

<p>Swallowing should be screened for as soon as possible but at least within 24 hours of admission.</p>	<p>People with acute stroke should have their swallowing screened within four hours of arrival at hospital and before being given any oral food, fluid or medication.</p>
<p>Personnel specifically trained in swallowing screening using a validated tool should undertake screening.</p>	<p>Weak recommendation Updated People with acute stroke should have their swallowing screened, using a validated screening tool, by a trained healthcare professional.</p>
<p>Patients who fail the swallowing screening should be referred to a speech pathologist for a comprehensive assessment. This may include instrumental examination e.g. VMBS &/or FEES. Special consideration should be given to assessing and managing appropriate hydration. These assessments can also be used for monitoring during rehabilitation.</p>	<p>Weak recommendation Updated All stroke patients who have failed swallow screening or who deteriorate should have a comprehensive assessment of swallowing performed by a speech pathologist.</p>
<p>Compensatory strategies such as positioning, therapeutic manoeuvres or modification of food and fluids to facilitate safe swallowing should be provided for people with dysphagia based on specific impairments identified during comprehensive swallow assessment.</p>	<p>Strong recommendation Updated For stroke survivors with swallowing difficulties, behavioural approaches such as swallowing exercises, environmental modifications, safe swallowing advice, and appropriate dietary modifications should be used early.</p>
<p>One or more of the following methods can be provided to facilitate resolution of dysphagia:</p> <ul style="list-style-type: none"> • therapy targeting specific muscle groups (e.g. ‘Shaker’ therapy) • thermo-tactile stimulation • electrical stimulation if it is delivered by clinicians experienced with this intervention, applied according to published parameters and employing a research or quality framework. 	<p>Weak recommendation AGAINST Updated For stroke survivors with dysphagia, surface neuromuscular electrical stimulation should only be delivered by clinicians experienced in this intervention, and be applied according to published parameters in a research framework.</p>
	<p>Weak recommendation AGAINST New</p>

	For stroke survivors with dysphagia, pharyngeal electrical stimulation is not routinely recommended.
Dysphagic patients on modified diets should have their intake and tolerance to diet monitored. The need for continued modified diet should be regularly reviewed.	<p>Practice statement Consensus-based recommendations Updated</p> <ul style="list-style-type: none"> • Until a safe swallowing method is established for oral intake, patients with dysphagia should have their nutrition and hydration assessed and managed with early consideration of alternative non-oral routes. • Patients with dysphagia on texture-modified diets and/or fluids should have their intake and tolerance to the modified diet monitored regularly due to the increased risk of malnutrition and dehydration. • Patients with dysphagia should be offered regular therapy that includes skill and strength training in direct therapy (with food/fluids) and indirect motor therapy which capitalises on the principles of neural plasticity to improve swallowing skills. • Patients with persistent weight loss, dehydration and/or recurrent chest infections should be urgently reviewed. • All staff and carers involved in feeding patients should receive appropriate training in feeding and swallowing techniques. • All staff should be appropriately trained in the maintenance of oral hygiene, including daily brushing of teeth and/or dentures and care of gums.
Patients with persistent weight loss and recurrent chest infections should be urgently reviewed.	
All staff and carers involved in feeding patients should receive appropriate training in feeding and swallowing techniques.	
The gag reflex is not a valid screen for dysphagia and should NOT be used as a screening tool.	-
Antithrombotic therapy	Antithrombotic therapy
Aspirin orally or via a nasogastric tube or suppository (for those with dysphagia) should be given as soon as possible after the onset of stroke symptoms (i.e. within 48 hours) if CT/MRI scans exclude haemorrhage. The	Strong recommendation Updated

<p>first dose should be at least 150 to 300 mg. Dosage thereafter can be reduced (e.g. 100 mg daily).</p>	<p>Patients with ischaemic stroke who are not receiving reperfusion therapy should receive antiplatelet therapy as soon as brain imaging has excluded haemorrhage.</p>
	<p>Strong recommendation AGAINST Updated Acute antiplatelet therapy should not be given within 24 hours of alteplase administration.</p>
<p>The routine use of early anticoagulation in unselected patients following ischaemic stroke/TIA is NOT recommended.</p>	<p>Strong recommendation AGAINST Routine use of anticoagulation in patients without cardioembolism (e.g. atrial fibrillation) following TIA/stroke is not recommended.</p>
	<p>Weak recommendation New Aspirin plus clopidogrel may be used in the short term (first three weeks) in high-risk patients with minor ischaemic stroke or TIA to prevent stroke recurrence.</p>
<p>Acute phase blood pressure lowering therapy</p>	<p>Acute blood pressure lowering therapy</p>
	<p>Weak recommendation AGAINST New Intensive blood pressure lowering in the acute phase of care to a target SBP of < 140 mmHg is not recommended for any patient with stroke.</p>
<p>In acute primary intracerebral haemorrhage where severe hypertension is observed on several occasions within the first 24 to 48 hours of stroke onset, antihypertensive therapy (that could include intravenous treatment) can be used to maintain a blood pressure below 180 mmHg systolic (mean arterial pressure of 130 mmHg).</p>	<p>Weak recommendation Updated In patients with intracerebral haemorrhage, blood pressure may be acutely reduced to a target systolic blood pressure of around 140 mmHg (but not substantially below).</p>

<p>Pre-existing antihypertensive therapy can be continued (orally or via nasogastric tube) provided there is no symptomatic hypotension or other reason to withhold treatment.</p>	<p>Weak recommendation Updated Pre-existing antihypertensive medication may be withheld until patients are neurologically stable and treatment can be given safely.</p>
<p>In ischaemic stroke, if blood pressure is more than 220/120 mmHg, antihypertensive therapy can be started or increased, but blood pressure should be cautiously reduced (e.g. by no more than 10–20%) and the patient monitored for signs of neurological deterioration.</p>	<p>Practice statement Consensus-based recommendations Updated</p> <ul style="list-style-type: none"> • All acute stroke patients 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.
<p>Intracerebral haemorrhage management</p>	<p>Intracerebral haemorrhage (ICH) management</p>
	<p>Medical interventions</p>
<p>The use of haemostatic drug treatment with rFVIIa is currently considered experimental and is NOT recommended for use outside a clinical trial.</p>	<p>Weak recommendation Updated</p> <ul style="list-style-type: none"> • For stroke patients with warfarin-related intracerebral haemorrhage, prothrombin complex concentrate should be urgently administered in preference to standard fresh frozen plasma to reverse coagulopathy. • Intravenous vitamin K (5–10 mg) should be used in addition to prothrombin complex to reverse warfarin but is insufficient as a sole treatment.
<p>In patients with ICH who were receiving anticoagulation therapy prior to the stroke and who have elevated INR, therapy to reverse anticoagulation should be initiated rapidly e.g. using a combination of prothrombin complex concentrate and vitamin K.</p>	
	<p>Weak recommendation New</p>

	Stroke patients with intracerebral haemorrhage related to direct oral anticoagulants should urgently receive a specific reversal agent where available.
	Strong recommendation AGAINST New For stroke patients with intracerebral haemorrhage previously receiving antiplatelet therapy, platelet transfusion should not be administered.
	Weak recommendation Updated For stroke patients with intracerebral haemorrhage, blood pressure may be acutely reduced to a target systolic blood pressure of around 140 mmHg (but not substantially below).
Oxygen therapy	Oxygen therapy
The routine use of supplemental oxygen is NOT recommended in acute stroke patients who are not hypoxic.	Weak recommendation AGAINST For acute stroke patients who are not hypoxic, the routine use of supplemental oxygen is not recommended.
	Weak recommendation AGAINST New For acute ischaemic stroke patients, hyperbaric oxygen therapy is not recommended.
Patients who are hypoxic (i.e. <95% oxygen saturation) should be given supplemental oxygen.	Practice statement Consensus-based recommendation Stroke patients who are hypoxic (i.e. < 95% oxygen saturation) should be given supplemental oxygen.

Neuroprotection	Neuroprotection
Putative neuroprotectors (including hypothermic cooling) should only be used in a randomised controlled trial.	Practice statement <u>Consensus-based recommendation</u> For stroke patients, putative neuroprotective agents, including hypothermic cooling, are not recommended outside the context of research.
Patients with acute ischaemic stroke who were receiving statins prior to admission can continue statin treatment.	Practice statement <u>Consensus-based recommendation</u> Patients with acute ischaemic stroke who were receiving statins prior to admission can continue statin treatment.
Glycaemic control	Glycaemic therapy
On admission, all patients should have their blood glucose level monitored and appropriate glycaemic therapy instituted to ensure euglycaemia, especially if the patient is diabetic.	Strong recommendation Updated All stroke patients should have their blood glucose level monitored for the first 72 hours following admission, and appropriate glycaemic therapy instituted to treat hyperglycaemia (glucose levels greater than 10 mmol/L), regardless of their diabetic status.
An early intensive approach to the maintenance of euglycaemia is currently NOT recommended.	Strong recommendation AGAINST Updated For stroke patients, an intensive approach to the maintenance of tight glycaemic control (between 4.0–7.5 mmol/L) is not recommended.
Pyrexia	Pyrexia management
	Strong recommendation New All stroke patients should have their temperature monitored at least four times a day for 72 hours.
Antipyretic therapy, comprising regular paracetamol and/or physical cooling measures, should be used routinely where fever occurs.	Weak recommendation Updated

	Stroke patients with fever ≥ 37.5 °C may be treated with paracetamol as an antipyretic therapy.
Chapter 5: Secondary prevention	Chapter 4 of 8: Secondary prevention
Lifestyle modification	Lifestyle modification
<p>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:</p> <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). 	<p>Info Box Practice point Updated</p> <p>All people 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.</p>
Interventions should be individualised and delivered using behavioural techniques such as educational or motivational counselling.	
	Smoking
	<p>Info Box Practice point New</p> <p>People 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.</p>

	Diet
	<p>Info Box Practice points New</p> <ul style="list-style-type: none"> • People with stroke or TIA should be advised to manage their dietary requirements in accordance with the Australian Dietary Guidelines. • All stroke survivors should be referred to an Accredited Practising Dietitian who can provide individualised dietary advice.
	Physical activity
	<p>Info Box Practice point New</p> <p>People with stroke or TIA should be advised and supported to undertake appropriate, regular physical activity as outlined in one of the following existing guidelines:</p> <ul style="list-style-type: none"> • Australia’s Physical Activity & Sedentary Behaviour Guidelines for Adults (18-64 years) OR • Physical Activity Recommendations for Older Australians (65 years and older).
	Obesity
	<p>Info Box Practice point New</p> <p>People 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.</p>

	<p>Alcohol</p> <p>Info Box Practice point New</p> <p>People with stroke or TIA should be advised to avoid excessive alcohol consumption (>2 standard drinks per day) in line with the Australian Guidelines to Reduce Health Risks from Drinking Alcohol.</p>
<p>Adherence to pharmacotherapy</p> <p>Interventions to promote adherence with medication regimes are often complex and should include combinations of the following:</p> <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. 	<p>Adherence to pharmacotherapy</p> <p>Weak recommendation Updated</p> <p>Interventions to promote adherence with medication regimens may be provided to all stroke survivors. Such regimens may include combinations of the following:</p> <ul style="list-style-type: none"> - reminders, self-monitoring, reinforcement, counselling, motivational interviewing, family therapy, telephone follow-up, supportive care and dose administration aids - development of self-management skills and modification of dysfunctional beliefs about medication.
<p>Blood pressure lowering</p>	<p>Blood pressure lowering therapy</p>
<p>All stroke and TIA patients, whether normotensive or hypertensive, should receive blood pressure lowering therapy, unless contraindicated by symptomatic hypotension.</p>	<p>Acute blood pressure management</p> <p>Practice statement Consensus-based recommendations New</p> <ul style="list-style-type: none"> • 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.

	<ul style="list-style-type: none"> • 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.
	<p>Weak recommendation AGAINST New</p> <p>Intensive blood pressure lowering in the acute phase of care to a target SBP of <140mmHg is not recommended for any patient with stroke.</p>
	<p>Weak recommendation Updated</p> <p>In patients with intracerebral haemorrhage blood pressure may be acutely reduced to a target systolic blood pressure of around 140mmHg (but not substantially below).</p>
	<p>Weak recommendation Updated</p> <p>Pre-existing antihypertensive agents may be withheld until patients are neurologically stable and treatment can be given safely.</p>
	<p>Long term blood pressure management</p>
<p>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.</p>	<p>Strong recommendation Updated</p> <ul style="list-style-type: none"> • All stroke and TIA patients, with a clinic blood pressure of >140/90mmHg should have long term blood pressure lowering therapy initiated or intensified. • 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. • 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-

	<p>blockers should not be used as first-line agents unless the patient has ischaemic heart disease.</p>
	<p>Weak recommendation Updated</p> <ul style="list-style-type: none"> • 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. • 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.
Antiplatelet therapy	Antiplatelet therapy
<p>Long-term antiplatelet therapy should be prescribed to all people with ischaemic stroke or TIA who are not prescribed anticoagulation therapy.</p>	<p>Strong recommendation Updated</p> <p>Long-term antiplatelet therapy (low-dose aspirin, clopidogrel or combined low-dose aspirin and modified release dipyridamole) should be prescribed to all people with ischaemic stroke or TIA who are not prescribed anticoagulation therapy, taking into consideration patient co-morbidities.</p>
<p>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.</p>	
	<p>Strong recommendation New</p> <p>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.</p>

	<p>Weak recommendation New</p> <p>For high risk patients with minor ischaemic stroke or TIA, aspirin plus clopidogrel may be used in the short term (first three weeks) to prevent stroke recurrence.</p>
<p>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.</p>	<p>Strong recommendation AGAINST</p> <p>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.</p>
	<p>Strong recommendation AGAINST New</p> <p>Antiplatelet agents should not be used for stroke prevention in patients with atrial fibrillation.</p>
<p>Aspirin alone can be used, particularly in people who do not tolerate aspirin plus dipyridamole or clopidogrel.</p>	-
<p>Anticoagulation therapy</p>	<p>Anticoagulant therapy</p>
<p>Anticoagulation therapy for secondary prevention for people with ischaemic stroke or TIA from presumed arterial origin should NOT be routinely used.</p>	<p>Strong recommendation Updated</p> <ul style="list-style-type: none"> • For ischaemic stroke or TIA patients with atrial fibrillation (both paroxysmal and permanent), oral anticoagulation is recommended for long-term secondary prevention.

<p>Anticoagulation therapy for long-term secondary prevention should be used in people with ischaemic stroke or TIA who have atrial fibrillation or cardioembolic stroke.</p>	<ul style="list-style-type: none"> • Direct oral anticoagulants (DOACs) should be initiated in preference to warfarin for patients with non-valvular atrial fibrillation and adequate renal function. • 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.
<p>In stroke patients, the decision to begin anticoagulation therapy can be delayed for up to two weeks but should be made prior to discharge.</p>	<p>Practice statement Consensus-based recommendation</p> <p>For ischaemic stroke patients, the decision to begin anticoagulant therapy can be delayed for up to two weeks but should be made prior to discharge.</p>
<p>In patients with TIA, anticoagulation therapy should begin once CT or MRI has excluded intracranial haemorrhage as the cause of the current event.</p>	<p>Info Box Practice points New</p> <ul style="list-style-type: none"> • 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.
<p>Cholesterol lowering</p>	<p>Cholesterol lowering therapy</p>
<p>Therapy with a statin should be used for all patients with ischaemic stroke or TIA.</p>	<p>Strong recommendation Updated</p> <p>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.</p>

Statins should NOT be used routinely for haemorrhagic stroke.	Weak recommendation AGAINST Statins should not be used routinely for intracerebral haemorrhage.
	Weak recommendation AGAINST New Fibrates should not be used routinely for the secondary prevention of stroke.
Diabetes management	Diabetes management
Patients with glucose intolerance or diabetes should be managed in line with national guidelines for diabetes.	Info Box Practice point Patients with glucose intolerance or diabetes should be managed in line with Diabetes Australia Best Practice Guidelines .
Chapter 6: Rehabilitation	Chapter 5 of 8: Rehabilitation
	Early supported discharge services
	Strong recommendation Updated Where appropriate stroke services are available, early supported discharge services should be offered to stroke patients with mild to moderate disability.
	Home-based rehabilitation
	Weak recommendation Updated 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.

	<p>Goal setting</p> <p>Strong recommendation Updated</p> <ul style="list-style-type: none"> • 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. • 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.
	<p>Early mobilisation</p> <p>Strong recommendation AGAINST New</p> <p>For stroke patients, starting intensive out-of-bed activities within 24 hours of stroke onset is not recommended.</p>
Patients should be mobilised as early and as frequently as possible.	<p>Strong recommendation Updated</p> <p>All stroke patients should commence mobilisation (out-of-bed activity) within 48 hours of stroke onset unless otherwise contraindicated (e.g. receiving end-of-life care).</p>
	<p>Weak recommendation New</p> <p>For patients with mild and moderate stroke, frequent, short sessions of out-of-bed activity should be provided, but the optimal timing within the 48-hour post-stroke time period is unclear.</p>

Sensorimotor impairment	Sensorimotor impairment
Weakness	Weakness
	Strong recommendation For stroke survivors with reduced strength in their arms or legs, strength training should be provided.
One or more of the following interventions should be used for people with reduced strength: <ul style="list-style-type: none"> • progressive resistance exercises • electrical stimulation • electromyographic biofeedback in conjunction with conventional therapy. 	Weak recommendation Updated For stroke survivors with reduced strength in their arms or legs (particularly for those with less than antigravity strength), electrical stimulation may be used.
Loss of sensation	Loss of sensation
Sensory-specific training can be provided to stroke survivors who have sensory loss.	Weak recommendation Updated For stroke survivors with sensory loss of the upper limb, sensory-specific training may be provided.
Sensory training designed to facilitate transfer can also be provided to stroke survivors who have sensory loss.	
Visual field loss	Vision
Stroke survivors who appear to have difficulty with recognising objects or people should be screened using specific assessment tools, and if a visual deficit is found, referred for comprehensive assessment by relevant health professionals.	Practice statement Consensus-based recommendation New All stroke survivors should have an: <ul style="list-style-type: none"> • assessment of visual acuity while wearing the appropriate glasses, to check their ability to read newspaper text and see distant objects clearly;

<p>Fresnel Prism glasses (15-diopter) can be used to improve visual function in people with homonymous hemianopia.</p>	<ul style="list-style-type: none"> • examination for the presence of visual field deficit (e.g. hemianopia) and eye movement disorders (e.g. strabismus and motility deficit).
<p>Computer-based visual restitution training can be used to improve visual function in people with visual field deficits.</p>	
<p>Amount, intensity and timing of rehabilitation</p>	<p>Physical activity</p>
<p>Amount and intensity of rehabilitation</p>	<p>Amount of rehabilitation</p>
<p>Rehabilitation should be structured to provide as much practice as possible within the first six months after stroke.</p>	<p>Strong recommendation Updated For stroke survivors, rehabilitation should be structured to provide as much scheduled therapy (occupational therapy and physiotherapy) as possible. For stroke survivors, group circuit class therapy should be used to increase scheduled therapy time.</p>
<p>Task-specific circuit class training or video self-modelling should be used to increase the amount of practice in rehabilitation.</p>	<p>Practice statement Consensus-based recommendation Updated Stroke survivors should be encouraged to continue with active task practice outside of scheduled therapy sessions. This could include strategies such as:</p> <ul style="list-style-type: none"> • self-directed, independent practice; • semi-supervised and assisted practice involving family/friends, as appropriate.
<p>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.</p>	
<p>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.</p>	<p>Weak recommendation New A minimum of three hours a day of scheduled therapy (occupational therapy and physiotherapy) is recommended, ensuring at least two hours of active task practice occurs during this time.</p>

Loss of cardiorespiratory fitness	Cardiorespiratory fitness
Rehabilitation should include interventions aimed at increasing cardiorespiratory fitness once patients have sufficient strength in the large lower limb muscle groups.	Strong recommendation Updated For stroke survivors, rehabilitation should include individually-tailored exercise interventions to improve cardiorespiratory fitness.
Patients should be encouraged to undertake regular, ongoing fitness training.	Practice statement Consensus-based recommendations Updated <ul style="list-style-type: none"> • All stroke survivors should commence cardiorespiratory training during their inpatient stay. • Stroke survivors should be encouraged to participate in ongoing regular physical activity regardless of their level of disability.
Sitting	Sitting
Practising reaching beyond arm's length while sitting with supervision/assistance should be undertaken by people who have difficulty sitting.	Strong recommendation For stroke survivors who have difficulty sitting, practising reaching beyond arm's length while sitting with supervision/assistance should be undertaken.
Standing up	Standing up
Practising standing up should be undertaken by people who have difficulty in standing up from a chair.	Strong recommendation For stroke survivors who have difficulty in standing up from a chair, practice of standing up should be undertaken.
Standing	Standing balance
Task-specific standing practice with feedback can be provided for people who have difficulty standing.	Strong recommendation Updated For stroke survivors who have difficulty standing, task-specific practice of standing balance should be provided. Strategies could include: <ul style="list-style-type: none"> • practising functional tasks while standing;

	<ul style="list-style-type: none"> walking training that includes challenge to standing balance (e.g. overground walking, obstacle courses).
	<p>Weak recommendation New</p> <p>For stroke survivors who have difficulty with standing balance, virtual reality including treadmill training with virtual reality or use of Wii Balance Boards may be used.</p>
Walking	Walking
<p>People with difficulty walking should be given the opportunity to undertake tailored, repetitive practice of walking (or components of walking) as much as possible.</p>	<p>Strong recommendation Updated</p> <p>Stroke survivors with difficulty walking should be given the opportunity to undertake tailored repetitive practice of walking (or components of walking) as much as possible.</p> <p>The following modalities may be used:</p> <ul style="list-style-type: none"> Circuit class therapy (with a focus on overground walking practice); Treadmill training with or without body weight support.
<p>One or more of the following interventions can be used in addition to conventional walking training outlined above:</p> <ul style="list-style-type: none"> cueing of cadence mechanically-assisted gait (via treadmill or automated mechanical or robotic device) joint position biofeedback virtual reality training. 	<p>Weak recommendation Updated</p> <p>For stroke survivors with difficulty walking, one or more of the following interventions may be used in addition to those listed above:</p> <ul style="list-style-type: none"> Virtual reality training. Electromechanically assisted gait training. Biofeedback. Cueing of cadence. Electrical stimulation.
<p>Ankle-foot orthoses, which should be individually fitted, can be used for people with persistent drop foot.</p>	<p>Weak recommendation Updated</p>

	For stroke survivors, individually fitted lower limb orthoses may be used to minimise limitations in walking ability. Improvement in walking will only occur while the orthosis is being worn.
Upper limb activity	Upper limb activity
Upper limb training should commence early. CIMT is one approach that may be useful in the first week after stroke.	Strong recommendation Updated For stroke survivors with some active wrist and finger extension, intensive constraint-induced movement therapy (minimum 2 hours of active therapy per day for 2 weeks, plus restraint for at least 6 hours a day) should be provided to improve arm and hand use. Trunk restraint may also be incorporated into the active therapy sessions at any stage post-stroke.
People with difficulty using their upper limb(s) 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: <ul style="list-style-type: none"> • constraint-induced movement therapy in selected people • repetitive task-specific training • mechanical assisted training. 	Weak recommendation Updated For stroke survivors with mild to severe arm weakness, mechanically assisted arm training (e.g. robotics) may be used to improve upper limb function.
	Strong recommendation AGAINST New Hand and wrist orthoses (splints) should not be used as part of routine practice as they have no effect on function, pain or range of movement.
One or more of the following interventions can be used in addition to those listed above: <ul style="list-style-type: none"> • mental practice • EMG biofeedback in conjunction with conventional therapy • electrical stimulation 	Weak recommendation Updated For stroke survivors with mild to moderate arm impairment, virtual reality and interactive games may be used to improve upper limb function. Virtual reality therapy should be provided for at least 15 hours total therapy time and is most effective when used in the first six months after stroke.

<ul style="list-style-type: none"> • mirror therapy • bilateral training. 	<p>Weak recommendation Updated For stroke survivors with mild to severe arm or hand weakness, electrical stimulation in conjunction with motor training may be used to improve upper limb function.</p> <p>Weak recommendation Updated For stroke survivors with mild to moderate weakness of their arm, mental practice in conjunction with active motor training may be used to improve arm function.</p> <p>Weak recommendation Updated For stroke survivors with mild to moderate weakness, complex regional pain syndrome and/or neglect, mirror therapy may be used as an adjunct to routine therapy to improve arm function after stroke.</p>
	<p>Weak recommendation New For stroke survivors with at least some voluntary movement of the arm and hand, repetitive task-specific training may be used to improve arm and hand function.</p>
	<p>Weak recommendation AGAINST New Brain stimulation (transcranial direct stimulation or repetitive transcranial magnetic stimulation) should not be used in routine practice for improving arm function, and only used as part of a research framework.</p>

Activities of daily living	Activities of daily living
Patients with difficulties in performance of daily activities should be assessed by a trained clinician.	<p>Strong recommendation Updated</p> <ul style="list-style-type: none"> • Community-dwelling stroke survivors who have difficulties performing daily activities should be assessed by a trained clinician. • 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.
Patients with confirmed difficulties in personal or extended ADL should have specific therapy (e.g. task-specific practice and trained use of appropriate aids) to address these issues.	<p>Weak recommendation AGAINST New</p> <p>For older stroke survivors living in a nursing home, routine occupational therapy is not recommended to improve ADL function.</p>
The routine use of acupuncture alone or in combination with traditional herbal medicines is NOT recommended in stroke rehabilitation.	<p>Strong recommendation AGAINST Updated</p> <p>For stroke survivors in the acute, sub-acute or chronic phase post-stroke, acupuncture should not be used to improve ADL.</p>
Administration of amphetamines to improve ADL is NOT recommended.	<p>Strong recommendation AGAINST</p> <p>Administration of amphetamines to improve ADL is not recommended.</p>
	<p>Weak recommendation New</p> <p>For stroke survivors, selective serotonin reuptake inhibitors may be used to improve performance of ADL.</p>
	<p>Weak recommendation AGAINST New</p> <p>Brain stimulation (transcranial direct stimulation or repetitive transcranial magnetic stimulation) should not be used in routine practice to improve ADL and only used as part of a research framework.</p>

	<p>Weak recommendation New</p> <p>For stroke survivors, virtual reality technology may be used to improve ADL outcomes in addition to usual therapy.</p>
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.	
	Communication
	Assessment of communication deficits
All patients should be screened for communication deficits using a screening tool that is valid and reliable.	<p>Info Box Practice points New</p> <ul style="list-style-type: none"> • 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.
Those patients with suspected communication difficulties should receive formal, comprehensive assessment by a specialist clinician.	
Aphasia	Aphasia
Treatment for aphasia should be offered as early as tolerated.	<p>Info Box Practice point New</p> <p>Treatment for aphasia should be offered as early as tolerated.</p>
	<p>Strong recommendation Updated</p> <p>For stroke survivors with aphasia, speech and language therapy should be provided to improve functional communication.</p>

<p>For patients undergoing active rehabilitation, as much therapy for dysphagia or communication difficulties should be provided as they can tolerate.</p>	<p>Weak recommendation Updated</p> <p>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.</p>
	<p>Weak recommendation AGAINST New</p> <p>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.</p>
<p>Where a patient is found to have aphasia, the clinician should:</p> <ul style="list-style-type: none"> • 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 • in collaboration with the patient and family/carer, identify goals for therapy and develop and initiate a tailored intervention plan. The goals and plans should be reassessed at appropriate intervals over time. 	<p>Info Box Practice points New</p> <p>Where a stroke patient is found to have aphasia, the clinician should:</p> <ul style="list-style-type: none"> • 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. <p>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.</p>
<p>Alternative means of communication (such as gesture, drawing, writing, use of augmentative and alternative communication devices) should be used as appropriate.</p>	
<p>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.</p>	

<p>People with chronic and persisting aphasia should have their mood monitored.</p>	<p>Info Box Practice points New</p> <ul style="list-style-type: none"> • 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. 	
<p>Environmental barriers facing people with aphasia should be addressed through training communication partners, raising awareness of and educating about aphasia in order 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, for example, from trained healthcare interpreters.</p>		
<p>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.</p>		
<p>Interventions should be individually tailored but can include:</p> <ul style="list-style-type: none"> • treatment of aspects of language (including phonological and semantic deficits, sentence level processing, reading and writing) following models derived from cognitive neuropsychology • constraint-induced language therapy • the use of gesture • supported conversation techniques • delivery of therapy programs via computer. 		-
<p>The routine use of piracetam is NOT recommended.</p>		-
<p>Group therapy and conversation groups can be used for people with aphasia and should be available in the longer term for those with chronic and persisting aphasia.</p>		-

<h3>Dysarthria</h3>	<h3>Dysarthria</h3>
<p>Interventions for the treatment of dysarthria can include:</p> <ul style="list-style-type: none"> • biofeedback or a voice amplifier to change intensity and increase loudness • intensive therapy aiming to increase loudness (e.g. Lee Silverman Voice Treatment) • the use of strategies such as decreased rate, over-articulation or gesture • oral musculature exercises. 	<p>Weak recommendation Updated</p> <p>For stroke survivors with dysarthria, individually tailored interventions provided by a speech and language pathologist or a trained communication partner may be provided.</p>
	<p>Weak recommendation AGAINST Updated</p> <p>For stroke survivors with dysarthria, non-speech oromotor exercises have not been shown to provide additional benefit to behavioural speech practice and are not recommended.</p>
<p>Patients with unclear or unintelligible speech should be assessed to determine the nature and cause of the speech impairment.</p>	<p>-</p>
<p>People with severe dysarthria can benefit from using augmentative and alternative communication devices in everyday activities.</p>	<p>-</p>
<h3>Dyspraxia of speech</h3>	<h3>Apraxia of speech</h3>
<p>Interventions for speech motor skills should be individually tailored and can target articulatory placement and transitioning, speech rate and rhythm, increasing length and complexity of words and sentences, and prosody including lexical, phrasal, and contrastive stress production. In addition, therapy can incorporate:</p> <ul style="list-style-type: none"> • integral stimulation approach with modelling, visual cueing, and articulatory placement cueing 	<p>Weak recommendation Updated</p> <p>For stroke survivors with apraxia of speech, individually tailored interventions incorporating articulatory-kinematic and rate/rhythm approaches may be used. In addition, therapy may incorporate:</p> <ul style="list-style-type: none"> • Use of modelling and visual cueing. • Principles of motor learning to structure practice sessions.

<ul style="list-style-type: none"> • principles of motor learning to structure practice sessions (e.g. order in which motor skills are practised during a session, degree of variation and complexity of behaviours practised, intensity of practice sessions) and delivery of feedback on performance and accuracy • PROMPT therapy. 	<ul style="list-style-type: none"> • Prompts for Restructuring Oral Muscular Phonetic Targets (PROMPT) therapy. • Self-administered computer programs that use multimodal sensory stimulation. • For functional activities, the use of augmentative and alternative communication modalities such as gesture or speech-generating devices is recommended.
<p>The use of augmentative and alternative communication modalities such as gesture or speech-generating devices is recommended for functional activities.</p>	
<p>Patients with suspected dyspraxia of speech should receive comprehensive assessment.</p>	<p>-</p>
<p>Cognitive communication deficits</p>	<p>Cognitive communication disorder in right hemisphere stroke</p>
<p>Stroke patients with cognitive involvement who have difficulties in communication should have a comprehensive assessment, a management plan developed and family education, support and counselling as required.</p>	<p>Practice statement <u>Consensus-based recommendations</u> Stroke survivors with cognitive involvement who have difficulties in communication should have input from a suitably trained health professional including:</p> <ul style="list-style-type: none"> • a comprehensive assessment, • development of a management plan, and • family education, support and counselling as required. <p>Management may include:</p> <ul style="list-style-type: none"> • Motoric-imitative, cognitive-linguistic treatments to improve use of emotional tone in speech production. • Semantic-based treatment connecting literal and metaphorical senses to improve comprehension of conversational and metaphoric concept.

Cognition	Cognition and perception
Assessment of cognition	Assessment of cognition
All patients should be screened for cognitive and perceptual deficits using validated and reliable screening tools.	Info Box Practice points <ul style="list-style-type: none"> • All stroke survivors should be screened for cognitive and perceptual deficits by a trained person (e.g. neuropsychologist, occupational therapist or speech pathologist) using validated and reliable screening tools, ideally prior to discharge from hospital. • Stroke survivors identified during screening as having cognitive deficits should be referred for comprehensive clinical neuropsychological investigations.
Patients identified during screening as having cognitive deficits should be referred for comprehensive clinical neuropsychological investigations.	
Executive functions	Executive function
Patients considered to have problems associated with executive functioning deficits should be formally assessed using reliable and valid tools that include measures of behavioural symptoms.	Info Box Practice points <ul style="list-style-type: none"> • Stroke survivors considered to have problems associated with executive functioning deficits should be formally assessed by a suitably qualified and trained person, using reliable and valid tools that include measures of behavioural symptoms. • For stroke survivors with impaired executive functioning, the way in which information is provided should be tailored to accommodate/compensate for the particular area of dysfunction.
In stroke survivors with impaired executive functioning, the way in which information is provided should be considered.	
External cues, such as a pager, can be used to initiate everyday activities in stroke survivors with impaired executive functioning.	Weak recommendation Updated For stroke survivors with cognitive impairment, meta-cognitive strategy and/or cognitive training may be provided.

<p>Attention and concentration</p>	<p>Attention and concentration</p>
<p>Cognitive rehabilitation can be used in stroke survivors with attention and concentration deficits.</p>	<p>Practice statement <u>Consensus-based recommendation</u> For stroke survivors with attentional impairments or those who appear easily distracted or unable to concentrate, a formal neuropsychological or cognitive assessment should be performed.</p>
	<p>Weak recommendation For stroke survivors with attention and concentration deficits, cognitive rehabilitation may be used.</p>
	<p>Weak recommendation <u>New</u> For stroke survivors with attention and concentration deficits, exercise training and leisure activities may be provided.</p>
<p>Memory</p>	<p>Memory</p>
<p>Any patient found to have memory impairment causing difficulties in rehabilitation or adaptive functioning should:</p> <ul style="list-style-type: none"> • be referred for a more comprehensive assessment of their memory abilities • have their nursing and therapy sessions tailored to use techniques which capitalise on preserved memory abilities • be assessed to see if compensatory techniques to reduce their disabilities, such as notebooks, diaries, audiotapes, electronic organisers and audio alarms, are useful • be taught approaches aimed at directly improving their memory • have therapy delivered in an environment as like the patient's usual environment as possible to encourage generalisation. 	<p>Practice statement <u>Consensus-based recommendations</u> Any stroke survivor found to have memory impairment causing difficulties in rehabilitation or adaptive functioning should:</p> <ul style="list-style-type: none"> • be referred to a suitably qualified healthcare professional for a more comprehensive assessment of their memory abilities; • have their nursing and therapy sessions tailored to use techniques that capitalise on preserved memory abilities; • be assessed to see if compensatory techniques to reduce their disabilities, such as notebooks, diaries, audiotapes, electronic organisers and audio alarms are useful; • have therapy delivered in an environment as similar to the stroke survivor's usual environment as possible to encourage generalisation;

	<ul style="list-style-type: none"> • be taught strategies aimed at assisting their memory, e.g. using a notebook, diary, mobile phone/audio alerts, electronic calendars and/or reminders; • be taught approaches aimed at directly improving their memory, e.g. computerised memory training games and learning mnemonic strategies.
	Perception
	<p>Practice statement Consensus-based recommendations New</p> <p>Stroke survivors with identified perceptual difficulties should have a formal perceptual (i.e. neurological and neuropsychological) assessment. Stroke survivors with an identified perceptual impairment and their carer should receive:</p> <ul style="list-style-type: none"> • verbal and written information about the impairment; • an assessment and adaptation of their environment to reduce potential risk and promote independence; • practical advice/strategies to reduce risk (e.g. trips, falls, limb injury) and promote independence; • intervention to address the perceptual difficulties, ideally within the context of a clinical trial.
Limb apraxia	Limb apraxia
People with suspected difficulties executing tasks but who have adequate limb movement should be screened for apraxia and, if indicated, complete a comprehensive assessment.	<p>Info Box Practice point</p> <p>Stroke survivors who have suspected difficulties executing tasks but who have adequate limb movement and sensation should be screened for apraxia.</p>
For people with confirmed apraxia, tailored interventions (e.g. strategy training) can be used to improve ADL.	<p>Weak recommendation Updated</p> <p>For stroke survivors with limb apraxia, interventions such as gesture training, strategy training and/or errorless learning may be provided.</p>

Neglect	Neglect
Any patient with suspected or actual neglect or impairment of spatial awareness should have a full assessment using validated assessment tools.	<p>Info Box Practice point</p> <p>Any stroke survivor with suspected or actual neglect or impairment of spatial awareness should have a full assessment using validated tools.</p>
<p>Patients with unilateral neglect can be trialled with one or more of the following interventions:</p> <ul style="list-style-type: none"> • simple cues to draw attention to the affected side • visual scanning training in addition to sensory stimulation • prism adaptation • eye patching • mental imagery training or structured feedback. 	<p>Weak recommendation Updated</p> <p>For stroke survivors with symptoms of unilateral neglect, cognitive rehabilitation (e.g. computerised scanning training, pen and paper tasks, visual scanning training, eye patching, mental practice) may be provided.</p>
	<p>Weak recommendation New</p> <p>For stroke survivors with symptoms of unilateral neglect, mirror therapy may be used to improve arm function and ADL performance.</p>
	<p>Practice statement Consensus-based recommendations New</p> <p>Stroke survivors with impaired attention to one side should be:</p> <ul style="list-style-type: none"> • given a clear explanation of the impairment; • taught compensatory strategies systematically, such as visual scanning to reduce the impact of neglect on activities such as reading, eating and walking; • given cues to draw attention to the affected side during therapy and nursing procedures; • monitored to ensure that they do not eat too little through missing food on one side of the plate.

	<p>Weak recommendation AGAINST New</p> <p>Non-invasive brain stimulation should not be used in routine clinical practice to decrease unilateral neglect, but may be used within a research framework.</p>
Chapter 7: Managing complications	Chapter 6 of 8: Managing complications
Nutrition and hydration	Nutrition and hydration - Early hydration
<p>All stroke patients should have their hydration status assessed, monitored and managed. Appropriate fluid supplementation should be used to treat or prevent dehydration.</p>	<p>Strong recommendation Updated</p> <ul style="list-style-type: none"> • All stroke patients should have their hydration status assessed, monitored, and managed throughout their hospital admission. • Where fluid support is required, crystalloid solution should be used in preference to colloid solutions as the first option to treat or prevent dehydration.
	Nutrition and hydration - Early feeding
<p>All patients with stroke should be screened for malnutrition.</p>	<p>Strong recommendation Updated</p> <p>All stroke patients should be screened for malnutrition at admission and on an ongoing basis (at least weekly) while in hospital.</p>
<p>Nutritional supplementation should be offered to people whose nutritional status is poor or deteriorating.</p>	<p>Strong recommendation</p> <p>For stroke patients whose nutrition status is poor or deteriorating, nutrition supplementation should be offered.</p>
<p>Nasogastric tube feeding is the preferred method during the first month post-stroke for people who do not recover a functional swallow.</p>	<p>Weak recommendation Updated</p> <ul style="list-style-type: none"> • For stroke patients who do not recover a functional swallow, nasogastric tube feeding is the preferred method of feeding in the short term.

	<ul style="list-style-type: none"> For stroke patients, there is no preference with regard to continuous pump (meaning using a pump for greater than or equal to 16hrs out of 24hrs for less than or equal to 80ml/hr) feeding versus intermittent bolus feeding (meaning 250-400mls/hr for 4-5times/day) therefore practical issues, cost and patient preferences should guide practice.
	<p>Weak recommendation AGAINST New</p> <p>For stroke patients who are adequately nourished, routine oral nutrition supplements are not recommended.</p>
Food intake should be monitored for all people with acute stroke.	<p>Info Box Practice points Updated</p> <ul style="list-style-type: none"> For patients with acute stroke food and fluid intake should be monitored. Stroke patients who are at risk of malnutrition, including those with dysphagia, should be referred to an Accredited Practising Dietitian for assessment and ongoing management.
Patients who are at risk of malnutrition, including those with dysphagia, should be referred to a dietitian for assessment and ongoing management.	
Screening and assessment of nutritional status should include the use of validated nutritional assessment tools or measures.	-
Poor oral hygiene	Oral hygiene
All patients, particularly those with swallowing difficulties, should have assistance and/or education to maintain good oral and dental (including dentures) hygiene.	<p>Strong recommendation</p> <p>All stroke patients, particularly those with swallowing difficulties, should have assistance and/or education to maintain good oral and dental (including dentures) hygiene.</p>
Staff or carers responsible for the care of patients disabled by stroke (in hospital, in residential care and in home care settings) can be trained in assessment and management of oral hygiene.	<p>Strong recommendation</p> <p>Staff and carers of stroke patients (in hospital, in residential care and home settings) should be trained in assessment and management of oral hygiene.</p>

	<p>Weak recommendation New</p> <p>For stroke patients, chlorhexidine in combination with oral hygiene instruction, and/or assisted brushing may be used to decrease dental plaque and gingiva bleeding. Caution should be taken, however, for patients with dysphagia.</p>
Spasticity	Spasticity
<p>In stroke survivors who have persistent moderate to severe spasticity (i.e. spasticity that interferes with activity or personal care):</p> <ul style="list-style-type: none"> • botulinum toxin A should be trialled in conjunction with rehabilitation therapy which includes setting clear goals • electrical stimulation and/or EMG biofeedback can be used. 	<p>Weak recommendation Updated</p> <p>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.</p>
	<p>Weak recommendation Updated</p> <p>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.</p>
	<p>Weak recommendation AGAINST New</p> <p>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.</p>
	<p>Weak recommendation Updated</p> <p>For stroke survivors with spasticity, adjunct therapies to Botulinum Toxin A, such as electrical stimulation, casting and taping, may be used.</p>
	<p>Weak recommendation AGAINST New</p> <p>For stroke survivors, the routine use of stretch to reduce spasticity is not recommended.</p>

<p>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).</p>	<p>-</p>
<p>Contracture</p>	<p>Contracture</p>
<p>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.</p>	<p>Strong recommendation AGAINST Updated For stroke survivors at risk of developing contracture, routine use of splints or prolonged positioning of upper or lower limb muscles in a lengthened position (stretch) is not recommended.</p>
<p>Serial casting can be used to reduce severe, persistent contracture when conventional therapy has failed.</p>	<p>Practice statement Consensus-based recommendations Updated</p> <ul style="list-style-type: none"> • 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.
<p>Conventional therapy (i.e. early tailored interventions) should be provided for stroke survivors at risk of or who have developed contracture.</p>	
<p>Overhead pulley exercise should NOT be used routinely to maintain range of motion of the shoulder.</p>	<p>-</p>
<p>Subluxation</p>	<p>Subluxation</p>
<p>For people with severe weakness who are at risk of developing a subluxed shoulder, management should include one or more of the following interventions:</p> <ul style="list-style-type: none"> • electrical stimulation • firm support devices • education and training for the patient, family/carer and clinical staff on how to correctly handle and position the affected upper limb. 	<p>Weak recommendation Updated 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.</p>

	<p>Weak recommendation AGAINST New</p> <p>For stroke survivors at risk of shoulder subluxation, shoulder strapping is not recommended to prevent or reduce subluxation.</p>
For people who have developed a subluxed shoulder, management may include firm support devices to prevent further subluxation.	<p>Practice statement Consensus-based recommendation</p> <p>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.</p>
	<p>Practice statement Consensus-based recommendation Updated</p> <p>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.</p>
Pain	
Shoulder pain	Shoulder pain
	<p>Weak recommendation Updated</p> <p>For stroke survivors with shoulder pain, shoulder strapping may be used to reduce pain.</p>
	<p>Weak recommendation New</p> <p>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.</p>

	<p>Weak recommendation New</p> <p>For stroke survivors with shoulder pain and upper limb spasticity, Botulinum Toxin A may be used to reduce pain.</p>
<p>The routine use of the following interventions is NOT recommended for people who have already developed shoulder pain:</p> <ul style="list-style-type: none"> • corticosteroid injections • ultrasound. 	<p>Weak recommendation AGAINST New</p> <p>For stroke survivors with shoulder pain, electrical stimulation is not recommended to manage pain.</p>
<p>For people with severe weakness who are at risk of developing shoulder pain, management may include:</p> <ul style="list-style-type: none"> • shoulder strapping • interventions to educate staff, carers and people with stroke about preventing trauma. 	<p>Practice statement Consensus-based recommendations Updated</p> <p>For stroke survivors with severe weakness who are at risk of developing shoulder pain, management may include:</p> <ul style="list-style-type: none"> • shoulder strapping; • education of staff, carers and stroke survivors about preventing trauma; • active motor training to improve function.
<p>For people who develop shoulder pain, management should be based on evidence-based interventions for acute musculoskeletal pain.</p>	<p>Info Box Practice point</p> <p>For stroke survivors who develop shoulder pain, management should be based on evidence-based interventions for acute musculoskeletal pain.</p>
<p>Central post-stroke pain</p>	<p>Not included in the scope of these Clinical Guidelines.</p>
<p>Swelling of the extremities</p>	<p>Swelling of the extremities</p>
<p>For people who are immobile, management can include the following interventions to prevent swelling in the hand and foot:</p> <ul style="list-style-type: none"> • dynamic pressure garments • electrical stimulation • elevation of the limb when resting. 	<p>Practice statement Consensus-based recommendation</p> <p>For stroke survivors with severe weakness who are at risk of developing swelling of the extremities, management may include the following:</p> <ul style="list-style-type: none"> • dynamic pressure garments; • electrical stimulation; • elevation of the limb when resting.

<p>For people who have swollen extremities, management can include the following interventions to reduce swelling in the hand and foot:</p> <ul style="list-style-type: none"> • dynamic pressure garments • electrical stimulation • continuous passive motion with elevation • elevation of the limb when resting. 	<p>Practice statement Consensus-based recommendation</p> <p>For stroke survivors who have swelling of the hands or feet management may include the following:</p> <ul style="list-style-type: none"> • dynamic pressure garments; • electrical stimulation; • continuous passive motion with elevation; • elevation of the limb when resting.
<p>Fatigue</p>	<p>Fatigue</p>
<p>Therapy for stroke survivors with fatigue should be organised for periods of the day when they are most alert.</p>	<p>Practice statement Consensus-based recommendations Updated</p> <ul style="list-style-type: none"> • 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 and education about 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 exercise and improving sleep hygiene.
<p>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.</p>	
<p>Incontinence</p>	<p>Incontinence</p>
<p>Urinary incontinence</p>	<p>Urinary incontinence</p>
<p>All stroke survivors with suspected urinary continence difficulties should be assessed by trained personnel using a structured functional assessment.</p>	<p>Weak recommendation</p>

<p>A portable bladder ultrasound scan should be used to assist in diagnosis and management of urinary incontinence.</p>	<ul style="list-style-type: none"> • All stroke survivors with suspected urinary continence difficulties should be assessed by trained personnel using a structured functional assessment. • For stroke survivors, a portable bladder ultrasound scan should be used to assist in diagnosis and management of urinary incontinence.
<p>Stroke survivors with confirmed continence difficulties should have a continence management plan formulated, documented, implemented and monitored.</p>	<p>Weak recommendation</p> <ul style="list-style-type: none"> • Stroke patients in hospital with confirmed continence difficulties, should have a structured continence management plan formulated, documented, implemented and monitored. • 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. • If incontinence persists the stroke survivor should be re-assessed and referred for specialist review.
<p>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.</p>	
<p>If incontinence persists the stroke survivor should be re-assessed and referred for specialist review.</p>	
<p>For people with urge incontinence:</p> <ul style="list-style-type: none"> • anticholinergic drugs can be trialled • a prompted or scheduled voiding regime program/ bladder retraining should be trialled • if continence is unachievable, containment aids can assist with social continence. 	<p>Weak recommendation</p> <p>For stroke survivors with urge incontinence:</p> <ul style="list-style-type: none"> • anticholinergic drugs can be tried; • a prompted or scheduled voiding regime program/ bladder retraining can be trialled; • if continence is unachievable, containment aids can assist with social continence.
<p>For people with urinary retention:</p> <ul style="list-style-type: none"> • The routine use of indwelling catheters is NOT recommended. However if urinary retention is severe, intermittent catheterisation should be used 	<p>Practice statement Consensus-based recommendations Updated</p> <p>For stroke patients with urinary retention:</p>

<p>to assist bladder emptying during hospitalisation. If retention continues, intermittent catheterisation is preferable to indwelling catheterisation.</p> <ul style="list-style-type: none"> • 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 in-dwelling catheterisation, they and their family/carer will require education about management, where to access supplies and who to contact in case of problems. 	<ul style="list-style-type: none"> • 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.
<p>For people with functional incontinence, a whole-team approach is recommended.</p>	<p>Practice statement Consensus-based recommendation For stroke survivors with functional incontinence, a whole-team approach is recommended.</p>
<p>The use of indwelling catheters should be avoided as an initial management strategy except in acute urinary retention.</p>	<p>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.</p>
<p>Faecal incontinence</p>	<p>Faecal incontinence</p>
<p>All stroke survivors with suspected faecal continence difficulties should be assessed by trained personnel using a structured functional assessment.</p>	<p>Weak recommendation</p> <ul style="list-style-type: none"> • All stroke survivors with suspected faecal continence difficulties should be assessed by trained personnel using a structured functional assessment.

<p>For those 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.</p>	<ul style="list-style-type: none"> • 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.
<p>Bowel habit retraining using type and timing of diet and exploiting the gastro-colic reflex should be used for people who have bowel dysfunction.</p>	<p>Weak recommendation</p> <p>For stroke survivors with bowel dysfunction, bowel habit retraining using type and timing of diet and exploiting the gastro-colic reflex should be used.</p>
<p>Education and careful discharge planning and preparation are required for any patient discharged with bowel incontinence.</p>	<p>Practice statement Consensus-based recommendations Updated</p> <p>For stroke survivors with bowel dysfunction:</p> <ul style="list-style-type: none"> • 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.
<p>If continence is unachievable, containment aids can assist with social continence.</p>	<ul style="list-style-type: none"> • 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.
<p>Mood disturbance</p>	<p>Mood disturbance</p>
<p>Identification</p>	<p>Mood assessment</p>
<p>All patients should be screened for depression using a validated tool.</p>	<p>Info Box Practice points Updated</p> <ul style="list-style-type: none"> • Stroke survivors with suspected altered mood (e.g. depression, anxiety, emotional lability) should be assessed by trained personnel using a standardised and validated scale.
<p>Patients with suspected altered mood (e.g. depression, anxiety, emotional lability) should be assessed by trained personnel using a standardised and validated scale.</p>	<ul style="list-style-type: none"> • Diagnosis should only be made following clinical interview.

Diagnosis should only be made following clinical interview.	
Deep venous thrombosis or pulmonary embolism	Deep venous thrombosis or pulmonary embolism
Low molecular weight heparin or heparin in prophylactic doses can be used with caution for selected patients with acute ischaemic stroke at high risk of DVT/PE. If low molecular weight heparin is contraindicated or not available, unfractionated heparin should be used.	Weak recommendation Updated For acute ischaemic stroke patients who are immobile, low molecular weight heparin in prophylactic doses may be used in the absence of contraindications.
	Weak recommendation New For acute stroke patients who are immobile, the use of intermittent pneumatic compression may be used, either as an alternative to low molecular weight heparin or in those with a contraindication to pharmacological DVT prophylaxis (including patients with intracerebral haemorrhage or within 24 hours of thrombolysis).
Thigh-length antithrombotic stockings are NOT recommended for the prevention of DVT/PE post-stroke.	Strong recommendation AGAINST Updated Antithrombotic stockings are not recommended for the prevention of DVT or PE post stroke.
Early mobilisation and adequate hydration should be encouraged in all acute stroke patients to help prevent DVT and PE.	Info Box Practice points Updated <ul style="list-style-type: none"> • For stroke patients, pharmacological prophylaxis should not be used in the first 24 hours after thrombolysis until brain imaging has excluded significant haemorrhagic transformation.

<p>Antithrombotic therapy is NOT recommended for the prevention of DVT/PE in haemorrhagic stroke patients.</p>	<ul style="list-style-type: none"> • For acute stroke patients, early mobilisation and adequate hydration should be encouraged to help prevent DVT and PE. • For stroke patients receiving intermittent pneumatic compression, skin integrity should be assessed daily. • For patients with intracerebral haemorrhage, pharmacological prophylaxis may be considered after 48-72 hours and once haematoma growth has stabilised, although evidence is limited.
<p>Antiplatelet therapy should be used for people with ischaemic stroke to help prevent DVT/PE.</p>	<p>-</p>
<p>Pressure care</p>	<p>Not included in the scope of these Clinical Guidelines.</p>
<p>Falls</p>	<p>Falls</p>
<p>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.</p>	<p>Practice statement Consensus-based recommendations Updated</p> <ul style="list-style-type: none"> • 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.
<p>Multifactorial interventions in the community, including an individually prescribed exercise program, should be provided for people who are at risk of falling.</p>	<p>Weak recommendation Updated</p> <p>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.</p>

	Chapter 7 of 8: Discharge planning and transfer of care
	Information and education
	<p>Strong recommendation New</p> <ul style="list-style-type: none"> • All stroke survivors and their families/carers should be offered information tailored to meet their individual needs using relevant language and communication formats. • Information should be provided at different stages in the recovery process. • 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.
	<p>Info Box Practice points New</p> <ul style="list-style-type: none"> • 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 emphasised.
	Discharge care plans
	<p>Strong recommendation New</p> <p>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.</p>

	<p>Info Box Practice point New</p> <p>Discharge planning should commence as soon as possible after the stroke patient has been admitted to hospital.</p>
	<p>Practice statement Consensus-based recommendation</p> <p>A discharge planner may be used to coordinate a comprehensive discharge program for stroke survivors.</p>
	<p>Practice statement Consensus-based recommendations</p> <p>To ensure a safe discharge process occurs, hospital services should ensure the following steps are completed prior to discharge:</p> <ul style="list-style-type: none"> • 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.

	<ul style="list-style-type: none"> • A locally developed protocol or standardised tool may assist in implementation of a safe and comprehensive discharge process.
	Patient and carer needs
	<p>Practice statement <u>Consensus-based recommendation</u></p> <p>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.</p>
	Home assessment
	<p>Practice statement <u>Consensus-based recommendation</u></p> <p>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.</p>
	Carer training
	<p>Weak recommendation</p> <p>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.</p>

<p>Chapter 8: Community participation and long-term recovery</p>	<p>Chapter 8 of 8: Community participation and long-term care</p>
<p>Self-management</p>	<p>Self-management</p>
<p>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.</p>	<p>Weak recommendation New</p> <ul style="list-style-type: none"> • 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.
<p>Stroke-specific programs for self-management should be provided for those who require more specialised programs.</p>	
<p>A collaboratively developed self-management care plan can be used to harness and optimise self-management skills.</p>	
<p>Driving</p>	<p>Driving</p>
<p>All patients admitted to hospital should be asked if they intend to drive again.</p>	<p>Practice statement Consensus-based recommendations Updated</p> <ul style="list-style-type: none"> • 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
<p>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 (Assessing Fitness To Drive) 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.</p>	

<p>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.</p>	<p>a TIA should be instructed not to drive for two weeks. 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.</p> <ul style="list-style-type: none"> • A follow-up assessment should be conducted by an appropriate specialist to determine medical fitness prior to return to driving. • 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.
<p>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 as well as informing the GP.</p>	<p>Weak recommendation New</p> <p>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.</p>
	<p>Practice statement Consensus-based recommendation New</p> <p>On-road driving rehabilitation may be provided by health professionals specifically trained in driving rehabilitation.</p>
	<p>Community mobility and outdoor travel</p>
<p>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</p>	<p>Weak recommendation Updated</p> <p>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</p>

<p>driving, aids and equipment, and written information about local transport options/alternatives.</p>	<p>occur in a variety of community settings and environments, and may also incorporate virtual reality training that mimics community walking.</p>
<p>Leisure</p>	<p>Leisure</p>
<p>Targeted occupational therapy programs can be used to increase participation in leisure activities.</p>	<p>Weak recommendation For stroke survivors, targeted occupational therapy programs including leisure therapy may be used to increase participation in leisure activities.</p>
<p>Return to work</p>	<p>Return to work</p>
<p>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.</p>	<p>Weak recommendation</p> <ul style="list-style-type: none"> • 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.
<p>Sexuality</p>	<p>Sexuality</p>
<p>Stroke survivors and their partners should be offered:</p> <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. 	<p>Practice statement <u>Consensus-based recommendations</u> Stroke survivors and their partners should be offered:</p> <ul style="list-style-type: none"> • the opportunity to discuss issues relating to sexual intimacy with an appropriate health professional; <i>and</i>

<p>Any interventions should address psychosocial aspects as well as physical function.</p>	<ul style="list-style-type: none"> • written information addressing issues relating to sexual intimacy and sexual dysfunction post stroke. <p>Any interventions should address psychosocial as well as physical function.</p>
<p>Support</p>	<p>Support</p>
<p>Peer support</p> <p>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.</p>	<p>Peer support</p> <p>Weak recommendation</p> <p>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.</p>
<p>Carer support</p>	<p>Carer support</p>
<p>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.</p>	<p>Strong recommendation</p> <p>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.</p>

<p>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.</p>	<p>Practice statement <u>Consensus-based recommendations</u> Updated</p> <ul style="list-style-type: none"> • 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.
<p>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.</p>	
<p>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.</p>	
<p>Assistance should be provided for families/carers to manage stroke survivors who have behavioural problems.</p>	

For access to the full Clinical Guidelines and further information refer to InformMe <https://informme.org.au/en/Guidelines/Clinical-Guidelines-for-Stroke-Management-2017>.