Sullivan County Department of Public Health

Title: Central Venous Catheter (CVC) removal **Number**: CP-41 **Page Number:** 1 of 3	Original Approval: 8/19 Reviewed/ revised: 9/19, 4/24

Statement/ Purpose:
To provide a standardized, evidence-informed process for the safe removal of a CVC.

Authority:

Application:
Registered Nurses

Terminology:

Responsible Party:
Training and Quality Improvement Coordinator

Cross-Reference:
Hand Hygiene

Procedure:

- The CVC should be removed when therapy is completed, in the presence of unresolved complications, or when deemed no longer necessary for the plan of care, with provider order.
- The removal of the CVC can be performed by a RN who has received training and demonstrated competency in the removal of a CVC. CVC removal is a clean technique.
- Never pull against resistance or stretch the catheter as there is a risk of catheter breakage or vein wall damage.
- Air embolism during CVC removal can occur. The following interventions must be done when removing a CVC to reduce this risk:
    - Positioning the patient supine (if patient is unable to lie flat raise the head of the bed until the patient is comfortable)
    - Use of Valsalva maneuver
    - Use of sterile petroleum-based ointment or petroleum

1. Review patient chart and reason for CVC removal. Verify provider order.
2. Verify exact trimmed length of CVC upon insertion.
3. Explain the procedure to the patient/ caregiver.
4. Perform hand hygiene.
5. Gather all supplies needed.
6. Open sterile dressings and squeeze sterile petroleum ointment onto one of the 2x2 sterile gauze pads.
7. Place patient in supine position with their arm abducted but below level of their heart.

8. Place non-sterile, waterproof pad underneath the arm.
9. Perform hand hygiene, don non-sterile gloves.
10. Remove dressing from insertion site. Remove CVC from stabilization device if applicable.
11. Remove stabilization device from skin.
12. Conduct a site assessment
    a. If cellulitis is suspected, cleanse area with normal saline, removing all exudate, purulent material, and necrotic tissue.
    b. Notify provider of complication.
13. Cleanse the exit site with CHG/ alcohol swab stick and allow to air dry completely, 2 minutes.
14. Remove gloves, perform hand hygiene.
15. Don new, non-sterile gloves.
16. Prior to removal, explain to the patient that you will be asking them to hold their breath while the CVC is removed.
    a. Ask the patient to hold their breath at the end of expiration, before the last 15 cm of the CVC is removed.
    b. If the patient is unable to cooperate with instructions or is on mechanical ventilation, remove the CVC during exhalation.
17. Hold sterile 2x2 gauze (without petroleum ointment) directly to exit site with non-dominant hand. With dominant hand, slowly remove catheter using gentle even pressure. As the catheter exits the site, apply firm, even, direct pressure on the exit site with the sterile gauze. Place the CVC on the waterproof pad to prevent contamination of the patient care and work area.
18. Apply pressure to exit site with gauze dressing until homeostasis is achieved.
19. Once homeostasis is achieved, remove initial sterile 2x2 gauze and apply the 2x2 non-woven sterile gauze with sterile petroleum ointment directly to the catheter exit site.
20. Apply a transparent, semipermeable dressing to the site on top of the gauze once bleeding has stopped.
21. Measure the length of the removed CVC for comparison with the insertion record. Inspect for an intact (not jagged) tip.
22. Dispose of CVC into regular garbage, remove gloves and perform hand hygiene
23. During this time, observe for symptoms of air embolus. If they occur, including shortness of breath, chest pain, dizziness, hypotension, change in level of consciousness, place the patient on their left side in Trendelenburg position, call 911, take vital signs, and initiate CPR if needed.
24. After the elapsed 30 minutes, place patient in sitting position. Take and record vital signs on non-affected arm. The procedure is complete if the patient is non-symptomatic.
25. Educate the patient/ caregiver to monitor for the following:
    a. Shortness of breath, fever, chills, chest pain, rigors, redness or streaking up the arm, swelling of the arm or new bleeding at the exit site.
    b. Should any of those symptoms occur, the patient/ caregiver should activate EMS/ call 911 or present to the nearest Emergency Department.
26. Document the CVC removal including:
    a. Date and time of removal
    b. Position of patient for the procedure
    c. Insertion site appearance
    d. Catheter measurement upon removal
    e. Appearance of catheter tip
    f. Patient tolerance to the procedure
    g. Any complications or concerns with the removal process
    h. Dressing application

i. All teaching and patient/ caregiver instructions.

Troubleshooting Tips for Difficult CVC Removal

CVC lines should never be removed against resistance. When resistance occurs it may be for the following reasons:

- Venous spasm
- Malposition or coiling of the catheter
- Thrombus formation

If resistance is met, stop removal and try one of the following troubleshooting techniques:

Action	Rationale
Flush CVC line	Moves tip away from vessel wall
Apply warm compress to the entire arm x 20 minutes	Warmth will encourage vasodilation
Ensure patient is supine, abduct arm	Straightens out venous pathway
Mental relaxation, distraction of the patient	Helps decrease venous spasm
Cover with DSD, re-attempt after 24 hours	Allows vessel to relax, alleviate spasm

If above actions are not successful, provider should be notified for further orders/ interventions.