

BACKGROUND

In the Champlain Region, post thrombolysis care is provided in Level 2 (Stepdown) or Level 3 (ICU) Units for a period of 24 hours. Post thrombolysis care should remain in Level 2 or 3 beds when possible. The following document is intended to support organizations to plan for direct admission to an inpatient ward unit post thrombolysis during the unprecedented possibility of limited capacity in Level 2 and 3 units due to the COVID-19 pandemic. This information is intended to be “guidance rather than directive” and is not meant to replace clinical judgment.

IMPLEMENTATION CONSIDERATIONS

In planning for the unprecedented reality of capacity challenges in the ED and limited capacity in the Level 2 or Level 3 units due to COVID, each thrombolysis organization should develop a plan supporting the bypass of Level 2 or Level 3 units and instead admitting directly to a unit bed, preferably a Stroke Unit bed. Each organization will need to determine the process for redirection. Below are *transfer considerations* for a stroke patient:

- **Transfer stroke patient post thrombolysis to a Stroke Unit:** Care may be provided by staff with limited experience monitoring patients post tPA.
- **Transfer stroke patient post thrombolysis to a Non-Stroke Unit:** Care may be provided by staff with limited stroke experience.

PHYSICIAN DECISION TO TRANSFER PATIENT DIRECTLY TO INPATIENT WARD UNIT BED

Consider the following contingency plan options after **assessing the safety of each patient** in bypassing Level 2 or Level 3 beds and according to bed access situation within the organization at that time.

- Option 1: Transfer to a regular ward unit at or close to 8 hours post tPA
- Option 2: Transfer to a regular ward unit after completion of the 1-hour tPA infusion

1 CARDIAC MONITORING

tPA infusion requires ECG monitoring. Cardiac arrhythmias with tPA may include rapid atrial fibrillation and/or ST segment changes. In general, the duration of cardiac monitoring post infusion varies between 8 hours to 24 hours.

MD REVIEWS access and clinical indication for cardiac monitoring post infusion.

- If direct cardiac monitoring not available, look at other solutions available in the setting, such as telemetry.
- If no other cardiac monitoring solutions are available, discontinue cardiac monitoring as clinically appropriate.

This document is meant to support staff who may not have experience working with the hyperacute stroke patient and provides a summary of the care required post thrombolysis.

2 MANAGING BLOOD PRESSURE

Blood pressure management guidelines for patients during the first 24 hours post tPA: Maintain blood pressure <185/110 mmHg.

MD REVIEWS blood pressure readings and assesses if pharmacological management can be provided safely on an inpatient unit.

- If blood pressure can be managed with medications that can be provided on a regular unit, MD changes the high-risk infusions, such as Labetalol, to medications which can be provided in regular inpatient care, such as Enalaprilat.

POST THROMBOLYSIS MONITORING—FIRST 24 HOURS

Once the physician has placed the order to transfer the patient directly to a ward unit, teams should endeavor to adhere to post thrombolysis order sets as much as possible to ensure the appropriate level of care.

When possible:

- Assign stroke nurses with stroke expertise to the inpatient area where stroke patients are admitted.
- Have a practitioner with stroke expertise available to support.

Initiate Order Set

The following is an example of a post tPA order set taken from The Ottawa Hospital, Champlain Regional Stroke Centre:

[Admission for Acute Ischemic Stroke Post Alteplase](#)

MONITOR FOR SIGNS OF NEUROLOGICAL DETERIORATION

Monitor for signs and symptoms of neurological deterioration, such as: new or worsening **headache, vomiting, increasing blood pressure, respiratory changes, and depressed level of consciousness** (HSFO, Faaast FAQs, 2007), as well as other signs of worsening neurological condition:

- Restlessness
 - Combativeness
 - Confusion
 - Lethargy / gradual loss of consciousness
 - Pupillary changes, sluggish response
 - Seizure
- New or worsening:**
- Weakness of face, arm, or leg
 - Problem with coordination
 - Problem with vision
 - Balance / unsteadiness
 - Difficulty speaking or trouble understanding speech

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Subtle neurological changes, such as changes in pupil shape, reactivity and size may indicate rising intracranial pressure:

- Record the size of the pupils in mm using a pupil scale prior to the application of the light stimulus.
- Indicate the reaction of pupils: **+** = Brisk Reaction **S** = Sluggish **-** = No Reaction

It is **critical** to report a change in either pupil size, shape, or reactivity, or change in eye movements which can result in double vision.

PERFORM A NEUROLOGICAL ASSESSMENT

Neurological assessment using an acute neurological scale should be performed frequently post tPA. Perform **GCS** with **Neuro Vital Signs** according to the Post Alteplase Order Set. If members of the care team are trained in performing the **NIHSS**, complete according to order set. **There is no expectation for health care professionals to complete NIHSS if not trained.** Speak to the most responsible physician if NIHSS is ordered and there is no staff trained to perform.

GLASGOW COMA SCALE (GCS)

The GCS is a neurological scale that aims to give a reliable and objective way of recording the state of a person's consciousness.

Directions on how to complete the GCS can be found [here](#)

NIHSS

The NIHSS is a 15-item impairment scale intended to evaluate neurologic outcomes and degree of recovery for patients with stroke. The scale assesses the level of consciousness, extraocular movements, visual fields, facial muscle function, extremity strength, sensory function, coordination (ataxia), language (aphasia), speech (dysarthria), and hemi-inattention (neglect). **It is important to note that one must be both trained and certified to administer the NIHSS.**

Information on training program and certification can be found [here](#)

MONITOR VITAL SIGNS

Frequency of vital signs: q15 minutes for the first hour post tPA, then q30 minutes x 6 hours, then q1h x 17 hours

- Blood Pressure: Target blood pressure <185/85 mmHg; notify a physician if blood pressure above target and administer anti-hypertensives as ordered to maintain blood pressure target.
- Heart Rate: Report any new atrial fibrillation, as well as a heart rate above or below normal parameters.
- Temperature: Monitor body temperature q4h; if elevated $\geq 37.5^{\circ}$ Celsius, use treatments to reduce fever, consider underlying infection.

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MONITOR BLOOD GLUCOSE

Monitor blood glucose levels as ordered. Notify physician if blood glucose ≥ 10 .

MONITOR FOR SIGNS OF BLEEDING

Monitor puncture sites and secretions for bleeding. Notify physician if present. If bleeding occurs in compressible area, it may require extended pressure to the area. If significant bleeding occurs, the patient may require blood products.

Avoid central line, indwelling catheter insertion, NG tube insertion, and IM injections for 24 hours.

Perform venepuncture carefully; usually can be performed after 6 hours post tPA.

No anticoagulants, no antiplatelets, no thromboembolic prophylaxis for 24 hours. All patients require a CT Head 24 hours post tPA, before starting anticoagulants or antiplatelet agents.

MONITOR FOR SIGNS OF ANGIOEDEMA

Angioedema has been observed during and up to several hours after tPA infusion. In many cases, patients received concomitant angiotensin-converting enzyme inhibitors. Monitor patients for angioedema during and for several hours after tPA infusion. Observe for swelling of the face, lips, tongue, and back of the throat. The swelling is seen on the surface of the skin and mucous membranes and appears puffy. If signs of angioedema occur, notify the physician and institute appropriate therapy as per order set: intravenous antihistamines, intravenous corticosteroids. Swelling may present to one side and then progress bilaterally. Angioedema can potentially cause airway obstruction and may require intubation.

MONITOR ABILITY TO SWALLOW SAFELY

All stroke patients are NPO (no oral medication, nutrition or hydration) until Swallowing Screen is completed—to be completed within 24 hours.

Complete a swallowing screen—[Barnes](#) or the validated tool used in your organization.

Register [here](#) to access an e-module on how to complete the BARNES or Standardized Swallowing Screen.

ACTIVITY

Follow your organization's recommendation with regards to mobility in the first 24 hours following tPA. In some organizations, the patient may be assisted for short episodes of mobilization with direct supervision, whereas in other organizations, strict bed rest for 24 hours is maintained. Ensure comprehensive fall risk prevention strategies are in place.

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WHERE TO GET MORE INFORMATION

- NIHSS Information on training program and certification can be found [here](#)
- [Stroke Best Practices: Acute Stroke Treatment](#)
- [SWO Stroke Network: Module 3: Prehospital and Emergency Management](#)
- Local hospital educational resources: Order sets, training manual

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