northern health
the northern way of caring

Regional Order Set

Ischemic Stroke: Initial 24 Hours
Post Thrombolysis Order Set

PATIENT LABEL

Allergies: ☐ None known ☐ Unable to obtain
List with reactions: _____

Weight: _____ **kg**

Admit to ICU or high-acuity unit under care of: _____

Code status: Refer to 10-111-5171 Medical Order for Scope of Treatment (MOST)
(Note - This is not an order. Prescriber must obtain, complete and sign this order separately)

Vitals/monitoring

- Neurovital signs post t-PA administration q15min x 2 hours, q30min x 6 hours, then q1hour x 16 hours
  If sudden deterioration is noted notify MRP, see appendix A.
- **10-000-5099-001 Adult NIH Stroke Scale** q4h x 24h
- Cardiac monitoring or telemetry for a minimum of 24h
- Maintain SpO2 between 90% to 94% unless contraindicated by COPD

☐ COPD patients maintain SpO2 at 88% to 92% unless otherwise specified

- Notify most responsible MD immediately if:
  - HR less than 50 bpm
  - RR greater than 24 breaths/minute
- Monitor for angioedema:
  - Observe for facial, tongue, and/or pharyngeal angioedema q15min x 2h and then periodically x 24h post infusion (see angioedema management).
- Evaluate urine, stool, emesis or other secretions for blood. If suspect hemorrhage, see Appendix A.

Investigations (Within 24 hours post thrombolysis)

- CBC, INR, PTT, random glucose, sodium, potassium, chloride, bicarbonate, urea, creatinine, AST, ALT, alkaline phosphatase, CK, HgbA1c
- Lipid profile and fasting blood glucose
- Urinalysis
- ECG

Diagnostic imaging

- CT scan head, non-contrast at 24 hours post-thrombolysis. Booked: _____
  (Note: MRI without GRE sequence is **not** a substitute for CT.)
- Carotid imaging within 24 hours (CT angiogram arch to vertex or ultrasound if CT angiogram not available)
- Chest x-ray within 24 hours of admission (if not done in ER)

IV fluids (Avoid new IV insertions unless clinically required)

- #1 IV of NS at 75 mL/h **or** _____
- # 2 IV Saline lock with NS flush **in opposite arm**

Physician signature: _____ **College ID:** _____ **Date:** _____ **Time:** _____

Blood pressure management: Avoid restarting antihypertensive agents for the first 24 hours. Note: Caution needs to be exercised to avoid lowering blood pressure too aggressively, compromising cerebral perfusion.

If SBP is greater than 180 mmHg or DBP is greater than 105 mmHg for first 24 hours after alteplase (t-PA):

- **labetalol** 10 mg IV over one minute q10min PRN. (Maximum cumulative dose of 300 mg in 24 hours.) Hold **labetalol** if heat rate less than 60 bpm.
- If heart rate less than 60 or if **labetalol** contraindicated:
  hydrALAZINE 10 to 20 mg IV q4h PRN
- Monitor vital signs and neuro vitals q15min until 4 hours after BP controlled
- Notify physician if BP not controlled by above

Angioedema management

Note: Avoid use of **EPINEPHrine** due to possibility of increasing risk of intracerebral hemorrhage secondary to sudden rise in blood pressure.

If patient develops angioedema, treat aggressively with:

- **diphenhydrAMINE** 50 mg IV q4h PRN
- **ranitidine** 50 mg IV q8h PRN

☐ If severe, **methylPREDNISolone** 80 mg IV q8h PRN

Glucose management:

- For known diabetics hold oral hypoglycemic medications and consider basal bolus **insulin** therapy or local **insulin** order set
- Blood glucose target 6 to 10 mmol/L
- Glucose monitoring qid

Patients with elevated blood glucose:

- If bedside glucose monitor is greater than 8 mmol/L, notify MRP to consider basal bolus **insulin** therapy or local **insulin** order set
- Avoid hypoglycemia, blood glucose less than 4 mmol/L

Seizure management

- **Monitor for seizures. If patient has seizure, initiate seizure precautions and notify MRP**
  - **LORazepam** 1 mg IV STAT PRN for seizure activity
  - May repeat q2min PRN up to a maximum of 4 mg if seizure persists

  *For recurrent or persistent seizures greater than 15 minutes, consider **phenytoin***
  *(loading dose: **phenytoin** 17.5 mg/kg IV x 1, maintenance: dose **phenytoin** 100 mg IV q8h)*

Nausea

☐ **ondansetron** 4 mg IV q8h PRN

☐ **dimenhyDRINATE** 25 to 50 mg PO/IV q4h PRN

Fever management

- Treat temperature greater than 37.5°C aggressively

☐ **acetaminophen** 650 mg PO/PR q4h PRN for temperatures greater than 37.5°C
(max **acetaminophen** from all sources 4000 mg/24 hours)

Physician signature: _____ **College ID:** _____ **Date:** _____ **Time:** _____

VTE prophylaxis:

☐ Mechanical prophylaxis with sequential compression device (SCD) for first 24 hours and until hemorrhage has been ruled out on CT.

Diet

• NPO until completion of **10-000-5189 Adult Swallowing Screen is passed**

☐ DAT ☐ Other: _____

Activity

• **Bed rest x 24h, then reassess**

☐ Supine position for non-hypoxic patients able to tolerate lying flat in order to optimize cerebral perfusion (AHA/ASA Guideline 2013)

☐ For patients at risk for airway obstruction or aspiration and those with suspected elevated intracranial pressure, the head of the bed should be elevated 15° to 30°. (AHA/ASA Guideline 2013)

• If patient position is altered, close monitoring of the airway, oxygenation, and neurological status is recommended, and adjustment to changing clinical parameters may be required (AHA/ASA Guideline 2013)

• Use supportive positioning for affected limbs

Wound management:

• Check puncture sites for bleeding or hematomas

• Apply pressure dressings to bleeding sites

• If arterial sheath in place, do not remove for 24 hours (see attached appendix A)

Precautions

• No tooth brushing or shaving with blade for 24 hours

• In and out catheterization is **not** recommended. In the event of urinary retention, indwelling catheterization can be used.

• No arterial punctures, intramuscular injections or invasive procedures for 24 hours (e.g. NG tubes, central venous access, arterial punctures)

• No anticoagulants administered in conjunction with IV alteplase (t-PA) administration and for 24 hours after infusion (e.g. **heparin**, **warfarin**, **LMWH**, **rivaroxaban**, **dabigatran**, **apixiban**)

• No antiplatelet agents for 24 hours after infusion (e.g. **ASA**, **clopidogrel**, **ticlopidine**, **prasugrel**, **ticagrelor**, **dipyridamole** (Aggrenox or equivalent), **cilostazol**, **abciximab**, **eptifibatide**, **tirofiban** or **NSAID**)

• Ensure no evidence of intracranial hemorrhage on 24 hour post thrombolysis CT prior to initiation of anticoagulants or antiplatelets

• No sedatives or narcotics for 24 hours

• Preferably avoid the use of indwelling catheters for the first 24 hours

Referrals: ☐ Dietician ☐ Physiotherapist ☐ Occupational therapist
☐ Speech language pathologist ☐ Social worker ☐ Pharmacist

****At 24h Post Thrombolysis refer to 10-111-5289 Ischemic Stroke Greater than 24 Hours Post Thrombolysis Order Set as appropriate.** (Note - This is not an order. Prescriber must obtain, complete and sign this order separately)

Physician signature: _____ **College ID:** _____ **Date:** _____ **Time:** _____

Appendix A: Management of hemorrhagic complications with use of alteplase (t-PA) for ischemic stroke

The use of alteplase (t-PA) carries the risk of hemorrhage complications either intracranial or systemic

1. Intracranial hemorrhage

- Clear neurological deterioration during or within 24 hours of alteplase (t-PA) infusion should be assumed to be due to intracranial hemorrhage
- Stop infusion if deterioration occurs during alteplase (t-PA) infusion
- Emergent CT scan
- Consider neurosurgery consultation (PTN: 1-866-233-2337)
- Consider cryoprecipitate*: 1 unit/10 kg given over approximately 10 to 30 minute per dose

2. Systemic hemorrhage

- The management of systemic hemorrhage will depend upon the location and size of the hemorrhage, and the likelihood the bleeding can be controlled mechanically
- If systemic bleeding is identified or suspected: STAT CBC, INR, PTT, fibrinogen
- If transfusion is considered cross-match and type 4 units packed red blood cells, 5 to 20 units of cryoprecipitate* and 1 unit of single donor platelets
- Consider tranexamic acid 10 mg/kg IV over 15 minutes
- If further bleeding occurs, consider repeat of cryoprecipitate*, see protocol above in #1
- Monitor vital signs q15min
- Consider imaging studies to identify source of bleeding
- Consider surgical consultation
- Active bleeding around intravenous and arterial puncture sites may be controlled by direct pressure

**If cryoprecipitate not available then may use FFP*

Appendix B: Management of Angioedema with Use of t-PA for Ischemic Stroke

- Angioedema has been reported in 1.3% (8/596; 95% CI 0.6 to 2.6%) of patients treated with IV alteplase (t-PA) therapy for acute stroke
- It has been associated with previous angiotensin converting enzyme (ACE) inhibitor therapy and with a past history of angioedema reactions
- The reaction has been observed approximately 45 to 90 minutes after the alteplase (t-PA) infusion was started
- Patients reported dysphagia and inspection of the tongue revealed hemilingual (ipsilateral to the side of the hemiplegia) tongue swelling
- Progression to the entire tongue and oropharynx may occur

Risk assessment

- Inquire if patient has ever experienced angioedema in the past
- Take ACE inhibitor history
- Contact pharmacy or access PharmaNet to review patient profile
- Consider stopping ACE inhibitor

Physician signature: _____ **College ID:** _____ **Date:** _____ **Time:** _____