

Emergency Department Evaluation of Acute Stroke and TIA Order and Documentation Template

The following actions are based on the 2015 Update of Canadian Stroke Best Practice Recommendations for Hyperacute Stroke Care. This document is intended to be used as a template to ensure alignment of organization specific care with the Stroke Best Practices for Emergency Department evaluation and management of stroke. Institutional specific standards for routine precautions, assessment and care should be followed.

All patients presenting to an emergency department with suspected stroke or transient ischemic attack must have an immediate clinical evaluation and investigations to establish the diagnosis, rule out stroke and TIA mimics, determine eligibility for thrombolytic therapy, and develop a plan for further management, including goals for care (CSBPR Hyperacute Stroke Care, Recommendation 3, *Emergency Department Evaluation and Management*).

Date _____ Time _____

Stroke Symptom History and Presentation

Record Onset of Stroke Symptoms (or last time seen as normal) _____

- Triage patient based on time since onset of stroke symptoms and clinical presentation (*Refer to Recommendation 1: Outpatient Assessment and Management of Stroke and TIA*).
- Conduct history and physical examination to establish diagnosis of TIA/non-disabling stroke

I. Initial Evaluation

Stroke Severity and Focal Deficits

- Complete baseline assessment with standardized stroke scale
 - National Institute of Health Stroke Scale (NIHSS) Baseline Score: _____
 - or Canadian Neurologic Scale (CNS) Baseline Score: _____
 - or Neurovital signs
- Repeat stroke scale assessment q ____ h
- Assess neurovitals q _____

Consults

- Stroke Neurologist/Stroke Team
 - Date/time called _____ Time arrived _____
- Neurosurgeon: Reason _____
 - Date/time called _____ Time arrived _____
- Other: _____

Investigations (Refer to Recommendation 1.2, CSBPR Hyperacute Stroke Care)

Vital Signs and Assessment

- Record baseline vital signs

Temperature _____°C Heart Rate _____/min.

Blood Pressure ____/____mmHg Respiratory Rate_____

- if temperature > 37.5°C, notify MD

- if SBP > 180 mmHg or DBP > 105 mmHg for 2 or more readings taken 10 minutes apart, notify MD

- SpO₂ via pulse oximetry_____ % Maintain SpO₂ at _____ %

- Actual Weight _____ kg or Estimated Weight _____ kg

- Height _____ cm Body Mass Index (BMI) calculated _____ kg/m²

- Continuous cardiac monitoring or VS q ____ minutes if unmonitored bed

- Monitor Intake and Output

Neuroimaging

- STAT** CT Angiography or **STAT** MR Angiography or **STAT** CT Perfusion

- STAT** CT or **STAT** MRI

Scan scheduled Time: _____

Scan completed Time: _____

- Other Non-invasive Vascular Imaging (intra- and extracranial vasculature)

Carotid Ultrasound Scheduled (date)_____ Completed (date) _____

Neurovascular Intervention

- Referral to neurovascular expert Name: _____ Date: _____

- Carotid endarterectomy scheduled Date: _____

Cardiac

- Complete 12 lead ECG **STAT**

Presence of Atrial Fibrillation:

- No

- Order prolonged ECG monitoring

Holter Monitor Loop Recorder Event Monitoring

Duration of monitoring _____

- Yes: (Refer to CSBPR Secondary Prevention of Stroke, 7.2, i, and Table 6: Oral Anticoagulants for the Prevention of Stroke in AF Patients).

- Chest x-ray (if the patient has evidence of acute heart disease or pulmonary disease. Do not delay assessment for thrombolysis by performing the chest x-ray).

- Baseline swallow assessment (as early as possible without delaying decision-making for thrombolysis)

Date: _____ Time: _____ Result: Normal Abnormal

* Patient should remain NPO, and oral medications held, until swallow screen has been completed and found to be normal.

- Assess and monitor for seizure activity (*Refer to Recommendation 3.1 viii, CSBPR Hyperacute Stroke Care*)

Recommended Laboratory Investigations for Patients with Acute Stroke or TIA (*Refer to Table 3.2: CSBPR Hyperacute Stroke Care*)

Order Initial Laboratory Investigations on arrival to the emergency department

- | | |
|---------------------------------------|---|
| <input type="checkbox"/> CBC | <input type="checkbox"/> capillary glucose |
| <input type="checkbox"/> Electrolytes | <input type="checkbox"/> blood and/or urine drug screen (if clinically indicated) |
| <input type="checkbox"/> PTT | <input type="checkbox"/> urine or serum β HCG (if female of childbearing age) |
| <input type="checkbox"/> INR | <input type="checkbox"/> cross and type may be considered |
| <input type="checkbox"/> creatinine | |
| <input type="checkbox"/> e-GFR | |

Interventions

Acute Blood Pressure Management (*Refer to CSBPR Hyperacute Stroke Care Recommendation 3.4 and prescribe treatment according to current CHEP guidelines*)

- BP management in patients with ischemic stroke eligible for thrombolytic therapy
- Treat BP to a target of below 180/105
- Order medication: Drug _____ dose _____ route _____ frequency _____

- BP management in patients with ischemic stroke not eligible for thrombolytic therapy
- extreme BP elevation (e.g. systolic > 220 or diastolic > 120 mmHg) should be treated to reduce pressure by approximately 15%, but not more than 25% over the first 24 hours
- Order medication: Drug _____ dose _____ route _____ frequency _____

Blood Glucose Management (*Refer to CSBPR Hyperacute Stroke Care Recommendation 3.5*)

- Check point of care capillary blood glucose (or review EMS record) Result: _____
- Correct hypoglycemia immediately

Oxygen Therapy (Refer to CSBPR Hyperacute Stroke Care Recommendation 3.6)

- Order supplemental O₂ for patients with an O₂ saturation below 95%
 - O₂ at _____ L/minute by nasal cannula or
 - O₂ at _____ L/minute by face mask
- Titrate O₂ to maintain O₂ saturation >92%

II. Acute Ischemic Stroke Therapy

All patients with disabling acute ischemic stroke must be screened without delay by a physician with stroke expertise (either on-site or by telemedicine/telestroke consultation) to determine their eligibility for both medical treatment with intravenous tPA (within 4.5 hours from stroke symptom onset) and interventional treatment with endovascular therapy (within a 6 hour window from stroke symptom onset) (Refer to CSBPR Hyperacute Stroke Care Recommendation 4.0).

a. Thrombolysis Assessment

 (Refer to Box 4.1, CSBPR Hyperacute Stroke Care)

These criteria are designed to guide clinical decision-making; however, the decision to use tPA in these situations should be based on the clinical judgment of the treating physician.

Criteria adapted in accordance with the criteria identified in National Institute of Neurological Disorders and Stroke (NINDS) tPA Stroke Study.

Intravenous tPA remains the first line standard of care. Consideration for intravenous tPA plus endovascular therapy should not delay treatment with intravenous tPA for eligible patients.

Thrombolysis (tPA) Treatment Inclusion Criteria

- Diagnosis of ischemic stroke causing measurable neurologic deficit in a patient who is 18 years of age or older.
 - For adolescents, decision to administer tPA 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 tPA administration.

Absolute Exclusion Criteria

- Any course of active hemorrhage or any condition that could increase the risk of major hemorrhage after tPA administration
- Any hemorrhage on brain imaging

Relative Exclusion Criteria (requiring clinical judgment 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.
- 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 <185/105 cannot be achieved.

Laboratory

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

CT or MRI Findings

- CT showing early signs of extensive infarction, represented by a score of less than six on the Alberta Stroke Program Early CT Score [ASPECTS], or MRI showing an infarct volume greater than 150 cc on diffusion-weighted imaging.

b. Endovascular Assessment *(Refer to Box 4.1, CSBPR Hyperacute Stroke Care)*

Endovascular therapy should be offered within a coordinated system of care including agreements with EMS; access to rapid neurovascular (brain and vascular) imaging; coordination between the ED, the stroke team and radiology; local expertise in neurointervention; and access to a stroke unit for ongoing management. (Refer to CSBPR Hyperacute Stroke Care Recommendation 4.3).

Endovascular Treatment Inclusion Criteria

- If intravenous tPA is given in conjunction with endovascular therapy, refer to Box 4.1 for additional inclusion criteria.
- Age:** Patients over 18 years of age. There is no current evidence for use of endovascular therapy in paediatric populations and it should not be used outside of a clinical trial.
- Clinical presentation:** Functionally disabling stroke.
- Imaging:**
 - A small-to-moderate ischemic core (with ASPECTS score of 6 or higher).
 - For patients with ASPECTS score less than 6, the decision to treat should be based on the potential benefits and risks of the therapy, made by a physician with stroke expertise in consultation with the patient and/or family/substitute decision-makers.
 - Intracranial artery occlusion in the anterior circulation, including proximal large vessel occlusions in the distal ICA, MCA/ACA and immediate branches.
 - For patients with basilar artery occlusions, the decision to treat with endovascular therapy should be based on the potential benefits and risks of the therapy, made by a physician with stroke expertise in consultation with the patient and/or decision-makers.

- Either of:
 - Moderate-to-good collateral circulation demonstrated using multiphase or dynamic CTA. *(Refer to Box 4.3, CSBPR Hyperacute Stroke Care, for definitions).*
 - OR**
 - If CT perfusion imaging is used, the specific imaging characteristics to define perfusion mismatch and a small-to-moderate ischemic core should be adapted based on available CT scanner and software technology.
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- Time to treatment:** Endovascular therapy should be considered for patients in whom treatment can be initiated within 6 hours of symptom onset and may be considered for those in whom treatment can be initiated within 12 hours from stroke symptom onset. Specifically:
 - Patients should have immediate neurovascular imaging (see above) to determine eligibility. Patients can be considered for imaging within a 12-hour window from stroke onset.
 - Within less than 6 hours from onset of symptoms to initiation of treatment (i.e. groin puncture), all patients who meet eligibility criteria should be treated.
 - Within 6 to 12 hours from onset of symptoms to initiation of treatment (i.e. groin puncture), *selected* patients may be treated if they meet clinical and imaging criteria, and based on local protocols and available expertise in endovascular therapy. This criterion is based on limited evidence from one randomized controlled trial (ESCAPE).

III. Patient Eligibility for treatment

- Patient meets tPA eligibility criteria *(Initiate Management of Stroke Patients who Receive tPA and/or Endovascular Therapy Order and Documentation Template)*
- Patient does not meet tPA eligibility criteria *(Continue this Order and Documentation Template)*
 - Not ischemic stroke
 - Stroke too severe
 - Family/patient refused
 - LSN time > 4.5 hours
 - Stroke too mild
 - Patient palliative status
 - Contraindication
 - MD decision
- Patient meets eligibility criteria for endovascular therapy
 - Patients who are eligible for IV tPA as well as endovascular therapy should be treated with IV tPA while simultaneously preparing the angiography suite for endovascular therapy. *(Initiate Management of Stroke Patients who Receive tPA and/or Endovascular Therapy Order and Documentation Template)*
- Patient does not meet eligibility criteria for endovascular therapy *(Continue this Order and Documentation Template)*

IV. Acute Aspirin Therapy

All acute stroke patients not already on an antiplatelet agent and not receiving tPA therapy should be given at least 160 mg of acetylsalicylic acid (ASA) immediately as a one-time loading dose after brain imaging has excluded intracranial hemorrhage (*CSBPR Hyperacute Stroke Care, Recommendation 5.1*)

- Order Acetylsalicylic Acid (ASA) _____ mg loading dose x 1 PO* PR* via feeding tube*
- Drug administered:

(drug) (dose) (route) (date) (time)

- Continue Acetylsalicylic Acid (ASA) _____ mg once daily PO* PR* via feeding tube* (dose range 81 – 325 mg daily)

* for dysphagic patients, ASA may be given by enteral tube (80 mg daily) or by rectal suppository (325 mg daily)

- For patients already on ASA prior to ischemic stroke or TIA, clopidogrel may be considered as an alternative. If rapid action is required,
- order a loading dose of clopidogrel 300 mg, followed by a
 - order maintenance dose of clopidogrel 75 mg once daily

Discharge Plan

- Admit to inpatient unit (*Initiate Admission of Acute Stroke and TIA Patients Order and Documentation Template*)
- Transfer to stroke unit
 - Transfer to Palliative/End of Life Care
 - Transfer to ICU
 - Transfer to Unit: _____
- Discharge home or to place of residence (*Initiate Secondary Prevention of Stroke Order and Documentation Template*)
- Refer patient to Stroke Prevention Clinic or Service
SPC: _____
Appointment Date: _____ Appointment Time: _____
 - Refer patient to Home Care services
 - Refer patient to outpatient or community-based rehabilitation for assessment and treatment
Facility: _____
Appointment Date: _____ Appointment Time: _____
 - Follow-up with Family Physician:
Name: _____
Appointment Date: _____ Appointment Time: _____
 - Send discharge summary/consult letter to Family Physician within 72 hours

- Other Follow-up Appointments:
 - Name _____
Appointment Date: _____ Appointment Time: _____
 - Name _____
Appointment Date: _____ Appointment Time: _____
 - Name _____
Appointment Date: _____ Appointment Time: _____

Patient and Family Education

- Provide patient and family education and skills training as required regarding (initial when completed):
 - ___ Diagnosis
 - ___ Stroke signs and symptoms and appropriate actions to take
 - ___ Contact numbers for EMS, neurologist, stroke team, other healthcare professionals

 - ___ Risk Factor modification – assist with development/update of an individualized plan
 - ___ Activity levels, activities of daily living
 - ___ Safety and avoidance of falls and injury
 - ___ Rehabilitation
 - ___ Driving
 - ___ Sexual Activity
 - ___ Community Support Group resources
 - ___ Other _____
- Provide patient and family with written summary of diagnosis, investigations and results, interventions, medications, and follow-up appointments/needs at end of ambulatory care visit
- Provide patient with access to resources (also refer to CSBPR Hyperacute Stroke Care Implementation Resources):
 - Taking Charge of Your Stroke Recovery: A survivor’s guide to the Canadian Stroke Best Practice Recommendations (http://www.strokebestpractices.ca/wp-content/uploads/2014/08/HSF_SBP_PatientsGuide_F14_EN_July2014-FINAL.pdf)
 - Post-Stroke Checklist (http://www.strokebestpractices.ca/wp-content/uploads/2014/06/HSF%20Post%20Stroke%20Checklist_WEB.pdf)