

The Credit Valley Hospital – CLINICAL PRACTICE GUIDELINES

Folder Name: Clinical Practice Guidelines

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Title: Stroke - Management of Acute Ischemic Stroke using Tissue Plasminogen Activator (TPA, Activase) CPG

PURPOSE

To provide a guideline to assist physicians in the medical management of patients with acute ischemic stroke using Tissue Plasminogen Activator (TPA, Activase[®]).

SELECTION CRITERIA:

Inclusion Criteria:

Clinical diagnosis of stroke in a patient 18 years or older causing measurable neurologic deficit with the onset of symptoms less than 3.5 hours (4.5 hours with 1 hour allowed for CT scan) before beginning treatment; if the exact time of stroke onset is not known, it is defined as the last time the patient was known to be normal.

Exclusion Criteria:

Historical

- Stroke or head trauma in the previous 3 months
- Any history of intracranial hemorrhage
- Major surgery in the previous 14 days
- Gastrointestinal or urinary tract bleeding in the previous 21 days
- Myocardial infarction in the previous 3 months
- Arterial puncture at a noncompressible site in the previous 7 days
- For treatment from 3 to 4.5 hours, additional relative exclusions (where the risk/benefit ratio is less clear) are age greater than 80 years and/or a combination of both previous stroke and diabetes mellitus

Clinical

- Spontaneously clearing stroke symptoms
- Only minor and isolated neurologic signs
- Seizure at the onset of stroke is an exclusion if the residual impairments are due to postictal phenomenon; seizure is not an exclusion if the clinician is convinced that residual impairments are due to stroke and not to postictal phenomenon
- Symptoms of stroke suggestive of subarachnoid hemorrhage
- Persistent blood pressure elevation (systolic \geq 185 mmHg, diastolic \geq 110 mmHg)
- Active bleeding or acute trauma (fracture) on admission
- For treatment for 3 to 4.5 hours, an additional relative exclusion (where the risk/benefit ratio is less clear) is an NIH Stroke Scale score of greater than 25

Laboratory

- Platelets less than $100,000 \times 10^9$
- Serum glucose less than 2.8 mmol/L
- INR greater than 1.7 if on oral anticoagulant
- For treatment for 3 to 4.5 hours, an additional relative exclusion (where the risk/benefit ratio is less clear) is oral anticoagulant use regardless of INR

Head CT Scan

- Evidence of hemorrhage
- Evidence of a multilobar infarction with hypodensity involving greater than 33% of the cerebral hemisphere

RESPONSIBILITY:

Physicians:

All physicians may initiate this guideline by completing Part A of the "Acute Ischemic Stroke – Tissue Plasminogen Activator (TPA, Activase®)" preprinted orders.

Neurologist/Internist:

The Neurologist or Internist will make the final decision about the eligibility of the patient to receive TPA. The Neurologist/Internist may initiate TPA treatment by completing Part B of the preprinted orders "Acute Ischemic Stroke – Tissue Plasminogen Activator (TPA, Activase®)" or by giving a verbal order to the ER physician or MRP.

The Neurologist/Internist will explain the benefits/risks to the patient or delegate. If the Neurologist/Internist is not on site the benefits/risks will be explained by the ER physician or MRP.

MRP:

The patient will be admitted to Critical Care under the care of the intensivist.

ASSESSMENT AND TREATMENT AND/OR MONITORING:

Diagnostic Workup:

When patients initially present with sudden onset of acute ischemic stroke that fit the above selection criteria then Part A of the preprinted orders (includes stat CT of the head – stroke protocol) "Acute Ischemic Stroke – Tissue Plasminogen Activator (TPA, Activase®)" should be initiated.

Treatment and Monitoring:

Treatment and monitoring as per the preprinted orders "Acute Ischemic Stroke – Tissue Plasminogen Activator (TPA, Activase®)".

See Appendix 1 for Algorithm:

Management of Acute Ischemic Stroke Using TPA - ER Patients

See Appendix 2 for Algorithm:

Management of Acute Ischemic Stroke Using TPA – Inpatients

See Appendix 3 for Algorithm:

Management of Thrombolytic Induced Major Bleeding

Patient Education:

The following benefits/risks of TPA treatment will be reviewed with the patient or delegate.

According to the 1995 study by the National Institute of Neurological Disorders and Stroke Study Group, in properly selected patients who received TPA within 3 hours of an ischemic stroke:

- for every 100 patients receiving TPA, at least 11 more compared to no treatment had an excellent recovery at discharge
- a 30% increase in complete or almost complete recovery was seen at 3 months compared to those who did not receive TPA
- a worsening of strokes within 36 hours due to intracranial hemorrhage was seen in 6.4% of patients who received TPA compared to 0.6% of patients who did not receive TPA

More recently, the study by Hacke et al found for the primary end point, 219 of the 418 patients in the alteplase (TPA) group (52.4%) has a favourable outcome as compared with 182 of the 403 patients in the placebo group (45.2%), representing an absolute improvement of 7.2%. For the secondary end point, the global odds ratio for a favourable outcome (the ability to return to an independent lifestyle) after stroke were 28% higher with alteplase (TPA) than with placebo.

REFERENCES

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- AHA/ ASA Scientific Statement. (2007) Guidelines for the Early Management of Ischemic Stroke. *Stroke*, 38, 1655-1711.
- AHA/ASA Science Advisory. (2009) Expansion of the Time Window for Treatment of Acute Ischemic stroke with Intravenous Tissue Plasminogen Activator. *Stroke*, 40, 2945-2948.
- Anderson, M. (2006) Managing Acute Ischemic Stroke, *Emergency Medicine*, September.
- Hacke, W., Kaste, M., Bluhmki, E., et al.(2008). Thrombolysis with Alteplase 3 to 4.5 hours after Acute Stroke. *New England Journal of Medicine*, 359, 1317-1329.
- Hankey, G. (2007) Clinical Update: Management of Stroke. *The Lancet*, 369, September.
- Lindsay, P., Bailey, M., Hillings, C., Hill, M., Woodbury, E., Phillips, S., (2008) Best Practice Recommendations for Stroke Care. *Canadian Medical Association Journal*, 179, 12.
- Management of Intracerebral Hemorrhage after Thrombolysis for Acute ST Elevation MI. Retrieved Dec 12, 2009 from *UpToDate*.

RELATED DOCUMENTS

Preprinted Orders "[Acute Ischemic Stroke – Tissue Plasminogen Activator \(TPA, Activase®\)](#)"
Parenteral monograph – [\[Para-Link\]](#) Tissue Plasminogen Activator

EDUCATION

The document leader will be responsible for an education plan to ensure staff members directed by the information contained in the clinical practice guideline are notified. New staff will receive education through hospital and/or department orientation.

EVALUATION

All patients receiving TPA for stroke will be evaluated. The endpoints monitored will include morbidity/mortality.

DEVELOPED BY

Neurology Service

APPROVED BY

General Medicine Steering Committee – May 20, 2010

Pharmacy & Therapeutics Committee – June 8, 2010

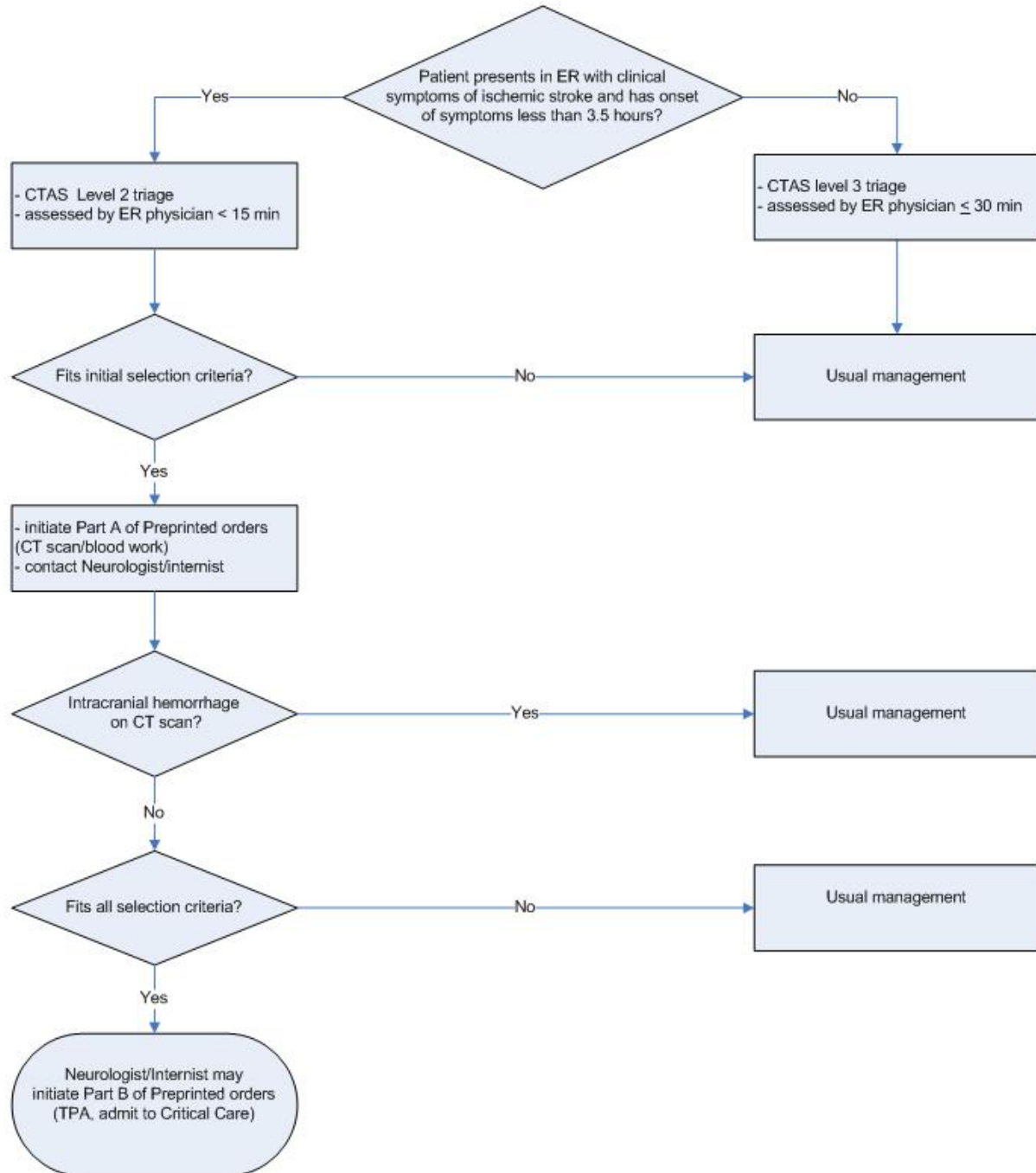
ER Steering Committee – June 15, 2010

SUPERCEDES

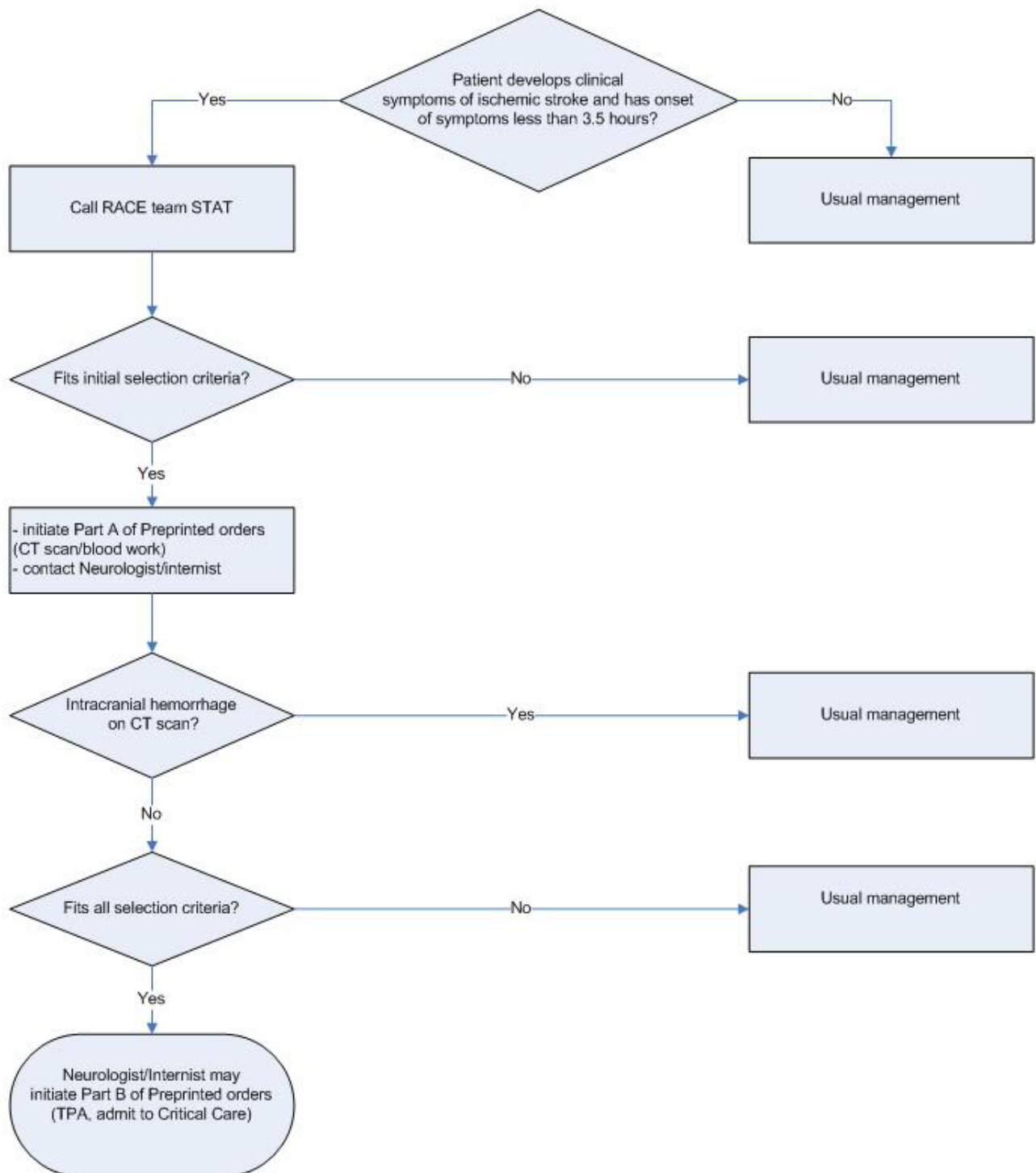
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Appendix 1
Management of Acute Ischemic Stroke using TPA
(ER patients)



Appendix 2 Management of Acute Ischemic Stroke using TPA (Inpatients)



Appendix 3
Intracranial Hemorrhage (ICH) following initiation of thrombolytic therapy for stroke

