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|  <p><b>CLINICAL PRACTICE GUIDELINE</b></p> | <b>Practice Guideline:</b><br><b>Tunneled Central Venous Access Device (CVAD) Repair</b> |                                  |
|   | <b>Approval Date:</b><br>June 4 <sup>th</sup> , 2021                                     | <b>Pages:</b><br><i>1 of 5</i>   |
|   | <b>Approved By:</b><br>Professional Advisory Committee<br>Standards Committee            | <b>Supersedes:</b><br><i>NEW</i> |

## 1.0 PURPOSE

To provide a standardized process for the safe and effective repair of a tunneled CVAD.

## 2.0 BACKGROUND

Prior to repairing a tunneled CVAD, a risk versus benefit analysis must be performed. Consideration must be given to the length of therapy remaining, the nature of the infusion, the immune status of the patient, the availability of other vascular access options, the risk of infection and the client's individual vascular access history while considering the broad objective of vascular preservation.

Once it is determined that the benefits of repairing a tunneled CVAD outweigh the risks, it must be determined if the CVAD repair is feasible. Consideration must be given to the availability of the device specific repair kit, adequate length of CVAD segment, location of damage and overall condition of remaining catheter. Increased risk of infection and catheter occlusion are the most common complications associated with CVAD repair.

## 3.0 DEFINITIONS

**3.1 Central Venous Access Device (CVAD):** Venous catheters designed to deliver medications, fluids and/or parenteral nutrition directly into the lower third of the superior vena cava (SVC) or right atrium.

## 4.0 PRACTICE CONSIDERATIONS

- Repair of tunneled CVADs is limited to nurses who have been trained on CVAD repair, who are practicing under their scope of practice and have received an order from an authorized prescriber.
- The need for the tunneled CVAD should be reviewed prior to repair. The CVAD should be removed when therapy is completed, in the presence of unresolved complications, or when deemed no longer necessary for the plan of care.
- The nurse will ensure the benefits outweigh the risks, before repairing a dysfunctional catheter
- Notify the practitioner if the catheter insertion site reveals signs of infection or a catheter infection is suspected.
- Use 10-mL syringes or larger for catheter clearance procedures. Larger syringes decrease the pressure when a catheter is flushed; high pressure may damage the catheter or blood vessels.



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**4.0 CVAD REPAIR**

**4.1 Supplies**

- Catheter Repair Kit (correct make and size)
- 1 pair of non-sterile gloves
- 6 - 2% chlorhexidine (CHG) with 70% isopropyl alcohol swab stick
- Toothless or sheathed clamp
- 1 - Sterile 4x4 gauze sponge
- 4 - 2x2 gauze sponges
- Sterile scalpel or sterile scissors \*
- Sterile drapes \*
- 2 pairs- sterile gloves
- Surgical mask
- 10 mL pre-filled normal saline syringe\*
- Tape
- Tongue blade or application stick
- Luer lock combo male/female cap (s) (*red stopper caps*)

\* May be provided in “IV Central Line Tray”

**5.0 PROCEDURE**

**\*\* Prior to starting CVAD repair, place patient in comfortable supine position. Flush affected lumen with 10 mL normal saline to assess fracture, identify any additional fractures and/or altered integrity (i.e., bulging). Ensure there is a minimum of 3cm of intact remaining catheter to be able to perform repair safely.**

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| <b>5.2.1</b> Perform hand hygiene, and don mask and non-sterile gloves.  |  |
| <b>5.2.2</b> Remove enough dressing to expose the catheter fracture only, while still maintaining a cover over the insertion site. Apply clamp to catheter distal to fracture.   | Use toothless or sheathed clamp (may use 2x2 gauze) to prevent further damage to the catheter. |
| <b>5.2.3</b> Holding the catheter upwards, vigorously scrub the catheter between two 2% chlorhexidine (CHG) with 70% isopropyl alcohol swab sticks. Ensure fractured area and a minimum of 1” (2.5 cm) above and 1” (2.5 cm) below is cleansed. Repeat x1. | May require second nurse/assistant to hold proximal end of catheter to maintain sterility.     |



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| <p><b>5.2.4</b> Position a sterile drape under the catheter and lay catheter onto drape.</p>  |   |
| <p><b>5.2.5</b> Using aseptic technique, open remaining supplies and <b>place</b> on sterile field. Remove non-sterile gloves and perform hand hygiene.</p>   |   |
| <p><b>5.2.6</b> Don sterile gloves and cover catheter with sterile eye drape, or series of drapes, to expose fracture only.</p>   |   |
| <p><b>5.2.7</b> Cut the catheter using a sterile scalpel or scissors at a 90° angle, just distal to the damaged area.</p>   | <p>The length of the remaining external segment must be sufficient to permit catheter repair. Will require a minimum of 3cm of remaining catheter as above.</p> |
| <p><b>5.2.8</b> Close sterile drapes around catheter so only the sterile portion is visible.</p>  |   |
| <p><b>5.2.9</b> Scrub the remaining catheter again between two 2% CHG with 70% isopropyl alcohol swab sticks. Allow to dry.</p>   | <p>A sterile 4x4 gauze may be used to grasp the catheter for scrubbing.</p>   |
| <p><b>5.2.10</b> Flush catheter repair portion with normal saline and add red stopper caps. Clamp catheter.</p>   |   |
| <p><b>5.2.11</b> Attach catheter repair portion to catheter ensuring the proper lumen connections are aligned. Slide repair sleeve over new connection allowing an equal distance on both sides of repair.</p>  |   |
| <p><b>5.2.12</b> Remove plunger from syringe barrel, inject medical adhesive into the syringe barrel, re-insert plunger and attach sterile blunt needle.</p>  | <p>Medical adhesive is not sterile. The remainder of the procedure is now aseptic technique.</p>  |
| <p><b>5.2.13</b> Squeeze adhesive into both sides of sleeve until adhesive leaks out both ends. Wipe excess adhesive off catheter sleeve with sterile 2x2 gauze and carefully lay catheter onto drape to avoid any pulling or movement of sleeve.</p> |   |
| <p><b>5.2.14</b> Remove sterile drapes and clamp.</p>   |   |
| <p><b>5.2.15</b> Cover repair with a sterile 4x4 gauze. Use a tongue blade or application stick to create a sling around the repair. Secure both ends of the catheter, with tape, to prevent any movement or</p>                                      | <p>Sleeve will freely move around until adhesive dries. All precautions must be taken to avoid movement.<br/>Do not flush catheter as this may damage</p>       |

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| pulling of catheter on either end. Secure to skin.  | repair. |
| <b>5.2.16</b> Remove remaining dressing at insertion site and perform dressing change per protocol. |         |

**6.0 ASSESSMENT OF CVAD REPAIR**

Allow repair to dry 24 hours before reassessment (minimum 12 hours if ideal conditions not possible).

**6.1 Supplies**

- Alcohol swab
- 10mL pre-filled normal saline syringe
- Heparin 100iu/mL (if required)

**6.2 Procedure**

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| <b>6.2.1</b> Perform hand hygiene.   |  |
| <b>6.2.2</b> Remove sling.   |  |
| <b>6.2.3</b> Ensure sleeve has not shifted, and repair site is fully covered.  | If sleeve has shifted and repair is not fully covered, the repair must be performed again cutting out the previous repair. |
| <b>6.2.4</b> Cleanse end of lumen with alcohol swab and assess lumen patency by flushing with 10mL prefilled normal saline syringe, ensuring brisk blood return. |  |
| <b>6.2.5</b> Using aseptic technique, open remaining supplies and <b>place</b> on sterile field. Remove non-sterile gloves and perform hand hygiene.             | If catheter occlusion present, follow occlusion management guidelines.   |
| <b>6.2.6</b> Lock lumen with appropriate locking solution.   |  |

**7.0 REFERENCES**

- 7.1 Cook Medical (2014). Catheter Repair Instructions for Use (2014).
- 7.2 Canadian Vascular Access Association (2019). *Canadian Vascular Access & Infusion Therapy Guidelines*. Pemboke, ON: Pappin Communications.
- 7.3 Journal of Infusion Nursing (2016). *Infusion Therapy Standards of Practice*. S110.



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