ALGORITHM for MANAGEMENT OF PARTIAL, PERSISTENT WITHDRAWAL or COMPLETE OCCLUSION

**Mechanical Occlusion**
- Open clamps; check external portion of CVAD and any tubing for kinks/twists; change dressing if necessary
- Reposition patient/catheter; ask patient to cough/perform Valsalva’s manoeuvre
- Change add-on devices i.e. extension tubing on infusors, access devices, clogged filters e.g. PN
- **PICC**: check external catheter length. Ports: verify needle placement & change if required
- Review the additional Practice Tips listed 1-4 over page to assist with establishing catheter flow
- Consider CXR or contrast study if tip malposition or fibrin tail suspected

**Thrombotic Occlusion**
- **SLOWLY** Instil alteplase* 1st Dose. Leave for 120 minutes
- Attach Drug label with ‘alteplase do not use’ to CVAD lumen/s
- Patency restored at 120 minutes?
  - YES
  - Drug Medication label
  - Patency Restored
  - NO
  - **SLOWLY** Instil alteplase* 2nd Dose. Leave 120 minutes (may be left in overnight)
  - Patency Restored?
    - YES
    - Flush CVAD with 20mL 0.9% sodium chloride then RESUME USE
    - NO
    - Contact Medical Team
      - Consider:
        - CXR or contrast studies
        - Radiology intervention- removal of if Fibrin sheath/tail.
        - Reposition catheter
        - Assessing for chemical occlusion
        - CVAD removal/replacement
  - NO
  - For further Practice tips to restore patency see over page

**Chemical Occlusion**
- **Base / Alkaline drug (pH>7)** See ** below
- **Parenteral Nutrition Lipids**
- Instil Sodium bicarbonate 8.4% **
- Instil Ethanol lock 70% ***
- Patency restored at 20-60 minutes?
  - YES
  - Repeat agent (2nd dose)
  - NO
  - Patency restored at 20-60 minutes
  - Contact Medical Team
    - Consider:
      - Manage as thrombotic occlusion if cause not known
      - CVAD removal/replacement

**CONTACT MEDICAL TEAM**

**METHOD OF ADMINISTRATION**

1. **Partial/withdrawal occlusion**: Instil clearance agent directly with single-syringe method
2. **Complete Occlusion**: Instil clearance agent using 3 way tap technique

**DOSAGE** – Always confirm you have correct product before use. Must be prescribed by Dr and obtained from pharmacy

* 1. **Alteplase**. Reconstitute 10 mg/10 mL with the diluent provided and draw up 2 mg/2 mL using 10mL syringe. Place remainder of vial in fridge with patient label attached should a 2nd dose be required. N.B. vial must be discarded after 8 hours if second dose not required

**Chemical clearance agents**

**Sodium Bicarbonate 8.4%, 1mmol/mL** fill volume of catheter lumen, refer to catheter section CVAD Resource Book (Reference NOIDs for pH high drugs e.g. phenytoin, dilantin)

**Ethanol lock 70%**- fill volume of catheter lumen see catheter section CVAD Resource Book

**AUTHORISED by** the CDHB CVAD Governance Group November 2014. Adapted from the 2014 CVAA Occlusion Guidelines in collaboration with Pharmacy Department Christchurch Hospital CDHB 2014
<table>
<thead>
<tr>
<th>Type of Occlusion</th>
<th>Symptoms/Signs</th>
<th>Cause</th>
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</thead>
<tbody>
<tr>
<td>Partial</td>
<td>Decreased ability to infuse or flush into the CVAD</td>
<td>Mechanical, Thrombotic or Chemical occlusion</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>Inability to aspirate blood but able to flush without resistance Lack of free flowing blood return</td>
<td>Mechanical or Thrombotic Occlusion, fibrin tail</td>
</tr>
<tr>
<td>Complete</td>
<td>Inability to infuse or withdraw blood or fluid into the CVAD</td>
<td>Mechanical, Thrombotic or Chemical occlusion</td>
</tr>
</tbody>
</table>

BEFORE CONTINUING, HAVE YOU COMPLETED THE BASIC PATIENT & CATHETER ASSESSMENT?

PICC- CHECK EXTERNAL MEASUREMENT PORT - CHECK NEEDLE PLACEMENT

Practice tips to be considered along with medical team assistance

**PRACTICE TIPS**

Prevention of occlusions should be the goal when managing CVADs. Catheter salvage is the preferred approach when managing partial or complete occlusions.

Do not leave a partial occlusion untreated. Prompt action should be taken as soon as a partial occlusion is suspected to restore full catheter patency and avoid a complete occlusion and possible removal.

Do not leave an occluded catheter lumen untreated because another lumen is functional. This is a source for infection.

**Checking for blood return:**

1. You can flush but there is no blood return observed when using a 10mL syringe? Try using a 5mL syringe to aspirate and check for blood return.
2. Try the irrigation ‘back & forth’ technique to attempt to re-establish catheter patency by using a STANDARD 10mL syringe containing 5mL 0.9% sodium chloride.
3. Use a gravity technique (i.e. with primed IV giving set and 100mL bag of 0.9% sodium chloride open clamps on catheter and giving set, briefly hold the attached bag below the level of the patient’s heart until you see flashback of blood).
4. Proceed with administration of medication if no problems have been identified during any of the steps above. STOP and seek medical advice if the patient experiences ANY discomfort or there are any unexplained problems.

**Using Alteplase**

Slowly instil alteplase to ensure it comes in contact with the thrombus or clot burden and is ‘soaked up’ by the thrombus for maximum effect.

Stop all infusions where possible when treating a suspected FIBRIN TAIL/SHEATH to ensure optimum thrombolysis during dwell time to facilitate maximum contact with fibrin.

For information on management of complications refer to the complications section in CVAD Resource Book.

For further clinical guidance refer to your Facility’s resource staff and Policies.