

Care and Maintenance of Central Venous Access Devices (CVAD) Specific to Paediatrics



Name:	
Date of Course:	
Venue:	

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1. Aims & Outcomes

Aim

The aim of this guideline is to provide the care provider with an opportunity to:

- Develop knowledge, skills and attitudes required for safe CVAD management.
- Provide education and guidance in the techniques required to safely manage a CVAD.

Outcomes

Combined with a period of supervised practice, completing the CVAD Learnpro module and attending UWS CVAD study day the care provider will demonstrate competence in all aspects of caring for a patient with a CVAD.

2. Roles & Responsibilities, Legal issues, Documentation & Consent

Areas of accountability

- To the public
- The patient
- To the employer
- To the profession

Legal and Ethical Considerations

All healthcare professionals must adhere to the code of professional conduct of their regulatory body. E.g. Nursing & Midwifery Council and General Medical Council.

Duty of Care

All care providers must justify clinical decisions or actions having considered their competence within a particular situation.

Consent

Consent, which can be implied, verbal, written and always informed, must be obtained by the health professional before any procedure is carried out.

Please view NHS Lanarkshire's consent policy using the link below.

<http://firstport2/resources/policies/Documents/Policy%20for%20Consent%20to%20Treatment,%20Surgery%20and%20Invasive%20procedures.pdf>

Competence

You must perform procedures according to NHS Lanarkshire policies/procedures/protocols and within your professional code of conduct.

- No definite number to become competent
- Decided between yourself and your supervisor
- You decide when confident and competent
- Keep up competence
- Revise and review as and when you feel this is required

3. Control of Infection

Areas to be considered

- Appropriate hand hygiene
- Use of aseptic technique
- Skin Preparation
- Site Care
- Infusion Equipment

Central Venous Access provides a direct access for infusing fluids or drugs into the circulatory system. This however also provides a direct route of infection whereby micro-organisms may enter the body of a patient.

Learning modules on aseptic technique can be found in LearnPro using the link below.

<http://nhs.learnpro.uk.com>

Standard Infection Control Precautions

(SIPCs) are core control of infection precautions which should be used by all care providers, in the care of all patients, all of the time, whether an infection is known to be present or not.

Guidance on standard infection control procedures in NHSL is available on the following link:

<http://firstport2/staff-support/infection-prevention-control/default.aspx>

Health and Safety Aspects

Sharps that are handled incorrectly and not disposed of correctly are dangerous. Staff who fail to safely dispose of sharps which they have used and thereby cause a hazard to others are in breach of the Health and Safety at Work Act 1974.

Sharps

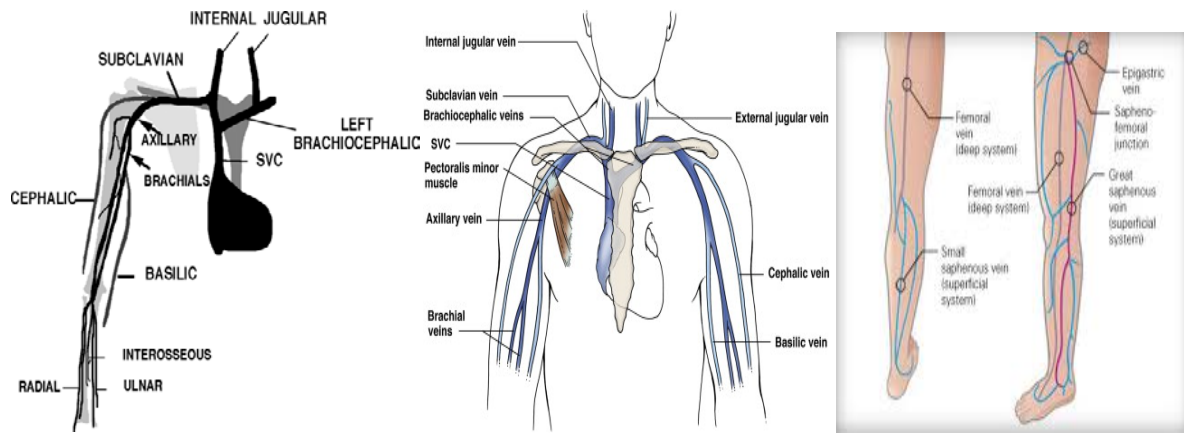
Apply to needles, glass ampoules / vials etc. Sharps containers must be suitable for the purpose. Ideally sharps containers, as part of the equipment required should be taken to the patient's bedside while this procedure is being carried out. For safe practice this will ensure all sharps are disposed of immediately following the procedure.

[http://firstport2/staff-support/salus-occupational-health-and-safety/Document%20Library/MPR%20SHARPS%2000000%20M%20\(2\).pdf](http://firstport2/staff-support/salus-occupational-health-and-safety/Document%20Library/MPR%20SHARPS%2000000%20M%20(2).pdf)

4. Anatomy & Physiology

Locations & Vessels

- Arm
 - Cephalic
 - Basilic
 - Brachial
 - Median Cubital
- Neck
 - External Jugular
 - Internal Jugular
- Chest
 - Axillary
 - Cephalic
 - Subclavian
- Groin
 - Femoral
- Leg
 - Lesser Saphenous
 - Greater Saphenous



Adapted from University of the West of Scotland's Care and maintenance of Central venous access device (CVAD) guideline, with thanks to UWS.

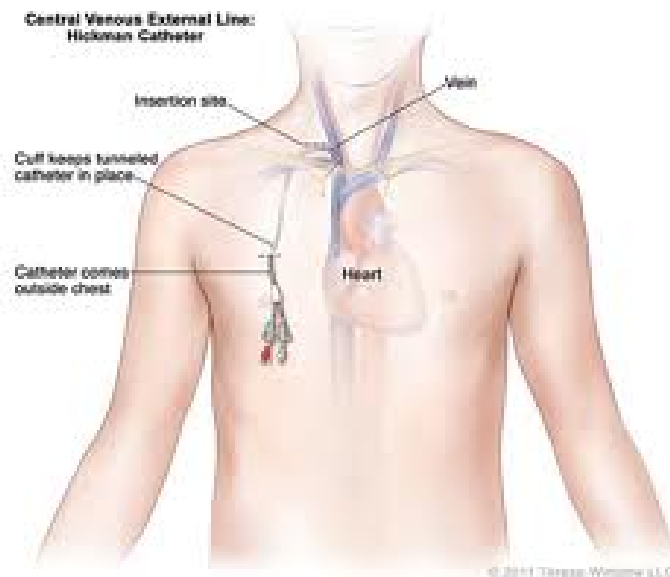
5. Device Overview

Peripherally Inserted Central Catheter (PICC)



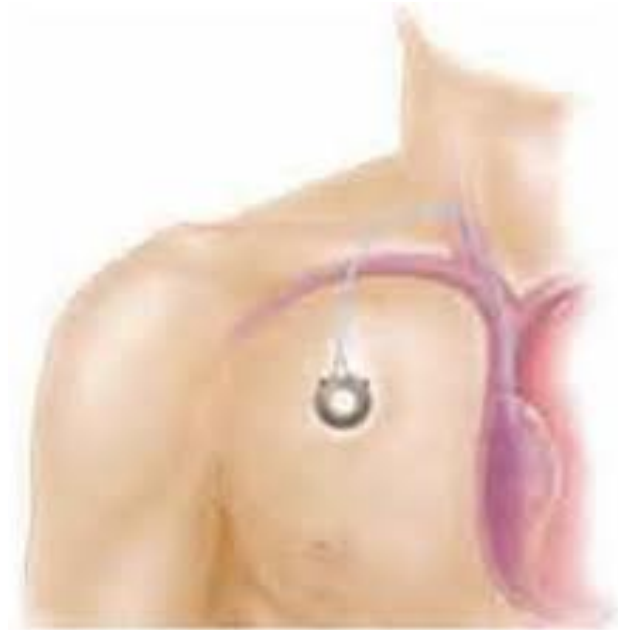
PiCCs are frequently used for long term venous access, they are inserted for variable lengths of time depending on the course of treatment that is required. They can remain insitu for up to six months. Veins in the arm are the most common points of insertion although these devices can be placed via a number of additional veins. The distal tip of the catheter should lie in the superior vena cava just out with the right atrium. PiCCs can facilitate the delivery of antibiotic therapy, IV fluids, TPN and the administration of fluids which have irritant / vesicant properties.

Tunnelled Central Venous Catheter (TCVCs) (Hickman® type Catheter)



TCVCs are inserted via the large veins of the neck or chest (jugular and subclavian). The **distal** tip rests in the lower third of the superior vena cava or the upper right atrium. The catheter is tunneled subcutaneously and many are equipped with a fibrous (Dacron®) cuff, which lies under the skin near the exit site. Adhesions form around the cuff to stabilize the catheter as well as provide a mechanical barrier to micro-organisms, thereby minimizing the risk of ascending infection. TCVC are usually sutured or secured with a stabilizing device for three weeks until the cuff has adhered. There are many indications for the use of TCVC's including: administration of irritating agents, prolonged intravenous therapy, antibiotics, and total parenteral nutrition (TPN). TCVCs can remain in situ for up to two years, a surgical procedure is required for insertion and removal.

Total Implantable Ports (Portacaths or TIPs)



TIPs comprise of a portal body which is placed in the upper chest or arm and an attaching catheter which is tunneled subcutaneously and terminates in the superior vena cava just out with the right atrium, both are implanted under the skin. To administer treatment the skin overlying the reservoir is punctured with a sterile non-coring non-siliconized needle (other needles will damage the device). As the port is implanted, it is not exposed to life's daily bacteria. The design of the device also means that flushing is only required once a month. These devices are thought to carry the lowest risk for catheter related blood stream infections, and are often chosen by patients due to the fact they are under the skin and not as obvious as an external device. One negative is that a surgical procedure is required for insertion and removal.

6. Complications

Complications of CVAD's include (this list is not exhaustive)

Bleeding

Pneumothorax/ Haemothorax

Air Embolus

Catheter misplacement or migration

Line Fracture

Occlusion

Thrombosis

Cardiac Tamponade

Phlebitis

Infiltration

Extravasation

Infection

Infectious Complications of CVADs

Infections are one of the main reasons why a CVAD is removed.

Colonization of a central venous catheter can arise from:

- Contamination - Failure to maintain aseptic technique during insertion or access.
- Skin flora - Inadequate skin disinfection for insertion and dressing management.
- Manipulation or a poorly secured catheter causing movement in/out.
- Poor dressing management, non-adhesive dressing, moisture and hair.
- Bacterial growth - Needleless connectors/ports that harbor bacteria; poor disinfecting. Residual blood in catheter or tubing; poor flushing/clearing.
- Factors that contribute to thrombosis development and subsequent infection

Other Risk Factors

Every intravascular device poses a risk of infection, additional risk factors include:

- Type of catheter used
- Method of insertion
- Site of insertion
- Purpose of use
- Number of manipulations
- Specific host factors

Classification of infections

Localised Exit Site Infections

- Induration, erythema, heat, pain, purulent discharge

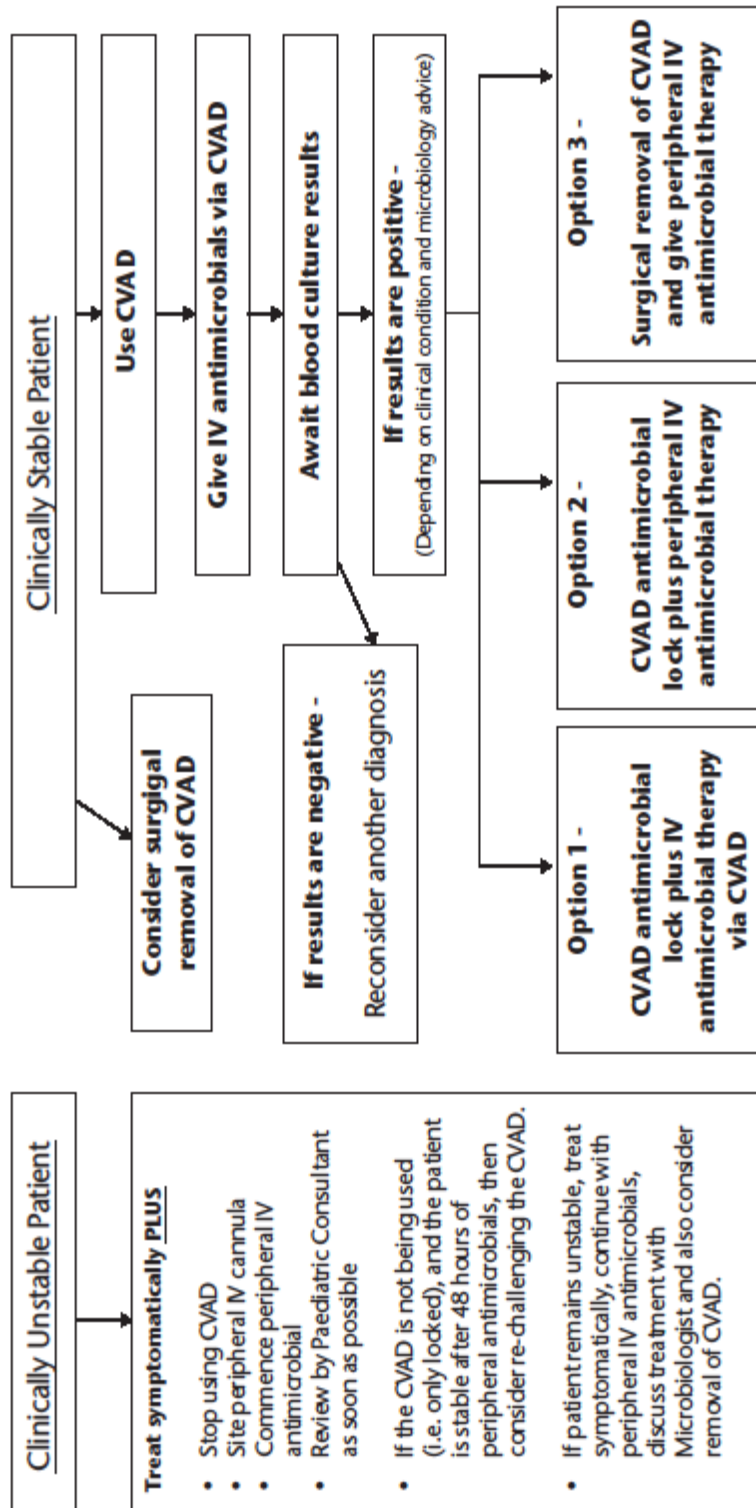
Systemic Infections

Catheter related blood stream infection

- Positive blood culture obtained from the CVAD
- Positive blood culture obtained from a peripheral vein
- Signs of systemic infection
- No other source of infection
- Positive colonisation of the catheter tip

Systemic infections are extremely serious and can be life threatening. If suspected, this should be discussed immediately with the attending paediatric consultant.

FLOW CHART FOR MANAGEMENT OF PATIENT WITH SUSPECTED SEPSIS AND CVAD IN PLACE

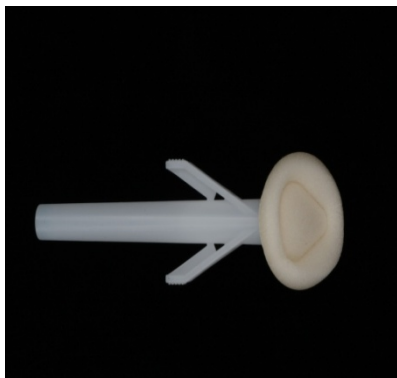


Adapted from Yorkshire CVAD care and use book and used with permission.

Cutaneous Cleansing

The cause of most catheter-related blood stream infections are by micro organisms that colonise catheter hubs and the skin surrounding the catheter insertion site. Skin antisepsis is regarded as one of the most important measures for preventing catheter-related infection and appropriate preparation of the insertion site will reduce this risk. It is recommended that a single use antimicrobial solution such as chlorhexidine gluconate 2% with 70% Isopropyl Alcohol is used to clean the skin over and around a CVC site to reduce the risk of bloodstream infections in children. This can be in the form of prefilled sponge sticks such as Chloroprep®. The solution must be applied with friction for at least 30 seconds. It is important that the skin is allowed to dry naturally and completely following cleaning.

Chlorhexidine Impregnated Sponge



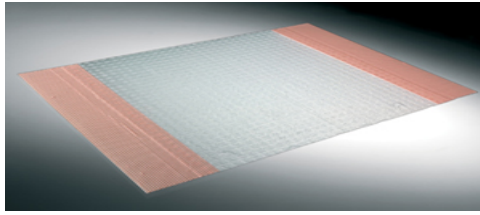
Biopatch

Biopatch is a protective disc which is impregnated with chlorahexidine. It is designed to provides 360 degree coverage round catheter insertion sites over a seven day period. Biopatch has been proven to reduce catheter associated blood stream infections.

Please follow the link below for more information on biopatch and for guidance around its use.

<https://www.youtube.com/watch?v=FHBKGAqjrs>

Dressing Regimens



Sterile transparent semi-permeable dressings secure the device and provide a barrier impermeable to water and bacteria while allowing the skin to breathe. The dressing must be self adhesive and transparent to allow visual inspection.

Documentation in the patients nursing notes should reflect routine assessment and describe the condition of the insertion site and dressing. A NHSL CVAD insertion and maintenance bundle must also be completed (Appendix 1).

Device	Dressing change
Tunnelled central venous catheter (TCVCs)	Weekly Or sooner if integrity of Biopatch or dressing compromised
Portacath (TIPs)	Weekly Or sooner if integrity of dressing compromised
Peripherally Inserted Central Catheter (PICC)	24 hours after insertion (if Biopatch not used) Then weekly Routine weekly dressing change can be at the discretion of a consultant paediatrician. Rationale must be clearly documented in notes. Routine weekly changes required if Biopatch in use. If integrity of Biopatch or dressing compromised dressing change is imperative.

Other considerations to reduce catheter related bloodstream infections (CRBSI) include:

- Add on devices such as administration sets, 3 way taps, extension sets, filters and needle free connectors should be used in accordance with local guidance and require changing (using aseptic technique) as per manufacturers' instructions or if the integrity of the device is compromised.
- Tubing used to administer blood or blood products should be changed within 12 hours of initiating the infusion.
- Tubing used to administer Fat emulsions should be changed with 24 hours of initiating the infusion.
- It is imperative that all add on devices are cleaned thoroughly with chlorhexidine gluconate 2% with 70% Isopropyl Alcohol wipes and allowed to dry completely prior to accessing them.

<http://firstport2/staff-support/infection-prevention-control/default.aspx>

7. Maintaining Catheter Patency

Central venous catheter occlusions are a common problem. However, it is important that the function of a catheter is maintained to prevent a disruption in treatment or care.

There are many types of occlusion including:

Mechanical Occlusions

Mechanical occlusions are caused by improper function of some part of the administration set up, the dressing, or the catheter that disrupts flow. Some occlusions are easy to identify, such as kinks or closed clamps, others are less obvious and are caused internally through positioning of the catheter. Mechanical occlusion can be ruled out by checking the following:

- IV tubing not clamped or kinked
- Any remaining sutures are not too tight at the exit site
- All connections are tight and there are no air leaks
- Ensure any add on devices are compatible with administration systems.
- Ask patient to change position, cough, deep breathe, stand up or lie down.

In Portacaths

- The position of the port should be identified by palpating the port and checking the contour. If there is no contour and the surface is flat it is possible the port has flipped.
- Is the access needle the correct size? In the correct position? Does it need to be changed?
- Examine and palpate the portal pocket and catheter tract for erythema, swelling or tenderness, which may indicate system leakage.

If occlusion persists despite above measures, follow patency trouble shooting guide and management of blocked CVADs flowchart.

Blood Occlusions

A blood occlusion occurs when a clot completely/partially occludes the lumen of the catheter. Blood occlusions can occur suddenly, as when the IV solution runs dry and the blood backs up into the tubing, or over time as blood residue builds up in the catheter lumen, causing a sluggish flow. Failure to correctly flush is a common cause of blood occlusions. Excess force should never be used to flush a CVAD. If a CVAD is occluded please follow management of blocked CVAD flowchart.

Persistent Withdrawal Occlusion (PWO)

The human body reacts to any irritant in the vascular system by depositing fibrin around the irritant. In CVADs, the body sees the catheter as a foreign object, and deposits fibrin and thrombus around it. The first sign of a fibrin sheath is the inability to withdraw blood. The vacuum created by negative pressure of withdrawal pulls back a flap, which is formed by the fibrin sheath, against the catheter opening and prevents blood from entering the lumen. Follow Patency trouble shooting guide if this is suspected.

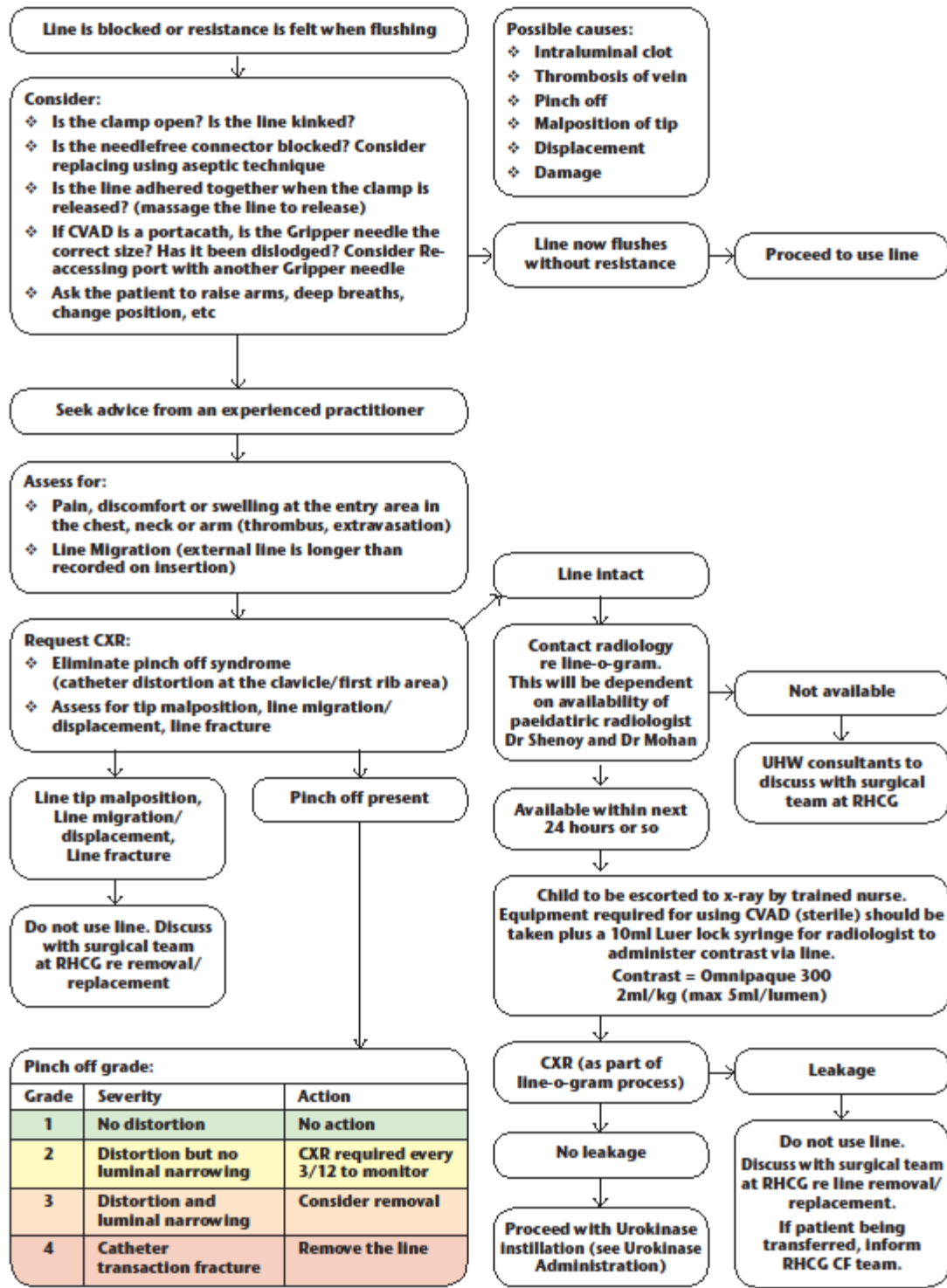
Flushing of CVADs

Flushing of CVAD's is essential in maintaining catheter patency. CVADs should be flushed with 0.9% saline 10mls prior to locking with heparin as prescribed. The patency of the catheter should be maintained by using a pulsated push-pause and positive pressure flush thus creating turbulence within the catheter lumen and removing debris from the internal catheter wall. Consideration must also be given to the syringe size used for flushing, the smaller the syringe size, the greater the pressure generated. Catheters are designed to withstand venous infusion pressures, but typically infusion pressures should never exceed 25-40 pounds per square inch (PSI). Smaller sized syringes will generate pressures in excess. Therefore syringe size must not be smaller than 10mls. The recommend frequency of flushing should be weekly for TVAD's / PICC's and monthly for Portacaths unless occlusive problems indicate otherwise.

Confirming patency

The patency of the CVC should be checked prior to administration of medication and / or solutions. The catheter should be aspirated and the catheter checked for blood return to confirm patency. Flashback is often unobtainable in PICC lines size 3mm/FR and below. Once placed PICC lines should not be used until an x-ray has confirmed the line is in the correct position.

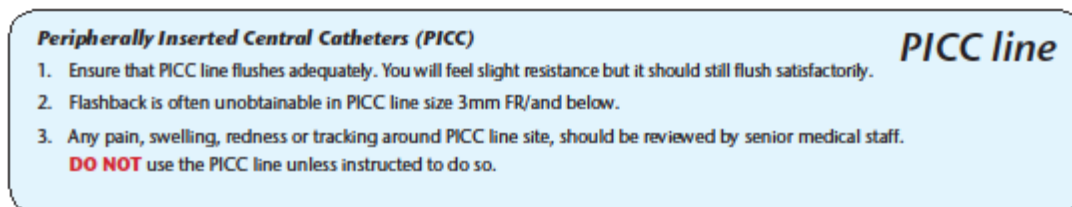
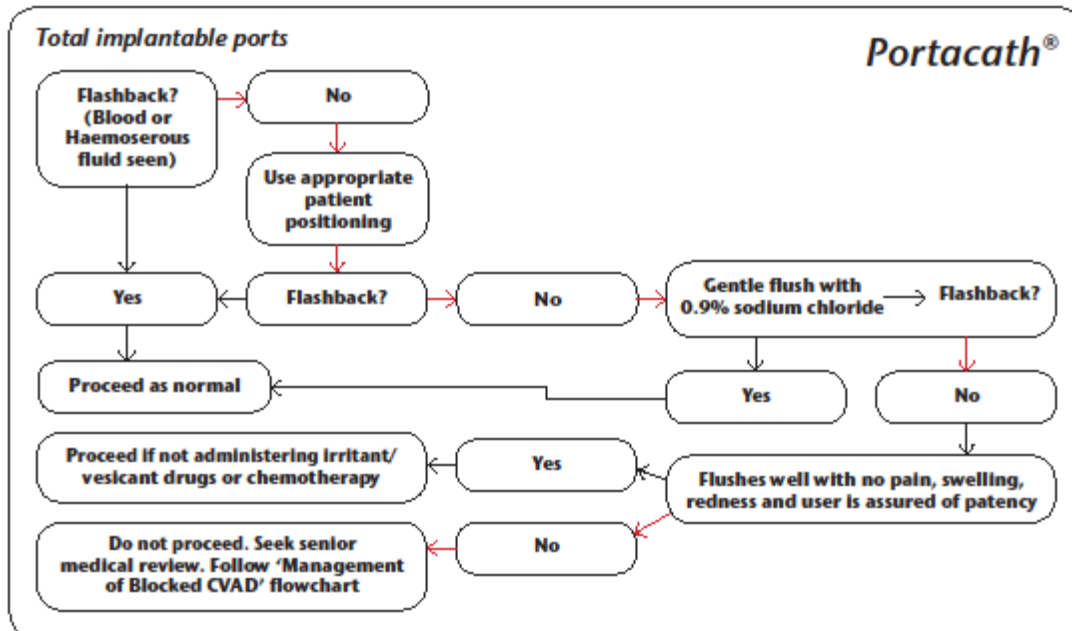
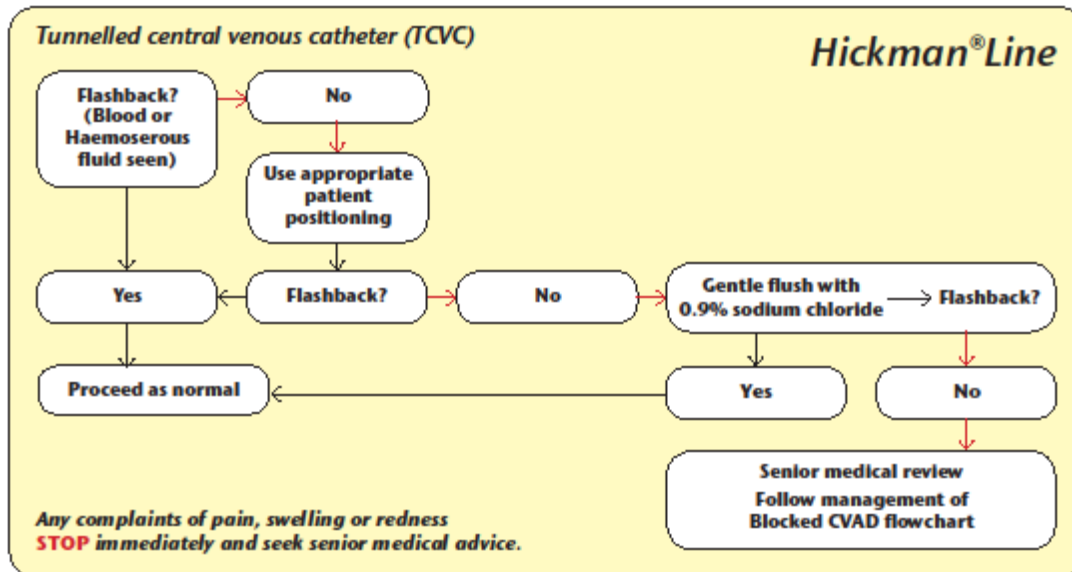
Management of Blocked CVADs



Adapted from NHS Ayrshire and Arran CVAD Guidelines - used with permission

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Patency Troubleshooting Guide



Adapted from NHS Ayrshire and Arran CVAD Guidelines - used with permission

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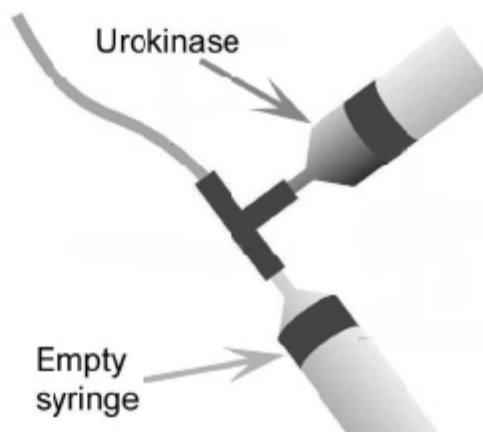
Urokinase administration

- ❖ The decision to administer Urokinase must be Consultant led and should only be carried out during regular working hours.
- ❖ Urokinase is contraindicated in active bleeding, recent surgery or trauma, recent CVA, severe hypertension, coagulation defects, acute pancreatitis, severe hepatic or renal insufficiency. This list is not exhaustive, see BNFC for more details.
- ❖ NB If blockage is suspected to be caused by precipitate rather than thrombus (e.g. if TPN being given) use a precipitate clearing agent according to manufacturer's guideline.
- ❖ Volume used must be calculated as follows- Patient specific CVAD priming volume plus minimum overage to ensure instillation around line tip (maximum volume 2mls).
- ❖ For preparation instructions follow NHSL paediatric IV monograph.
- ❖ Patients who have Urokinase in their CVAD must not leave the ward.

Three way tap technique for Urokinase administration

- Attach a three-way-tap and syringes (Figure 1).
- Open clamp (if there is one).
- Open stopcock to the empty syringe and the blocked catheter.
- Pull back on the plunger of the empty syringe to create a vacuum in the catheter. You will need to pull quite forcibly.
- Maintain suction with one hand and with the other hand turn stopcock so it is closed to the empty syringe and open to the syringe containing Urokinase, which will be sucked into the catheter. Do not worry if it seems that very little Urokinase is sucked in: even a tiny volume will reach several cm into the catheter.
- Leave for up to 4 hours.
- After this time, attempt withdrawal of blood. If this is not possible, attempt to flush the catheter using 0.9% Sodium chloride in a 10ml syringe. Do not use excessive force.
- This procedure may need to be repeated before it works. This is a consultant decision: leaving in line for 12 hours/overnight can help.
- If this procedure fails despite two attempts discuss with patient's responsible consultant/liaise with tertiary centre.

Figure 1: Three-way-tap technique



A adapted from NHS Ayrshire and Arran CVAD Guidelines - used with permission

8. Care of CVADs

Accessing Implanted Ports / Inserting a Gripper Needle

When determining what length of Gripper needle to insert, two factors must be determined:

- The Gripper needle should be long enough to reach the bottom of the portal when inserted
- The Gripper needle hub should lie flush against the skin surface.

Only sterile, noncoring, nonsiliconised needles should be used to access the portacath reservoir as other needles will damage the device.

Gripper needles should remain in situ for a maximum of two weeks

You will require (NB: for a single lumen):

- Apron
- Sterile dressing pack
- Sterile hand towel
- Sterile gloves
- ChloraPrep 3mls - 2% Chlorhexidine Gluconate 70% Isopropyl Alcohol Solution
- Sterile transparent semi-permeable dressings
- Gripper needle in appropriate size
- 2% Chlorhexidine Gluconate 70% Isopropyl Alcohol wipes
- Sterile bung of closed Luer Lock design
- 2 Needles (Filter needles required for glass ampoules)
- **Luer Lock Syringes 10ml x 2 (NB This is a needle free system)**
- Normal Saline 0.9% ampoule of 10ml
- Heparin as prescribed (3-5mls)

Procedure:

- Explain procedure to patient and parents/carers if applicable
- Put on apron.
- Perform hand hygiene.
- Open sterile dressing pack and place equipment onto sterile field.
- Perform hand hygiene again.
- Put on sterile gloves.
- Draw up 10mls saline 0.9% into a 10ml luer lock syringe, and 3-5mls of prescribed Heparin into another 10ml luer lock syringe.
- Prime gripper needle, extension set and bung with saline 0.9%
- Use Chloraprep applicator to clean skin over and 4-5 inches around portacath for at least 30 seconds and allow to dry naturally
- Place sterile drape underneath entry site
- Palpate and secure the port in place
- Insert Gripper needle through the skin and portal septum at a 90 degree angle until it touches the bottom plate of the portal chamber
- Do not rock or tilt the needle once inserted
- Apply sterile transparent semi-permeable dressings over gripper needle base. There should be a coil in the line under the dressing. Ensure a minimum of 4cm area surrounding the base of Gripper is covered by dressing.
- Attach saline syringe to end of line, open clamp and aspirate to obtain a “flashback” of blood to check the line is patent.
- Flush, using a pulsated, push - pause and positive pressure technique (the aim is to create turbulence within the line in order to clear of any debris), Close clamp while maintaining positive pressure, disconnect syringe.
- To lock the line, attach syringe of prescribed Heparin 3- 5mls, open clamp and flush as described above. Clamp line whilst injecting the final 1/2ml of Heparin, to maintain positive pressure and prevent the backflow of blood into the line.
- Safely dispose of sharps and equipment as per local policy.

De-accessing Implanted Ports / Removing a Gripper Needle

You will require (*NB: for a single lumen*):

- Apron
- Sterile dressing pack
- Sterile hand towel
- Sterile gloves
- 2% Chlorhexidine Gluconate 70% Isopropyl Alcohol wipes
- 2 Needles (Filter needles required for glass ampoules)
- **Luer Lock** Syringes 10ml x 2 (**NB This is a needle free system**)
- Normal Saline 0.9% ampoule of 10ml
- Heparin as prescribed (3-5mls)

Procedure:

- Explain procedure to patient and parents/carers if applicable
- Put on apron.
- Perform hand hygiene.
- Open sterile dressing pack and place equipment onto sterile field.
- Perform hand hygiene again.
- Put on sterile gloves.
- Draw up 10mls saline 0.9% into a 10ml luer lock syringe, and 3-5mls of prescribed Heparin into another 10ml luer lock syringe.
- Place sterile drape underneath entry site
- Using 2% Chlorhexidine Gluconate 70% Isopropyl Alcohol wipes cleanse from the sterile bung up to the clamp level and allow to dry naturally.
- Attach saline syringe to end of line, open clamp and aspirate to obtain a “flashback” of blood to check the line is patent.
- Flush, using a pulsated, push - pause and positive pressure technique (the aim is to create turbulence within the line in order to clear of any debris), Close clamp while maintaining positive pressure, disconnect syringe.
- To lock the line, attach syringe of prescribed Heparin 3- 5mls, open clamp and flush as described above. Clamp line whilst injecting the final 1/2ml of

Heparin, to maintain positive pressure and prevent the backflow of blood into the line.

- Carefully peel dressing from the skin while holding the port and gripper plus needle securely.
- Place fingers on each side of the Gripper plus base
- Lift the safety arm straight back to the lock position UNTIL IT CLICKS
- Safely dispose of sharps and equipment as per local policy

Central Venous Catheter Procedure for flushing and locking

You will require (NB: for a single lumen):

- Apron
- Sterile dressing pack
- Sterile hand towel
- Sterile gloves
- 2% Chlorhexidine Gluconate 70% Isopropyl Alcohol wipes
- Sterile bung of closed Luer Lock designs
- 2 Needles (Filter needles required for glass ampoules)
- **Luer Lock Syringes 10ml x 3 (NB This is a needle free system)**
- Normal Saline 0.9% ampoule of 10ml
- Heparin as prescribed (3-5mls)

Procedure:

- Explain procedure to patient and parents/carers if applicable
- Put on apron.
- Perform hand hygiene.
- Open sterile dressing pack and place equipment onto sterile field.
- Perform hand hygiene again.
- Put on sterile gloves.
- Draw up 10mls saline 0.9% into a 10ml luer lock syringe, and 3-5mls of prescribed Heparin into another 10ml luer lock syringe.
- Place sterile drape underneath the catheter.
- Using 2% Chlorhexidine Gluconate 70% Isopropyl Alcohol wipes cleanse from the sterile bung up to the clamp level and allow to dry naturally.
- Change Sterile bung if due changed (cleanse underneath bung with 2% Chlorhexidine Gluconate 70% Isopropyl Alcohol wipes and prime all “dead space” with 0.9% saline)
- Attach 0.9% saline syringe to end of line, open clamp and aspirate to obtain a “flashback” of blood to check the line is patent,

- Flush, using a pulsated, push - pause and positive pressure technique (the aim is to create turbulence within the line in order to clear of any debris), Close clamp while maintaining positive pressure, disconnect syringe.
- To lock the line, attach syringe of prescribed Heparin 3-5mls, open clamp and flush as described above. Clamp line whilst injecting the final 1/2ml of Heparin, to maintain positive pressure and prevent the backflow of blood into the line.
- Safely dispose of sharps and equipment as per local policy

Central Venous Catheter Procedure for connecting and disconnecting an infusion

You will require (NB: for a single lumen):

- Apron
- Sterile dressing pack
- Sterile hand towel
- Sterile gloves
- 2% Chlorhexidine Gluconate 70% Isopropyl Alcohol wipes
- Sterile bung of closed Luer Lock design
- 2 Needles (Filter needles required for glass ampoules)
- **Luer Lock Syringes 10ml x 3 (NB This is a needle free system)**
- Prescribed infusion fluid/drug
- Normal Saline 0.9% ampoule of 10ml x 2
- Heparin as prescribed (3-5mls)

Procedure:

- Explain procedure to patient and parents/carers if applicable
- Put on apron.
- Perform hand hygiene
- Open sterile dressing pack and place equipment onto sterile field.
- Perform hand hygiene again.
- Put on sterile gloves.
- Draw up 10mls saline 0.9% into a 10ml luer lock syringe x 2, and 3-5mls of prescribed Heparin into another 10ml luer lock syringe.
- Connect infusion fluid to giving set and prime.
- Place sterile drape underneath the catheter.
- Using 2% Chlorhexidine Gluconate 70% Isopropyl Alcohol wipe cleanse from the sterile bung up to the clamp level and allow to dry naturally. .
- If due, change sterile bung in accordance with manufacturer's instructions (cleanse line under bung with 2% Chlorhexidine Gluconate 70% Isopropyl Alcohol wipes and prime all "dead space" with 0.9% saline)

Adapted from University of the West of Scotland's Care and maintenance of Central venous access device (CVAD) guideline, with thanks to UWS.

- Attach first saline syringe to end of line, open clamp and aspirate to obtain a “flashback” of blood to check the line is patent.
- Flush, using a pulsated, push - pause and positive pressure technique (the aim is to create turbulence within the line in order to clear of any debris), Close clamp while maintaining positive pressure, disconnect syringe.
- Attach primed infusion set to end of line, open clamp and start infusion at prescribed rate.
- When infusion has ended, close clamp, disconnect and discard.
- Attach second saline syringe to end of line, Flush, as described above.
- To lock the line, attach syringe of prescribed Heparin 3-5mls, open clamp and flush as described above. Clamp line whilst injecting the final 1/2ml of Heparin, to maintain positive pressure and prevent the backflow of blood into the line.
- Safely dispose of equipment and sharps as per local policy

Central Venous Catheter Blood Sampling

PICC lines should not be used to obtain blood samples

You will require (**NB: for a single lumen**):

- Apron
- Sterile dressing pack
- Sterile gloves
- Sterile hand towel
- 2% Chlorhexidine Gluconate 70% Isopropyl Alcohol wipes
- Sterile bung of closed Luer Lock design
- 2 Needles (Filter needles required for glass ampoules)
- **Luer Lock Syringes 10ml x 4 (NB This is a needle free system)**
- Normal Saline 0.9% ampoule of 10ml
- Heparin as prescribed (3-5mls)
- Blood bottles for appropriate investigations.

Procedure:

- Explain procedure to patient and parents/carers if applicable
- Put on apron.
- Perform hand hygiene.
- Open sterile dressing pack and place equipment onto sterile field.
- Perform hand hygiene again.
- Put on sterile gloves.
- Draw up 10mls saline 0.9% into a 10ml luer lock syringe, and 3-5mls prescribed Heparin into another 10ml luer lock syringe.
- Place sterile drape underneath the catheter.
- Using 2% Chlorhexidine Gluconate 70% Isopropyl Alcohol wipe cleanse from the sterile bung up to the clamp level and allow to dry naturally.
- Aspirate 3-5mls of `dead space` blood using empty syringe and discard. **If blood cultures are being taken from the CVAD, do not discard the “dead space” blood, use this as the blood culture sample**

- Attach 10ml luer lock syringe and aspirate enough blood for requested samples.
- Attach luer lock syringe with 10mls 0.9% saline and flush, using a pulsated, push - pause and positive pressure technique (the aim is to create turbulence within the line in order to clear of any debris). Close clamp while maintaining positive pressure, disconnect syringe.
- Change sterile bung if due changed (cleanse underneath bung with 2% Chlorhexidine Gluconate 70% Isopropyl Alcohol wipes and prime all “dead space” with 0.9% saline)
- To lock the line, attach syringe of prescribed Heparin 3-5mls, open clamp and flush as described above. Clamp line whilst injecting the final 1/2ml of Heparin, to maintain positive pressure and prevent the backflow of blood into the line.
- Transfer bloods to blood bottles.
- Safely dispose of equipment and sharps as per local policy

Central Venous Catheter Dressing Procedure

You will require:

- Apron
- Sterile gloves
- Sterile hand towel
- Dressing pack
- ChloraPrep 3mls - 2% Chlorhexidine Gluconate 70% Isopropyl Alcohol Solution
- 2% Chlorhexidine Gluconate 70% Isopropyl Alcohol wipes
- Sterile transparent semi-permeable dressing
- Biopatch if required
- Disposal bag

Procedure:

- Explain procedure to patient and parents/carers if applicable
- Put on apron.
- Perform hand hygiene.
- Put on sterile gloves.
- Remove previous dressing (and biopatch or catheter stabilisation device if in use).
- Perform hand hygiene.
- Open sterile dressing pack and place equipment onto sterile field.
- Perform hand hygiene.
- Put on sterile gloves.
- Place sterile drape under the catheter.
- Use ChloraPrep applicator to clean skin over and around entry site for at least 30 seconds and allow to dry naturally.
- Clean line downwards, away from the entry site with 2% Chlorhexidine Gluconate 70% Isopropyl Alcohol wipes for at least 30 seconds and allow to dry naturally.
- Apply catheter stabilisation device according to manufacturer's instructions, if required.

- Apply Biopatch according to manufacturer's instructions, if required.
- Apply sterile transparent semi-permeable dressings over line/ gripper needle base. There should be a coil in the line under the dressing.

Ensure a minimum of 4cm area surrounding the base of line / gripper is covered by dressing.

For queries related to the care and management of CVAD's please contact:

Senior Charge Nurse

01698366190

Integrated Community Children's Nurses

01698366035

Care and Maintenance - KEY POINTS

- The practitioners competence will initially be assessed using the supervised practice record framework
- The health professional providing care and maintenance of CVADs after initial assessment should ensure their competence in this skill, and practice in accordance with the Nursing and Midwifery Council's Code of Professional Conduct. Therefore knowledge and skills relating to CVAD care must be maintained.
- Central Venous Access Device care must be performed using aseptic technique and steps taken to prevent infectious complications.
- Central Venous Access Devices must be flushed at established intervals using recommended techniques to promote and maintain catheter patency.

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Attach Patient Label Here: _____

Note re Observation:

- DOES THIS PATIENT NEED A CVAD?
- Sterile bung must be changed every 72 hours **[and if damaged]**
- Check CVAD, site and dressing on each shift and initial

Please see reverse of this sheet for Maintenance Bundle

- All 5 questions MUST be answered to produce accurate compliance stats
- If "NO" to 1 or more questions, consider if CVAD should be removed
- If "YES" to all 5 questions, optimal care has been achieved

Ward: _____
 Area: _____

INSERTION DETAILS:

Reason for CVAD: _____	Insertion Site: _____
Device size and/make: _____	Number of Insertion attempts: _____
Date and time: ____ / ____ / ____ Hrs	
What skin cleansing agent was used: _____	Examination Gloves worn? Yes <input type="checkbox"/> No <input type="checkbox"/>
Correct Hand Hygiene procedures followed as per NHSL aseptic technique? Yes <input type="checkbox"/> No <input type="checkbox"/>	Comments (i.e., use of tubifast, etc.): _____
CVAD Inserted by? _____	
CVAD Inserted <u>OUTWITH</u> Paediatric Unit? Yes <input type="checkbox"/> No <input type="checkbox"/>	
If "Yes", specify where CVAD inserted: (i.e., A&E, Paramedics, Theatres, etc.) _____	

CVAD Removed? Yes No Date Removed? ____ / ____ / ____ Removed by: _____ Print Name: _____

10. Appendix

Attach Patient Label Here:

Ward _____
 Area _____



	DAY 1			DAY 2			DAY 3			DAY 4			DAY 5			DAY 6			DAY 7					
	Date			Date			Date			Date			Date			Date			Date					
	(circle) AM	PM	NS	(circle) AM	PM	NS	(circle) AM	PM	NS	(circle) AM	PM	NS	(circle) AM	PM	NS	(circle) AM	PM	NS	(circle) AM	PM	NS			
1. Is the CVAD still in use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Absence of inflammation, swelling, pus or any other signs of local infection at site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. CVAD dressing intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Hand Hygiene as per NHSL aseptic technique?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. What was done with CVAD?	<input type="checkbox"/> Left in Situ	<input type="checkbox"/> Removed	<input type="checkbox"/>	<input type="checkbox"/> Left in Situ	<input type="checkbox"/> Removed	<input type="checkbox"/>	<input type="checkbox"/> Left in Situ	<input type="checkbox"/> Removed	<input type="checkbox"/>	<input type="checkbox"/> Left in Situ	<input type="checkbox"/> Removed	<input type="checkbox"/>	<input type="checkbox"/> Left in Situ	<input type="checkbox"/> Removed	<input type="checkbox"/>	<input type="checkbox"/> Left in Situ	<input type="checkbox"/> Removed	<input type="checkbox"/>	<input type="checkbox"/> Left in Situ	<input type="checkbox"/> Removed	<input type="checkbox"/>	<input type="checkbox"/> Left in Situ	<input type="checkbox"/> Removed	

	DAY 8			DAY 9			DAY 10			DAY 11			DAY 12			DAY 13			DAY 14								
	Date			Date			Date			Date			Date			Date			Date								
	(circle) AM	PM	NS	(circle) AM	PM	NS	(circle) AM	PM	NS	(circle) AM	PM	NS	(circle) AM	PM	NS	(circle) AM	PM	NS	(circle) AM	PM	NS	(circle) AM	PM	NS			
1. Is the CVAD still in use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Absence of inflammation, swelling, pus or any other signs of local infection at site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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4. Hand Hygiene as per NHSL aseptic technique?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. What was done with CVAD?	<input type="checkbox"/> Left in Situ	<input type="checkbox"/> Removed	<input type="checkbox"/>	<input type="checkbox"/> Left in Situ	<input type="checkbox"/> Removed	<input type="checkbox"/>	<input type="checkbox"/> Left in Situ	<input type="checkbox"/> Removed	<input type="checkbox"/>	<input type="checkbox"/> Left in Situ	<input type="checkbox"/> Removed	<input type="checkbox"/>	<input type="checkbox"/> Left in Situ	<input type="checkbox"/> Removed	<input type="checkbox"/>	<input type="checkbox"/> Left in Situ	<input type="checkbox"/> Removed	<input type="checkbox"/>	<input type="checkbox"/> Left in Situ	<input type="checkbox"/> Removed	<input type="checkbox"/>	<input type="checkbox"/> Left in Situ	<input type="checkbox"/> Removed	<input type="checkbox"/>			

NHSL – Paediatric – CVAD Insertion & Maintenance Proforma v4 - Prepared by Clinical Quality Dept, updated 14/07/14

12. Notes
