

The occasional peripherally inserted central catheter

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Peripherally inserted central catheters (PICCs) are becoming a popular means of ensuring long-term venous access in patients who require parenteral nutrition, chem-otherapy, treatment with other medications, or who have poor peripheral veins. In many medical centres, the PICC is inserted by the nurses. These catheters are easily maintained and can be left in place for months: the ingen-ious valve at the tip allows for once-weekly flushing and a minimum of fuss and bother. Patients find them comfortable, and, usually, blood samples can also be taken through the catheter. In many ways PICCs replace the Hickman catheter; they are simpler and safer. They are ideal for rural hospitals and there is no reason why the rural doctor cannot insert the occasional PICC.

Here's how.

Indications

- Long treatment duration — patients who require 6 to 12 weeks of therapy
- Patients who require several weeks of antibiotic therapy
- Infusions of hyperosmolar solutions (total parenteral nutrition)
- Infusions of vesicant chemotherapy
- Long-term intravenous rehydration
- Continuous narcotic infusions
- Lack (or anticipated lack) of vas-cular access
- Location (e.g., the need for inter-mediate IV therapy at home)
- Patient or clinician preference

Contraindications

- Inadequate antecubital veins

- Clinician's inability to locate a large antecubital vein
- Pre-existing skin infection
- Anatomical distortions from surgery or trauma (e.g., axillary dissection, mastectomy, burns and scarring)
- Severe bleeding disorder
- Severe immunocompromised state

Catheter tip location

The preferred placement of the catheter tip is usually in the superior vena cava. Under no circumstances should the tip lie in the right atrium, where long-term erosion of the atrial wall may occur. The right arm of the patient is the easier limb to use. The basilic vein in the antecubital fossa allows the most direct route to the superior vena cava. With a tape measure, measure along the course of the vein from the antecubital fossa to the clavicular head. Then measure from the clavicular head to the third intercostal space (feel for the second rib below the clavicle). Add the amount of catheter that is to be left out of the arm for dressings and repairs ([Fig. 1](#)).

Procedure

1. Place the patient supine with the arm extended at 90° to the trunk.
2. Place a tourniquet on the upper arm near the axilla ([Fig. 2](#)).
3. Prepare and drape in the usual manner ([Fig. 2](#)). 4
4. Fill three 10-cc syringes with sterile normal saline.
5. Remove catheter from the tray, irrigate through the priming hub with normal saline and irrigate the catheter connector.
6. Perform the venipuncture, with or without local anesthetic, and insert the introducer catheter into the vein, then withdraw the needle. Bleeding can be minimized by applying thumb pressure proximal to the introducer catheter ([Fig. 3](#)). Most kits come with a guide wire and dilator (Seldinger technique) to make communication easy.
7. Release the tourniquet through the sterile drape without contaminating the field.
8. Insert the flushed PICC through the introducer catheter to the depth determined (e.g., 1 dot = 10 cm, 2 dots = 20 cm).
9. Have the patient turn his or her head, chin on shoulder, toward the venipuncture site to help prevent cannulation of the internal jugular vein.
10. Once the PICC is in place, remove the introducer catheter by sliding it to the distal end of the PICC.
11. Place the suture wing around the catheter near the venipuncture site.
12. Remove the stiffening stylet from the PICC ([Fig. 4](#)).
13. Using sterile scissors, cut the PICC to the desired length, leaving at least 4 to 7 cm of the catheter.
14. Slide the oversleeve onto the catheter and insert the connector into the catheter ([Fig. 5](#)).

15. Slide the oversleeve up onto the connector, securing catheter in place ([Fig. 6](#)).
16. Aspirate a blood sample to confirm placement. (This may be difficult with a 3 French.)
17. Irrigate with 10 cc of normal saline.
18. Apply an injector cap and suture or tape the suture wing ([Fig. 7](#)).
19. Place a folded 2 × 2 gauze just below the insertion site and cover with a transparent dressing (Fig. 7).
20. Confirm catheter placement location by radiogram.

Now, you don't want to be forcing the catheter through the vein, and, of course, the wire stylet should slide out easily. Carefully remove any talc from your gloves before insertion; this will minimize inflammation. The patient's arm should not be held over his or her head when the catheter is open.

Finally, always use at least a 10-cc syringe for any irrigations or aspirations — smaller syringes may exert too much pressure on the line.

Maintenance

Inspect and flush the catheter once a week.

The company listed below has full documentation, including nursing protocols and videos, to get your hospital going. What are you waiting for?

Bard Canada
2345 Stanfield Rd.
Mississauga ON L4Y 3Y3
Western Canada: 800 268-2862
Eastern Canada: 800 387-7851
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