

PROTOCOL FOR: Alteplase (t-PA): administration for Acute Ischemic Stroke

Policy:

1. Alteplase (t-PA) may be administered by RNs in the Emergency Department and Intensive Care unit, per MD order, for patients with a suspected acute ischemic stroke.
2. Prior to administration of Alteplase (t-PA), a review of inclusion/exclusion criteria (see pg.4) and a thorough neurological examination utilizing the National Institute of Health Stroke Scale (NIHSS) must be completed by the attending ED physician (available through link on pg 6);
3. Consent for administration of Alteplase (t-PA) must be obtained and documented.
4. Alteplase (t-PA) must be administered within 3 hours (180 minutes) of the onset of signs and symptoms.
5. The Neurology on-call Attending Physician must be consulted prior to the administration of Alteplase (t-PA).
6. Alteplase (t-PA) must be infused on an Alaris pump using the guardrails drug library.
7. Once the infusion has been initiated, the patient may be transferred to ICU for continued close observation & monitoring.

Desired Patient

Outcomes: Alteplase (t-PA) will be administered safely and appropriately to stroke patients who are candidates.

Procedure:

1. Initiate cardiac monitoring, NIBP, pulse oximetry and obtain/document full set of vital signs, including pain scale.
2. Assess level of consciousness, motor deficit, sensory deficit, speech deficit, and visual deficit.
3. Obtain IV access (a second IV line is recommended) and assure that all blood work, per MD order, has been obtained. Baseline labwork should include a CBC and platelet count, PT / PTT, fibrinogen, serum glucose, BUN and creatinine, type and screen.
4. Baseline labwork for which results must be known prior to Alteplase (t-PA) administration include:
 - a. fingerstick glucose
 - b. PT (if on warfarin)
 - c. pregnancy test (for women of childbearing age)
5. Obtain actual patient weight, if possible. This may require transferring the patient onto a hospital bed with a scale.

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6. Administer Alteplase (t-PA) as ordered by the physician. Alteplase is administered as an infusion, 0.9 mg/kg (max dose 90 mg) over 60 minutes - 10% of the total dose is given as an IV bolus prior to the infusion, over 1-2 minutes, then the remaining volume/dose is infused. Standard concentration is 100 mg in 100 ml NS.

DO NOT USE CARDIAC DOSE OF ALTEPLASE (t-PA , ACTIVASE) OR SUBSTITUTE RETEVASE / RETEPLASE

7. Perform BP and neurological assessments every 15 minutes during the infusion and every 30 minutes thereafter for the next 6 hours, then hourly until 24 hours after treatment.
8. Increase the frequency of blood pressure measurements if systolic blood pressure is ≥ 180 mm Hg or if a diastolic blood pressure is ≥ 105 mm Hg; Notify MD of BP elevation and administer antihypertensive medications per MD order to maintain blood pressure at or below these levels.
9. Delay placement of nasogastric tubes, indwelling bladder catheters, or intra-arterial pressure catheters if possible, due to risk of bleeding.
10. Monitor CBC/platelets; observe urine for overt bleeding and heme test all stools.
11. Maintain the patient on bedrest and NPO for 24 hours following administration.
12. Avoid starting anticoagulants or antiplatelet agents for 24 hours post Alteplase (t-PA), unless specifically ordered by the attending physician.
13. If the patient develops severe headache, acute hypertension, nausea, or vomiting, discontinue the infusion (if Alteplase (t-PA) is being administered), notify the MD immediately, and prepare for an emergency CT / MRI scan, bloodwork, blood product transfusion, and possible transfer to the OR for surgical intervention.
14. Plan for repeat non-contrast head CT scan in 24 hours.

Reportable Conditions: - Signs of elevated ICP or ICH (i.e., worsening headache, nausea, vomiting, decreased level of consciousness)
- BP > 185/110 for 3 consecutive readings in ½ hr.
- Bleeding
- Allergic reaction

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Patient and
Family Teaching:

Explain all procedures to the patient/family.
Keep patient/family informed of plan of care.

Documentation:

Document all vital signs, assessments, medications,
interventions and response to interventions in the
medical record.

Associated Protocol:

Cerebral Vascular Accident (CVA), Suspected

Approval: Emergency Department Standards Committee
Nursing Standards Committee

EFFECTIVE DATE: 12/07

REVIEWED DATES: 9/08, 10/09

* See pages 4-6 for Fibrinolytic Checklist, NIHSS overview, and link to full NIHSS assessment tool.

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Fibrinolytic Checklist for Use of tPA in Patients With Acute Ischemic Stroke

All boxes must be checked before tPA can be given.

Note: The following checklist includes FDA-approved indications and contraindications for tPA administration for acute ischemic stroke. A physician with expertise in acute stroke care may modify this list.

Inclusion Criteria (all Yes boxes in this section must be checked):

Yes

- Age 18 years or older?
- Clinical diagnosis of ischemic stroke with a measurable neurologic deficit?
- Time of symptom onset (when patient was last seen normal) well established as <180 minutes (3 hours) before treatment would begin?

Exclusion Criteria (all No boxes in "Contraindications" section must be checked):

Contraindications:

No

- Evidence of intracranial hemorrhage on pretreatment noncontrast head CT?
- Clinical presentation suggestive of subarachnoid hemorrhage even with normal CT?
- CT shows multilobar infarction (hypodensity greater than one third cerebral hemisphere)?
- History of intracranial hemorrhage?
- Uncontrolled hypertension: At the time treatment should begin, systolic pressure remains >185 mm Hg or diastolic pressure remains >110 mm Hg despite repeated measurements?
- Known arteriovenous malformation, neoplasm, or aneurysm?
- Witnessed seizure at stroke onset?
- Active internal bleeding or acute trauma (fracture)?
- Acute bleeding diathesis, including but not limited to
 - Platelet count <100 000/mm³?
 - Heparin received within 48 hours, resulting in an activated partial thromboplastin time (aPTT) that is greater than upper limit of normal for laboratory?
 - Current use of anticoagulant (eg, warfarin sodium) that has produced an elevated international normalized ratio (INR) >1.7 or prothrombin time (PT) >15 seconds*?
- Within 3 months of intracranial or intraspinal surgery, serious head trauma, or previous stroke?
- Arterial puncture at a noncompressible site within past 7 days?

Relative Contraindications/Precautions:

Recent experience suggests that under some circumstances—with careful consideration and weighing of risk-to-benefit ratio—patients may receive fibrinolytic therapy despite one or more relative contraindications. Consider the pros and cons of tPA administration carefully if any of these relative contraindications is present:

- Only minor or rapidly improving stroke symptoms (clearing spontaneously)
- Within 14 days of major surgery or serious trauma
- Recent gastrointestinal or urinary tract hemorrhage (within previous 21 days)
- Recent acute myocardial infarction (within previous 3 months)
- Postmyocardial infarction pericarditis
- Abnormal blood glucose level (<50 or >400 mg/dL [<2.8 or >22.2 mmol/L])

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*In patients without recent use of oral anticoagulants or heparin, treatment with tPA can be initiated before availability of coagulation study results but should be discontinued if the INR is >1.7 or the partial thromboplastin time is elevated by local laboratory standards.

National Institute of Health Stroke Scale **

Tested Item	Title	Responses and Scores
1A	Level of consciousness	0—alert 1—drowsy 2—obtunded 3—coma/unresponsive
1B	Orientation questions (2)	0—answers both correctly 1—answers one correctly 2—answers neither correctly
1C	Response to commands (2)	0—performs both tasks correctly 1—performs one task correctly 2—performs neither
2	Gaze	0—normal horizontal movements 1—partial gaze palsy 2—complete gaze palsy
3	Visual fields	0—no visual field defect 1—partial hemianopia 2—complete hemianopia 3—bilateral hemianopia
4	Facial movement	0—normal 1—minor facial weakness 2—partial facial weakness 3—complete unilateral palsy
5	Motor function (arm) a. Left b. Right	0—no drift 1—drift before 5 seconds 2—falls before 10 seconds 3—no effort against gravity 4—no movement
6	Motor function (leg) a. Left b. Right	0—no drift 1—drift before 5 seconds 2—falls before 5 seconds 3—no effort against gravity 4—no movement
7	Limb ataxia	0—no ataxia 1—ataxia in 1 limb 2—ataxia in 2 limbs

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8	Sensory	0—no sensory loss 1—mild sensory loss 2—severe sensory loss
9	Language	0—normal 1—mild aphasia 2—severe aphasia 3—mute or global aphasia
10	Articulation	0—normal 1—mild dysarthria 2—severe dysarthria
11	Extinction or inattention	0—absent 1—mild (loss 1 sensory modality) 2—severe (loss 2 modalities)

Reference: *Circulation*, Volume 112, Issue 24 Supplement; December 13, 2005

**** A detailed NIHSS Score sheet & instructions may be printed from the attached file:**

(Click on *ICON* to print NIHSS):

