

Radiologic insertion of a Central Venous Access Device

A Central Venous Access Device (CVAD) is a long, narrow tube called a catheter, which allows long term access to your child's bloodstream. This is done to allow fluids, nutrients and medications to be given directly to the bloodstream, or regular blood samples to be taken.

There are three main types of CVAD:

- a peripherally inserted central catheter (PICC) for short-medium term access
- a tunnelled central catheter for medium-long term access
- an implantable port for long term access.

How is the device inserted?

The different methods for each device insertion are shown on the diagrams below. No matter which type of catheter is placed, the aim is to position the tip right next to the heart. This is the safest place for it to be due to the fast blood flow through this region.

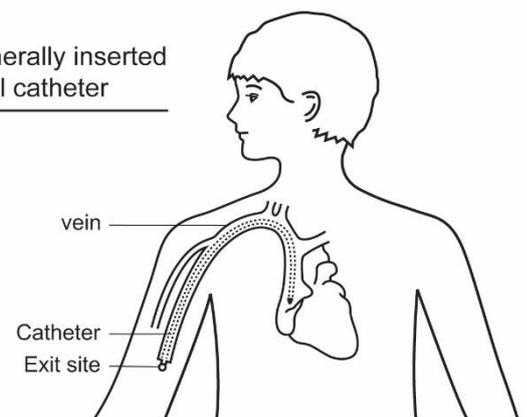
Before inserting a CVAD, your child will need to be treated for *Staphylococcus aureus*.

Staphylococcus aureus is a common bacterium found in the nose, throat and skin. It's normal for people to carry these bacteria, but those that do have it are more likely to develop an infection after surgery. Read more about *Staphylococcus aureus* treatment (Health Fact 819).

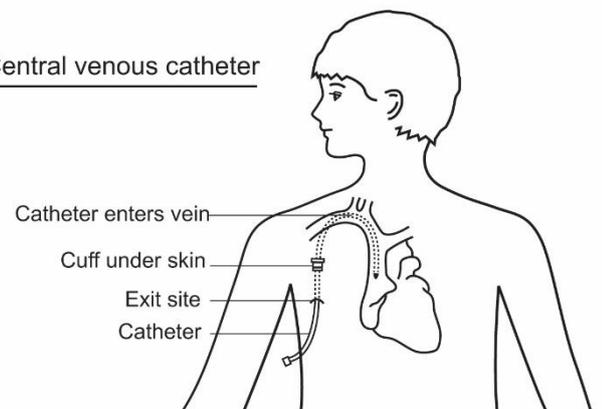
A CVAD may be inserted awake or under a general anaesthetic. Using ultrasound as a guide a needle will be inserted into a large vein, usually in the upper arm near the bicep.

A thin wire inserted through the needle secures it in place and allows the doctor to make the hole slightly larger. The catheter can then be guided into position using an x-ray to make sure that the tip placement is precise. At the end of the procedure there will be a neat dressing at the site in the upper arm where the catheter exits the skin.

Peripherally inserted central catheter



Central venous catheter



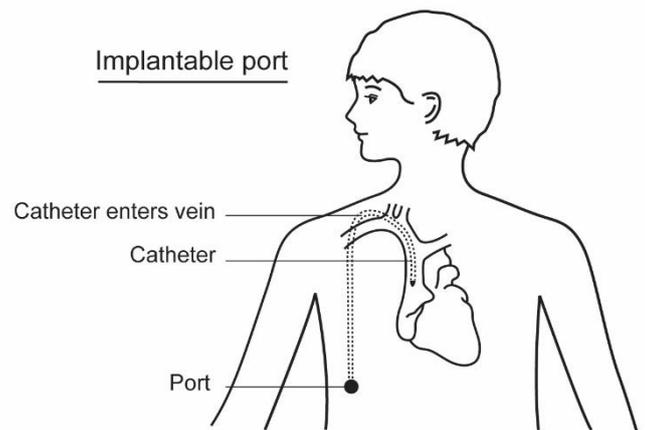
A tunnelled central line and port are only placed under general anaesthetic. In both cases a needle is inserted into a large vein in the neck using ultrasound as a guide.

The catheter is tunnelled under the skin from a place on the chest wall to the neck insertion, and this tunnel acts as a barrier to reduce the risk of the line becoming infected.

The exit site for the tunnelled central line is usually on the front of the chest and at this site there will be a neat dressing where the catheter exits the skin. The exit site for the port may be below the collarbone or near the armpit, depending on the discussion you have with your doctor and what you would prefer.

At this site the port itself is placed in a small pouch beneath the skin which is then sewn shut so that you can still feel the small bump that is the port but not see anything.

As mentioned above, the central line and port catheters both enter the neck vein at the insertion site and have their tip near the heart. You will see a tiny nick in the skin at the neck insertion site which will be covered by a band-aid. This is usually too small to need a stitch.



Who will be performing the procedure?

PCH interventional radiologists (doctors with specialist training in image guided procedures such as these) perform this procedure.

In addition to the interventional radiologist your child will be cared for by medical imaging nurses and medical Imaging technologists throughout the procedure.

If this procedure is under a general anaesthetic your child's team will also include anaesthetists, anaesthetic technologists, recovery room nurses and ward nurses.

What will happen on the day?

If the procedure is being done awake you and your child need to present to the Medical Imaging Department at the scheduled time.

If your child is having an anaesthetic (which is usually the case) they will be admitted to a ward first. Prior to the procedure, the interventional radiologist will explain the procedure to you and answer any questions.

You will be asked to sign a consent form. You must be your child's legal guardian to sign this form. You will be taken into the room where the procedure will be done.

Your child will be helped onto the table where they will be asked to lie down. If your child is having an anaesthetic, you may stay with your child until they fall asleep.

What can I expect after this procedure?

Some children may experience mild pain and minor bruising at the site of the central line insertion. This site will probably be covered with a dressing after the procedure.

The CVAD should be ready to use immediately. The nurses on the ward will provide extensive education regarding how to best look after the line while it remains in place.

Are there any risks?

If the procedure is under a general anaesthetic there are extremely small anaesthetic risks which will be explained by the Anaesthetist.

There may be some pain, swelling and even bruising at the site of insertion immediately after the procedure. Any procedure which breaches the skin carries a small risk of infection despite the use of sterile precautions.

The guidewire, and eventually the catheter, do go very near the heart. Although this is accepted to be the safest position there is a small chance that the heart could be stimulated into an irregular rhythm known as an arrhythmia.

Pulling back the device usually stops this although in rare cases the anaesthetist may need to give a drug to convert the heart rhythm back to normal. The risk of a life-threatening arrhythmia is very small.

While the line is in position there are risks of the line being accidentally pulled out, becoming blocked or becoming infected. The nurses will educate you on how best to minimise the risks of this happening.



Government of **Western Australia**
Child and Adolescent Health Service

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