

Box 5A – 5C

Box 5A Criteria for Stroke Centres Providing Acute Ischemic Stroke Treatment

Within the [Canadian Stroke Best Practices Optimal Stroke Services Framework](#) all hospitals in Canada have been identified as either comprehensive, advanced/primary, general non-stroke acute care hospitals, or basic healthcare facilities (generally small rural and remote sites). Comprehensive and advanced/primary stroke centres are those that have coordinated stroke care services, including CT imaging and alteplase administration available on-site.

Some comprehensive stroke centres and a select group of advanced/primary stroke centres will be able to provide endovascular thrombectomy (with mechanical embolectomy) for acute ischemic stroke. To provide endovascular thrombectomy, centres must meet the following criteria:

- ◆ A designated stroke team which includes physicians with stroke expertise (stroke neurologist or other physicians with advanced stroke training); stroke nurses and advanced practice nurses (and/or nurse practitioners); neurosurgeons; (neuro)-radiologists, Emergency Physicians; critical care physicians; rehabilitation therapists (physical therapists, occupational therapists, speech-language pathologists, and dieticians), pharmacists, and social workers.
- ◆ Neurointerventional expertise on-site with available 24-hour access, seven days a week.
- ◆ On-site neurosurgery support and neurocritical care services.
- ◆ Stroke imaging on-site with 24-hour access, seven days a week, including a computed tomography (CT) scanner (i.e. 3rd generation or higher helical scanner) with programming for CT angiography (CTA). Multiphase or dynamic CTA or CT perfusion (CTP) imaging can also be used if available on-site. MR imaging (MRI, MRA, MRP) may be considered if available on site and will not delay acute stroke treatments.
- ◆ Capability to administer intravenous alteplase;
- ◆ Designated stroke unit on-site – a geographically defined hospital unit dedicated to the care of stroke patients, with protocols in place that follow current evidence-based stroke best practice recommendations for acute stroke management and early access to rehabilitation assessment and therapy.

Box 5B Criteria for Acute Thrombolytic Therapy with Intravenous Alteplase

Refer to Section 4.2 and Box 4A for detailed recommendations on neuroimaging-based selection criteria

These criteria are designed to guide clinical decision-making; however, the decision to use alteplase in these situations should be based on the clinical judgment of the treating physician. The relative benefits of alteplase therapy versus any potential risks or contraindications should be weighed on an individual basis.

IV alteplase Treatment Inclusion Criteria

- Diagnosis of ischemic stroke causing disabling neurologic deficit in a patient who is 18 years of age or older.
 - For adolescents, decision to administer alteplase should be based on clinical judgment, presenting symptoms, and patient age; and, if possible, consultation with a pediatric stroke specialist.
- Time from last known well (onset of stroke symptoms) less than 4.5 hours before alteplase administration. * For patients beyond 4.5 hours refer to Section 5.1 Clinical considerations for

more information..

Absolute Exclusion Criteria

- Any source of active hemorrhage or any condition that could increase the risk of major hemorrhage after alteplase administration.
- Any hemorrhage on brain imaging.

Relative Exclusion Criteria (requiring clinical judgement based upon the specific situation)

Historical

- History of intracranial hemorrhage.
- Stroke or serious head or spinal trauma in the preceding three months.
- Major surgery, such as cardiac, thoracic, abdominal, or orthopedic in the preceding 14 days. Risk varies according to the procedure.
- Arterial puncture at a non-compressible site in the previous seven days.

Clinical

- Symptoms suggestive of subarachnoid hemorrhage.
- Stroke symptoms due to another non-ischemic acute neurological condition such as seizure with post-ictal Todd's paralysis or focal neurological signs due to severe hypo- or hyperglycemia.
- Hypertension refractory to aggressive hyperacute antihypertensive treatment such that target blood pressure less than 180/105 cannot be achieved or maintained. Blood pressure should be treated rapidly and aggressively in order to minimize delays to thrombolysis.
- Patient currently prescribed and taking a direct non-vitamin K oral anticoagulant (DOAC). [Refer to Section 5.2 clinical considerations for additional information.](#)

CT or MRI Findings

- CT showing early signs of extensive infarction

Laboratory

- Blood glucose concentration below 2.7 mmol/L or above 22.2 mmol/L.
- Elevated activated partial-thromboplastin time.
- International Normalized Ratio greater than 1.7.
- Platelet count below 100,000 per cubic millimetre.

Box 5C Inclusion Criteria for Endovascular Thrombectomy

[Refer to Section 4.2 and Boxes 4B, 4C and 4D for detailed recommendations on neuroimaging-based selection criteria](#)

1. If intravenous alteplase is given in conjunction with endovascular thrombectomy, refer to Box 5B for additional inclusion criteria.
2. **Age:** Patients under 18 years of age. There is no current evidence for use of endovascular thrombectomy in pediatric populations and the decision to treat should be based on the potential benefits and risks of the therapy, made by a physician with Pediatric stroke expertise in

consultation with the patient and/or family/substitute decision-makers.

3. **Premorbid Condition Criteria:** In general, functionally independent and life expectancy greater than 3 months.
4. **Imaging:**
 - a. A small-to-moderate ischemic core (such as with ASPECTS score of 6 or higher).
 - For patients with large ischemic core, such as with ASPECTS score less than 6, the decision to treat should be based on the potential benefits and risks of the treatment, made by a physician with stroke expertise in consultation with the neuro-interventionalist, and patient and/or family/substitute decision-makers.
 - b. Intracranial artery occlusion in the anterior circulation, including proximal large vessel occlusions in the distal ICA or MCA and immediate branches.
 - c. For patients with basilar artery occlusions, the decision to treat with endovascular thrombectomy should be based on the potential benefits and risks of the therapy, made by a physician with stroke expertise in consultation with the neuro-interventionist, and the patient and/or decision-makers.
5. **Time to treatment:** The decision to proceed with endovascular thrombectomy should be shared between the physician with clinical stroke expertise and the neuro-interventionalist, who will make use of the available imaging information as is indicated. Details regarding imaging parameters commonly used in the literature are included in Box 4B – 4D.
 - a. Specifically:
 - i. Patients should have immediate neurovascular imaging (see above) to determine eligibility. Patients can be considered for imaging within a **24-hour window** from stroke onset or last known well.
 - ii. **For patients presenting less than 6 hours** from onset of stroke symptoms or last known well to initiation of treatment (i.e. arterial puncture), all patients who meet eligibility criteria should be treated.
 - iii. **For patients presenting between 6 to 24 hours from last seen well**, highly selected patients may be treated if they meet clinical and imaging criteria, and based on local protocols and available expertise in endovascular thrombectomy.