Key Changes to the 2022 Acute Stroke Management Canadian Stroke Best Practice Recommendations (CSBPR)

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Purpose: In 2022 the Heart and Stroke Foundation of Canada released updated Acute Stroke Management (ASM) Canadian Stroke Best Practice Recommendations. This knowledge translation document is intended to support leadership and best practice champions to identify and adopt the new changes in the CSBPR.

This document

1. highlights significant changes between the previous CSBPR and this newest release so end users can recognize the new recommendations at a glance with links to the fulsome guidelines, and
2. identifies actions that end users may consider (e.g., uptake, adoption and implementation considerations) to assist with knowledge translation.

Target audience:

- Clinical educators
- Leadership
- Clinical leads
- Best practice experts
- Others working in the hyperacute and acute stroke spaces

How to use this document: Use this document to inform yourself and your stakeholders about the relevant changes to the Acute CSBPRs. Utilize the "Practical Implementation Ideas" column as a guide to ensuring your protocols, order sets, practices etc., are in line with the latest recommendations. Organizations with Accreditation Canada's Stroke Distinction™ program might highlight the use of this document as a tool to help facilitate compliance and alignment with the latest CSBPRs. Information on CBSPR guideline methodology can be found on page 10/11 of the Acute Stroke Management module.

Caution: This document is not a substitute for the complete Acute Stroke Management CSBPRs. Always refer to the fulsome guidelines.
Expiratory date: This document was published June 2023 and is valid until there is a new publication of the Acute Stroke Management CSBPRs that replaces the 2022 version.

Imaging (section 4.2, LINK)	
2022 Highlighted Changes	Practical Implementation Ideas*
All recommendations related to imaging in the early phase of acute stroke have been consolidated into Section 4.	☐ Check that your center performs a combined CT/CTA of the head and neck as the standard for all suspected code stroke/ stroke protocol patients; if not, facilitate discussions with stakeholder about key barriers and enablers to combine CT/CTA including availability 24/7 ☐ Check that your site is using the latest standard provincial stroke imaging protocol located on the CorHealth website here: latest standard imaging protocol ☐ Consider adopting the use of perfusion imaging

*Practical Implementation Ideas highlights uptake, adoption and implementation considerations of the new ASM recommendations provided by the *Ontario Acute Stroke Best Practice Coordinators.*

Addition of Tenecteplase (Section 5.2, LINK) Based on new clinical trial evidence released in 2022, new recommendations for the use of tenecteplase (TNK) as an alternative to alteplase for acute intravenous thrombolysis has been added to Section 5.	
2022 Highlighted Changes	Practical Implementation Ideas
Section 5.2 Intravenous Thrombolysis Administration, LINK **Rec 5.2 iv.** Tenecteplase may be considered as an alternative to alteplase within 4.5 hours of acute stroke symptom onset [Strong recommendation; Moderate quality of evidence]. a. Tenecteplase dose: If administering tenecteplase, the dose of 0.25 mg/kg up to a maximum of 25 mg should be administered, given as a single bolus over 5 seconds [Strong recommendation; Moderate quality of evidence] (p. 61). *Caution: The dosing of alteplase and tenecteplase for stroke is NOT the same as the dose protocols for administration of these medications for myocardial infarction or massive pulmonary embolism.*	☐ Your team may consider switching to TNK (instead of tPA) for thrombolysis; this would require consultation with your stakeholders
Section 5 System Implications **4.** Health system leaders should work with hospitals to coordinate plans for launching tenecteplase and consider group purchase opportunities. Health Canada should undertake rapid review and approval for use of tenecteplase in acute stroke (p. 71).	☐ Local stroke systems may be able to provide guidance and resources for this work (e.g., in Ontario - the Stroke Networks)

Emergency Management of Thrombolysis- Associated Hemorrhage (Section 5.6, LINK) This new section (section 5.6) highlights the emergency management of symptomatic intracranial hemorrhage following administration of intravenous thrombolysis.	
2022 Highlighted Changes	Practical Implementation Ideas
This section includes information on: • How to identify hemorrhage (intracranial/extracranial) • Treatment guidelines for above hemorrhages including recommendations on imaging, bloodwork and management • Clinical consideration for the management of HTN with symptomatic ICH. Note: For further detailed information on the management of intracerebral hemorrhage refer to the CSBPR module Management of Spontaneous Intracerebral Hemorrhage (2020).	☐ Review all stroke process documents ensuring they include the management of thrombolysis associated hemorrhage ☐ Communicate practice changes to all appropriate stakeholders (e.g., front line emergency department staff, diagnostic imaging, etc.) ☐ Consider an order set or practice guide to facilitate efficient management of hemorrhage post thrombolysis

Pre and post Endovascular Thrombectomy Care (Section 5) New clinical practice guidance has been included in Section 5, Box 5D on the care of people undergoing EVT, pre and post procedure	
2022 Highlighted Changes	Practical Implementation Ideas
Box 5D of Section 5 provides general management considerations on the care of people undergoing endovascular thrombectomy (EVT), pre and post procedure. These guidelines include general management considerations on the following and more: • Airway management • Anesthesia consideration • Contrast allergy management • Monitoring (cardiac, BG, temp, use of catheters, etc.) • General management following EVT	☐ Review Box 5D and consider how your standing orders sets and care pathways/plan align with these new stroke best practice general management considerations ☐ EVT-enabled sites should follow local post-procedural protocols and assessment algorithms for neuro vitals, puncture site and extremity perfusion assessments, and patient mobilization restrictions ☐ Incorporate the general management considerations, including anesthesia considerations, as appropriate ☐ Communicate practice changes to all appropriate stakeholders

Intravenous Thrombolysis and EVT (Section 5.2 LINK and 5.4 Clinical Considerations LINK)	
2022 Highlighted Changes	Practical Implementation Ideas
Section 5.2 Clinical Consideration *on the use of Intravenous thrombolysis and/or EVT in patients who are not functionally independent* **5.** Evidence for the use of intravenous thrombolysis and EVT is derived from randomized trials that enrolled patients who were functionally independent at baseline. The use of intravenous thrombolysis and/or EVT in patients who are not functionally independent may be considered, based on careful review of risks and benefits for the patient. The patient's goals of care should be discussed in consultation with a physician with stroke expertise, and/or a neurointerventionalist, and the patient and/or family and/or substitute decision-makers (p. 62). **Section 5.4 Clinical Consideration *on Combined Intravenous thrombolysis and EVT*** **6.** When a patient who is eligible for both intravenous thrombolysis and EVT presents DIRECTLY TO AN EVT-CAPABLE HOSPITAL, a decision not to administer intravenous thrombolysis and proceed straight to EVT must balance both the patient-related and operational factors in play at that moment, for that patient. The overarching focus is to improve patient outcomes while safely reducing door-to-needle and door-to-puncture times. The main driver for an excellent outcome remains "time is brain." Note: Clinical consideration 6 is controversial. It will be updated as additional evidence becomes available. In the meantime, clinicians involved in acute stroke care should focus on improving patient outcomes while safely reducing door-to-needle and door-to-puncture times. The main driver for excellent outcomes remains "time is brain" (p. 64).	☐ Communicate and facilitate discussions with EVT interventionalists and stroke neurologists around new implementation considerations for; i) baseline function among EVT candidates ii) repeat imaging decisions, and iii) time is brain principles (e.g., considerations related to intravenous thrombolysis plus EVT versus EVT only) ☐ Review all stroke protocols and pathways and update as appropriate based on local leadership consensus ☐ Communicate changes to protocols and practices to appropriate stakeholders ☐ As a reminder, an EVT consult for basilar artery occlusion will require discussion with stroke experts and the patient/ family /SDM

Section 5.4 *EVT for Acute Ischemic Stroke* has been separated into anterior & posterior circulation. **Rec 5.4.2 Posterior Circulation** **vii.** For large artery occlusions in the posterior circulation (e.g., basilar artery occlusion) EVT should be considered based on patient pre-morbid function, clinical deficit, and imaging findings. Consultation with a physician with stroke expertise and with the patient and/or substitute decision-makers is recommended [Conditional recommendation; Moderate quality of evidence]. Note: Randomized trials are ongoing, and this guidance will be reviewed when trial results are available (p. 63).	

Dual Antiplatelet Therapy (Section 6, LINK)	
2022 Highlighted Changes	Practical Implementation Ideas
New recommendations have been added to Section 6 (LINK) regarding the use of dual antiplatelet therapy (DAPT) in people who have experienced an acute ischemic stroke. These new recommendations are aligned with recommendations in the CSBPR Secondary Prevention of Stroke module, 2020. **Section 5.2 Clinical Consideration on intravenous thrombolytic administration for patients on DOACs** **2.** Intravenous thrombolytic administration for patients on DOACs: Intravenous thrombolytics should not routinely be administered to patients on DOACs who present with acute ischemic stroke. In comprehensive stroke centres with access to specialized tests of DOAC levels and reversal agents, thrombolysis could be considered, and decisions should be based on individual patient characteristics, in consultation with thrombosis specialists, patients, and their families. **a.** The benefits and risks of providing intravenous thrombolysis to a patient who is being treated with the combination of antiplatelet and low-dose DOAC (i.e., COMPASS trial protocol) are unclear. Treatment may be considered in consultation with a stroke expert. **b**. Anticoagulation is not a contraindication for EVT, and the decision to treat should be based on individual patient factors and assessment of benefit and risk. **c.** Patients who present with stroke who are taking a DOAC may be considered for rapid reversal if otherwise eligible for IV thrombolysis and if a reversal agent is readily available. Consultation with an expert in stroke care in strongly advised for these cases (p. 62).	☐ Review and update your stroke order sets ☐ Review and update your IV thrombolysis inclusion and exclusion criteria to align with the latest best practices ☐ Provide reminders about not delaying antiplatelets for EVT patients with NO IV thrombolysis + no other contraindications ☐ Performance monitoring: when looking at performance indicators and measurement at your hospital, note that indicators (listed at CSBPR) now include other antiplatelet medications; in cases where another agent is used instead of aspirin in the first 48 hours, this should be noted in local indicator definitions

Section 6.1 regarding acute antithrombotic therapy for patients <u>NOT receiving IV thrombolysis</u>, the phrasing around dysphasia has changed. **Rec 6.1 i.** All patients with acute ischemic stroke or transient ischemic attack (TIA) who are not already on an antiplatelet agent should be treated with at least 160 mg of acetylsalicylic acid (ASA) immediately as a one-time loading dose after brain imaging has excluded intracranial hemorrhage [Strong recommendation; High quality of evidence]. **a.** For patients with delayed swallow screen or potential dysphagia, ASA (81 mg daily) or clopidogrel (75 mg daily) may be administered by enteral tube or ASA (325 mg daily) by rectal suppository [Strong recommendation; Moderate quality of evidence]. Note: ASA and clopidogrel should only be administered orally once dysphagia screening has been performed and indicates an absence of potential dysphagia (p. 84). **Section 6 Clinical Considerations** ***5.*** Platelet function assays and pharmacogenetic testing may indicate antiplatelet activity and patients with potential clopidogrel resistance; however, the clinical implications for stroke prevention treatment are unclear at the time of writing and publication (p. 86).	

Medical Assistance in Dying (MAiD) (Section 11, LINK) *New statements have been added to Section 11 regarding discussions about MAiD with appropriate patients and family members*	
2022 Highlighted Changes	Practical Implementation Ideas
Section 11 Definitions for Palliative care, Palliative approach to care and Medical Assistance in Dying (MAiD) have been revised. **Recommendations for Palliative and End-of-Life Care have two new additions regarding MAiD** **Section 11 Rec v.** Decisions to initiate, withdraw, or forgo life-prolonging treatments after stroke, including artificial nutrition and hydration, should be made in discussion with the patient, family, and informal caregivers as appropriate, taking into account the best interests of the person, and including whenever possible their prior expressed wishes, either in an advanced care plan or through discussions [Strong recommendation; Low quality of evidence]. **Section 11 Rec vi.** Each member of the healthcare team should understand their roles and responsibilities as defined by their respective provincial or territorial college or professional organization regarding discussions about medical assistance in dying (MAiD) [Strong recommendation; Low quality of evidence] (p. 125). Section 11 **Clinical Consideration #2 includes two new areas to be considered where appropriate for patients with stroke at the end of life** 2.a. need for formal palliative care consultation 2.l. Interdisciplinary support for patients, families, and caregivers during dying process (p. 125).	☐ Be prepared to have conversations surrounding MAiD ☐ Be aware that these are national recommendations and there may be provincial MAiD legislation to consider ☐ Familiarize your staff with your organization's process for accessing MAiD

Virtual Care

New and updated recommendations for virtual stroke care in the emergency department and inpatient care have been added to Sections 2, 4, 5 and 8.3 to reflect the sustainable integration of this modality into daily care for people with stroke.

2022 Highlighted Changes	Practical Implementation Ideas
Section 2.6 Virtual Care in Secondary Stroke Prevention A new section has been added relating to virtual care in secondary stroke prevention (p. 23-24). This section includes information on: • Information technology infrastructure and protocols • Established/validated criteria for best form of visit for each patient at each encounter • Validated approaches to virtual neurological exams • Clinic processes • Home blood pressure monitors • Cardiac monitoring **Section 4.7 Virtual Acute Stroke Care (Telestroke)** **Rec 4.7.1 i**. Virtual acute stroke care networks should be in place and readily available when stroke expertise is not available on-site, to allow access to consultations with stroke experts for acute stroke assessment, diagnosis, and treatment, including acute thrombolytic therapy and decision-making for EVT [Strong recommendation; Moderate quality of evidence] (p. 47). **Section 5.1 Patient Selection for Acute Ischemic Stroke Treatments** This section includes recommendations for virtual acute stroke care/Telestroke consultation when a physician with stroke expertise is not available on-site. (p. 60) **Section 8.3 Virtual Inpatient stroke care** **Rec 8.3 i.** Virtual stroke care modalities should be considered to support optimal in-hospital stroke care when patients cannot be transferred to an acute stroke unit (i.e., virtual stroke unit care) including support for medical decision-making and rehabilitation treatment [Conditional recommendation; Low quality of evidence]. **Rec 8.3 ii**. Virtual care technology should be available to provide education to admitted patients and to staff working with patients, and to allow patients to access programs available at other locations if not available on-site, when safe to do so [Conditional recommendation; Low quality of evidence].	☐ Consider virtual stroke care modalities to enhance access to care ☐ Refer to CSBPR Virtual Stroke Care Implementation Toolkit ☐ Confirm criteria for virtual care client selection for your organization (refer to Toolkit above)

Other Notable Changes	
2022 Highlighted Changes	Practical Implementation Ideas
Laboratory Investigations - Table 2A (LINK) This table lists recommended initial laboratory investigations for patients with acute Stroke and TIA as well as additional laboratory investigations for consideration in specific circumstances. **Section 2.3 Blood Work** **Rec 2.3 i c. Giant Cell Arteritis**: If giant cell arteritis is suspected (e.g., retinal ischemia or headache), ESR or CRP should be measured [Strong recommendation; Low quality of evidence]. **Rec 2.3 ii. Extensive Thrombophilia testing** for hereditary hypercoagulable disorders is not recommended for routine investigation of a patient with arterial ischemic stroke and should be limited to selected situations [Strong recommendation; Low quality of evidence]. a. If a hypercoagulable state is suspected, consultation with a healthcare professional with hematology or thrombosis expertise should be considered [Strong recommendation; Low quality of evidence]. **Box 3B considerations in EMS Transport Decisions** **7.** A system of rapid transport should be available to facilitate the movement of patients from one emergency department to another when time-sensitive stroke-specific care cannot be provided in the emergency department where the patient is first assessed. **Section 6 Clinical Consideration** **5.** Platelet function assays and pharmacogenetic testing may indicate antiplatelet activity and patients with potential clopidogrel resistance; however, the clinical implications for stroke prevention treatment are unclear at the time of writing and publication (LINK, scroll to page 86).	☐ Review your order sets to ensure that recommended lab tests are included ☐ Review your method and process for rapid transport of hyperacute stroke patients to the stroke centre to enable time sensitive treatment delivery

Section 4.1 Initial Emergency Department Evaluation **Rec 4.1 iii a.** Use or non-use of anticoagulants, including the timing of the last dose taken, should be sought and recorded [Strong recommendation; Moderate quality of evidence] (LINK, scroll to page 43). **Section 5.2 Clinical Consideration** **6. Hypertension with symptomatic ICH:** In patients with symptomatic ICH who are hypertensive (>185/110 mmHg), blood pressure should be lowered, however, the specific target and duration of therapy are unknown at this time (LINK scroll to page 62).	☐ Consider if your ED staff routinely seeks out and records anticoagulation use and timing of last dose