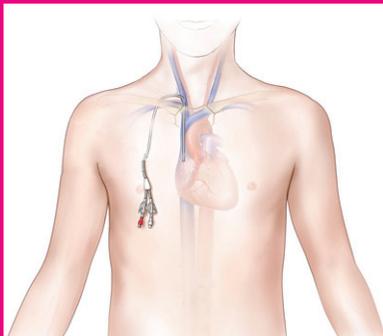


# What are vascular access procedure?

A vascular access procedure is one whereby a long, thin tube is inserted in a vein in the arm, in the neck or in the chest just beneath the collarbone. The tube then is threaded into a major vein in the middle of the chest. In many conditions, having this type of tube inserted provides a simple and painless means of drawing blood, or delivering drugs, nutrients or both. This also spares the patient the discomfort and stress of repeated needle sticks. These so-called central catheters can remain in place for weeks, months or even years. There are various types of catheters or devices that can be used in this procedure.



## How to care for your venous access device?

1. To avoid infections:
  - a) Keep skin around the device dry. Cover the area with plastic wrap during showers. If it gets wet, dry the skin completely after shower.
  - b) Keep skin around the device clean and covered.
2. To avoid blockage of the device:
  - a) Flush with sterile saline once a day.
  - b) When your line is not being used, remember to check daily that the bung is securely attached and the clamp is closed.

PLEASE NOTE: *This should always be a sterile procedure so do not hesitate to remind anyone who handles your central line to wash their hands and to wear sterile gloves in order to protect you from infection.*
3. Be careful not to bump or cut your access.
4. Don't let anyone put a blood pressure cuff on your access arm if you have a PICC
5. Don't wear jewelry or tight clothes over your access site.
6. Don't sleep with your access arm under your head or body.
7. Don't lift heavy objects or put pressure on your access arm.
8. Check the pulse in your access arm every day.



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## Vascular Access



## Example of devices

**Peripherally inserted central catheter (PICC)** is introduced through an arm vein but its tip lies in a large central vein. A PICC may even remain in place from weeks to about six months, as long as it continues to work well and is not infected, but it still is considered to be a temporary catheter.

**Tunneled catheter** is a permanent catheter that is fixed in place when tissue forms in response to a cuff placed beneath the skin. This catheter may be inserted at the neck or in the chest below the collar bone, emerging from the skin about six inches from where it entered the vein. This is the best choice when a patient is likely to need one for longer than three months and when the line will be used many times each day. It is secure and easy to access. The downside of these catheters is that 10 percent to 15 percent of tunneled catheters have to be removed because of infection.

**The subcutaneous port** is a permanent vascular access device consisting of a catheter attached to a small reservoir implanted beneath the skin. The entire device is under the skin—nothing is visible on the outside of the skin except for a small bulge where the reservoir is located. The catheter itself, which passes from an access site in a vein of the arm, shoulder or neck, ends in a large central vein in the chest. The reservoir has a silicone covering that can be punctured with a special needle. The port is used mainly when IV access is needed only intermittently over a long period, as in patients who require chemotherapy. Its only disadvantage is the need for a needle stick whenever treatment is given, but discomfort usually is not marked and it tends to decrease over time.

## What are the benefits vs risks?

### BENEFITS

- The vascular access device is an extremely useful solution for patients who—for any reason—require repeated entry into the venous circulation over a long period.
- Patients will not need to have an IV line placed for each treatment, and their arm veins will not become badly scarred.
- A PICC is very helpful when medicines or fluids that are irritating to the wall of the vein are administered e.g. antibiotics and blood products. It may also be used for IV feeding and frequent blood sampling.
- A vascular access device will continue functioning well for a year or longer. The devices are easily removed when no longer needed.
- A catheter sometimes is the only way of getting access to the circulatory system for hemodialysis in patients with serious kidney disease.

### RISKS

*Two types of risks are associated with vascular access devices:*

- During or shortly after placement.
- Delayed risks that occur simply because the device is in your body.

### IMMEDIATE RISKS

- **Bleeding** - The risk can be minimized through a blood test in advance to be sure that your blood clots normally.
- **Infection** - An infection may develop at an incision site shortly after catheter placement.
- **Pneumothorax** - Very rarely a patient may develop a condition called a pneumothorax, a collection of air in the chest that may cause one of the lungs to collapse.
- **Abnormal heart rhythm** - The normal heart rhythm may be disturbed while the catheter is inserted, but this is usually only temporary. The problem is easily recognized during the procedure and eliminated by adjusting the catheter position.
- **Arterial puncture** - Rarely, the catheter will enter an artery rather than a vein. If this happens, the catheter will have to be removed. Most often the artery then heals by itself, but occasionally it has to be surgically repaired.

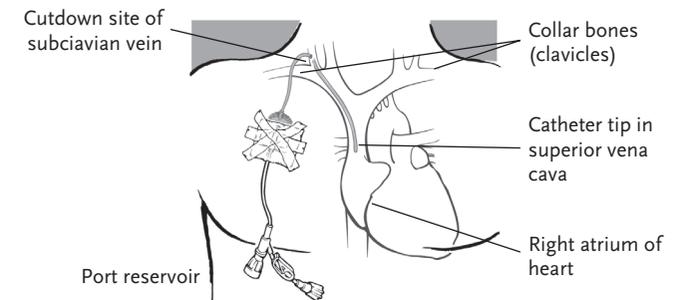
### DELAYED RISKS

- **Delayed infection** - Two types of delayed infection may develop: skin infection at the catheter or port insertion site or bloodstream infection. Infections are least common after placing a port. The risk of delayed infection can be minimized if you and anyone else who will be handling the device wash hands before flushing it or cleaning the insertion site.
- **Catheter fracture** - A hole or break in the catheter may lead to leakage of fluid. This problem may be seen with use of a PICC or tunneled catheter. Breaks may be avoided by not always clamping the catheter in the same spot and by never using too much force when flushing it.
- **Accidental dislodgement of the catheter** - This may occur with any catheter. If this happens, you should apply pressure to the incision site using a sterile dressing and call your physician immediately.
- **Air in the catheter** - As it is an emergency that may cause chest pain or shortness of breath. This problem can be avoided by always clamping the catheter before and after inserting a syringe, and by making sure that the catheter cap is inserted on tightly. Call your physician immediately if this happens.
- **Catheter occlusion** - Any type of vascular access catheter may become obstructed by clotted blood. You can minimize the risk by carefully following instructions about flushing the catheter. Once a catheter occludes, it sometimes can be cleared by injecting medication, but at other times must be removed or exchanged for a new catheter.
- **Vein occlusion** - If the vein in which the catheter lies becomes occluded, the arm, shoulder, neck or head may develop swelling. Should this occur, call your physician immediately. The clot may be treated by a blood thinning medication, but occasionally will have to be removed.

## How is the procedure performed?

This may be performed in the ward, in Radiology department or in operating theatre. When performed in Radiology department.

- You may be given a sedation which will help you to relax. However, you will remain awake.
- After the appropriate arm is swabbed with a disinfectant and covered with sterile drapes, painkiller is injected to numb the venous puncture site.
- using ultrasound or fluoroscopy to identify the vein, the radiologist passes a small needle into the subclavian vein, neck vein or arm vein. Through this a small, thin wire called a guidewire is passed into the blood vessel. The catheter itself is placed over the guidewire, which is then removed.
- For a tunneled catheter, the radiologist will make two incisions usually smaller than one inch long: one over the vein where the catheter is inserted and the other where the catheter emerges from the skin. The catheter is placed beneath the skin between the two incisions. Finally, the radiologist will place two small stitches, one at each end of the tunnel, which remain in place for about one to two weeks and help keep the catheter firmly in place. A small bandage is placed over the sites.
- Implanting a port also requires two incisions (except in the arm where a single incision may suffice). The port reservoir is placed under the skin close to the lower incision. The incision for the port is a little longer than for the catheter, usually about two inches long. A small, elevated area remains on the body at the site of the reservoir; you will be able to feel it. The incisions are held together by stitches, surgical glue or a special tape.



## What happens after the procedure?

- Rest for the remainder of the day.
- Resume usual activities the next day but should avoid carrying heavy objects.
- After having a tunneled catheter or subcutaneous port placed, you should expect some bruising, swelling and tenderness in the chest, neck or shoulder, but these symptoms resolve over about five days. You may be prescribed some pain killers.
- For the first week, it is especially important to keep catheter site clean and dry.
- Please notify the doctor if problems develop with your catheter. Problems calling for medical attention include malfunction of the device, bleeding at the insertion site or signs of infection. Infection may be present if you develop fever or notice redness, increased swelling or tenderness, warmth at the catheter insertion site or fluid drainage from the site.