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Specialty Pharmacy & Infusion Solutions

CENTRAL VENOUS CATHETER (CVC) GUIDELINES

Section: Nursing
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I. POLICY

The following guidelines will be followed when using central venous catheters (CVC).

II. PROCEDURES

A. Central venous catheters are inserted by physicians for long term venous infusion or for infusion of vesicant medications. The catheter tip is placed in the superior vena cava or right atrium, allowing for rapid dilution of the infusate, thus reducing the risk of phlebitis and vein sclerosis. Insertion is most commonly via the subclavian vein. Occasionally a simple subclavian central venous catheter is seen in the home setting, but tunneled catheters in which the distal catheter is tunneled through subcutaneous tissue to an exit site or port is more frequently used

B. The three types of central venous catheters most often seen in the home setting include:

1. The open-end external catheter
2. The closed end external catheter
3. The implantable port catheter (which is open ended)

Complications related to central venous catheters include air embolism, which is always a danger if an open-end catheter is not clamped when the system is open at any point, catheter-related infection either at the insertion site or along the sheath with fibrin build-up, and occlusion

C. Whenever a patient with a central venous catheter has an unexpected fever spike, catheter infection must be suspected. The site must be carefully inspected. Blood cultures may be drawn from the catheter. The catheter may be removed if determined to be the source of infection. Catheter occlusion can be minimized with adequate flushing. See Urokinase protocol for further information on clotting.

D. Central venous catheters provide safe, easily accessible sites for long term administration of fluids, medications, nutrients, and blood products and for obtaining blood samples

E. External Closed End Central Venous Catheter (Groshong).

1. The external closed end central venous catheter has a valve at the distal tip that allows fluids to enter the bloodstream at normal infusion pressures but prevents backflow at normal venous pressures, thus eliminating possible air embolism and the need for continual anticoagulants to prevent catheter clot formation. A clamp is not needed and should not be used as it might damage the catheter. It is imperative that sharp objects and scissors never be used around the catheter or site. Excessive force must not be used when irrigating the catheter to avoid damage to the valve, but rapid flush is necessary to clean the inside lumen of the catheter. The syringe/cannula is withdrawn during the infusion of the last 0.5 ml of flush to avoid backflow of blood into the catheter

2. The external closed end central venous catheter has a Dacron cuff at the exit site to promote stability and formation of fibrous tissue, which reduces the potential of catheter sepsis. The hub of the catheter is designed to come off, so care must be taken when changing the cap or tubing not to loosen the hub connection. If the hub should come off, the tip of the catheter must be protected with sterile 2x2 until it can be replaced by a physician or registered nurse

3. Heavy lifting or straining may increase venous pressure sufficiently to cause blood to back up in the catheter. The catheter is immediately flushed with 5-10 ml NS if this occurs

F. External Open End Central Venous Catheter (Hickman/Broviac).

1. The external open end central venous catheter is a single or multiple lumen catheter with an open distal end. The catheter may exit directly from the venous insertion site or may be tunneled through subcutaneous tissue to an exit site.

2. Tunneled catheters have a small Dacron cuff at the exit site to provide stabilization and promotion of growth of fibrous tissue, which helps seal the exit site.

3. Since the catheter does not have a valve, the catheter must be clamped before removing the cap, disconnecting tubing or syringes, or opening the system at any point. A Hickman or Broviac clamp, a smooth clamp without teeth, is used, and the catheter is clamped at its reinforced point. The patient should always carry a clamp in case of damage to the catheter.

4. Sharp objects and scissors should be avoided around the catheter and in caring for the catheter