A position statement drafted by the Cardiovascular Health and Stroke SCN™, the Provincial Acute Stroke/TIA Expert Working Group and the Endovascular Therapy Management Subgroup

### **Preamble**

Ischemic stroke treatment has rapidly advanced over the last few years; however, one fact has remained constant: for select patients, treatment with intravenous thrombolytic agents and/or endovascular thrombectomy (EVT) is life and disability saving. In the past, the threshold for treatment eligibility was highly contingent upon the 6 hour time window from stroke onset. As practices in stroke care have evolved, it is becoming clear that time is only one contributing factor to treatment eligibility and that the imaging appearance defining the physiology is actually a more critical factor.

The Canadian Stroke Best Practice Recommendations, as of 2018, recognize a **24-hour threshold** for identifying potentially treatable ischemic stroke patients (Appendix A, Section 5.1 & 5.4) and indicate that **screening and imaging** are to be rapidly completed within that timeframe to determine treatment eligibility. Currently in Alberta, varying thresholds for EVT treatment exist among urban and rural hospitals, and with Emergency Medical Services (EMS); this variation in practice has created inequitable access to treatment and both clinical and administrative challenges.

The Provincial EVT Steering Committee has asked the Cardiovascular Health & Stroke Strategic Clinical Network™ (CvHS SCN™) to craft a position statement pertaining to the 24 hour EVT treatment window. This position statement has been developed in conjunction with the Acute Stroke/TIA Expert Working Group and the EVT Management Subgroup with the intent of creating equitable access to treatment, improving outcomes for patients, and standardizing provincial practice to align with the Canadian Stroke Best Practices Recommendations.

## Position Statement from the Cardiovascular Health & Stroke SCN™

On behalf of the clinical, operational, and stroke system experts and in alignment with Canadian Stroke Best Practice Recommendations, all patients in Alberta with disabling acute ischemic stroke presenting within **24 hours** of stroke symptom onset or last known well should be rapidly screened clinically and with neurovascular imaging for eligibility for acute Endovascular Therapy treatment.



Clinical Network<sup>3</sup>



## **Operational Implications**

The CvHS SCN™ recognizes that there are operational implications to this standard, which include but are not limited to:

- a change to the current transportation and communication algorithms along with the corresponding communication and/ or training pertaining to the change for EMS; Referral, Access, Advice, Placement, Information, Destination (RAAPID); and Shock Trauma Air Rescue Society (STARS).
- minimal overall increase in stroke volumes or stroke admissions provincially, a 24h threshold could change the hyper-acute stroke response (Emergency Department, Stroke Neurology, Medicine, Neuro-intervention) for all primary and comprehensive stroke centres
- 3. the need for hyper-acute brain and neurovascular imaging will increase; nonetheless, DI and clinical operations suspect that advances in imaging software will highly impact imaging efficiency
- 4. stroke admissions will need to be balanced with repatriation and discharge planning; however, with reductions in morbidity and mortality length of stay will also likely decrease

## **Proposed Next Steps**

The CvHS SCN™ will support clinical, operational, and system partners to develop the systems and changes required to meet this standard; understanding that change will take time, education, and compromise. Collaboratively, we will work within zones and provincially to define ways to implement this standard.

The CvHS SCN™ also recommends adopting as many common approaches across the province as is pragmatically feasible to solve the challenge of implementing this standard.

## **Outcomes**

- -Evidence based patient care
- -Equitable access
- -Reduced morbidity and mortality
- -Clarity/standardized care
- -Improved appropriateness
- -Operational effectiveness

## **Summary**

A provincial consensus by both operational and clinical stroke leads has been reached to formally expand and standardize the EVT treatment window to 24hours for all eligible stroke patients.

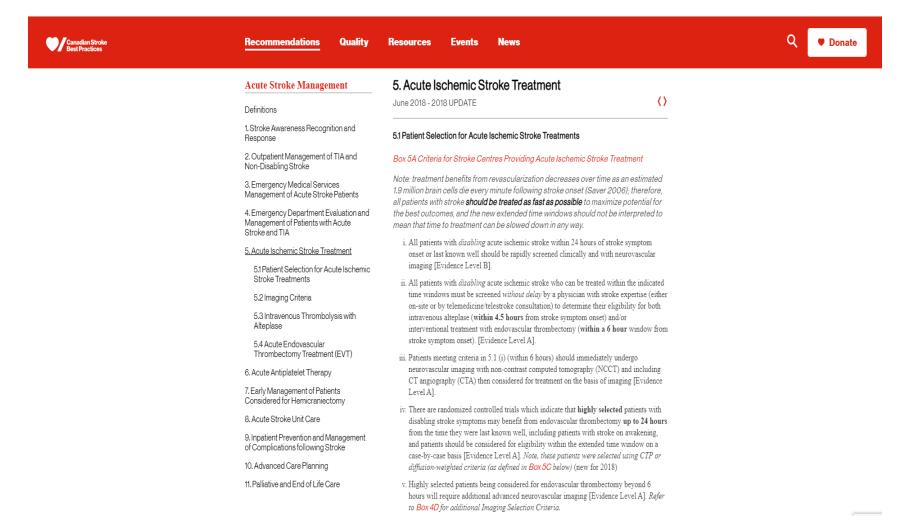
The CvHS SCN™ and the provincial stroke community appreciate the challenges faced by operations in adopting the expanded time window and will provide support in developing and implementing the required changes to meet this evidence based best practice standard.

## **Contributions**

This position statement was developed in consultation and collaboration with the members of the Acute Stroke/TIA Expert Working Group, the EVT Management Subgroup and the CvHS SCN™, and has been approved by the Provincial EVT Steering Committee (Appendix B).

# **Appendix A**

The following Stroke Best Practices Recommendations for Acute Ischemic Stroke Care were retrieved from: <a href="https://www.strokebestpractices.ca/recommendations/acute-stroke-management/acute-ischemic-stroke-treatment">https://www.strokebestpractices.ca/recommendations/acute-stroke-management/acute-ischemic-stroke-treatment</a>
December 10<sup>th</sup>, 2020.





Recommendations

Quality

Resources Events

#### Acute Stroke Management

#### Definitions

- 1. Stroke Awareness Recognition and
- Outpatient Management of TIA and Non-Disabling Stroke
- 3. Emergency Medical Services Management of Acute Stroke Patients
- 4. Emergency Department Evaluation and Management of Patients with Acute Stroke and TIA
- 5. Acute Ischemic Stroke Treatment
- 5.1 Patient Selection for Acute Ischemic Stroke Treatments
- 5.2 Imaging Criteria
- 5.3 Intravenous Thrombolysis with Alteplase
- 5.4 Acute Endovascular Thrombectomy Treatment (EVT)
- 6. Acute Antiplatelet Therapy
- 7. Early Management of Patients Considered for Hemicraniectomy
- 8. Acute Stroke Unit Care
- 9. Inpatient Prevention and Management of Complications following Stroke
- 10. Advanced Care Planning
- 11 Palliative and End of Life Care

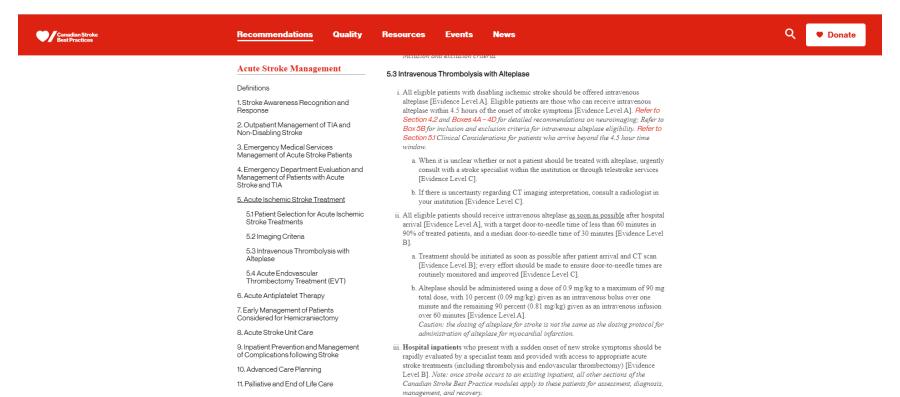
### Clinical considerations:

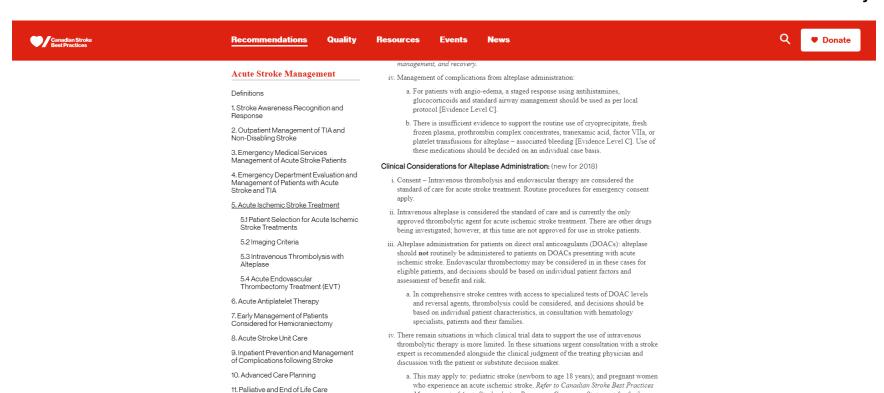
- i. One recent multi-centre randomized double-blind placebo controlled trial compared alteplase to placebo for ischemic stroke patients with unknown time of onset, using MRI selection criteria (DWI/FLAIR mismatch). It included ischemic stroke patients who were not candidates for endovascular thrombectomy, and who would otherwise have met the criteria for acute intravenous alteplase administration 46 (refer to Box 5B for alteplase
  - · This trial demonstrates a clinical benefit of intravenous alteplase administered more than 4.5 h from the time the patient was last known well in patients where onset time is unknown (no upper time limit defined).
  - · If intravenous alteplase is considered after 4.5 h, a consultation with a physician with stroke expertise should be obtained. Selection of patients for intravenous alteplase in patients presenting after 4.5 hours on the basis of CT, CTA and CTP remains unproven at this time.
  - MRI scanning can be challenging to obtain urgently in an Emergency Department setting. This must be considered in decision-making and not delay decisions regarding endovascular thrombectomy eligibility.

#### 5.2 Imaging Criteria

Refer to Section 4.2 for detailed recommendations and Boxes 4A, 4B, 4C and 4D for selection criteria for neuroimaging.

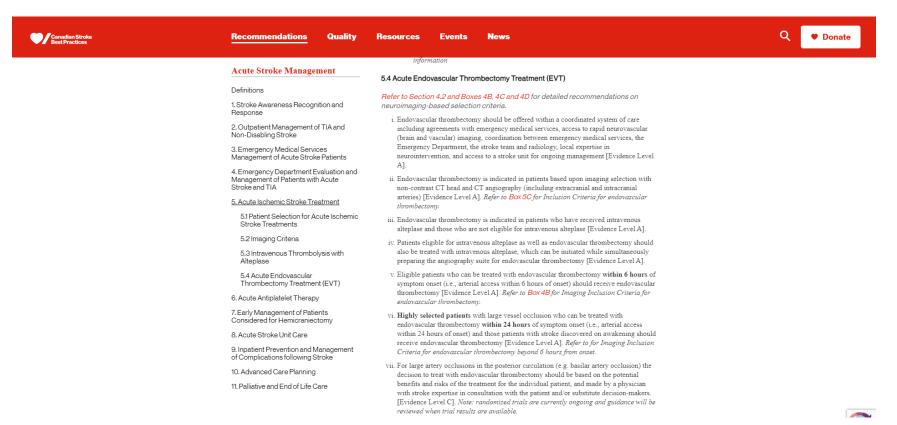
- i. Patients should be considered for revascularization treatment when there is no evidence of extensive early infarct changes [Evidence Level B], in consultation with physicians with stroke expertise. Note: one possible tool to assess infarct change is the ASPECT
  - a. Timely access to CT or MR perfusion scanning can also be used to demonstrate a perfusion mismatch and to determine the extent of the ischemic core [Evidence Level A], especially in patients beyond 6 hours from last known well, including patients with stroke on awakening.
- ii. For endovascular thrombectomy, patients should have a proximal occlusion in the anterior circulation [Evidence Level A]. Refer to Box 5C for endovascular thrombectomy inclusion and exclusion criteria.





information

 ${\it Management of Acute Stroke during Pregnancy Consensus Statement for further}$ 





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#### Acute Stroke Management

#### Definitions

- Stroke Awareness Recognition and Response
- 2. Outpatient Management of TIA and Non-Disabling Stroke
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- viii. Sedation: For endovascular procedures, procedural sedation is generally preferred over general anaesthesia and intubation in most patients when necessary [Evidence Level B].
  - a. General anaesthesia and intubation is appropriate if medically indicated (e.g. for airway compromise, respiratory distress, depressed level of consciousness, severe agitation, or any other indication determined by the treating physician) and in such cases, excessive and prolonged hypotension and time delays should be avoided [Evidence Level B].

#### Clinical Considerations for Endovascular Thrombectomy (new for 2018)

- i. For patients transferred to an EVT-enabled hospital, in order to ensure patient remains a candidate for EVT, consider doing repeat NCCT immediately on arrival if most recent CT was completed more than 60 minutes prior to arrival at the EVT-enabled site.
- Device selection should be at the discretion of the interventionalists based on clinical and technical factors during the procedure.
- iii. For patients undergoing EVT following administration of alteplase, there should not be a delay in proceeding to EVT to determine clinical effectiveness of alteplase.

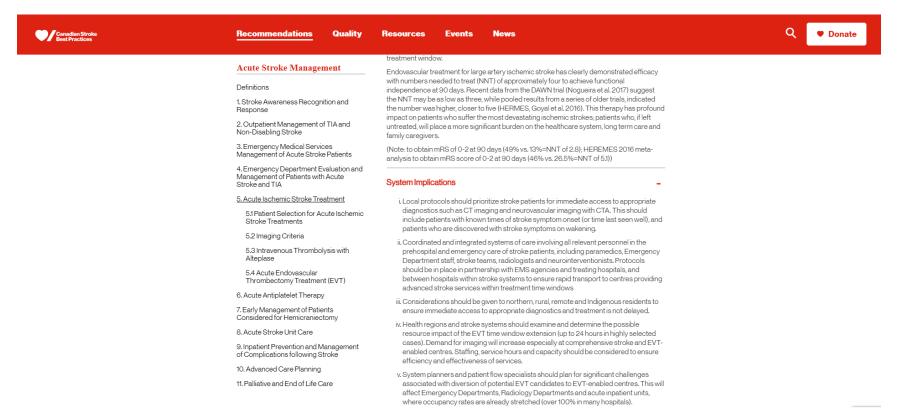
 $\textit{Box}\, \textit{5B Criteria for Acute Thrombolytic Therapy with Intravenous Alteplase}$ 

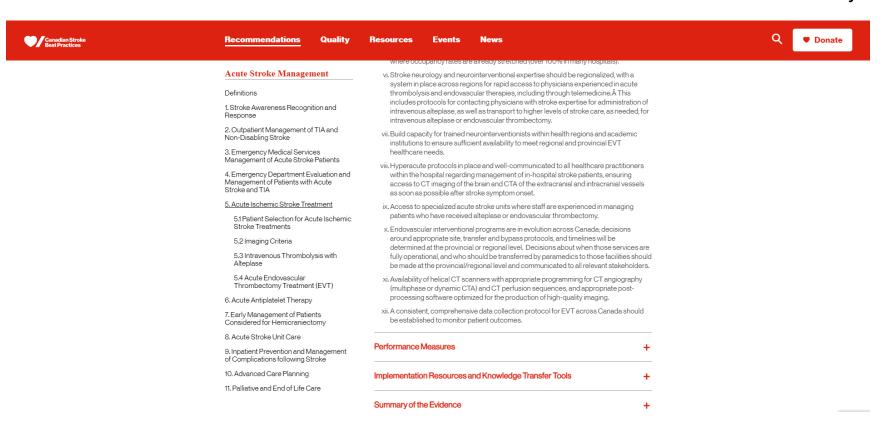
#### Box 5C Inclusion Criteria for Endovascular Thrombectomy

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#### Rationale

Meta-analyses of the randomized controlled trials of intravenous alteplase for acute ischemic stroke have shown that thrombolytic treatment can reduce the risk of disability and death, despite the risk of serious bleeding. The latest time for alteplase administration after stroke onset remains imprecisely defined, but currently available data show clear evidence of benefit when given up to 4.5 hours after the onset of symptoms. The available evidence demonstrates a strong inverse relationship between treatment delay and clinical outcome; eligible patients should be treated without delay, regardless of when they present within the treatment window.





# Appendix B

# **Acute Stroke/TIA Expert Working Group**

Name	Position/Department
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	Co-PI Stroke Ambulance Project
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Name	Role
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	Northern Stroke Lead Cardiovascular Health & Stroke SCN, AHS   Co-PI
	Stroke Ambulance Project

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	Cardiovascular Health & Stroke (CvHS) SCN™
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Balraj Mann	Executive Director, Cardiovascular Health & Stroke SCN™
Agnes Lehman	Manager, Cardiovascular Health & Stroke SCN™
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