	P02.9 - MEDICATION & FLUID ADMINISTRATION BY CVAD	
	Version: 2025-06-08	Effective Date: 2025-06-17 (07:00)
PCP ¹ / ICP ¹ / ACP / CPP		ALL AGES

INDICATIONS

- Administering medication(s) or intravenous (IV) fluid by a central venous access device (CVAD):
 - Section A - Peripherally inserted central line (PICC)
 - Section B - Central venous catheter (CVC)

WARNINGS

- **Strict sterile technique is essential.** Because the tip of the CVAD sits in the distal superior vena cava, line contamination can lead to infection of the heart.
- **Never leave a CVAD open to the air.** Because the tip of the catheter is intrathoracic, the negative pressure generated during active inspiration can entrain air, causing an air embolism.

EQUIPMENT

- Nonsterile gloves (1 pair)
- Disposable blue soaker pad
- 70% isopropyl alcohol swab (4)
- 10 ml sterile saline flush syringe (2)
- IV administration set
- Prescribed medication or IV fluid
- IV pole or hook
- Biohazard container

PROCEDURE

1. A paramedic with the primary (PCP) or intermediate (ICP) work scope can access a CVAD only in an emergency when vascular access by any other route cannot be obtained. ERS requires additional employer-based training to perform this procedure (A06.2).
2. The dressing and access cap(s) should be changed routinely every seven (7) days, or whenever soiled or contaminated. If you are using the catheter for a scheduled medication administration or blood sampling, check when this was last done and, if necessary, replace the dressing and cap(s) before non-emergency use (P02.1). **However, in an emergency, a paramedic should access the CVAD without delaying to change the dressing or cap(s).**

3. Explain the procedure to the patient / proxy and obtain verbal consent if time allows.
4. Prepare a clear and clean area. Gather all equipment.
5. Perform hand hygiene and don nonsterile gloves.
6. A CVAD may have one or more lumens / lines. Usually just one is needed for routine medication administration (e.g. home antibiotic therapy). Needleless connectors (e.g. Luer-Lok™) should always be used.
7. Prepare the medication(s) and / or fluid in advance. Some medications, such as antibiotics, will require preparation in a Mini-BAG Plus™ (P02.3).
8. Attach the mini-bag or standard-size bag to an IV administration set (figure 1), with an appropriate drip chamber.
A *microdrip* set has a drip factor of 45 to 60 drops per milliliter (ml) and is used for medication administration, while a *macrodrop* set has a drip factor of 10 to 20 drops per ml and should be used when administering larger volumes of fluid (figure 2).
9. Ensure the administration set roller clamp is closed.
10. Remove the protective cap from the plastic spike and insert the spike into the infusion port of the IV bag.
11. Squeeze the drip chamber to ensure it is half full.
12. Remove the line end cap and open the roller clamp. Allow a sufficient volume of fluid to purge the line of all air, then close the roller clamp.
13. Close the roller clamp, replace the end cap, and hang the bag and administration set from an IV pole or hook (the bag must be higher than the patient's heart).

SECTION A - PICC (figure 3):

14. Have the patient assume a comfortable position with the arm extended and supported.
15. Place a soaker pad under the arm and remove the tubular mesh
16. Inspect the catheter and catheter entry site. Do not use if there is any evidence of infection, damage, or tampering.
17. Ensure that the PICC line clamp is closed.
18. Remove the injection port end cap. Clean the injection port with an alcohol swab for 15 seconds. Repeat with a second swab for 15 seconds and allow to air dry.
19. Attach one of the flush syringes to the injection port and release the line clamp.
20. Aspirate to ensure blood returns. If blood return is noted, flush with saline, then close the line clamp. Do not use if there is no blood return or the line cannot be flushed.
21. Attach the administration set connector to the injection port.
22. Open the roller clamp on the administration set to begin the infusion.
23. Regulate the drip rate to administer the infusion over the specified duration, and monitor the rate every 15 minutes.⁸
24. Once the infusion is completed, close both the administration set roller clamp and the PICC line clamp. Disconnect the administration set and clean the injection port with an alcohol swab for 15 seconds. Repeat with a second swab, then allow to air dry.
25. Attach the second flush syringe to the injection port and open the PICC line clamp. Flush the line with the full 10 ml of saline using the *push-pause technique*. Inject a small (1 - 2 ml) bolus of saline, followed by a brief pause. Repeat

this several times. The turbulent flow will remove fibrin, preventing clot formation in the line. During the final bolus, remove the syringe while injecting. This will create a positive pressure in the catheter lumen, helping to maintain patency

26. Close the PICC line clamp, replace the injection port end cap, and reapply the tubular mesh to protect the PICC.

SECTION B - CVC (figure 4):

27. Have the patient assume a recumbent or supine comfortable position.

28. Place a soaker pad under the patient's neck and upper back.

29. Inspect the catheter and catheter entry site. With a tunneled catheter, visualize and palpate the subcutaneous tunnel (figure 5). Do not use if there is any evidence of infection, damage, or tampering.

30. Ensure that the CVC line clamp is closed.

31. Remove the injection port end cap. Clean the injection port with an alcohol swab for 15 seconds. Repeat with a second swab for 15 seconds and allow to air dry.

32. Attach one of the flush syringes to the injection port and release the line clamp.

33. Aspirate to ensure blood returns. If blood return is noted, flush with saline, then close the line clamp. Do not use if there is no blood return or the line cannot be flushed.

34. Attach the administration set connector to the injection port.

35. Open the roller clamp on the administration set to begin the infusion.

36. Regulate the drip rate to administer the infusion over the specified duration, and monitor the flow rate every 15 minutes.⁸

37. Once the infusion is completed, close both the administration set roller clamp and the CVC line clamp. Disconnect the administration set and clean the injection port with an alcohol swab for 15 seconds. Repeat with a second swab, then allow to air dry.

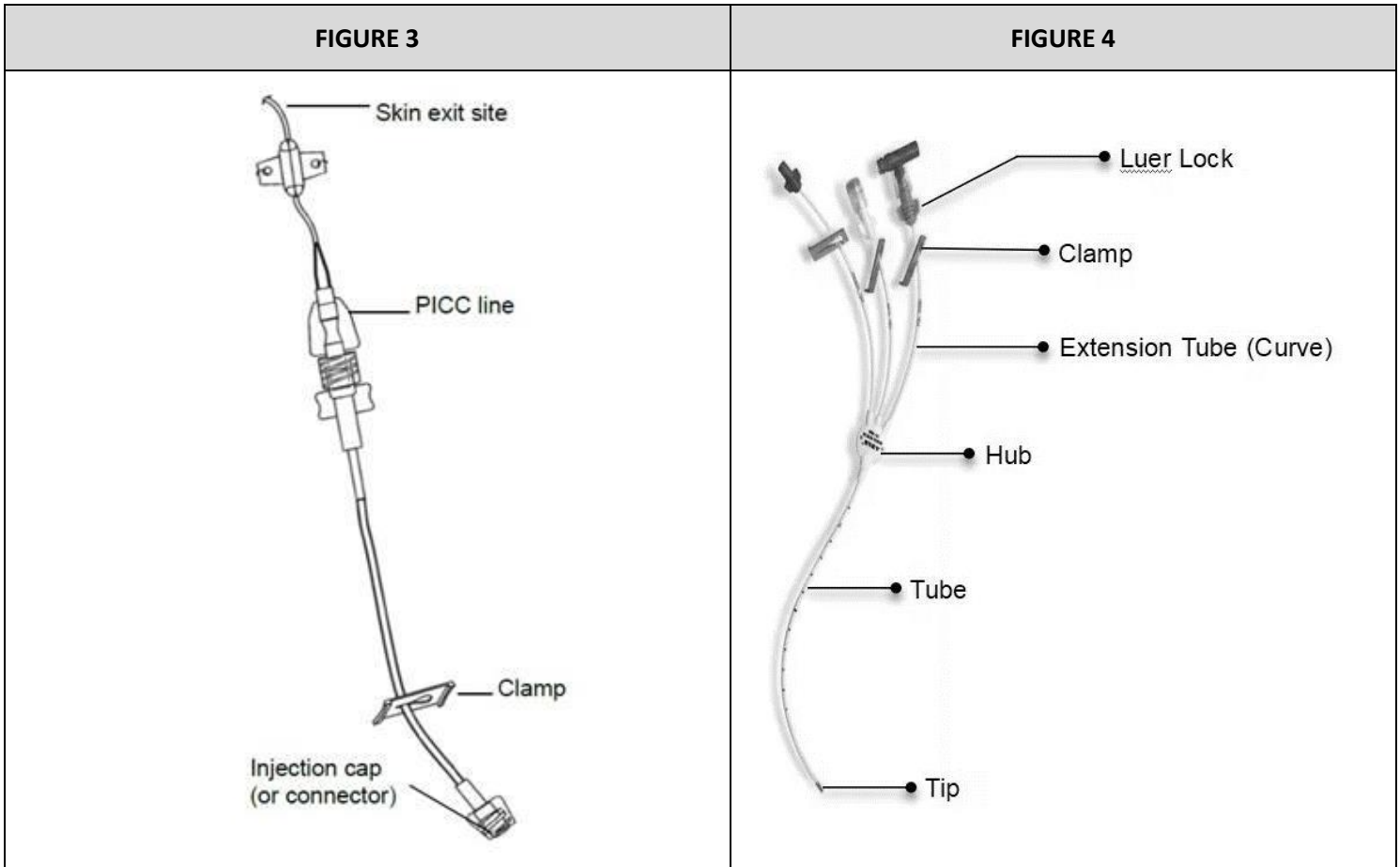
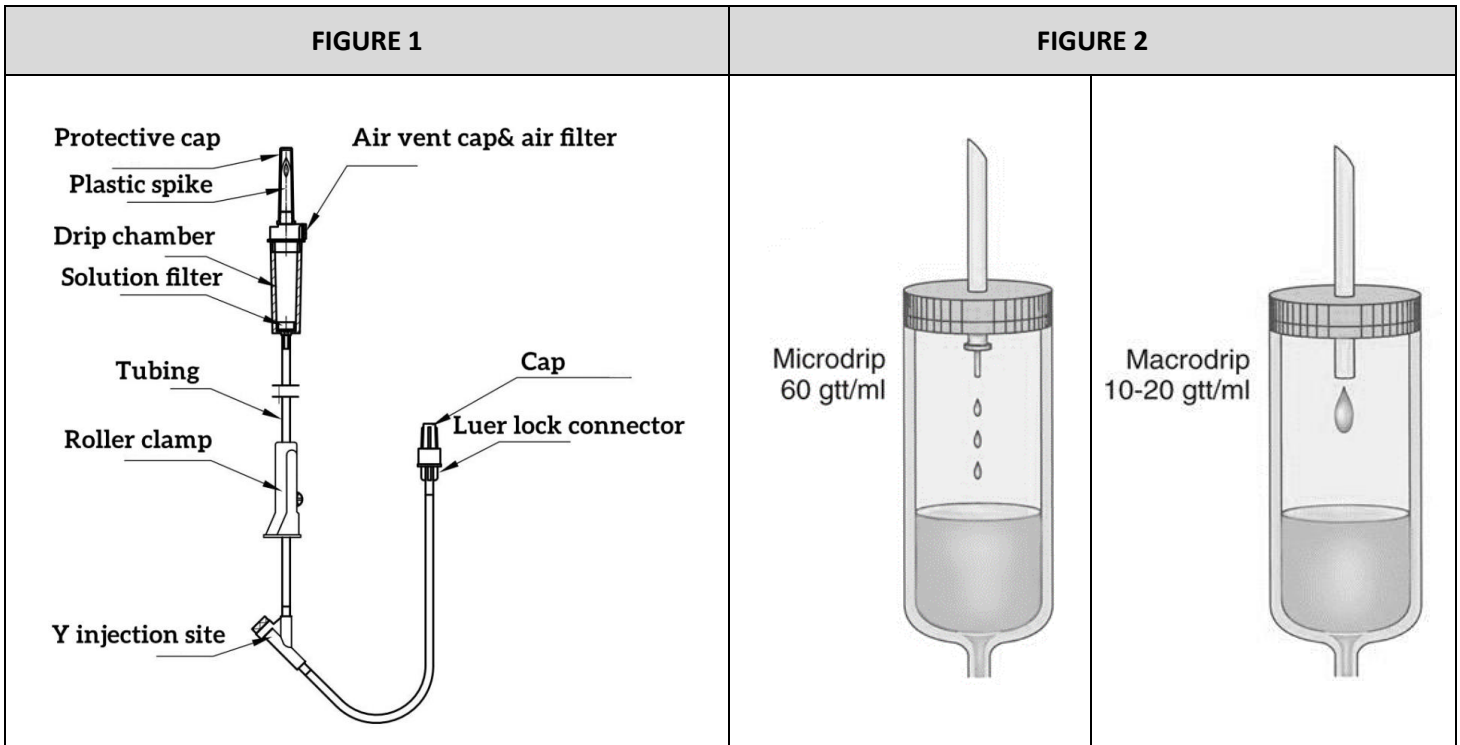
38. Attach the second flush syringe to the injection port and open the CVC line clamp. Flush the line with the full 10 ml of saline using the push-pause technique. Inject a small (1 - 2 ml) bolus of saline, followed by a brief pause. Repeat this several times. The turbulent flow will remove fibrin, preventing clot formation in the line. During the final bolus, remove the syringe while injecting. This will create a positive pressure in the catheter lumen, helping to maintain patency

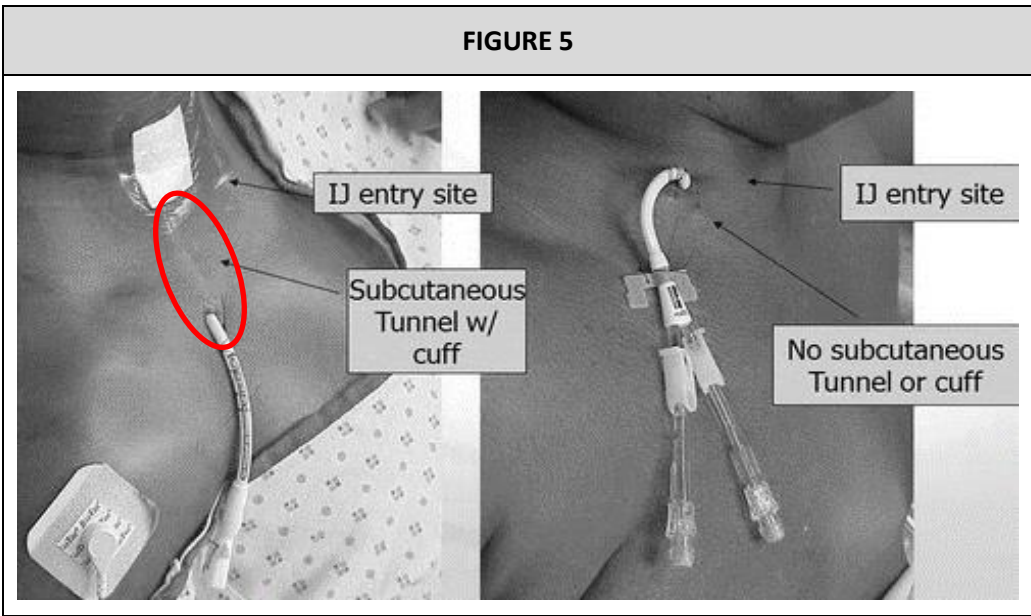
39. Close the CVC line clamp and replace the injection port end cap.

40. Remove the soaker pad from under the patient, and discard all equipment into the biohazard container.



41. Remove your gloves and repeat hand hygiene.

42. Document the procedure in the electronic patient record (EPR).





LINKS
<ul style="list-style-type: none"> A06.2 - EMS Work Scope (Medical Functions & Procedures) P02.1 - CVAD Dressing & Cap Change P02.3 - Medication Preparation with Mini-BAG Plus™

APPROVED BY	
	
EMS Medical Director	EMS Associate Medical Director

VERSION CHANGES (refer to X09 for change tracking)
<ul style="list-style-type: none"> New