

Training & Experience Requirements for Stroke Clot Retrieval Interventionalists

Purpose

This framework provides a set of standards for the recognition of medical specialists with the appropriate training and experience to deliver safe and efficacious stroke clot retrieval intervention in New Zealand.

The framework is a pathway for training medical specialists to perform stroke clot retrieval (SCR) in centres with a demonstrated need for additional workforce support.

This pathway is designed to enable the sustainable delivery of SCR services in New Zealand stroke centres with a focus on quality of patient outcomes and equity of access. This document is intended for use alongside organisational Human Resource (HR) policies.

This has been developed through the National stroke clot retrieval improvement programme, funded by the New Zealand Ministry of Health.

Aims of the Framework

The aim of this framework is to outline a strategy for the safe and efficient delivery of SCR to the population of Aotearoa New Zealand. This strategy is intended to allow suitably trained and experienced medical specialists to participate in the delivery of SCR services through existing recognised SCR centres.

The framework will:

- ❖ clearly articulate the skills, knowledge, and training requirements for delivering SCR
- ❖ enable training pathways to ensure that there is adequate workforce capacity to deliver acute stroke intervention services
- ❖ provide a mechanism for the recognition of appropriately trained and experienced medical specialists to deliver acute stroke interventional therapy, including those trained overseas
- ❖ maintain the quality and safety of SCR interventions by ensuring that medical specialists capture and share patient outcomes and other relevant safety and quality data.

Context

Discussion regarding credentialing and training requirements for SCR has been driven by strong evidence demonstrating improved patient outcomes through the delivery of acute stroke interventional treatments. There has also been increasing impetus from government and other bodies who are developing and refining guidelines to support the delivery of SCR and ensure a balance between providing access to, and maintaining the safety and quality of, acute stroke interventional treatment. Evidence shows that high volume stroke centres deliver better patient outcomes.

Training and Experience Requirements

The foundation training and experience requirements to perform SCR include:

- 1.1 Neuroscience knowledge: working knowledge of neuroanatomy, neuropathology,

neurophysiology, understanding of current evidence for SCR, and clinical skills including neurological examination and assessment.

- 1.2 Diagnostic neuroradiology knowledge and skills: the ability to interpret CT, CTA, CTP and MRI of the brain during assessment and follow up of acute stroke.
- 1.3 Competence in basic angiography and advanced catheter skills (i.e., the use of microcatheters, microwires and complex access systems).
- 1.4 SCR-specific knowledge in addition to the practical skills which will be acquired in the process of training and competence include:
 - a. clinical diagnosis and management of acute ischaemic stroke, including appropriate patient selection for treatment
 - b. detailed knowledge of vascular neuroanatomy
 - c. knowledge of anti-platelet agents and anti-coagulation treatments
 - d. intra-arterial therapy for acute ischaemic stroke, including obtaining access to the intracranial circulation in challenging anatomy and microcatheter navigation of the cerebral circulation
 - e. knowledge in the use of stroke-specific devices and complication recognition and avoidance

Some of these prerequisites will be easier to achieve for candidates operating in radiology (e.g., catheter skills) or neurology (e.g., neurological assessment skills), and it is the intention that members from both services provide sufficient opportunities to allow trainees from another specialty to acquire the foundation skills required to gain entry into the neuro-intervention fellowship programme.

Training environment

- 2.1 Dedicated training in neuro-intervention, under the direct supervision of recognised proctors at an eligible high-volume stroke centre. Training should encompass simulation training and live SCR cases.
- 2.2 To be eligible, a facility must:
 - a. have a designated comprehensive stroke unit, and,
 - b. on a 24-hour basis, be equipped and staffed so that it can provide the following to a patient:
 - i. neuro-interventional expertise (including staff capable of performing SCR)
 - ii. diagnostic imaging services using advanced imaging techniques (including computed tomography, computed tomography angiography, computed tomography perfusion, digital subtraction angiography, magnetic resonance imaging and magnetic resonance angiography)
 - iii. care from a team of health practitioners, including stroke physicians/neurologists, anaesthetists, intensive care unit specialists, neurosurgeons, nurses, and medical imaging technologists
 - iv. optimised time for treatment and other processes through coordination with ambulance services and referral centres
 - v. access to dedicated endovascular angiography facilities
 - vi. staff who participate in regular multidisciplinary clinical and quality assurance and improvement meetings

- vii. written procedures for assessing and treating patients that present with symptoms of stroke

Assessment of Competency

- 3.1 By provision of a logbook of SCR experience certified by recognised proctors. This will enable comparison with the outcome benchmarks listed in 3.5.
- 3.2 During training, a minimum of SCR cases (currently 40) must be performed and recorded in the logbook. The final 20 cases performed and logged must meet the requirements outlined in 3.6.
- 3.3 The proctors will also ensure that the SCR operator is competent in other skills as outlined under 1.1 - 1.4.
- 3.4 The number of cases required to achieve competency may be higher or, in exceptional circumstances, lower than the minimum case requirement. Justification regarding the number of cases required, and outcomes data must be provided by the proctors.
- 3.5 A case is eligible for logbook entry if the operator is actively involved in performing the procedure and in the decision-making **before, during, and after** the procedure. On most occasions two, and on rare occasions three, individuals may make substantial contributions to the SCR procedure. Observer, assistant, or primary operator are terms used to describe involvement in a procedure, however if there is any doubt, the final determination regarding the eligibility of case for logbook entry will be made by the supervisor. A minimum of 50% of the final 20 cases need to be completed in the role of primary operator.
- 3.6 Procedural outcomes, as defined by points a) to c) below, must be achieved during training. Procedural outcomes should be tracked, recorded and audited against the following minimum threshold levels stipulated in contemporaneous published data:
 - a. successful re-canalisation (modified TIC1 2b or 3) in at least 70% of cases
 - b. embolisation to new territory of less than 10%
 - c. symptomatic intracranial haemorrhage (i.e., parenchymal haematoma on imaging with clinical deterioration) rate less than 10%; - 10% being the standard defined in the ASWG document 'Framework for the Recognition of Training in Mechanical Thrombectomy for Acute Ischaemic Stroke'. In addition, patient clinical outcomes (e.g. modified Rankin score at 3 months) should be monitored, reviewed, and investigated if below national standard in the setting of a peer review programme.

Continuing professional development

To maintain expertise and knowledge in SCR, an individual medical specialist must:

- 4.1 Undertake a minimum of 24 hours of stroke-specific education every three years.
- 4.2 Be an operator in at least 40 SCR cases in a three-year period to maintain clinical skills.
- 4.3 Have access to support and advice from a supervisor/mentor.

- 4.4 Participate in an ongoing peer-reviewed audit, quality assurance and improvement programme, and monitor outcomes both in the peri-procedural period and at 90 days. Outcomes should meet requirements outlined in 3.6.
- 4.5 Participate in a national quality improvement registry.

Culture and Equity

An individual medical specialist must:

- 5.1 Demonstrate an understanding of the significance of, and obligations under, Te Tiriti o Waitangi, including how to apply Te Tiriti principles in a meaningful way in your role
- 5.2 Commit to acknowledge and address any of their own biases, attitudes, assumptions, stereotypes, prejudices, structures and characteristics that may affect the quality of care provided.

Communication

- 6.1 Communicates effectively and in a culturally safe manner with patients, whānau, carers, colleagues and others involved in health services in order to facilitate the provision of high-quality health care. Adheres to organisational policy regarding discrimination, bullying and harassment.
- 6.2 Works to build rapport and trust with patients, their whānau and carers, and engages them in the decision-making process. Communicates decisions clearly and effectively to all involved parties and ensures patients and their whānau understand the information provided, employing interpreters, or alternative methods of communication suitable for patients as required.
- 6.3 Takes care during the communication process not to diminish or invalidate a patient's personal circumstances, or cultural beliefs and practices. Arranges an appropriate environment to discuss confidential information and is mindful of how their own personal beliefs may impact on patient care, including unconscious bias.
- 6.4 Acts to prevent and help resolve conflict within the inter-disciplinary stroke and neuroradiology teams and encourages respect for diversity among team members. Facilitates discussion when required and considers all perspectives when resolving differences.

Self-care and collegial support

- 7.1 Strives to maintain personal, mental and physical health to optimise performance during interventional practice for the benefit of colleagues, patients, and self.
- 7.2 Is offered and participates in a mentorship/supervision scheme during and following completion of training for collegial/peer support provided by a senior colleague.

Glossary

<i>Stroke Clot Retrieval (SCR)</i>	SCR is the removal of a clot from a cerebral artery by an endovascular technique. It involves sedation or general anaesthesia, followed by access to the body's arteries through the femoral or radial artery. After gaining access to the arteries, devices are navigated under x-ray guidance into the blocked artery. The blocked artery is then opened by either aspiration or mechanical retrieval of clot. This specialised procedure is performed by radiologists, neurologists or neurosurgeons that have specialist skills in neuro-intervention and is only available at a limited number of tertiary hospitals.
<i>Recognised Proctor</i>	A recognised proctor/mentor in the New Zealand setting for training in SCR is defined as someone who currently practises at an established stroke clot retrieval SCR centre, and who has performed a minimum of 100 SCR cases, and has at least 2 years of data meeting the outcome standards outlined by RANZCR/ASWG, or is CCINR-accredited, or fulfils the Acute Stroke Working Group (ASWG) criteria for competence in SCR.
<i>Stroke Clot Retrieval Centre</i>	A comprehensive stroke centre with highly specialised services including Stroke Clot Retrieval and appropriately trained/skilled personnel available (¹ 24 hours a day, seven days a week) to treat acute stroke.

¹ during service establishment phase services may not be operating 24 hours a day/7 day a week