

# SAN FRANCISCO EMERGENCY MEDICAL SERVICES AGENCY

Effective: 01/07/13  
Supersedes: 09/01/05

Protocol: P-052.2

## ADULT AND PEDIATRIC VASCULAR ACCESS WITH PRE-EXISTING VASCULAR ACCESS DEVICE (PVAD)

### SUBJECTIVE and OBJECTIVE FINDINGS

Critically ill or injured patient as defined in this protocol below:

BLS Treatment	ALS Treatment
<ul style="list-style-type: none"><li>• Routine Medical Care.</li><li>• Follow appropriate treatment guideline consistent with BLS standard of care</li></ul>	<p>Critically ill or injured patients are defined in this protocol as:</p> <ol style="list-style-type: none"><li>1. Unable to obtain pulse</li><li>2. Unresponsive</li><li>3. Apneic</li><li>4. Hypotension with shock</li><li>5. Acute deteriorating level of consciousness</li></ol> <ul style="list-style-type: none"><li>• EMT-Ps may initiate vascular access for fluid or medication administration. <b>Primary vascular access shall be through a peripheral intravenous catheter.</b> If vascular access cannot be established via peripheral IV in 2 attempts or 90 seconds then proceed with IO or PVAD access.</li><li>• <b>Pre-Existing Vascular Access Devices (PVAD) or Intraosseous (IO) Device (See P-52.1 Intraosseous Access)</b> or may be utilized or may be utilized only on critically ill or injured patients. It is NOT to be used when routine IV access is unsuccessful or difficult to establish.</li></ul>

### DOCUMENTATION

- Each attempt for PVAD access (successful or unsuccessful) must be documented. Include details about procedures used for site preparation, placement, methods for securing the device and assessment of patency.
- Document removal and discarding of 5 ml of fluid or blood prior to infusion (PVAD).

### PRE-EXISTING VASCULAR ACCESS DEVICES:

**Definition:** A pre-existing vascular access device (PVAD) is an indwelling catheter/ device placed into one of the central veins, to provide vascular access for those patients requiring long-term intravenous therapy or hemodialysis. For the purposes of this protocol, types of catheters to be considered for PVAD use include, but are not limited to the following:

- A. **Long-Term Venous Access Catheters:** Catheters that are tunneled cutaneously from numerous venous access points to a position on the anterior chest wall that terminates into the right atrium. These catheters include the "Broviac" or "Hickman."

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- B. Implantable Venous Access Devices:** Surgically implanted circular, subcutaneous chamber in continuity with a central Silastic catheter that terminates into the right atrium. The chamber is palpable, as well as visible, on the anterior chest wall. These devices include the "Port-a-Cath" device.
- C. Peripherally Inserted Central Venous Catheters (PICC Lines):** Peripherally placed central venous catheters. Generally placed through the medial cubital, basilica, and cephalic veins.
- D. Arteriovenous Shunts and Fistulas:** Arteriovenous shunts are externally placed Silastic bridges between the arterial and venous circulation located near the wrist and are indwelling vessels.

## CONSIDERATIONS

1. Strict adherence to clean or aseptic technique is crucial when handling any PVAD to prevent infection.
2. **Air embolism:** The PVAD provides a direct line into the central circulation. Introduction of air into these devices can be hazardous.
  - a. Do not remove injection cap from catheter unless catheter is clamped
  - b. Do not allow IV fluids to run dry
  - c. Always expel air from preload/syringe prior to administration.
3. **Thrombosis:** A blood clot within the vascular device. Dislodging a clot can cause pulmonary embolus or vascular damage.
  - a. Follow medication with 5 ml normal saline or heparin solution (if within scope of practice) flush.
  - b. Do NOT inject medications or fluids if resistance is met. When establishing patency, draw back first.
4. **Catheter damage:** Should damage occur to the external catheter:
  - a. Clamp immediately between the skin exit site and the undamaged area to prevent air embolism or blood loss.
  - b. Use padded hemostats (or padded with 2 X 2 and tape).
5. **Bleeding:** If needle or catheter is dislodged from fistula or shunt, or if device is damaged from trauma, maintain direct pressure as for an arterial bleed.

## CONTRAINDICATIONS

- Infection at insertion site.

## PROCEDURES

### Equipment Required:

1. One 10 ml syringe pre-filled with normal saline.
2. 18-20 gauge Angiocath or needle.
3. Sterile gloves if available or clean gloves if not available.
4. Betadine solution preferred but if not available alcohol prep is acceptable.

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5. 1 catheter clamp or hemostat without teeth or teeth taped.
6. Tape and securing materials.
7. Pressure bag or blood pressure cuff.
8. Fluids and medication to be administered
9. Midazolam should be avoided with any Silastic catheter ( may cause deterioration of the catheter), but can be used if no other access is available.
10. Contact Base Hospital if you have questions concerning flow rate problems (PVAD) or placement concerns (IO).

## **Access Procedure:**

1. Prepare medication and 10 ml saline or IV solution flush, and tubing. Purge all air from lines and syringe.
2. Apply pressure cuff to IV bag if access is being made to fistula or shunt.
3. Wash hands thoroughly and/or cleanse with alcohol based cleanser. Sterile gloves are preferred for procedure if available.
4. If betadine wipes or cleanser are not available, alcohol preps may be used.
5. Cleanse injection cap or access site with betadine wipes. If time allows, let set for 90 seconds.
6. Wipe injection cap or access site with alcohol.
7. Due to high pressures created, never use syringes smaller than 10 ml for IV push medications or flushing.
8. Never use high pressures for IV push fluids. Pressure cuffs < 150 mm.
9. Prior to infusion, withdraw and discard 5 ml of blood to remove heparin lock and assure patency.
10. If unable to withdraw 5 ml of blood or assure patency of line, do not continue PVAD access. May attempt IO access.
11. If multiple color ports are available, the BLUE color port is preferred.