Clinical Services Capability Framework

Stroke Services

Government of South Australia
SA Health

Module Overview

Please note: This module must be read in conjunction with the Fundamentals of the Framework, Medical Services and Rehabilitation modules.

This module should also be read in conjunction with the following standards, plans and care pathways:

> National Acute Stroke Services Framework 2015 (National Stroke Foundation)

> Acute Stroke Clinical Care Standard (Australian Commission on Safety and Quality in Health Care)

> SA Health Stroke Management Procedures and Protocols: A Guide for Stroke Units and Emergency Departments (2014)

> SA Health Stroke Service Plan 2009-2016

> SA Health Pathway for Stroke Rehabilitation: A Best Practice Guide for Stroke Rehabilitation Services in South Australia

Delivering optimal stroke services remains a challenge with variable access to best practice stroke services, particularly in rural and regional areas. One of the most effective ways of reducing death and disability following a stroke is to provide evidence-based, dedicated hospital services, with access to experienced stroke teams working on stroke units. Capacity to plan, deliver and evaluate high quality acute stroke services is essential for improvement of health care delivery and patient outcomes[1]. People with stroke and who are admitted to a stroke unit for their care are more likely to be living at home, independent and alive[2].

This module recognises six levels of complexity for stroke service provision, and incorporates the service delineation outlined in the National Acute Stroke Services Framework 2015[5]. The different service levels take into consideration the complexity and risks associated with the delivery of a service and the need for specialised support.

A level 1 and 2 service is typically a rural hospital, with no or minimal ED services and no CT capacity. These country hospitals can recognise the signs and symptoms of stroke and transfer the patient to a level 4 hospital or above.

A level 3 service typically admits less than 50 stroke patients per year. This service does not have sufficient demand to justify specialised in-hospital resources such as a stroke unit, clinicians with stroke expertise or advanced neuroimaging, nor do they have essential infrastructure. These hospitals can recognise the signs and symptoms of stroke and transfer the patient to a level 4 hospital or above.

A level 4 service can be a country or metropolitan hospital that typically admits between 50-100 stroke patients per year. This level of service does not have sufficient demand to justify a specialist stroke unit, however has access to CT imaging. For metropolitan general hospitals the inter-hospital transfer protocol and recognition of stroke in the emergency department protocol should be enacted to ensure people who present here are transferred to the appropriate Primary Stroke Service (PSS) or Comprehensive Stroke Service (CSS). Level 4 country hospitals, should have access to CT during office hours (with on-call access to CT 24/7), and offer thrombolytic therapy with remote stroke specialist support.

A level 5 service, known as a *Primary Stroke Services (PSS)*, is one which typically admits more than 300 stroke patients per year. A primary stroke service has a dedicated stroke unit with clinicians who have stroke expertise. It has written stroke protocols, CT / CT angiography capability and the ability to offer thrombolytic therapy.

A level 6 service, known as a *Comprehensive Stroke Service (CSS)*, is located in large, tertiary referral services which see high volumes of stroke patients (usually over 500 annual admissions)

including the most complex presentations. Thrombolytic therapy, endovascular therapy, vascular surgery and vascular neurosurgery are available promptly at all times. These services have a dedicated stroke unit, and established well organised systems to link emergency services, hyperacute care, rehabilitation, secondary prevention and community integration.

Service Requirements

In addition to the requirements outlined in the Fundamentals of the Framework, specific service requirements include:

- compliance with SA Health policy directives and guidelines that are referenced at:
  - SA Health Policy Directives
  - SA Health Policy Guidelines
  - SA Health Clinical Directives and Guidelines

Workforce Requirements

The CSCF does not prescribe staffing ratios, absolute skill mix, or clerical and/or administration workforce requirements for a team providing a service, as these are best determined locally and in accordance with relevant industrial instruments. Where minimum standards, guidelines or benchmarks are available, the requirements outlined in this module should be considered as a guide only. All staffing requirements should be read in conjunction with the Health Care Act 2008, Awards and relevant Enterprise Agreements including, but not limited to:

- SA Health Salaried Medical Officers Enterprise Agreement 2017
- SA Health Visiting Medical Specialists Enterprise Agreement 2017
- SA Health Clinical Academics Enterprise Agreement 2014
- Nursing/Midwifery (South Australian Public Sector) Enterprise Agreement 2016
- SA Ambulance Service Enterprise Agreement 2017
- SA Modern Public Sector Enterprise Agreement: Salaried 2017

People with stroke will be cared for by a stroke team, which is comprised of medical, pharmacy, allied health and nursing professionals who have a special interest and expertise in the management of stroke. Senior team members provide ongoing support and training to less experienced staff who may rotate through the stroke team.

The stroke team includes the stroke medical consultant and medical officers, the stroke nurse coordinator, and senior stroke allied health staff from the following professions - physiotherapy, occupational therapy, dietetics, speech pathology and social work. Pharmacists, psychologists (clinical psychologists and neuropsychologists) and allied health assistants are valuable stroke team members as are the allied health team leader positions, who assist in service coordination. Junior and trainee staff from all disciplines should rotate through the team in order to foster ongoing learning in a supportive environment. Additional allied health professions will be accessed as required, such as medical imaging, podiatry and orthotics.

People with stroke will also require timely access to geriatric medicine services including Aged Care Assessment Team (ACAT) assessment, Transition Care Program (TCP) assessment, and relevant ambulatory services.

Stroke Services	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Service description	> Typically remote rural hospitals > Low stroke activity (approximately < 50/yr) > No ED services > No Stroke Unit or stroke expertise > No CT capacity > Service includes stroke recognition and transfer to level four hospital or above.	> Typically some rural hospitals > Low stroke activity (approximately < 50/yr) > Some ED services > No Stroke Unit or stroke expertise > No CT capacity > Service includes stroke recognition and transfer to level four hospital or above.	> Low stroke activity (approximately <50/yr) > 24/7 ED services > Does not have capacity to provide a dedicated stroke unit or access to stroke expertise. > CT capacity but no thrombolysis services. > Service includes stroke recognition and transfer to level four hospital or above. > Has formal networks and written agreements in place to transfer stroke patients to a Primary Stroke Service (PSS) or Comprehensive Stroke Service (CSS). > Where PSS is accessible within reasonable transport time, ambulance services should bypass basic services and deliver suspected stroke patients to the PSS or CSS.	> Moderate stroke activity (approximately 50 -100/ yr) > 24/7 ED services > No Stroke Unit although there may be access to stroke expertise. > CT capacity with onsite thrombolysis services (with remote stroke specialist support). > Service includes stroke rehabilitation and secondary prevention. > Service does not offer interventional neuroradiology or capacity to manage complex patients - such require transfer to a level 5 hospital or above. > Where PSS or CSS is accessible within reasonable transport time, ambulance services should bypass basic services and deliver suspected stroke patients to the PSS or CSS. > Stroke rehabilitation services are provided here, refer to rehabilitation services.	> Known as a Primary Stroke Service (PSS). > High stroke activity (approximately >300/yr) > Has a dedicated stroke unit with onsite clinicians with stroke expertise. > Immediate access to CT / CT angiography > Immediate access to thrombolysis services coordinated by an onsite dedicated stroke team, 7-days from 8am to 8pm. > Access to neurovascular imaging and expert interpretation. > Capable of managing some complex cases but does not offer endovascular therapy. > Has protocols in place to transfer endovascular patients to a Comprehensive Stroke Service > Service includes stroke rehabilitation and secondary prevention. > Has written stroke protocols for emergency services, acute care and rehabilitation. > Telemedicine services and coordinated processes for patient transition to ongoing rehabilitation services.	> Known as a Comprehensive Stroke Service (CSS). > High stroke activity (approximately >500/yr) > Has a dedicated Stroke Unit with onsite clinicians with stroke expertise operational 24/7. > Immediate access to CT /CT angiography 24/7 > Immediate access to thrombolysis services coordinated by an onsite dedicated stroke team, 24/7 > Established and well organised systems to link emergency services, hyperacute care, rehabilitation, secondary prevention and community reintegration (e.g. early supported discharge). > Ability to manage all complex cases and offer endovascular therapy and neurosurgery 24/7. > Links with other specialist services including, but not limited to, cardiology and palliative care > Has a leadership role in establishing partnerships with other local hospitals for supporting stroke care services (e.g. formal networks, specialist education and clinical advice including outreach visits or telemedicine links).

Stroke Services	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Service requirements	> Ability to recognise stroke signs and symptoms and transfer to a hospital equipped to provide stroke care (level four or above).	> Ability to recognise stroke signs and symptoms and transfer to a hospital equipped to provide stroke care (level four or above).	> Ability to recognise stroke signs and symptoms and transfer to a stroke unit hospital with stroke expertise to provide stroke care (level four or above).	> Organised pre-hospital services (including use of validated screening tools) > Coordinated emergency department systems > Coordinated regional stroke systems > Access to CT brain available during business hours (with on-call access 24/7). > Access to delivery of intravenous tissue plasminogen activator (tPA) during business hours	As per Level 4, plus: > Dedicated stroke unit onsite > Onsite CT angiography available 8am to 8pm, 7 days. > Carotid imaging > May have access to advanced imaging (e.g. MRI/MRA, catheter angiography) > May have access to onsite neurosurgical services. If services not available onsite then will have clear transfer arrangements to services with this capacity. > Access to delivery of intravenous tissue plasminogen activator (tPA) during business hours > Ability to provide acute monitoring (telemetry and other physiological monitoring) for at least 72 hours. > Access to HDU / ICU (for complex patients) > Provides rapid (within 48 hours) Transient Ischaemic Attack (TIA) assessment clinic. > May have access to other specialist services (cardiology, palliative care, vascular)	As per Level 5, plus: > Onsite CT brain and CT angiography available 24/7 > Onsite endovascular stroke therapy 24/7 > Onsite neurosurgical services > Access to delivery of intravenous tissue plasminogen activator (tPA) 24/7 > Access to other specialist services (cardiology, palliative care, vascular).

Stroke Services	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Workforce requirements	Medical > Access to medical practitioner. Nursing > Staffing levels in accordance with the relevant industrial instruments. Allied health > Access to relevant allied health professionals, as required. > Access to allied health services are typically available via telemedicine and/or site visit. Pharmacy > Access to pharmacist, as required.	As per Level 1	As per Level 2, plus: Medical > Access—24 hours—to medical practitioner (general practitioner) who may have advanced rural generalist training Nursing > Staffing levels in accordance with the relevant industrial instruments. > Suitably qualified and experienced registered nurses in charge of shifts appropriate to service being provided. Allied health > As per Level 2	As per Level 3, plus Medical > Medical practitioner (general practitioner) and/or registered medical specialist (consultant physician) competent in recognising stroke symptoms and the delivery of thrombolysis > Access—during business hours—to rehabilitation physician and/or geriatrician. Nursing > Staffing levels in accordance with the relevant industrial instruments. > Nursing staff suitably qualified and experienced in the recognition of stroke signs and symptoms and the delivery of thrombolysis, including the ability to undertake neurological assessment and 1:1 nursing care following thrombolysis Allied health > Access – during business hours - to allied health professionals, including but not limited to physiotherapist, occupational therapist, speech pathologist, social worker and dietitian. > Access – during business hours – to Allied Health Assistant.	As per Level 4, plus: Medical > Dedicated medical lead responsible for clinical governance of service with overall responsibility for stroke services. > At least one registered medical specialist with credentials in emergency medicine. > Access—24 hours—to registered medical specialists (consultant physicians). > Medical practitioner (excluding ED staff) onsite 24 hours. > Additional medical practitioners appropriate to acuity and bed capacity. Nursing > Staffing levels in accordance with the relevant industrial instruments. > Dedicated stroke coordinator. > Suitably qualified staff that provide stroke care in accordance with stroke protocols and procedures.	As per Level 5, plus Medical > Dedicated medical lead who has primary focus on stroke services (Stroke Service Director). > Sufficient registered medical specialists with credentials in emergency medicine. Allied health > Dedicated team of senior allied health professionals with specialist-level stroke knowledge and skills supervising rotating junior staff. > Access – extended business hours - to physiotherapist, occupational therapist, speech pathologist, dietitian, and social worker - 7 days per week.

Stroke Services	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Workforce requirements *(continued)*				Pharmacy > Access to onsite pharmacist during business hours Other > Senior lead clinician (allied health or nursing) with rehabilitation experience to program manage and lead rehabilitation service, and link to metro rehab service.	Allied health > Access - during business hours - to relevant allied health professionals at least 6 days a week, including but not limited to physiotherapist, occupational therapist, speech pathologist, dietitian and social worker and other professions. > Senior allied health professionals with demonstrated advanced level of knowledge and skills in stroke management. > Access – during business hours – to Allied Health Assistant at least 6 days per week. > Access to neuropsychologist during business hours Pharmacy > Senior pharmacist with specialist level stroke knowledge and skill, including supervision of rotating staff	
Specific risk considerations	> Nil	> Nil	> Nil	> Nil	> 24/7 onsite CT capacity is currently only available at Royal Adelaide Hospital	> Nil

The following table outlines the support service requirements for each level of Stroke services. The table cross-references to other modules in the CSCF, thereby recognising the interdependencies which exist between Stroke services and other specialty areas.

Support services requirements for stroke services	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6	
	Onsite	Accessible	Onsite	Accessible	Onsite	Accessible	Onsite	Accessible	Onsite	Accessible	Onsite	Accessible
Cardiac (cardiac medicine)						3		3	5		6	
Cardiac (cardiac care unit)						4		4	5		6	
Emergency	1		2		3		3		5		6	
Geriatric Medicine		2		2		3		4		4		4
Intensive care									5		6	
Medical Imaging					3		4		5		6	
Palliative care		2		2		4	4		6		6	
Pathology		2		2	3		3		4		5	
Pharmacy		2		2		3	3		5		5	
Rehabilitation							3		5		6	

Legislation, regulations and legislative standards	Non-mandatory standards, guidelines, benchmarks, policies and frameworks
Refer to the Fundamentals of the Framework for details.	Refer to the Fundamentals of the Framework for details.

Reference List:

1. Stroke Unit Trialists' Collaboration. *Organised inpatient (stroke unit) care for stroke.* Cochrane Database of Systematic Reviews 2013, Issue 9. Art. No.: CD000197. DOI: 10.1002/14651858. CD000197.pub3. https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD000197.pub3/full
2. National Stroke Foundation. *Clinical Guidelines for Stroke Management 2017.* Melbourne Australia. https://informme.org.au/Guidelines/Clinical-Guidelines-for-Stroke-Management-2017
3. SA Health. *SA Stroke Service Plan 2009-2016.* Adelaide. http://www.health.sa.gov.au/Portals/0/sastrokesvcplan-asho-phcc-20100625.pdf
4. SA Health. *Stroke Management Procedures and Protocols.* Adelaide. http://inside.sahealth.sa.gov.au/wps/wcm/connect/non-public%20content/sa%20health%20intranet/business%20units/health%20system%20development/office%20of%20the%20chief%20executive/policies/guidelines/stroke%20management%20procedures%20and%20protocols
5. National Stroke Foundation. *National Acute Stroke Services Framework 2015.* Melbourne Australia. https://strokefoundation.org.au/en/What-we-do/Treatment-programs/National-stroke-services-frameworks
6. Australian Commission on Safety and Quality in Health Care. Acute Stroke Clinical Standard. Sydney: ACSQHC 2015. https://www.safetyandquality.gov.au/our-work/clinical-care-standards/acute-stroke-clinical-care-standard/
7. Stroke Clinical Improvement Project: Service Design Review. Adelaide

For more information

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Public I1-1A