E. PROCEDURES

1. ACCESSING CENTRAL VENOUS CATHETERS AND DEVICES

a) PURPOSE

Accessing a preexisting central venous catheter or device may be required for fluid volume resuscitation and/or medication administration for critically ill/injured patients when peripheral IV access cannot be established.

b) INDICATIONS

Life-Threatening Emergency

A preexisting central venous access catheter or device may be accessed by a paramedic for resuscitation medication administration or fluid volume administration.

A CRT-I may access these devices **WITH MEDICAL CONSULTATION**.

Non–Life-Threatening Emergency

Medical consultation is required for all ALS (CRT-I and paramedic) clinicians.

c) CONTRAINDICATIONS

None

d) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

(1) Infection (local site and in the central bloodstream)
(2) Air in the catheter line (air embolism)
(3) Damage to catheter line
(4) Obstruction in the line
(5) Dislodge the catheter

e) PROCEDURE: PORTS (e.g., Port-a-Cath®, Mediport®, Bard®, Infuse-a-Port®)

A port (reservoir) is a disc about an inch in diameter that is just under the skin, usually on the upper chest. Under the skin, it is connected to a catheter line that lies in a large vein just above the heart.

(1) Explain the procedure to the patient whenever possible.
(2) Obtain assistance as needed.
(3) Position the patient supine.
(4) Using a 10 mL syringe or larger, draw up TWO 5 mL flushes with NS/RL.
NOTE: 10 mL syringes are used because they have lower pressure when flushing fluids than smaller volume syringes (1 mL, 3 mL, or 5 mL). The smaller volume syringes may deliver enough pressure to break the catheter.
(5) Open the right-angle, non-coring (Huber® or Gripper®) needle package and flush with NS/RL. Be sure there are **no air bubbles in the tubing.**
(6) Clean the skin site at the port with cleaning material from patient/family, or use alcohol or other *approved antibacterial agent (e.g., ChloraPrep®)*, using a circular motion.

(7) Use sterile latex-safe gloves. Using the non-dominant hand, palpate the area over the port to stabilize the port and locate the center.
(8) With other hand, insert the non-coring needle into the center of the port with firm, steady pressure until you feel the needle reach the back of the port. Do not rock the non-coring needle back and forth in the port.
(9) Aspirate 5 mL of blood and/or heparinized solution and discard. If unable to aspirate blood, verify needle position by gently pushing the needle farther against the backstop of the port.

If you are still unable to aspirate blood or fluid, contact MEDICAL CONSULTATION prior to use.
(10) Flush with 5 mL NS/RL while assessing for swelling at the site. **Be sure there are no air bubbles in the syringe or tubing**. Do not force flush if resistance is met. Verify the non-coring needle position by gently pushing the needle further against the backstop of the port, and attempt to flush again.
(11) After assessing patency, clamp the tubing, and remove the syringe.
(12) Apply needleless injection cap, if available, and cleanse with alcohol.
(13) IV fluids, tubing, and connectors must be assembled and primed in the cleanest area possible with **all air eliminated** prior to connecting to the patient.
(14) Attach the completely flushed IV line, unclamp the needle tubing, and begin infusion of fluid/medication. NOTE: IV fluids may not infuse by gravity.
(15) Secure the non-coring needle with sterile 2x2 or 4x4 and tape or occlusive dressing, being careful not to tape over the insertion site.
(16) Tape or loop extension tubing to outside of dressing.

f) PROCEDURE: TUNNELED AND NON-TUNNELED LINES

TUNNELED LINES (e.g., Hickman®, Groshong®, Broviac®, Cook®)
A tunneled central line is a catheter that is inserted under the skin of the chest, and the tip of the catheter is in a large vein just above the heart. A tunneled catheter has a cuff below the skin that the soft tissue grows into, reducing the risk of dislodgement and infection. These can be single or multiple-lumen catheters.

NON-TUNNELED LINES: PICC and MLC (e.g., Cook®, Neo-PICC®)
A PICC (Peripherally Inserted Central Catheter) line is a thin catheter that is inserted into one of the large veins, usually in the arm near the bend of the elbow, but may be in the neck or a lower extremity, and is threaded in a large vein just above the heart. A MLC (Mid-Line Catheter) is a thin peripheral catheter that is inserted into a large vein in the elbow and ends in the vein before the shoulder. Both of these catheters have a very small lumen and are considered “low volume lines” and not appropriate for volume resuscitation.

(1) Explain the procedure to the patient whenever possible.
(2) Obtain assistance as needed.
(3) Position the patient supine.
(4) Using a 10 mL syringe or larger, draw up 5 mL flushes with NS/RL. **Be sure there are no air bubbles in the syringe.** Attach a stopcock if available.
NOTE: 10 mL syringes are used because they have lower pressure when flushing fluids than smaller volume syringes (1 mL, 3 mL, or 5 mL). The smaller volume syringes may deliver enough pressure to break the catheter.
(5) Use sterile latex-safe gloves.
(6) If multiple lumens or ports, determine from patient/family which catheter is most appropriate for use, if possible, or refer to the EIF Form. This is usually the **white** port.
(7) Clean the existing cap on catheter with alcohol for 30 seconds.
(8) Clamp all lines with special clamps that do not have teeth, which might damage the catheter.
(9) Access the appropriate catheter port with a 10 mL syringe.
(10) Unclamp the catheter line to be accessed and aspirate 5 mL of blood/heparinized solution and discard to confirm placement and access patency. Delete this step if less than 2 Fr PICC catheter, as this may damage the catheter (the lumen is very small and the catheter wall may collapse and any blood in the catheter will form a clot).
NOTE: Contact MEDICAL CONSULTATION if unable to aspirate blood/fluid, or less than 2 Fr catheter.
(11) Reclamp the catheter any time you are changing lines or syringes. Remember that regular clamps may damage the central line tubing.
(12) Attach the flush syringe and unclamp.
(13) Flush with 5 mL NS/RL. ***Be sure there are no air bubbles in the syringe or tubing.***
(14) Clamp this line again with the special clamp.