IREDELL HEALTH SYSTEM

Alteplase Infusion	
Approved by: Dr. Jose Perez, Intensivist Dr. Vijay Nagpal, Emergency Medicine Diane Galati, MBA, BSN, RN, NE-BC Laura Rollings, PharmD, BCPS, BCGP	Last Revised/Reviewed Date: 05/2024
Emergency Department Committee Critical Care Committee EBM - Stroke Committee P&T Committee	Date: 06/2024 Date: 06/2024 Date: 06/2024 Date: 06/2024

Standard: To provide guidance on the use of alteplase in the care of Myocardial Infarction or Pulmonary Embolus patient, as well as an Acute Ischemic Stroke for use in pregnancy ONLY.

Alteplase binds to fibrin in a thrombus and converts entrapped plasminogen to plasmin.
Alteplase is indicated for the use in acute myocardial infarction (MI) for the reduction of mortality and reduction in the incidence of heart failure. Alteplase is also indicated for the acute massive pulmonary embolism (PE) defined as: acute pulmonary emboli obstructing blood flow to a lobe or multiple lung segments and acute pulmonary emboli accompanied by unstable hemodynamics (e.g. failure to maintain blood pressure without supportive measures). Alteplase is indicated for the treatment of acute ischemic stroke, excluding intracranial hemorrhage as the primary case. For the treatment of acute ischemic stroke, Iredell Health System has Tenecteplase as their formulary agent in all populations with the exception of pregnant patients.

Policy:

Any provider may order alteplase. Any Critical Care RN or Emergency Room RN who has been in-serviced on alteplase infusion and has demonstrated knowledge of complications and treatment, contraindications, and general infusion may administer alteplase. Alteplase infusions may be started in the Emergency Room or Critical Care.

Telephone orders are to be only accepted when the patient has been fully evaluated by the provider ordering the alteplase. If the provider has not evaluated the patient, the provider must be present when the alteplase is initiated.

Dosing:

Diagnosis	Acute Ischemic Stroke for use in PREGNANT patients ONLY	Myocardial Infarction (MI)	Pulmonary Embolus (PE)	PE *associated with cardiac arrest*
Dose & Rate of Administration	Total dose 0.9 mg/kg IV (max *total dose*, load + infusion = 90 mg) *Load dose* 0.09 mg/kg IV over 1 minute *Infusion* 0.81 mg/kg IV over 60 minutes	Patient weight >67 kg: Infuse 15 mg IV bolus over 1 to 2 minutes, followed by infusions of 50 mg over 30 minutes, then 35 mg over 1 hour; maximum total dose: 100 mg. Patient weight ≤67 kg: Infuse 15 mg IV bolus over 1 to 2 minutes, followed by infusions of 0.75 mg/kg (not to exceed 50 mg) over 30 minutes, then 0.5 mg/kg (not to exceed 35 mg) over 1 hour; maximum total dose: 100 mg.	100 mg IV over 2 hours (NOT weight adjusted) *PE in patients with impending cardiac arrest*: 20 mg IV bolus, followed by 80 mg IV infused over the next 2 hours	50 mg IV bolus over 2 minutes; after 15 minutes, can repeat 50 mg IV bolus
Eligibility Criteria	See **Appendix A** (attached)			
Special Instructions	• Do not give aspirin, heparin or warfarin or other anticoagulants for 24 hours post alteplase infusion. • Maintain BP less than 180/105.			

Contraindications include:

- Allergy to alteplase
- Active internal bleeding
- Recent (within 3 months) intracranial or intraspinal surgery or serious head trauma
- Known bleeding disorder
- Severe uncontrolled hypertension unresponsive to emergency therapy
- Intracranial neoplasm, arteriovenous malformation, or aneurysm
- Prior intracranial hemorrhage
- Suspected aortic dissection
- Ischemic stroke within 3 months, except when within 4.5 hours
- Significant closed head or facial trauma within 3 months with bony fracture or brain injury
- Leqembi (lecenemab) administered in the past 6 months
- Refer to **Appendix A**: Eligibility Criteria for Alteplase use in the Setting of Acute Ischemic Stroke for use in PREGNANT patients ONLY

Procedure:

1. Obtain order to administer alteplase
2. Explain purpose of alteplase infusion to patient and/or family by provider
3. Start 2 IVs with #20 protective caths
4. Be aware of all major contraindications listed above.
5. Ensure all lab work has been drawn prior to infusion of alteplase. Providers should be notified of labs results.
6. Pharmacy shall prepare all alteplase orders for administration according to package insert instructions.
7. Verify dosage and pump settings. The pharmacist or ordering provider and second RN must verify dosage. Two RNs must independently verify the pump has been programmed correctly and once running, verify infusing appropriately. Verification of dose and pump setting must be documented in the patient's electronic medical record (EMR).
8. *If applicable to indication*, administer **Heparin Infusion** per specified protocol per provider's orders. Monitoring and adjustments to be made according to protocol. *Note:* If patient has received an anticoagulant within the last 24 hours, or if the patient has an indwelling epidural or intrathecal catheter, contact provider prior to administering heparin.
9. Precautions –
    a. Do not add, push or piggyback any medications into the alteplase infusion. Alteplase is not compatible with any other medication.
    b. Ensure fluids left in tubing infuses completely. When the infusion complete alarm sounds, hang a 50 mL bag of normal saline at the same rate as the primary infusion to flush in the alteplase running in the primary tubing.
    c. Observe strict bedrest with minimum patient handling.
    d. Avoid all IM injections 24 hours after therapy, if possible.
    e. Do venipunctures prior to infusion of alteplase. Following infusion, perform venipunctures carefully and only as required.
    f. A-line should be inserted prior to infusion if needed.
    g. If ABG's must be collected, compression of the puncture site for 30 minutes is recommended.

Monitoring:

1. Evaluate the patient's status during the alteplase infusion with special attentions to:
    a. Cardiac rhythm
    b. Vital signs
    c. Venipuncture sites

    d. Hematuria
    e. GI and vaginal bleeding
    f. Neurological status (changes)
2. Observe for possible complications and allergic reactions (urticarial, hypotension, severe headache, orolingual edema and fever). Notify provider if any were to occur.
3. Observe for effects of drug interactions – anticoagulants and antiplatelet medications increase the risk of bleeding is given prior to, during, or after alteplase therapy.
4. If *minor* bleeding is observed (oozing around venous or arterial puncture) – apply direct pressure and pressure dressing should be applied.
5. If *major* bleeding is observed:
    a. Stop alteplase infusion and heparin therapy.
    b. Notify provider.
    c. Obtain thrombin time STAT.
    d. Treat bleeding appropriately with regard to site.
    e. Transfuse with blood products as ordered per provider.

Documentation:

1. Document time infusion was started, including: IV site, needle site, IVAC rate, dosage. Verification of dosage and pump programming by two RNs.
2. Document any complication observed during therapy (e.g. bleeding, change in neuro status or cardiac status).
3. For *Acute Ischemic Stroke* use, nursing staff shall document all neuro checks and vital signs on the Alteplase (Activase) Infusion and Post-Infusion Flowsheet.

References:

"Activase® (alteplase): Treatment for Acute Ischemic Stroke (AIS)." *Genentech, Inc.*, https://www.activase.com/.

"American Stroke Association: A Division of the American Heart Association." American Heart Association, Inc., https://www.stroke.org/en

LexiComp Online. Lexi-Drugs Online, Hudson, Ohio: UpToDate, Inc.; 2021; Last Updated April 24, 2024.

INITIAL EFFECTIVE DATE: 08/2021
DATES REVISIONS EFFECTIVE: 06/2022, 07/2024
DATES REVIEWED (no changes):

Appendix A: Eligibility Criteria for Alteplase use in the Setting of Acute Ischemic Stroke for use in PREGNANT patients ONLY

Inclusion Criteria:

- Clinical diagnosis of ischemic stroke causing measurable neurologic deficit
- Onset of symptoms < 4.5 hours 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.
- Age ≥18 years of age (>80 proven to be as effective as for younger patients)
- Pregnant patients

Exclusion Criteria:

Historical

- Significant head trauma or ischemic stroke in the previous 3 months
- Previous intracranial hemorrhage
- Intracranial neoplasm, arteriovenous malformation or aneurysm
- Intracranial or intraspinal surgery within the prior 3 months
- Arterial puncture at a non-compressible site in previous 7 days
- Leqembi (lecenemab) administered in the past 6 months

Clinical

- Symptoms suggest subarachnoid hemorrhage
- Elevated blood pressure (systolic > 185 mm Hg or diastolic > 110 mm Hg)
- Blood glucose levels < 50 or > 400 mg/dL
- Acute Ischemic stroke and symptoms consistent with infective endocarditis
- Acute head trauma in posttraumatic infarction that occurs during the acute in-hospital phase
- Active intracranial hemorrhage
- Acute bleeding diathesis, including but not limited to conditions defined in "Hematologic"

Hematologic

- Platelet count < 100,000/mm^3, INR > 1.7, aPTT > 40 s, or PT > 15 seconds
- Low molecular weight heparin within the previous 24 hours
- Current use of a direct thrombin inhibitor or direct factor Xa inhibitor with evidence of abnormal laboratory tests (aPTT, INR, platelet count ECT, TT) or the patient has received a dose of these agents within the previous 48 hours.

Head CT scan

- Evidence of acute intracranial hemorrhage
- Extensive regions of obvious hypodensity consistent with irreversible injury

Relative Exclusion Criteria:

- Moderately severe stroke symptoms demonstrating early improvement
- Seizure at the onset of stroke with postictal neurologic impairments
- Major surgery or serious trauma within previous 14 days
- Gastrointestinal or urinary tract bleeding in the previous 21 days
- Myocardial infarction in the previous 3 months
- Pregnancy