

Central lines

This information is intended for parents of children who have or will need any type of central line (Broviac, Hickman, port-a-cath or temporary, single-, double- or triple lumen central venous catheter).

WHAT IS A CENTRAL LINE?

Central lines are soft plastic or silastic catheters (fine tubes) placed into the large veins of the body that drain directly into the heart. This allows these catheters to be large enough to be used for blood drawing and administration of medication and nutrition, all of which could be too irritating to the smaller veins of the arms or the legs.

Some central lines are actually threaded through the smaller veins of the arm, and advanced into the larger veins of the chest (so-called PIC lines, or Peripherally Inserted Catheters). Although they work well for the short-term, these catheters have a limited life span and do not reliably allow repeated sampling of blood.

All other central lines are introduced directly into the larger veins of the chest cavity, and are usually placed while your child is under anesthesia in the operating room. To gain access into these veins, the surgeon either makes an incision over the vein in question, or accesses this vein through the skin using a needle. One end of the catheter is passed into this vein and threaded to position near the entry into the heart. The other end of the catheter is threaded underneath the skin and either comes out of the skin on the chest wall (Broviac or Hickman catheter) or is attached to a flushing chamber (port) that is also inserted underneath the skin surface, so that no part of the catheter is visible (Port-a-Cath type).

Reasons for using one approach to the vein over another are primarily technical (related to risks specific to the size of your child, his/her risk of bleeding, etc.), but are also affected by whether a vein needs to be used in the future, should another catheter be necessary.

WHAT HAPPENS AFTER THE OPERATION?

What you will see when your child returns from the operating room will be a small incision or needle mark either in the neck or underneath the collar bone (clavicle) where the catheter enters the vein. With a Broviac or Hickman catheter, you will see the hub of the catheter coming out of a small incision further down the chest wall, with one or two sutures holding it in place until it has a chance to heal. A sterile dressing will be in place to prevent infection from occurring at this exit site. With a Port-a-Cath, you will see a bump under the skin, which is the flushing chamber, and an

incision through which this chamber was placed. This incision is generally closed with sutures underneath the skin surface, so that no sutures will need to be removed. Butterfly bandages or a biological glue will initially cover this incision for about one week. If your doctor needs to use the catheter immediately, a special type of needle (so-called "Huber" needle) will have been placed through the skin and into the chamber while your child was still under anesthesia. A bandage holds this needle in place.

WHAT ARE THE RISKS OF THIS PROCEDURE?

As with any operation, there are some risks associated with the placement and presence of central venous lines regardless of the type of catheter used.

The most common potential problem is a **catheter infection**. Although these catheters are placed in a sterile environment (the operating room), sometimes the skin harbors bacteria that can establish an infection. Other times, the bacteria are in your child's blood stream for other reasons and settle down on the inside of the catheter, starting a catheter infection. If a catheter infection occurs, it can usually be treated with antibiotics; however, sometimes the catheter will have to be removed.

At the time of placement of the catheter, the surgeon has two primary concerns, particularly when the catheter is placed with the needle method (the technical term is "percutaneous", or 'through the skin', i.e. without an actual incision). One is **bleeding** from the vein or the artery that is located next to the vein. This is not necessarily a major problem, unless your child's ability to stop bleeding is impaired: this may happen due to a low platelet count, for example. If the level is extremely low, a platelet transfusion will be necessary before surgery, to minimize the risk of continued bleeding. Sometimes, however, an excessive risk of bleeding will force the surgeon to place the catheter by making an incision (in the neck or the upper chest) so that all potential bleeding can be controlled directly, and no blood vessels are accidentally punctured or injured.

The other concern is a **pneumothorax**, which is an accumulation of air around the lung that tends to collapse the lung. This happens as a consequence of a needle puncture into the lung, which releases a small amount of air into the chest cavity. It usually requires the placement of a small tube to evacuate the air and prevent the lung from collapsing. Although this complication is infrequent, a chest X-ray is routinely obtained after percutaneous placement of a central line, to rule out a pneumothorax.

At the end of the operation, your child will wake up and be brought to the recovery room. Once everything is settled, someone will bring you to your child, so that you can be there before he/she is fully awake. Once your child is recovered, you will be allowed to go home. The stay in the recovery room should be about 1-2 hours.