The Sydney children's Hospitals Network
care, advocacy, research, education

TREATMENT OF THROMBOTIC OCCLUSIONS

LOCAL CVAD PROCEDURE ©

To be read in conjunction with SCHN CVAD Practice Guideline Section 4.2 and the CVAD Occlusion Management Pathway

Table: Alteplase administration

Concentration	1mg/mL
Volume to instil	Maximum standard dose is: • Patient less than 30kg = 1.5 mL • Patient more than 30kg = 2 mL Alternatively, use volume equal to the 110% internal volume of the lumen if known if treating suspected intraluminal thrombus.
Dwell time	2 – 4 hours (standard) Consider 24 – 72 hours for fibrin sheath or mural thrombus
Instillations	Maximum 2 instillations in 24 hours (seek specialist advice)

Partial occlusion – Using direct instillation technique

- Reconstitute alteplase to 1mg/mL as per preparation instructions
- If alteplase cannot be aspirated consider extending dwell time as per above Table
- If alteplase cannot be aspirated after extended dwell time or patency is not fully restored consider a second instillation
- Procedure should be performed within a hospital setting to minimise risk if complications were to occur.

Instillation

Equipment

- Gather equipment as per ANTT
- 1 x 10mL syringe filled with required volume of alteplase (1mg/mL)
- 1 x 10mL luer lock syringe
- 2x pre-filled 10mL sodium chloride 0.9% syringes. Alternatively use sodium chloride 0.9% ampoule, drawing up needle and 10mL syringe.
- 2% chlorhexidine gluconate in 70% alcohol swabs

Procedure

> **Practice Point:** Explain the intended procedure to the patient/family/carer and obtain verbal consent.

1. Set up as per ANTT risk assessment – Standard/Surgical
2. Perform hand hygiene and don gloves
3. Prepare alteplase solution in 10mL syringe (as per Medication Administration Practice Guideline)
4. Vigorously clean the entire NAD insitu with 2% chlorhexidine gluconate in 70% alcohol swab for 20 seconds. Allow to dry.
5. If locked, aspirate lock solution and discard.
6. Flush with 10mL sodium chloride 0.9% using pulsating technique.
7. Instil required volume of alteplase into lumen, clamping under positive pressure. Ensure NAD remains on the end of the CVAD lumen.
8. Label lumen with 'alteplase 1mg/mL – Do not flush' and date and time of instillation
9. Discard waste in appropriate receptacle and return equipment to designated areas.
10. Document in the patient's medical record as per Section 1.4 CVAD Guideline.

Aspiration (after appropriate dwell time)

Equipment

- Gather equipment as per ANTT
- 1 x 10mL luer lock syringe
- 1 x prefilled 10mL sodium chloride 0.9% syringe. Alternatively use sodium chloride 0.9% ampoule, drawing up needle and 10mL syringe.
- 2% chlorhexidine gluconate in 70% alcohol swabs

Procedure

> **Practice Point:** Explain the intended procedure to the patient/family/carer and obtain verbal consent.

1. Set up as per ANTT risk assessment – Standard/Surgical
2. Perform hand hygiene and don gloves.
3. Vigorously clean the entire NAD *insitu* with 2% chlorhexidine gluconate in 70% alcohol swab for 20 seconds then **allow to dry**.
4. Gently aspirate the alteplase from treated lumen. **NB:** If unable to aspirate alteplase, consider second dose.
5. Flush with 10mL sodium chloride 0.9% using a pulsating technique.
6. Attach fluid line or lock lumen as required.
7. Discard waste in appropriate receptacles and return equipment to designated areas
8. Document in patient's medical record as per minimum documentation requirements in Section 1.6 in CVAD Guideline.

Complete occlusion – Using negative-pressure technique

- Management of complete thrombotic occlusions may require creating a negative pressure vacuum inside the catheter lumen, enabling instillation into the dead space.
- Complete thrombotic occlusions usually require more than 1 treatment.
- Reconstitute alteplase to 1mg/mL as per preparation instructions.
- If alteplase cannot be aspirated consider extending dwell time as per above Table.
- If alteplase cannot be aspirated after extended dwell time or patency is not fully restored consider a second instillation.
- Procedure should be performed within a hospital setting to minimise risk if complications were to occur.

Instillation

Equipment

- 1 x 10mL syringe filled with required volume of alteplase (1mg/mL)
- 1 x 10mL luer lock syringe
- 2x prefilled 10mL sodium chloride 0.9% syringes or 10mL luer lock syringes filled with sodium chloride 0.9%
- 2% chlorhexidine gluconate in 70% alcohol swabs
- 3-way tap
- 2x NADs

Procedure

> **Practice Point:** Explain the intended procedure to the patient/family/carer and obtain verbal consent.

1. Set up as per ANTT risk assessment – Standard/Surgical
2. Perform hand hygiene and don gloves
3. Attached 2x NADs to side ports of 3-way tap and prime tap ports with 0.9% sodium chloride
4. Attach empty 10mL syringe to one port of 3-way tap and alteplase syringe to the other
5. Vigorously clean the hub of the NAD insitu 2% chlorhexidine gluconate in 70% alcohol swab for 20 seconds then **allow to dry**.
6. Attach the 3-way tap to the NAD on the CVAD lumen (*Figure 1*)

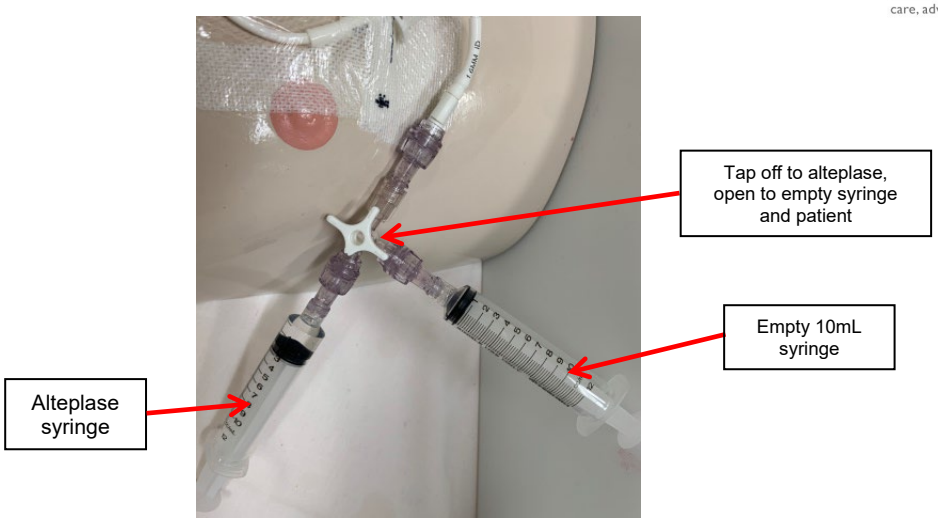

Figure 1.

7. Turn tap open to empty syringe and CVAD lumen. Pull plunger back 2-4 mL (*Figure 2*).

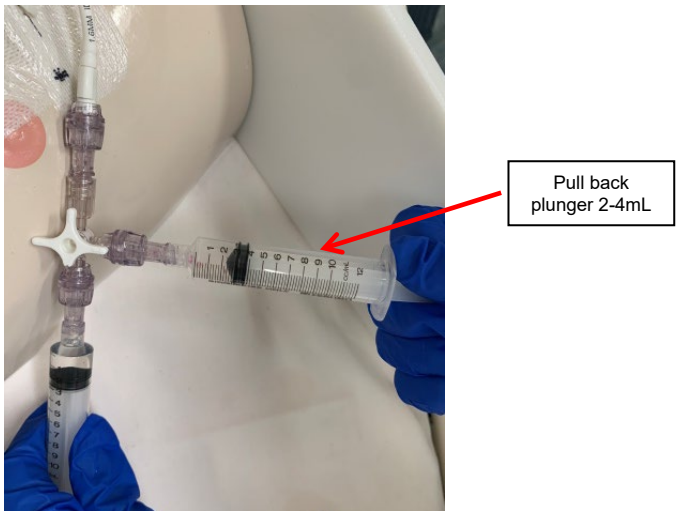

Figure 2.

8. While holding plunger of empty syringe, turn tap open to alteplase syringe and CVAD lumen. Alteplase should be withdrawn into catheter lumen (*see Figure 3*).

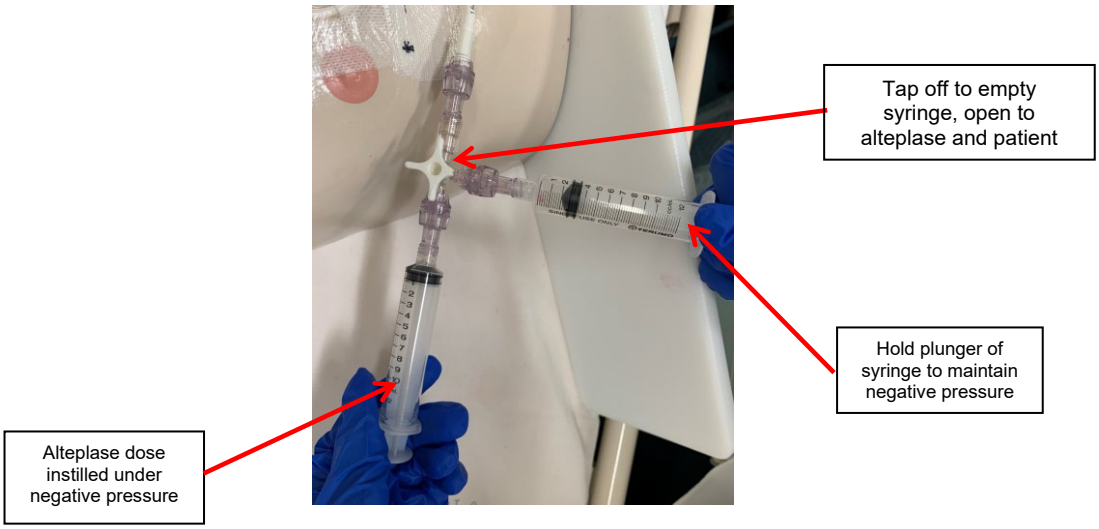

Figure 3.

9. If instillation of alteplase is not achieved, repeat steps 7 and 8.
10. Clamp lumen and remove 3-way tap, ensuring NAD remains on the end of the CVAD lumen
11. Discard waste in appropriate receptacles and return equipment to designated areas
12. Label lumen and document in patient's medical record as per minimum documentation requirements in Section 1.6 in CVAD Guideline.

Aspiration (after appropriate dwell time)

Equipment

- 1 x 10mL luer lock syringe
- 1 x prefilled 10mL sodium chloride 0.9% syringe or 10mL luer lock syringe filled with sodium chloride 0.9%
- 2% chlorhexidine gluconate in 70% alcohol swabs

Procedure

> **Practice Point:** Explain the intended procedure to the patient/family/carer and obtain verbal consent.

1. Set up as per ANTT risk assessment – Standard/Surgical
2. Perform hand hygiene and don gloves.
3. Vigorously clean the hub of the NAD *insitu* 2% chlorhexidine gluconate in 70% alcohol swab for 20 seconds then **allow to dry**.
4. Gently aspirate the alteplase from treated lumen.
   NB: If unable to aspirate alteplase, consider second dose.
5. Flush line with 10mL 0.9% sodium chloride using pulsating technique.
6. Attach fluid line or lock lumen as required.
7. Discard waste in appropriate receptacles and return equipment to designated areas.
8. Document in patient's medical record as per minimum documentation requirements in Section 1.6 in CVAD Guideline.

Revision History

Version (date)	Approved by	Amendment notes *(summary of what was changed)*
14th Nov 2023	PPG Committee	Due for mandatory review – no changes made
10th July 2020	CVAD Working Party	Amended maximum dose of alteplase for patients less than 30kg to 1.5 mL.
11th May 2020	PPG Committee	No major practice changes for occlusions from v5 CVAD Guideline. Now presented in CVAD Local Procedure.