

## CLINICAL PROCEDURE

# CENTRAL VENOUS ACCESS DEVICE (CVAD) DRESSING, SECUREMENT DEVICE AND CAP CHANGE

### TARGET AUDIENCE

All Peter Mac staff responsible for completing CVAD dressings, securement device and cap changes.

### STATE ANY RELATED PETER MAC POLICIES, PROCEDURES OR GUIDELINES

[Hand Hygiene Procedure](#)

[Aseptic Technique Procedure](#)

[Principles of Management of Central Venous Access Devices Guideline](#)

[Peter Mac PICC dressing and cap change training video resource](#)

### PURPOSE

This document describes the evidence-based best practice procedure for CVAD dressings, securement device and cap change.

**This procedure covers the following:**

[Sequence of performing CVAD dressing and cap change](#)

[Assessment requirements before the procedure](#)

[PICC dressing and cap change equipment](#)

[PICC dressing and cap change procedure](#)

[Tunnelled device \(Hickman and Permacath\) dressing and cap change equipment](#)

[Tunnelled device \(Hickman and Permacath\) dressing and cap change procedure](#)

### PROCEDURE

General principles for the management of CVADs are outlined in the clinical procedure document [Principles of Management of Central Venous Access Devices \(CVADs\)](#)

#### Sequence of procedure

A cap change and exit site dressing should be completed at least every 7 days as one procedure, where possible. Where both cap and dressing change are required the cap change should be completed prior to the dressing in order to maintain asepsis of the CVAD exit site.

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## Assessment

Assessment of the patient and device should be undertaken prior to obtaining equipment and preparing to complete a CVAD dressing. Assessment should include the following:

- Assessment of device for position and signs of migration;
  - For Peripherally Inserted Central Catheters (PICC), catheter hub placement measurement (visualise length from catheter exit site to hub and compare to insertion documentation).
  - For tunnelled devices look for presence of the cuff outside the insertion site
  - If there is any evidence the device has migrated refer to the medical officer for review and further investigation and do not commence the procedure.
- Assessment of any sutures present for tunnelled devices and date for removal
- Assessment of exit site for signs and symptoms of infection and exudate
- Assessment of allergies to tapes and or chlorhexidine
- Assessment for any new symptoms that require further investigation prior to undertaking the dressing.

## PICC dressing, securement device and cap change

### Equipment required

- Trolley disinfected on all surfaces with Clinell surface wipes Hazardous waste bin and cytotoxic waste bin if required
- PPE- standard precautions or cytotoxic precautions
- 1x pair of non-sterile gloves
- 2 x pairs of sterile gloves
- Sterile dressing pack
- Plastic backed absorbent sheet
- 2x single procedure use chlorhexidine 2% in alcohol 70% in 60mls
- 2x packet of sterile gauze for each lumen of CVAD (for cap change)
- 1 x Neutral Displacement Catheter Patency Device (Neutron) for each lumen
- 5x 10ml BD PosiFlush™ Sterile Field 0.9% Normal Saline Flush Syringe
- 1x 10ml syringe
- 2 x antimicrobial 2% chlorhexidine gluconate with 70% ethanol protective barrier stick
- 1 x large transparent semi-permeable membrane (TSM) dressing (e.g. IV3000, Tegaderm HP)
- Securement device (e.g. StatLock® PICC Plus Stabilization Device)
- Sodium chloride 0.9% sachet(s) for exit site cleaning

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\* Additional sterile gauze and sodium chloride 0.9% sachets may be required if extensive exudate present at exit site.

### Procedure

- Correctly identify the patient
- Explain the intended procedure to the patient and obtain verbal consent
- Assess the patient and device and ensure all infusions are discontinued prior to commencement of procedure
- Perform routine hand hygiene with alcohol based hand rub solution or soap and water if hands are visibly soiled. Refer to Hand Hygiene Procedure.
- Position patient in a comfortable position with PICC accessible and plastic backed absorbent sheet under patient's arm
- Perform hand hygiene
- Open sterile dressing pack and open equipment onto the aseptic field in dedicated zones
  - Set up field with chlorhexidine 2% in alcohol 70% soaked gauze in the upper quadrant of the field closest to the patient side
  - Use dressing tray to contain sodium chloride 0.9% for exit site cleaning and 2 x antimicrobial 2% chlorhexidine gluconate with 70% ethanol protective barrier sticks
  - Set up dry dressing supplies on the other side of the field away from wet area to maintain asepsis.
- Don PPE (goggles +/- cytotoxic gown as required)
- Perform hand hygiene
- Close CVAD clamps in the middle of lumen to allow for adequate cleaning
- Perform hand hygiene
- Don non sterile gloves and remove existing dressing using a stretch technique. If the Biopatch does not come away readily with TSM dressing removal leave insitu until later in procedure.
- Remove non sterile gloves and perform hand hygiene
- Don first pair of sterile gloves
- Prepare aseptic field for procedure;
  - Ensure wet dressing supplies are in a dedicated area of aseptic field (e.g. Left upper quadrant)
  - Using 1x Posiflush prime all Neutrons with 0.5mls leave syringe attached to primed cap

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- Attach spare syringe to second primed Neutron (if completing procedure for 2 lumen PICC)
- In the dedicated area of the aseptic field, prepare chlorhexidine soaked gauze ready for the cap change procedure
- Place the sterile drape next to the device on top of the patient's arm in case required throughout the procedure
- Pick up CVAD lumen by the cap with sterile gauze soaked with chlorhexidine 2% in alcohol 70% as a barrier between your hand and the device
- With a new piece of sterile gauze soaked with chlorhexidine 2% in alcohol 70%, thoroughly clean the catheter lumen starting at the cap and cleaning downward to above clamp then discarding gauze
- Repeat process two more times with two more pieces of sterile gauze soaked with chlorhexidine 2% in alcohol 70% to clean the lumen
- Remove old cap and discard
- Use the scrub the hub method to disinfect the CVAD hub with a new piece of sterile gauze soaked with chlorhexidine 2% in alcohol 70% and allow to dry
- Attach the new cap to the catheter hub
- Use the sterile drape if you need to place the cleaned line down in between steps once the line has been cleaned
- Unclamp the line
- Aspirate the line with the syringe on the end of the cap to confirm patency and discard syringe
- Flush the device with 2 x 10ml Posiflush sodium chloride 0.9% pre-filled syringe using a pulsatile (stop and start) method and ensuring that catheter remains unclamped at the completion of the procedure
- Repeat this process for each lumen of the PICC
- Remove securement device by gently separating adhesive base from skin using an antimicrobial 2% chlorhexidine gluconate with 70% ethanol protective barrier stick to dissolve the adhesive in the securement device
- Open securement device and separate PICC flange from eyelets on device and slide securement device out and discard
- Apply adhesive strip supplied in securement device pack to secure PICC once the securement device is removed. Apply strip away from exit site to allow for effective cleaning and antimicrobial application
- Remove first pair of sterile gloves
- Perform hand hygiene
- Don 2<sup>nd</sup> pair of sterile gloves

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- If Biopatch still insitu remove with sterile forceps
- Clean skin around CVAD exit site with sodium chloride 0.9%, to remove any exudate. Dry by blotting excess moisture with a piece of sterile gauze
- Using an antimicrobial 2% chlorhexidine gluconate with 70% ethanol protective barrier swab clean around the exit site using gentle friction. Use a repeated back-and-forth motion working outwards in a spiral motion to clean an area of skin at least 5cm from the exit site. Turn the stick over and repeat the clean using the other side of the stick. Discard the swab.
- Allow site to air dry completely (approx. 45 seconds)
- Swab skin to be covered by securement device with skin protectant pad by opening pad and sliding under device once using supplied sterile forceps.
- Remove adhesive strip in preparation to apply new securement device using sterile forceps
- Slide new securement device under PICC and insert posts through eyelets on PICC flange and close
- Attach securement device to skin by peeling back paper flaps on rear of securement device, one side at a time
- Confirm catheter hub placement measurement is unchanged from beginning of procedure (length from catheter exit site to hub)
- Apply a single layer TSM dressing, ensuring insertion site is covered but leaving clamps and caps free of dressing
- Discard all contaminated equipment
- Immediately remove gloves and perform hand hygiene
- Label the CVAD dressing with the date of the procedure using the sticker on the IV3000 or other TSM dressing used
- Document intervention on the patient's Avatar in Epic. Documentation must include length of PICC from catheter exit site to hub

## **Tunnelled device (Hickman and Permacath) dressing and cap change procedure**

### **Equipment required**

- Trolley disinfected on all surfaces with Clinell surface wipes
- Hazardous waste bin and cytotoxic waste bin if required
- PPE- goggles +/- cytotoxic gown if required
- 1x pair of non-sterile gloves
- 1x pair of sterile gloves
- Sterile dressing pack

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- Plastic backed absorbent sheet
- 2x single procedure use chlorhexidine 2% in alcohol 70% in 60mls
- 2x packet of sterile gauze for each lumen of CVAD (for cap change)
- 1 x Neutral Displacement Catheter Patency Device (Neutron) for each lumen of Hickman **or** 1 clave for each lumen of Permacath
- 5x 10ml Posiflush sodium chloride 0.9% pre-filled syringe
- 1x 10ml syringe
- 1 x antimicrobial 2% chlorhexidine gluconate with 70% ethanol protective barrier stick
- 1 x large transparent semi-permeable membrane (TSM) dressing (e.g. IV3000, Tegaderm HP)
- 1x Biopatch
- Sodium chloride 0.9% sachet(s) for exit site cleaning

\* Additional sterile gauze and sodium chloride 0.9% sachets may be required if extensive exudate present at exit site.

\*Heparin 1,000 in 1ml solution (supplied in 5000 units in 5mls) drawn up to the volume of the lumen as per medical order for Heparin lock of Permacaths on completion of dressing and cap change procedure if device not being used

## Procedure

- Correctly identify the patient
- Explain the intended procedure to the patient and obtain verbal consent
- Assess the patient and device and ensure all infusions are discontinued prior to commencement of procedure
- Perform routine hand hygiene with alcohol based hand rub solution or soap and water if hands are visibly soiled. Refer to [Hand Hygiene Procedure](#).
- Position patient in a comfortable position with Tunnelled device easily accessible and plastic backed absorbent sheet under device
- Perform hand hygiene
- Open sterile dressing pack and open equipment onto the aseptic field in dedicated zones. Check expiry dates of products and integrity of product before opening on sterile field. Open product facing you onto aseptic field.
  - Set up field with chlorhexidine 2% in alcohol 70% soaked gauze in the upper quadrant of the field closest to the patient side
  - Use dressing tray to contain sodium chloride 0.9% for exit site cleaning and 2 x antimicrobial 2% chlorhexidine gluconate with 70% ethanol protective barrier sticks

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- Set up dry dressing supplies on the other side of the field away from wet area to maintain asepsis.
- Perform hand hygiene
- Ensure clamps remain closed in dedicated “clamp here” zone
- Perform hand hygiene
- Don non sterile gloves and remove existing dressing using a stretch technique. If the Biopatch does not come away readily with TSM dressing removal leave insitu until later in procedure.
- Remove non sterile gloves and perform hand hygiene
- Don sterile gloves
- Prepare aseptic field for procedure;
  - Ensure wet dressing supplies are in a dedicated area of aseptic field (e.g. Left upper quadrant)
  - Using 1x Posiflush prime all Neutrons with 0.5mls leave syringe attached to primed cap
  - Attach spare syringe to second primed Neutron (if completing procedure for 2 lumen PICC)
  - In the dedicated area of the aseptic field, prepare chlorhexidine soaked gauze ready for the cap change procedure
- Place the sterile drape next to the device on top of the patient’s chest in case required throughout the procedure
- Pick up CVAD lumen by the cap with sterile gauze soaked with chlorhexidine 2% in alcohol 70% as a barrier between your hand and the device
- With a new piece of sterile gauze soaked with chlorhexidine 2% in alcohol 70%, thoroughly clean the catheter lumen starting at the cap and cleaning downward to above clamp then discarding gauze
- Repeat process two more times with two more pieces of sterile gauze soaked with chlorhexidine 2% in alcohol 70% to clean the lumen
- Remove old cap and discard
- Use the scrub the hub method to disinfect the CVAD hub with a new piece of sterile gauze soaked with chlorhexidine 2% in alcohol 70% and allow to dry
- Attach the new cap to the catheter hub
- Use the sterile drape if you need to place the cleaned line down in between steps once the line has been cleaned
- Unclamp the line
- Aspirate the line to confirm patency. For Permacaths aspirate at least 4ml to remove Heparin lock and discard

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- Flush the device with 2 x 10ml Posiflush sodium chloride 0.9% pre-filled syringe using a pulsatile (stop and start) method and ensuring that catheter is clamped at the completion of the procedure.
- Repeat this process for each lumen of the CVAD
- If performing a cap change for a Permacath, lock with Heparin on completion of the procedure as per the CVAD management clinical guideline
- If the Biopatch is still insitu remove with sterile forceps
- Clean skin around CVAD exit site with sodium chloride 0.9%, to remove any exudate. Dry by blotting excess moisture with a piece of sterile gauze
- Using an antimicrobial 2% chlorhexidine gluconate with 70% ethanol protective barrier swab clean around the exit site using gentle friction. Use a repeated back-and-forth motion working outwards in a spiral motion to clean an area of skin at least 5cm from the exit site. Turn the stick over and repeat the clean using the other side of the stick. Discard the swab.
- Allow site to air dry completely (approx. 45 seconds)
- Apply a Biopatch dressing with blue side facing up and the pre-cut slit rotated off centre with the Biopatch flat against the patient's skin
- Apply a single layer TSM dressing, leaving clamps and caps free of dressing
- Discard all contaminated equipment
- Immediately remove gloves and perform hand hygiene
- Label the CVAD dressing with the date of the procedure using the sticker on the IV3000 or other TSM dressing used
- Document intervention on the patients Avatar in Epic.

## DEFINITIONS

<b>Scrub the Hub</b>	Application of a 2% chlorhexidine and alcohol swab to all access devices on hubs of CVAD lumens and lines. Scrubbing consists of a 180 degree back-and-forth twisting motion for 15 seconds. After disinfection the device must completely air dry before accessing.
<b>Central venous access device (CVAD)</b>	A catheter inserted into the venous system, typically placed in a blood vessel in the upper body, with the tip positioned in the lower third of the superior vena cava (SVC). Catheters inserted into the femoral vein are positioned with the tip in the inferior vena cava (IVC). CVADs are used for administration of fluids, blood products, medications including Chemotherapy and Immunotherapy and total parenteral nutrition (TPN), central venous pressure (CVP) monitoring, blood sampling and apheresis procedures.
<b>Securement device</b>	A commercially produced device, usually adhesive, designed to secure a CVAD to the skin to prevent catheter migration, eliminating the need to

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	secure the catheter by sutures.
<b>Transparent semi-permeable membrane (TSM) dressing</b>	Sterile, transparent polyurethane dressing that allows moisture evaporation from underneath the dressing but provides a barrier from extrinsic moisture and microorganisms.
<b>Biopatch</b>	A disc shaped hydrophilic polyurethane absorptive foam dressing infused with 7 day time-released chlorhexidine gluconate. The foam material absorbs excess fluid from the site whilst the chlorhexidine gluconate inhibits bacterial growth under the dressing.
<b>Needle free Connector (Clave)</b>	A Clave is a needle free connector for an access device used on all peripheral intravenous catheters. It can be directly accessed with a syringe or infusion line. Claves are used on tunneled haemodialysis lines to distinguish it as a device that requires heparin.
<b>Needle free Neutral Displacement Catheter Patency Device (Neutron cap)</b>	A Neutron is a neutral displacement device that is attached to the hub end of a CVAD lumen that can be directly accessed with a syringe or infusion line. The device has a bi-directional silicone seal which forms a swabable barrier to prevent bacterial ingress. The device can be used to either infuse or aspirate via the CVAD. In the absence of flow or forward pressure into the Neutron the valve will automatically close and prevent all types of reflux into the CVAD lumen which prevents thrombotic occlusion of the CVAD.

## REFERENCES/SUPPORTING DOCUMENTS

- Infusion Nurses Society. 2016. Infusion Nurses Standards of Practice. Journal of Infusion Nursing, 39, 1-59
- Lovedaya, L.J., Wilsona, J.A., Pratta, R.J, Golsorkhia, M., Tinglea, A., Baka, A., Brownea, J. Prietob, Wilcox, M. (2014) epic3: National Evidence-Based Guidelines for Preventing Healthcare-Associated Infections in NHS Hospitals in England, Journal of Hospital Infection 86S1, S1-S70
- National Health and Medical Research Council. (2010). *Australian Guidelines for the Prevention and Control of Infections in Healthcare*. Canberra: Commonwealth of Australia.
- NSW Government EVIQ. Clinical procedure - central venous access device - dressing and needleless injection cap change Available from: <https://www.eviq.org.au/clinical-resources/central-venous-access-devices-cvads/900-central-venous-access-device-dressing-and-n#112383>
- O’Grady NP, Alexander M. (2011) Guidelines for the Prevention of Intravascular Catheter-related Infections. Recommendations of the Healthcare Infection Control Practices Advisory Committee (HICPAC). American Journal of Infection Control , 39, 1- 34.
- Royal College of Nursing (2010). *Standards of Infusion Therapy* (3rd ed.). London: Royal College of Nursing.
- Schiffer,C., Mangu, P., Wade, J., Camp-Sorrell, D., Cope, D., El-Rayes, B., Gorman, M., Ligibel, J., Mansfield, P., Levine, M. (2013) Central Venous Catheter Care for the Patient with Cancer:

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American Society of Clinical Oncology Clinical Practice Guideline, Journal of Clinical Oncology, 31 1357-1369.

- Venetec International (2007). *StatLock PICC Plus* [On-line].  
<http://www.venetec.com/products.html>
- 3M Soluprep accessed at <https://multimedia.3m.com/mws/media/15194790/3m-skin-antiseptic-products.pdf>

#### **FURTHER INFORMATION**

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