

PROCEDURE FOR: Central Lines: Alteplase (Cathflo Activase®) Instillation for Catheter Clearance

- POLICY:**
1. Central lines which do not respond to usual flushing methods with normal saline and/or heparin lock solution, may be irrigated with alteplase when so ordered by the physician/LIP.
 2. If the physician/LIP has written an order for PRN alteplase for catheter clearance, the nurse may instill the alteplase before notifying the physician/LIP. The physician/LIP, however, must be notified that alteplase was instilled.
 3. Alteplase solution should be prepared using aseptic technique and sterile equipment.

SUPPORTIVE

DATA: Alteplase is indicated to restore patency of central venous catheters obstructed by clotted blood or fibrin. Alteplase acts on the endogenous fibrinolytic system. It converts plasminogen to the enzyme plasmin. Plasmin degrades fibrin clots as well as fibrinogen and other plasma proteins.

NOTE: Catheters may be occluded by substances other than fibrin clots, such as drug precipitates from incompatible drugs or lipid accumulations. Alteplase is not effective in such cases.

- EQUIPMENT:**
- 3 10ml syringes
 - 2mg alteplase (Cathflo Activase®)
 - 10ml vial sterile water
 - 10ml syringe with 10ml 0.9% sodium chloride injection
 - USP Heparin Lock Solution - 100 u/ml
 - Alcohol wipe
 - Gloves
 - Needle-free valve port (or catheter cap)

PROCEDURE:

ACTION

POINTS OF EMPHASIS

PREPARATION OF SOLUTION

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| <ol style="list-style-type: none">1. Aseptically prepare solution for instillation according to directions in package insert. Use 2.2 ml sterile water. Do not use bacteriostatic water for injection. DO NOT SHAKE. | <ol style="list-style-type: none">1. Visually inspect solution for particulate matter and discoloration prior to instillation. |
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INSTILLATION

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| <ol style="list-style-type: none">1. Notify physician or LIP that catheter is obstructed. | <ol style="list-style-type: none">1. If PRN order exists, alteplase may be instilled prior to notification.

For areas utilizing Computerized Physician Order Entry (CPOE), if physician/APRN has placed an electronic order for PRN t-PA or Urokinase for catheter clearance, the nurse may administer the t-PA or Urokinase before notifying the physician. The |
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physician/house officer, however, must be notified that t-PA or Urokinase was administered.

2. Clamp catheter. Aseptically disconnect IV tubing and needle-free valve port or catheter cap and attach an empty 10ml syringe.
 3. Determine occlusion by gently attempting to aspirate blood from the catheter with the 10ml syringe.
 4. If aspiration is not possible, remove the syringe and attach a 10ml syringe filled with the prepared alteplase (2 mg per 2 ml).
 5. Slowly and gently instill 2 mg alteplase into the clotted lumen.
 6. Remove the syringe and apply sterile needle-free valve port or catheter cap.
 7. Wait at least 30 minutes, then:
 - a. Using friction, wipe the needle-free valve port with alcohol (or aseptically remove the catheter cap). Connect a new empty 10 ml syringe and attempt to aspirate the drug and residual clot. Aspirate 4-5 ml of blood, slowly and gently.
 - b. If no blood enters the syringe upon aspiration, wait another 30 minutes before trying to aspirate again.
 - c. If unable to clear the catheter at 120 minutes, a second injection of 2 mg of alteplase may be instilled, following same procedure as with the first instillation, per physician/LIP order.
 8. Once the catheter is cleared, as noted by blood return upon aspiration, remove the blood-filled syringe to assure removal of all the drug and residual clot.
2. When clearing a central venous catheter, have patient exhale or hold breath to prevent air from entering catheter. Use the technique that is most comfortable for the patient.
 4. Pheresis catheters are larger than standard Hickman catheters and require more alteplase to reach the end of the catheter.
 5. Avoid excessive pressure that could cause rupture of the catheter or expulsion of the clot into the circulation.
8. Use aseptic technique.

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9. Attach a new 10 ml syringe filled with 0.9% sodium chloride for injection.
10. Gently irrigate the catheter.
11. Remove the 10 ml syringe. Aseptically reconnect the sterile IV tubing to the catheter/needle-free valve port if IV fluid is to resume, or administer Heparin flush and cap the line.
12. If the catheter does not clear after second injection, notify the physician/LIP.
10. To assure patency of the catheter.
11. If no IV solution is infusing, follow standard procedure of flushing catheter with Heparin solution.
12. Alteplase may be instilled a total of 2 times. If catheter is still occluded, further investigation is required as catheter may be occluded by substances other than a fibrin clot.

APPROVAL: Nursing Standards Committee

EFFECTIVE DATE: 3/06

REVISION DATES: 7/08, 5/09