

Alteplase Administration for Stroke

Developed by: Janet Adams MSN, RN, CCRN, SCRN
Robin Ruthford, BSN, RN

Objectives

- Describe recombinant tissue plasminogen activator
- Identify the risks and benefits of Alteplase in the Stroke Patient
- Describe the mixing and administration process
- Compare the presentation of allergic type adverse reactions to bleeding type adverse reactions with administration of Alteplase
- Explain the monitoring requirements for patients receiving Alteplase
- Discuss including High Reliability Options to prevent errors in administration of Alteplase

Alteplase: Activase

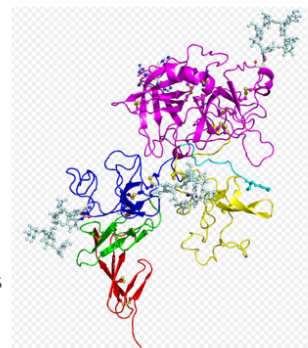
The brand name for one form of tPA: tissue plasminogen activator is Activase. Also known as Alteplase, the generic name. International names are Actilyse, Activacin, and Aktylize.

Uses:

- AIS (Acute Ischemic Stroke)
- AMI (acute myocardial infarction)
- PE (Pulmonary Embolism)
- Small doses called CATH FLOW: declot IV catheters

A theoretical structure of the full t-PA enzyme in humans. Sugar residues are the light cyan-grey molecules, and the different domains are marked in different colors.

Source: https://en.wikipedia.org/wiki/Tissue_plasminogen_activator



Tissue Plasminogen Activator

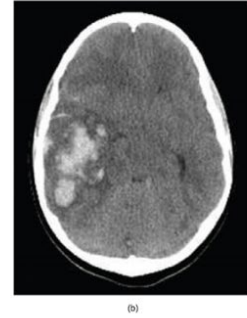
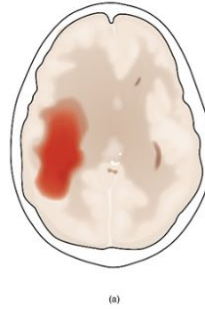
Tissue Plasminogen Activator is a protein involved in the breakdown of blood clots. Developed initially by our own bodies to get rid of small clots once they are no longer needed. When your body makes tPA it makes the protein in very small doses and right at the site where it is needed.

There are three brands of manufactured recombinant tPA (rtPA):

- Alteplase
- Retelplase
- Tenecteplase

Retepase

- Thrombolytic agent
- A form of rt-PA
- Uses:
 - AMI
 - Acute PE
- Not used in ischemic stroke: has a higher risk of intracranial hemorrhage than other forms of rt-PA



Tenecteplase (TNK, TNKase)

- A thrombolytic agent
- Another form of rt-PA
- Uses:
 - AMI
 - Pulmonary embolism
- Currently being studied for use with acute ischemic stroke: easier to administer and less expensive.
- In the 2018 Acute Ischemic Stroke Guidelines the only drug for use in stroke is Alteplase (Activase). TNK should only be used if your facility is involved in a pharmaceutical study.



t-PA

- The Joint Commission has recommended that t-PA or rt-PA be referred to by either the brand name (Activase) or the generic name (Alteplase) rather than the class name t-PA or rt-PA.
- Based on the previous two slides it is easy to see how confusion is possible since there are three forms of rt-PA on the market in the US and abroad.
- The only form of t-PA for use in stroke currently in Texas Health facilities is Alteplase (Activase).

Knowledge Check

When charting or ordering the medication to break up a clot in the brain, which of the following would be acceptable to document in the chart? Choose all that apply.

- A) Alteplase
- B) Activase
- C) tPA
- D) rt-tPA
- E) TNK

Correct - Click anywhere or press 'y' to continue.

Submit

Risks and Benefits

Alteplase (Activase) Inclusion and Exclusion Criteria

Understanding and Answering Questions related to the Risks and Benefits



Risky and Benefits

Benefit:

- May lyse the clot and allow perfusion to an area of ischemia (restores blood flow to the area of the brain impacted by the stroke)
- About a 30% chance of less disability overall
- The earlier the patient presentation the higher the likelihood of significant improvement
- Patients treated with Alteplase within 3 hours of symptom onset had reduced disability and were 33% more likely to achieve minimal or no disability at 90 days compared with placebo-treated patients (NINDS trial)

Risks:

- Bleeding
 - Incidence of symptomatic Intracranial Hemorrhage is 6.4%
 - Bleeding from other sites possible if recent injury
- Hypersensitivity Reactions (Allergic)
 - Anaphylaxis
 - Orolingual angioedema
- Mortality – the 90 day mortality rates for those treated with Alteplase compared to those treated with placebo showed no significant difference

Hypersensitivity

- Includes: urticarial/ anaphylactic reactions
- Occurs during and up to 2 hours post infusion
- More likely to occur in patients who are also taking angiotensin-converting enzyme (ACE) inhibitors (ACE-I) (the -pril- ending medications such as catpropril, lisinopril, etc.)
- Monitor and document that you are monitoring the patient for signs of hypersensitivity during infusion and for several hours post infusion
- If signs of hypersensitivity occur, stop the infusion if still infusing and treat with antihistamines (Pepcid and Benadryl), IV corticosteroids (methylprednisolone), and epinephrine

Orolingual edema Anaphylaxis

<https://www.activase.com/ais/diagnosing-and-treating-ais/clinical-overview.html>

Manage Hypersensitive Reactions

Medication	Dose/Route
Angioedema Treatment	
<input checked="" type="checkbox"/> Methylprednisolone Sod Suc(PF) 125 mg/2 mL solr	125 mg, IV PUSH, AS NEEDED Starting today For 1 Doses
<input checked="" type="checkbox"/> famotidine (PEPCID) solution	20 mg, INTRAVENOUS, AS NEEDED Starting today For 1 Doses
<input checked="" type="checkbox"/> diphenhydramine (BENADRYL) solution	50 mg, INTRAVENOUS, AS NEEDED Starting today For 1 Doses
<input checked="" type="checkbox"/> EPINEPHrine HCl (ADRENALIN) solution	0.3 mg, SUBCUTANEOUS, AS NEEDED Starting today For 1 Doses
Antihypertensive (Single Response)	
<input type="radio"/> Labetalol IV Push PLUS Nicardipine Infusion	10 mg, SLOW IV PUSH, ONCE AS NEEDED For 1 Doses
<input type="checkbox"/> labetalol solution	hypertension, For blood pressure above goal
<input type="checkbox"/> niCARDipine (CARDENE) solution	2.5-15 mg/hr, Continuous IV Infusion
<input type="radio"/> Nicardipine Infusion	
<input type="checkbox"/> niCARDipine (CARDENE) solution	2.5-15 mg/hr, Continuous IV Infusion

Notice the medications for management of angioedema are pre-selected. The management of hypertension must be selected.

Decrease Risk of Bleeding

- Resist the temptation to insert a urinary catheter!
- No NG tube insertion for 24 hours
- No IM injections for 24 hours
- Manage the blood pressure:
 - Goal \leq 185/110 prior to initiating Alteplase
 - Goal \leq 180/105 for the first 24 hours after starting treatment with Alteplase
 - Patients who have hypertensive episodes greater than 180/105 have higher risks of intracranial hemorrhage during the first 24 hours
 - **Caution: lowering blood pressure too far can create further ischemia! What is too far when lowering the blood pressure: If the symptoms worsen as you lower the blood pressure, let it creep back up towards the 180 systolic mark and see if the patient improves. Just do not let it stay above the 180/105 mark after Alteplase!**

Inclusion

So who can get Alteplase for symptoms of a stroke? If the answer is yes for the following items then the patient should be considered for Alteplase administration:

- Clinical presentation highly suggestive of ischemic stroke causing symptoms
- Time of last known normal or clear time of symptom onset is less than 4.5 hours
- Age is greater than or equal to 18 (pediatrics is a special consideration since it has not been studied in the pediatric population)
- The patient or family agrees to the treatment plan or if no family is available the physician deems this is the best treatment
- Glucose level is greater than 50 mg/dl (if the glucose is low initially and comes up with treatment and the stroke symptoms remain then Alteplase is warranted).
 - Don't forget a low blood sugar may cause stroke like symptoms!
- While decision to treat or not to treat with Alteplase is a physician decision it is important for the nurse and physician to review the inclusion and exclusion criteria as a team for the safety of the patient. Use an error prevention tool, such as STAR, prior to administration of Alteplase to review the inclusion/exclusion criteria to ensure patient safety.

Knowledge Check

What are the only two results required prior to starting Alteplase in addition to a CT of head that is negative for blood?

- A) Blood Pressure
- B) O2 Saturation
- C) Glucose
- D) INR
- E) Creatinine
- F) Troponin

Correct - Click anywhere or press 'y' to continue.

Submit

Contraindications

- Subarachnoid Hemorrhage suspected or confirmed remains an absolute contraindication
- Current intracranial hemorrhage
- Active internal bleeding
- Recent (within 3 months) ischemic stroke, intracranial or intraspinal surgery or serious head trauma
- Presence of intracranial conditions that may increase the risk of bleeding (e.g., some neoplasms, arteriovenous malformations, or aneurysms)
- Bleeding diathesis
- Current severe uncontrolled hypertension

References: 1) Scientific Rationale for the Inclusion and Exclusion Criteria for Intravenous Alteplase in Acute Ischemic Stroke published 2016. 2) 2018 Guidelines for the Early Management of Patients with Acute Ischemic Stroke and 3) Genentech Activase (Alteplase) : Evaluating patients with acute ischemic stroke. Pamphlet 2018.

Bleeding Diathesis Defined

- Platelet count < 100,000/ mm³
- INR > 1.7, aPTT > 40 seconds, or PT > 15 seconds
- Warfarin use if the INR is > 1.7, and/or a PT is > 15 seconds
- Low-molecular weight heparin (enoxaparin) at greater than VTE prophylaxis doses in the last 24 hours
- Use of direct thrombin inhibitors or direct factor Xa inhibitors unless laboratory tests for these medications are negative or the patient has not taken them in the last 48 hours
 - For Pradaxa check thrombin time
 - For Xarelto, Eliquis, Savaysa, and Bevyxxa check anti Xa levels (if available at your facility)

aPTT= activated partial thromboplastin time; INR = international normalized ratio; PT = prothrombin time
Reference: Genentech, A member of the Roche Group. Activase (Alteplase) : Evaluating patients with acute ischemic stroke. Pamphlet published 2018. ACI/011315/0006(4).

Knowledge Check

The lab has not yet reported the results of the CBC and PT/INR. The patient is having a major stroke. Do you have to wait for these results prior to starting Alteplase? The CT was negative for any bleeding, the glucose level was normal, and the blood pressure has been controlled to below 185/110.

- A) Yes, you need to wait?
- B) No, you can start the Alteplase?

Correct - Click anywhere or press 'y' to continue.

Start the Alteplase as long as the patient is at low risk for having any type of bleeding diathesis. Once the platelet count, PT, INR are resulted, if they are low you can stop the infusion. Note: The goal of door to lab results in ≤ 45 minutes is still part of the stroke program requirements, however, do not delay the administration of Alteplase to wait on those results.

Submit

Contraindications/Careful Consideration

- History of intracranial hemorrhage- requires careful consideration with risk – benefit evaluation.
- Prior stroke (greater than 3 months) and seizure at onset were removed from the contraindications list in 2015.
- Severe stroke in progress has been changed from the contraindications list to the relative contraindications list so the patient with a very high the NIHSS may be determined eligible.
- Patients with mild stroke symptoms or appear to be improving has been removed as a contraindication because the risk of complications from the drug are far less then the risk that they will get worse as time goes on from the stroke. It is still a relative contraindication based on provider judgement.
- GI bleeding in the last 21 days and GI malignancy- this is a relative contraindication and risk compared to benefit need to be considered.
- There is no upper limit to age that can receive Alteplase based on the 2015 guidelines.
- Alteplase still has not been studied in the pediatric population.
- Presence of infectious endocarditis – careful consideration and cardiology consultation recommended, for those presenting with a major stroke expected to produce major disability treatment with Alteplase may be reasonable.

Scientific Rational for the Inclusion and Exclusion Criteria for Intravenous Alteplase in Acute Ischemic Stroke: A statement from the AHA/ ASA (2016). 2018 Guidelines for the Early Management of Patients with Acute Ischemic Stroke: A guideline for healthcare professionals from the AHA/ ASA.

Knowledge Check

What population has not been included in the studies for administration of thrombolytic agents in stroke?

- A) Geriatric population
- B) Female population
- C) Pediatric population under age 18

Correct - Click anywhere or press 'y' to continue.

Submit

Knowledge Check

BJ is a 65 y/o female patient who had a left atrial appendage ligation through a minimally invasive approach 1 week ago. She presents today with right sided weakness, slurred speech, mild aphasia, and a right sided facial droop. Her NIHSS is 5. Her last known normal is well established at 1 hour prior to arrival. She and her husband are both able to provide consent. Is she eligible for Alteplase (Activase) administration?

- A) Yes
- B) No
- C) Maybe, this would be a great patient to use an error prevention tool such as STAR and/or CUS prior to initiating the drip to clarify eligibility

Correct - Click anywhere or press 'y' to continue.

This was a difficult decision. After consulting with the CV Surgeon the decision was made to give the Alteplase. Everyone involved did a STAR:

Stop- are we really thinking about this,

Think- this is not an absolute contraindication and she is getting worse let's talk with the CV surgeon,

ACT- give the Alteplase after careful consideration and letting the patient know there may be some bleeding,

Review- we did a post infusion Chest Xray one hour after completion of the Alteplase and again the next day to confirm no pericardial effusions and no other bleeding in the chest where she had surgery.

Her NIHSS 6 (with disabilities) just prior to giving Alteplase improved to 2 at Discharge (slurred speech, and slight facial droop).

Signs of Bleeding

Intracranial:

- Vomiting (50% of patients)
- Headache (50% of patients)
- Depending on size and location
 - Worsening symptoms already present
 - Eyes deviate to the side of the bleed in the brain or opposite of the side of hemiplegia
 - Patient becomes more stuporous progressing to coma
- Signs of herniation
 - Dilated pupil, coma, posturing, abnormal respiratory pattern, VS alterations
- Elevated ICP
 - repeated vomiting with an acute mental status decline is highly indicative of increased ICP
 - Increased ICP activates the sympathetic response resulting in an increasing MAP which should increase blood flow into the brain (both the SBP and DBP increase). With increased ICP initially the HR will increase until brainstem herniation occurs and then the HR decreases. Respiratory patterns change- deep sighs and yawns with occasional pauses may be noticed initially and then with herniation of the brainstem the respiratory rate decreases and then apnea will occur.

Other Internal Bleeding:

- Pain where the bleeding is occurring as the blood irritates the tissues and puts pressure on the tissues
- Decreasing blood pressure
- As BP decreases the signs from the initial stroke may get worse due to decrease in cerebral perfusion pressure
- Increasing HR and respiratory rate – part of the compensatory response to hypovolemic shock
- Decreasing H & H
- Other symptoms depend on location of the bleeding

Signs of Hypersensitivity Reactions

Histamine Release:

- Vasodilation
 - With histamine release the blood pressure decreases due to vasodilation. If you are watching closely you will notice the DBP and the MAP decreasing. The histamine also causes increased vascular permeability which may cause leaking of fluids from the vascular space to the tissues – causing pulmonary edema which then increases the respiratory rate
- Angioedema
 - Normally in the mouth, throat, tongue
 - May cause stridor and increased respiratory rate

Lowering Blood Pressure:

- Ischemic Stroke Patients
 - Lowering the blood pressure in an ischemic stroke patient to the point of normal or below normal may worsen stroke symptoms
 - For the stroke patient experiencing a hypersensitivity reaction the stroke symptoms will likely worsen if the blood pressure drops too low for that patient. With this type of neurological deterioration it is usually restricted to the same area of the brain that was initially involved- so the person with right sided hemiplegia may worsen to right sided paralysis but is unlikely to develop left sided paresis or paralysis

Monitoring for Adverse Effects

Bleeding is the most dangerous adverse effect

- ICH after Alteplase has a 6.7% occurrence rate but don't forget about the other common adverse effects

Orolingual angioedema is a type of sensitivity reaction (allergic or drug induced)

- Also common but easy to treat if you catch it early
- Most likely to occur within 2 hours of the introduction of Alteplase in the IV line
- A slightly higher risk for patients who are already taking a ACE-Inhibitor (the ACE enzyme helps us break down bradykinin, an inflammatory substance so patients who take an ACE-I have a higher amount of circulating bradykinin and are more susceptible to inflammatory reactions)

Other allergic reactions including anaphylaxis are possible

- Treat as a hypersensitivity reaction like the orolingual angioedema is treated



Mixing and Administration of Alteplase

Some entities - nurses mix the Alteplase in the department and at other entities the pharmacy mixes the Alteplase.

Alteplase Order Set for Stroke

MEDICATIONS

Evidence Criteria - Thrombolytic Agents Stroke

Intravenous Alteplase/Activase is recommended for selected patients who may be treated within 3 hours of onset of ischemic stroke EVEN if endovascular treatments are being considered. It is also recommended in selected patients who may be treated within 4.5 hours of onset. Treatment should be initiated as quickly as possible as benefit of therapy is time dependent.

Thrombolytic Agents

WARNING - total administered dose (bolus and drip) must NOT exceed 90 mg

[AHA / ASA Early Management of Acute Ischemic Stroke with Alteplase/Activase Inclusion & Exclusion Characteristics](#)

URL: <https://sp.texashealth.org/sites/THRGuidelinesReference/SharedDocuments/THR - Stroke - 2018 Stroke Guidelines - Ischemic CVA.pdf?Web=1>

- Alteplase (Activase) Bolus + Infusion
- alteplase (ACTIVASE) - BOLUS
- alteplase (ACTIVASE) - INFUSION
- NORMAL SALINE solution

"And" Linked Panel

- 0.09 mg/kg, INTRAVENOUS, STAT For 1 Doses
- 0.81 mg/kg, INTRAVENOUS, STAT For 1 Doses, for 1 Hours
- 0.81 mL/kg/hr, Continuous IV Infusion

If Alteplase Given, Hold Anticoagulants, Antithrombotics, and Antiplatelets for 24 hours until repeat CT or MRI done at 24 hours shows NO intracranial hemorrhage.

- IF Alteplase/Activase given, hold

Medication(s) to be held: Anticoagulants, Antithrombotics, and Antiplatelets

Specify for how long to hold or when to resume: Hold until repeat CT or MRI after Alteplase/Activase shows NO intracranial hemorrhage
EXCEPTION: IF patient is post-interventional Radiology, THEN PHARMACIST to call and verify with provider for any anticoagulants and/or antiplatelets orders STARTING within 24 hours of alteplase/activase infusion.

Prior to mixing or obtaining Alteplase you will need to know the patient weight.

Mixing

Step 1: Reconstitute

- Reconstitute to 1mg/ml by adding 100mL of sterile water to Alteplase powder
- Using the transfer device, invert the two vials so that the Alteplase is on the bottom (upright) and the sterile water is upside down
- Mix the solution with a gentle swirl or slow inversion
- Do not shake



Step 2: Determine the dose

- Dose is 0.9mg/kg not to exceed 90 mg

Step 3: Discard Excess

- Remove the excess medication leaving only the total dose to be administered (if pharmacy is mixing this in a clean room then the excess can be saved for CathFlo declotting purposes, but if nurses are mixing at the bedside the overage must be discarded).

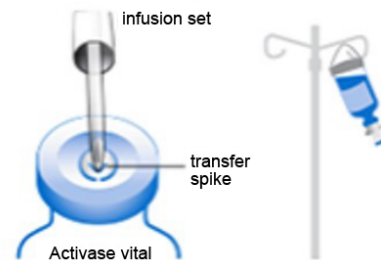


Step 4: Drawing up the bolus dose:

- 10% of dose
- Remove the dose from the vial before it is attached to the infusion set
- Use the keyhole port of the vial top away from the puncture site made by the transfer device
- Do not prime the syringe

Step 5: Prepare infusion set

- Insert the spike end of infusion set through the center of the stopper of the vial, using the same puncture site made by the transfer device

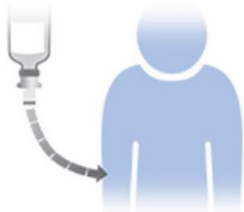
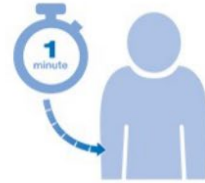


Step 6: Prime infusion set



Step 7: Administer bolus

- Directly into infusion port or program the infusion pump to deliver bolus
- Over 1 minute
- Be ready to start the Infusion



Step 8: Administer the remainder of the infusion

- Immediately following the Bolus
- Over 60 minutes

Step 9: Flush IV tubing

- Use the same Alteplase infusion set
- 50mL of 0.9% Sodium Chloride
- **Infusion should continue at the same rate as the Alteplase infusion**



Knowledge Check

Complete the sentence below by filling in the blanks.

Prior to administration of the Alteplase, the pump!

Correct - Prior to administration of the Alteplase, **prime** the pump!
Click anywhere or press 'y' to continue.

Submit

Drip and Ship Cases

If the patient is transferring to another facility with Alteplase infusing or after infusing Alteplase:

- Document using the CareFlite Acute STROKE Transfer Checklist
- The VS and Neuro checks associated with the Alteplase infusion will need to be clearly communicated as well. The transferring provider (Careflite or other EMS) will need to know the schedule for VS and assessments to continue them during transfer.



Neuro Checks

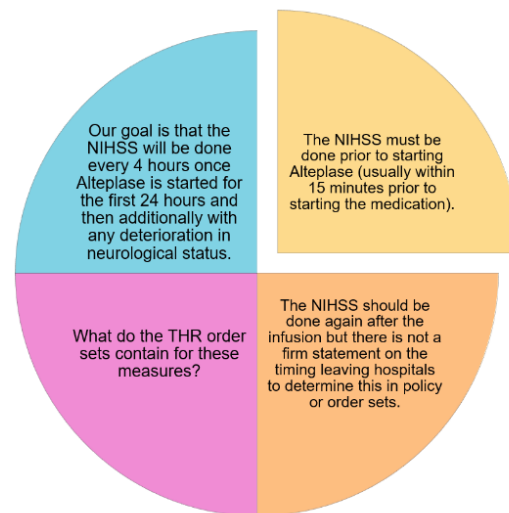
Texas Health standard for ongoing monitoring of neuro-checks includes:

- Level of consciousness
- Pupils
- Muscle Strength Grading
- Motor Responses (26 options)
- For some Texas Health facilities the Glasgow Coma Scale is included as part of the ongoing neuro check

Texas Health alternative to the above standard is to do a complete NIHSS for each neuro-check.

National Institute of Health Stroke Scale

If you work at an entity that uses the NIHSS for all neuro checks in the stroke patient, please disregard this slide.



Alteplase Order Set for Stroke

VITAL SIGNS

Vital Signs

Vital Signs and Neurological Checks

Routine

EVERY 15 MINUTES

Vital signs and neuro assessments starting at 15 minutes prior to Alteplase/Activase, THEN every 15 minutes from start of Alteplase/Activase infusion for 2 hours, THEN every 30 minutes for 6 hours, THEN every 1 hour for 16 hours

Blood Pressure Goal First 24 hours of Admission

(A) Recommended Blood pressure goal:

-PRE Alteplase/Activase SBP/DBP LESS THAN 185/110 mmHg

-POST Alteplase/Activase SBP/DBP LESS THAN 180/105 mmHg

(B) IF SBP/DBP is above 185/110, THEN DELAY

Alteplase/Activase administration until blood pressure goal is met.

Routine

CONTINUOUS For 24 Hours

Notify Physician for Blood Pressure Goal if not re-defined after 24 hours of admission

Routine

CONTINUOUS

NIH Stroke Scale

Routine

ONCE

NIH stroke scale PRIOR to and at COMPLETION of

Alteplase/Activase infusion

THEN every 4 hours x 10 and PRN for significant neurological changes

ASAP

ONCE For 1 Occurrences

OK to use stated weight

Weigh patient

The Standards for Care: Available in the Order Set

Alteplase/Activase Short Set [7879]

Physician documentation of thrombolytic assessment required. Refer to entity inclusion/exclusion criteria

[AHA / ASA Early Management of Acute Ischemic Stroke with Alteplase/Activase Inclusion & Exclusion Characteristics](#)

URL: <https://sp.texashealth.org/sites/THRGuidelinesReference/SharedDocuments/THR-Stroke-2018StrokeGuidelines-IschemicCVA.pdf?Web=1>

[AHA / ASA Endovascular Treatment for Patients With Acute Ischemic Stroke](#)

URL: <http://sp.txhealth.org/sites/THRGuidelinesReference/Shared%20Documents/THR%20-%20Stroke%20-%20TPA%20-%20Guidelines%20for%20the%20Management%20of%20Patients%20with%20Acute%20Ischemic%20Stroke%20regarding%20Endovascular%20treatment.pdf>

[AHA / ASA Alteplase/Activase Time Window Expansion](#)

URL: <http://sp.txhealth.org/sites/THRGuidelinesReference/THR/THR%20-%20Stroke%20-%20TPA%20Stroke%20-%20Expansion%20of%20Time%20Window%20for%20Treatment%20of%20Acute%20Ischemic%20stroke.pdf#search=tpa%20time%20window>

Have you ever noticed the blue “hyperlinks” imbedded within the online order sets? These links will actually take the user to the Guidelines for Stroke Care, all you have to do is click on the link!

NURSING

Precautions

- Swallowing Screen by Nursing
- Avoid arterial or venous punctures and IM injections from non-compressible sites during the first 24 hours after IV Alteplase/Activase infusion.
- Delay placement of nasogastric tubes, indwelling bladder catheters, or intra-arterial pressure catheters if the patient can be safely managed without them

Contingency, Notify

- Notify provider for any signs & symptoms of neurological deterioration or evidence of bleeding
- Notify provider

For possible life-threatening intracerebral bleeding

- Discontinue Alteplase/Activase infusion if still being infused
- Initiate Alteplase/Activase reversal orders for possible life-threatening intracerebral hemorrhage from thrombolytic therapy

Routine
ONCE
IF any contraindications present, THEN KEEP patient NPO, implement aspiration precautions, and consult speech therapy
Avoid arterial or venous punctures and IM injections from non-compressible sites during the first 24 hours after IV Alteplase/Activase infusion.
Routine
ONCE
Routine
ONCE

STAT
PRN, Starting today at 9:30 AM

STAT

PRN, Starting today

(A) Patient develops tongue or mouth swelling, respiratory distress, OR rash during and up to 1 hour post Alteplase/Activase infusion.
(B) Respirations per minute greater than 24 or less than 10 OR dyspnea with oxygen saturation less than 90%.
(C) Temperature >101 degrees Fahrenheit.
(D) Pulse >120 or <50 beats per minute (BPM).

Routine

ONCE

USE ONLY if patient has (1) Acute worsening of stroke symptoms and/or (2) Altered mental status suggesting potential life-threatening Intracranial Hemorrhage (ICH).

Routine

ONCE

RESPIRATORY THERAPY

Respiratory Therapy

- Respiratory Therapy Treatment Evaluation
- Oxygen Guidelines
- Bedside Pulse Oximetry Continuous Monitoring
- Pulse Oximetry Spot Check

Routine
DAILY, Starting today at 9:00 AM
Exceptions:
Routine
CONTINUOUS
Titrate oxygen delivered to keep SaO2 percentage above: Other (enter in Comments) (94%)
Routine
CONTINUOUS
PRN



Alteplase Order Set

Additional orders include:

- Medical Imaging
- Laboratory evaluations

Also included:

- And management of suspected intracranial bleeding during or post-Alteplase infusion
- **This order set allows a nurse to implement the Alteplase reversal order set if intracranial hemorrhage is suspected**

For possible life-threatening intracerebral bleeding

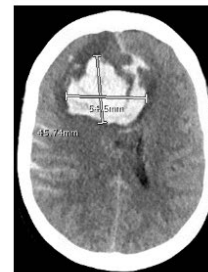
- Discontinue Alteplase/Activase infusion if still being infused
- Initiate Alteplase/Activase reversal orders for possible life-threatening intracerebral hemorrhage from thrombolytic therapy

Routine
ONCE
USE ONLY if patient has (1) Acute worsening of stroke symptoms and/or (2) Altered mental status suggesting potential life-threatening Intracranial Hemorrhage (ICH).
Routine
ONCE



Alteplase Reversal Order Set

In the event that a physician is not immediately available, the Alteplase order set allows a nurse to implement a reversal order set if there is a suspected hemorrhage related to the Alteplase infusion. This allows for rapid management of the patient while a physician is being notified.



Alteplase (tPA) Reversal - Acute Stroke - SYSTEM [1991]

[AHA / ASA Early Management of Patients With Acute Ischemic Stroke](#)

URL: <https://sp.texashealth.org/sites/THRGuidelinesReference/SharedDocuments/THR - Stroke - 2018 Stroke Guidelines - Ischemic CVA.pdf?Web=1>

USE ONLY FOR (1) Acute worsening of stroke symptoms and/or(2) Altered mental status suggesting intracerebral hemorrhage

Start by Discontinuing the Alteplase

Nursing Orders

- Discontinue Alteplase infusion, if still being infused.

- Notify provider and neurologist immediately if patient has (1) acute worsening of stroke symptoms and/or (2) altered mental status suggesting potential life-threatening intracranial hemorrhage (ICH). If no response from neurologist in 10 minutes, nurse to initiate the following orders: Blood bank, Lab, & Imaging.

- Hold all anticoagulants, antithrombotics and antiplatelets, if already started

Medication(s) to be discontinued: Alteplase infusion if still being infused.

Specify when to discontinue medication(s): if patient has (1) Acute worsening of stroke symptoms and/or (2) Altered mental status suggesting potential life-threatening intracerebral hemorrhage
STAT

ONCE NOW, Starting today at 9:30 AM For 1 Occurrences
Notify provider and neurologist Immediately if patient has (1) Acute worsening of stroke symptoms and/or (2) Altered mental status suggesting potential life-threatening ICH. IF NO RESPONSE FROM PROVIDER and NEUROLOGIST in 10 MINUTES, nurse to initiate the following orders: Blood Bank, Lab, & Imaging.

Medication(s) to be held: If patient has (1) Acute worsening of stroke symptoms and/or (2) Altered mental status suggesting potential life-threatening ICH, HOLD Anticoagulants, Antithrombotics, Antiplatelets if already started.

Draw Labs and Get a Head CT

2018 Guidelines Statement: "If the patient develops severe headache, acute hypertension, nausea or vomiting or has a worsening neurological examination, discontinue the infusion and obtain emergency head CT scan."

Nursing Orders

- Discontinue Alteplase infusion, if still being infused.
- Notify provider and neurologist immediately if patient has (1) acute worsening of stroke symptoms and/or (2) altered mental status suggesting potential life-threatening Intracranial hemorrhage (ICH). If no response from neurologist in 10 minutes, nurse to initiate the following orders: Blood bank, Lab, & Imaging.
- Hold all anticoagulants, antithrombotics and antiplatelets, if already started

Stat Imaging Orders

- CT Head, WO IV Contrast

Medication(s) to be discontinued: Alteplase infusion if still being infused.
Specify when to discontinue medication(s): if patient has (1) Acute worsening of stroke symptoms and/or (2) Altered mental status suggesting potential life-threatening intracerebral hemorrhage
STAT

ONCE NOW, Starting today at 9:30 AM For 1 Occurrences
Notify provider and neurologist Immediately if patient has (1) Acute worsening of stroke symptoms and/or (2) Altered mental status suggesting potential life-threatening ICH. IF NO RESPONSE FROM PROVIDER and NEUROLOGIST in 10 MINUTES, nurse to initiate the following orders: Blood Bank, Lab, & Imaging.
Medication(s) to be held: If patient has (1) Acute worsening of stroke symptoms and/or (2) Altered mental status suggesting potential life-threatening ICH, HOLD Anticoagulants, Antithrombotics, Antiplatelets if already started.

Unit Collect

STAT
ONCE, Starting today For 1 Occurrences
To rule out intracerebral hemorrhage.
Reason: STROKE
Is the patient pregnant? UNKNOWN -SHIELD ABDOMEN

Treat the Patient: Reverse the Effects of the Alteplase

When it comes to reversing Alteplase, blood products are a key component of the reversal process. **Cryoprecipitate, if ordered, should be hung first or as soon as available.**

- Notice the order to repeat the CT of head without contrast if blood products are given. Hopefully, the blood products will adequately reverse the Alteplase and the size of the bleed will not have increased.

<p>AHA/ASA Management of Symptomatic Intracranial Bleeding (Table 8 e25) URL: http://stroke.ahajournals.org/content/early/2018/01/23/STR.000000000000158.full.pdf?download=true</p>	
<p><input checked="" type="checkbox"/> IF CT (HEAD) CONFIRMS INTRACEREBRAL HEMORRHAGE, CONTACT NEUROLOGIST OR PROVIDER TO EVALUATE AND DECIDE IF BLOOD PRODUCTS SHOULD BE INFUSED.</p>	<p>Routine PRN, Starting today IF CT (head) confirms Intracerebral Hemorrhage, contact Neurologist or Provider for evaluation and decision if blood products should be infused: 1. Administer 2 pool/pack (~10 units) of cryoprecipitate and repeat for fibrinogen level < 200 mg/dL. 2. IF platelet count is less than 100,000, THEN administer 1 apheresis platelet.</p>
<p><input checked="" type="checkbox"/> IF BLOOD PRODUCTS GIVEN, PLACE ORDER FOR REPEAT CT (HEAD) WITHOUT CONTRAST TO RULE OUT INCREASING SIZE OF INTRACEREBRAL HEMORRHAGE</p>	<p>Routine PRN If blood products given, place order for repeat CT (head) without contrast to rule out increasing size of intracerebral hemorrhage</p>
<p>Medications ****NOTIFY PHARMACIST IMMEDIATELY**** <input type="checkbox"/> tranexamic acid (CYKLOKAPRON) solution</p>	<p>1 g, INTRAVENOUS, ONCE For 1 Doses</p>

Final Notes: Documentation

- Documentation must be on time and complete (no blank areas)
 - For VS and Neuro Checks that are due every 15 minutes there is not a grace period- they can be done early and the interval resets but they cannot be done late. They must still be done for 2 hours.
- Documentation needs to consistently use the same or similar scales within a facility
- During the initial infusion and for at least the first hour after there needs to be documentation that you assessed for orolingual angioedema. The new Alteplase documentation flowsheet has been developed and should be released soon if it has not already been released and it will contain a row specific to assessing for orolingual angioedema.
- Handoffs between facilities, units, and/ or shift change should include the patient received Alteplase, what part of the VS monitoring are being done at this point (every 15 min or every 30 min or every hour, etc.), and the need for safety precautions such as bleeding precautions specific to the Alteplase. The patient's initial neuro-assessment and current assessment should be reviewed at the bedside during shift changes to compare findings.

References

- Demaerschalk BM, Kleindorfer DO, Adeoye OM, Demchuk AM, Fugate JE, Grotta JC, Khalessi AA, Levy EI, Palesch YY, Prabhakaran S, Saposnik G, Saver JL, Smith EE; on behalf of the American Heart Association Stroke Council and Council on Epidemiology and Prevention. Scientific rationale for the inclusion and exclusion criteria for intravenous alteplase in acute ischemic stroke: a statement for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*. 2016;47:581–641.
- Powers WJ, Rabinstein AA, Ackerson T, Adeoye OM, Bambakidis NC, Becker K, Biller J, Brown M, Demaerschalk BM, Hoh B, Jauch EC, Kidwell CS, Leslie-Mazwi TM, Ovbiagele B, Scott PA, Sheth KN, Southerland AM, Summers DV, Tirschwell DL; on behalf of the American Heart Association Stroke Council. 2018 Guidelines for the early management of patients with acute ischemic stroke: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*. 2018;49:e46–e99. doi:10.1161/STR.000000000000158.
- Genentech, A member of the Roche Group. Activase (Alteplase) : Evaluating patients with acute ischemic stroke. Pamphlet published 2018. ACI/011315/0006(4).
- Lexicomp online: access through Texas Health References
 - Alteplase
 - Reteplase
 - Tenecteplase
- Texas Health order sets accessed online through EPIC
- Wikipedia: https://en.wikipedia.org/wiki/Tissue_plasminogen_activator

Congratulations, you have successfully completed the

Alteplase Administration for Stroke Education

Click the EXIT Module button below to close this training.

EXIT
Module

Alteplase Administration for Stroke Quiz

Exit

This is a sequential quiz, which means that you must answer the questions in the order presented. You must answer each question. Consider your answers carefully; once you move to the next question, you cannot go back. When you complete the quiz click Submit Quiz. Your answers will be evaluated and your quiz grade recorded.

Welcome to the Alteplase Administration for Stroke quiz! Click the start button below to start the quiz.

Start

Alteplase Administration for Stroke Quiz

Exit

1 of 24 questions answered

Question 1

Case 1: Patient AB presents to the Emergency Department with a last known normal of 1400 hours. Arrival time to the ED is 1430 hours. NIHSS is 4 on arrival with slurred speech and right sided weakness. AB Demographics: Age 62, Male, Right Handed, Weight 82 kg. AB Medical History: Diabetes recently diagnosed, Hypertension. Medications: Lisinopril daily, aspirin daily, metformin daily.

What is the appropriate total dose of Alteplase for patient AB?

- 73.8 mg
- 100 mg
- 65.6 mg
- 82 mg

Correct

Check Answer

Next

Alteplase Administration for Stroke Quiz

Exit

2 of 24 questions answered

Question 2

Case 1: Patient AB presents to the Emergency Department with a last known normal of 1400 hours. Arrival time to the ED is 1430 hours. NIHSS is 4 on arrival with slurred speech and right sided weakness. AB Demographics: Age 62, Male, Right Handed, Weight 82 kg. AB Medical History: Diabetes recently diagnosed, Hypertension. Medications: Lisinopril daily, aspirin daily, metformin daily.

What is the bolus dose to be administered to patient AB?

- 8.2 mg
- 6.56 mg
- 10 mg
- 7.38 mg

Correct

Check Answer

Next

Alteplase Administration for Stroke Quiz

Exit

3 of 24 questions answered

Question 3

Case 1: Patient AB presents to the Emergency Department with a last known normal of 1400 hours. Arrival time to the ED is 1430 hours. NIHSS is 4 on arrival with slurred speech and right sided weakness. AB Demographics: Age 62, Male, Right Handed, Weight 82 kg. AB Medical History: Diabetes recently diagnosed, Hypertension. Medications: Lisinopril daily, aspirin daily, metformin daily.

What is the rate for the IV pump for patient AB when setting up the Alteplase drip on the pump? Choose the closest ml/hour.

- 82 ml/hour
- 66 ml/hour
- 100ml/hour
- 74 ml/hour

Correct

Check Answer

Next

Alteplase Administration for Stroke Quiz

Exit

4 of 24 questions answered

Question 4

Case 1: Patient AB presents to the Emergency Department with a last known normal of 1400 hours. Arrival time to the ED is 1430 hours. NIHSS is 4 on arrival with slurred speech and right sided weakness. AB Demographics: Age 62, Male, Right Handed, Weight 82 kg. AB Medical History: Diabetes recently diagnosed, Hypertension. Medications: Lisinopril daily, aspirin daily, metformin daily.

What is more likely to happen with this patient given he takes lisinopril than with patients who do not take lisinopril and receive Alteplase for thrombolysis?

- Intracranial hemorrhage
- Pulmonary edema
- Hemorrhagic conversion
- Orolingual angioedema

Correct

Check Answer

Next

Question 5

Case 2: Patient BJ was admitted to the medical unit two days ago with pneumonia. BJ has required frequent breathing treatments and continuous oxygen and has not been getting up as much as she usually does. Last night she developed an irregular heart rhythm and was determined to be in atrial fibrillation with a controlled ventricular rate. This morning she was working on a crossword puzzle at 0900 when the patient care technician came in to get her breakfast tray. The PCT helped her to the bathroom and they conversed for a while about the news of the day. At 0945 you enter the room and BJ is a little agitated. She is having trouble sitting up in the bed, her speech is slurred and difficult to understand. She is not moving her right arm or leg. Her face has a noticeable droop. BJ Demographics: 85 y/o female, right handed, weight 65 kg. BJ Medical History: New onset atrial fibrillation, HTN, pneumonia, high cholesterol. Current Medications: Enoxaparin 30mg SQ daily, Zosyn 3.75 grams, simvastatin 10 mg, HCTZ 10mg daily.

Is BJ eligible for Alteplase administration?

- Yes
- No

Correct

Check Answer

Next

Question 6

Case 2: Patient BJ was admitted to the medical unit two days ago with pneumonia. BJ has required frequent breathing treatments and continuous oxygen and has not been getting up as much as she usually does. Last night she developed an irregular heart rhythm and was determined to be in atrial fibrillation with a controlled ventricular rate. This morning she was working on a crossword puzzle at 0900 when the patient care technician came in to get her breakfast tray. The PCT helped her to the bathroom and they conversed for a while about the news of the day. At 0945 you enter the room and BJ is a little agitated. She is having trouble sitting up in the bed, her speech is slurred and difficult to understand. She is not moving her right arm or leg. Her face has a noticeable droop. BJ Demographics: 85 y/o female, right handed, weight 65 kg. BJ Medical History: New onset atrial fibrillation, HTN, pneumonia, high cholesterol. Current Medications: Enoxaparin 30mg SQ daily, Zosyn 3.75 grams, simvastatin 10 mg, HCTZ 10mg daily.

What lab results would be important to review prior to Alteplase administration?

- None of the above, she is not eligible for Alteplase
- WBC, Hgb, HCT
- Lactic Acid
- PTT, PT/INR, Platelets

Correct

Check Answer

Next

Question 7

Case 2: Patient BJ was admitted to the medical unit two days ago with pneumonia. BJ has required frequent breathing treatments and continuous oxygen and has not been getting up as much as she usually does. Last night she developed an irregular heart rhythm and was determined to be in atrial fibrillation with a controlled ventricular rate. This morning she was working on a crossword puzzle at 0900 when the patient care technician came in to get her breakfast tray. The PCT helped her to the bathroom and they conversed for a while about the news of the day. At 0945 you enter the room and BJ is a little agitated. She is having trouble sitting up in the bed, her speech is slurred and difficult to understand. She is not moving her right arm or leg. Her face has a noticeable droop. BJ Demographics: 85 y/o female, right handed, weight 65 kg. BJ Medical History: New onset atrial fibrillation, HTN, pneumonia, high cholesterol. Current Medications: Enoxaparin 30mg SQ daily, Zosyn 3.75 grams, simvastatin 10 mg, HCTZ 10mg daily.

What time would be considered the time of last known normal for BJ?

- 0945
- 0900

Correct

Check Answer

Next

Question 8

Case 3: Patient ZK received Alteplase 2 hours ago for an acute ischemic stroke. Post infusion ZK had significantly improved and except for just a slight facial droop all his other symptoms had resolved. He is watching the Dallas Cowboys on TV and getting very upset at the lack of defense being played by the team. His blood pressure has been creeping up since the game started and when you mention that the TV probably should be turned off his blood pressure increases significantly to 220/110.

The maximum allowable blood pressure for 24 hours after Alteplase is:

- 220/110
- 185/110
- 120/80
- 180/105

Correct

Check Answer

Next

Question 9

Case 3: Patient ZK received Alteplase 2 hours ago for an acute ischemic stroke. Post infusion ZK had significantly improved and except for just a slight facial droop all his other symptoms had resolved. He is watching the Dallas Cowboys on TV and getting very upset at the lack of defense being played by the team. His blood pressure has been creeping up since the game started and when you mention that the TV probably should be turned off his blood pressure increases significantly to 220/110.

Based on the current time of 2 hours post infusion, VS and neuro checks should be done how often unless the patient has a significant change?

- 15 minutes
- Every 4 hours
- 30 minutes
- Every hour

Correct

Check Answer

Next

Alteplase Administration for Stroke Quiz

Exit

10 of 24 questions answered

Question 10

Case 3: Patient ZK received Alteplase 2 hours ago for an acute ischemic stroke. Post infusion ZK had significantly improved and except for just a slight facial droop all his other symptoms had resolved. He is watching the Dallas Cowboys on TV and getting very upset at the lack of defense being played by the team. His blood pressure has been creeping up since the game started and when you mention that the TV probably should be turned off his blood pressure increases significantly to 220/110.

Would you consider this rise in blood pressure significant?

- No
- Yes

Correct

Check Answer

Next

Alteplase Administration for Stroke Quiz

Exit

11 of 24 questions answered

Question 11

Case 3: Patient ZK received Alteplase 2 hours ago for an acute ischemic stroke. Post infusion ZK had significantly improved and except for just a slight facial droop all his other symptoms had resolved. He is watching the Dallas Cowboys on TV and getting very upset at the lack of defense being played by the team. His blood pressure has been creeping up since the game started and when you mention that the TV probably should be turned off his blood pressure increases significantly to 220/110.

Would you treat this blood pressure now or wait to see if it comes down on its own?

- Wait 30 minutes
- Treat now
- Wait an hour then turn off the TV

Correct

Check Answer

Next

Question 12

Case 4: Patient BB received Alteplase 3 hours ago for a large vessel occlusion after the Alteplase repeat imaging no longer showed the presence of a large vessel occlusion and no mechanical intervention was deemed necessary, so he was admitted to the ICU for ongoing monitoring. Pre-Alteplase his NIHSS was 10 and post-Alteplase his NIHSS was 4 with some residual facial droop, slurred speech, ataxia and numbness remaining. In the ICU he has been on a Cardene drip to keep his blood pressure less than 180 systolic. Over the last hour he has had a couple of elevated blood pressure measurements that required going up on the Cardene drip. His son comes to the desk and asks how long till his dad wakes up again. Concerned you enter the room to find BB unresponsive except to painful stimuli. He withdraws only the right side to pain and his left side does not move. His heart rate is 40. Respiratory rate is 12. O2 saturation is 94%. Blood pressure has increased to 200/140.

What is the most likely cause for BB's change in condition?

- Hypoglycemia
- Allergic Reaction
- Fatigue
- Intracerebral bleed

Correct

Check Answer

Next

Question 13

Case 4: Patient BB received Alteplase 3 hours ago for a large vessel occlusion after the Alteplase repeat imaging no longer showed the presence of a large vessel occlusion and no mechanical intervention was deemed necessary, so he was admitted to the ICU for ongoing monitoring. Pre-Alteplase his NIHSS was 10 and post-Alteplase his NIHSS was 4 with some residual facial droop, slurred speech, ataxia and numbness remaining. In the ICU he has been on a Cardene drip to keep his blood pressure less than 180 systolic. Over the last hour he has had a couple of elevated blood pressure measurements that required going up on the Cardene drip. His son comes to the desk and asks how long till his dad wakes up again. Concerned you enter the room to find BB unresponsive except to painful stimuli. He withdraws only the right side to pain and his left side does not move. His heart rate is 40. Respiratory rate is 12. O2 saturation is 94%. Blood pressure has increased to 200/140.

What is the most important next step given the following options?

- Stop the Cardene drip
- Stop the Alteplase infusion
- Notify a provider or neurologist

Correct

Check Answer

Next

Alteplase Administration for Stroke Quiz

Exit

14 of 24 questions answered

Question 14

Case 4: Patient BB received Alteplase 3 hours ago for a large vessel occlusion after the Alteplase repeat imaging no longer showed the presence of a large vessel occlusion and no mechanical intervention was deemed necessary, so he was admitted to the ICU for ongoing monitoring. Pre-Alteplase his NIHSS was 10 and post-Alteplase his NIHSS was 4 with some residual facial droop, slurred speech, ataxia and numbness remaining. In the ICU he has been on a Cardene drip to keep his blood pressure less than 180 systolic. Over the last hour he has had a couple of elevated blood pressure measurements that required going up on the Cardene drip. His son comes to the desk and asks how long till his dad wakes up again. Concerned you enter the room to find BB unresponsive except to painful stimuli. He withdraws only the right side to pain and his left side does not move. His heart rate is 40. Respiratory rate is 12. O2 saturation is 94%. Blood pressure has increased to 200/140.

A STAT CT of the head reveals blood in the brain tissue. You have orders to give Platelets, Cryoprecipitate and Tranexamic acid. All three of these components are at the bedside waiting for you with another nurse when you return from CT. Which of the components should be given first?

- Tranexamic acid
- Cryoprecipitate
- Aspirin
- Platelets

Correct

Check Answer

Next

Alteplase Administration for Stroke Quiz

Exit

15 of 24 questions answered

Question 15

When mixing Alteplase the vials should be swirled and never shaken.

- True
- False

Correct

Check Answer

Next

Alteplase Administration for Stroke Quiz

Exit

16 of 24 questions answered

Question 16

The maximum dose of Alteplase for someone weighting more than 100kg or more is:

- 80 mg
- 100 mg
- 90 mg

Correct

Check Answer

Next

Alteplase Administration for Stroke Quiz

Exit

17 of 24 questions answered

Question 17

When ordering thrombolytics for an acute stroke a verbal order is given to start tPA, what should happen next?

- The order should be clarified like the following statement, "I understand you would like Intravenous Alteplase to be administered is this correct?"
- The pharmacy should be notified tPA is needed for the patient in ED room 6

Correct

Check Answer

Next

Alteplase Administration for Stroke Quiz

Exit

18 of 24 questions answered

Question 18

Two types of hypersensitivity reactions known to occur with Alteplase include orolingual angioedema and anaphylaxis.

- True
- False

Correct

Check Answer

Next

Alteplase Administration for Stroke Quiz

Exit

19 of 24 questions answered

Question 19

A patient who routinely takes any medication ending in "pril" may be at a higher risk of orolingual angioedema when receiving Alteplase.

- True
- False

Correct

Check Answer

Next

Alteplase Administration for Stroke Quiz

Exit

20 of 24 questions answered

Question 20

Patients presenting with stroke like symptoms who have a blood sugar less than 50 should have the blood sugar treated before deciding to proceed with Alteplase.

- True
- False

Correct

Check Answer

Next

Alteplase Administration for Stroke Quiz

Exit

21 of 24 questions answered

Question 21

Prior to starting thrombolytics a CT of the head is done to:

- Confirm the presence of a stroke
- Rule out any bleeding in the brain

Correct

Check Answer

Next

Alteplase Administration for Stroke Quiz

Exit

22 of 24 questions answered

Question 22

The blood pressure should be $\leq 185/110$ prior to starting Alteplase.

- True
- False

Correct

Check Answer

Next

Alteplase Administration for Stroke Quiz

Exit

23 of 24 questions answered

Question 23

The Guidelines related to administration of Alteplase can be accessed directly from the order set by clicking on the blue titled hyperlink in the order set.

- True
- False

Correct

Check Answer

Next

24 of 24 questions answered

Question 24

The Alteplase Reversal Order set can be implemented quickly upon suspicion of an intracranial bleed following or during Alteplase administration even if you are unable to reach a provider?

- Yes, it is stated in the Alteplase orders to contact a provider and if no response within 10 minutes to implement the Reversal order set
- No, you must wait to reach a provider even if it is up to 30 minutes or longer

Correct

Check Answer

Submit Quiz

Good job, you passed the Alteplase Administration for Stroke quiz! This course will now be marked complete and moved to your Learning History.



24 of 24 questions correct

Survey

Thank you for your participation in this Continuing Education event. We would appreciate your help in evaluating this course. The survey should take approximately 3-5 minutes and your input will remain confidential. Your responses will help us improve and plan future educational events. Completion of this survey is required to receive your certificate of completion.

Note: If you have no feedback, please enter "N/A" in the response.

Title: CE Evaluation for Alteplase Administration for Stroke

This Survey is not anonymous.

Submit

Save

Close

Previous Page

Page 1 of 1

Read the learning outcome statement to answer the following questions.

Note: If you have no feedback, please enter "n/a" in the response.

Learning Outcome: Upon completion of this learner-paced activity, the RN will have increased knowledge of the use of recombinant tissue plasminogen activator in the post-ischemic stroke patient, including risks, benefits, administration, side effects, allergic reactions, monitoring, and ways to reduce errors in administration.

1. Was the learning outcome met?

- Yes
 No

2. As a result of this activity, do you intend to make any changes to your professional practice/performance?

- Yes
 No

3. If yes, identify changes you intend to make: Note: If you have no feedback, please enter "n/a" in the response.

3990 character(s) remaining

4. If no, why not? Note: If you have no feedback, please enter "n/a" in the response.

3990 character(s) remaining

5. What potential barriers do you see to applying the new strategies/knowledge gained from this activity? Note: If you have no feedback, please enter "n/a" in the response.

3990 character(s) remaining

6. How effective was the teaching/learning resource(s) in meeting the learning outcome?

- N/A 1 - Not at all 2 - A little 3 - Mostly 4 - Very

7. A conflict of interest occurs when an individual has an opportunity to affect or impact educational content with which he or she may have a commercial interest or a potentially biasing relationship of a financial nature. Did you, as a participant, notice any bias and/or conflict of interest that was not previously disclosed in this presentation?

- Yes
 No

8. If "Yes", please describe who was biased and how. Note: If you have no feedback, please enter "n/a" in the response.

3990 character(s) remaining

9. Based on today's activity, please list additional learning needs that you might have. Note: If you have no feedback, please enter "n/a" in the response.

3990 character(s) remaining

10. How long in minutes did it take you to complete this activity?

3990 character(s) remaining

Submit

Save

Close

Previous Page