Central Venous Catheters

What are central venous catheters?

Central venous catheters (CVCs) are also called central venous access devices (CVADs), or central lines. They are used to put medicines, blood products, nutrients, or fluids right into your blood. They can also be used to take out blood for testing.

Many different kinds of CVCs are available. The 2 most common types are the port and the PICC line.

Why would I need a central venous catheter?

Most chemotherapy (chemo) drugs are put right into your bloodstream. Putting needles and catheters in the small veins of your arms or hands repeatedly, can cause wear and tear and scarring in the veins. This makes getting an IV harder and sometimes, it can take many tries to put one in.

Some reasons you might want or need a CVC:

- To get more than one drug at a time
- To get continuous infusion chemo (over 24 hours or longer)
- To get nutrition
- To get frequent treatments
- To get treatments at home
- To get long-term therapy (over many months or even longer)
- To get drugs that can cause serious damage to skin and muscle tissue if they leak outside a vein (these drugs are known as vesicants). Getting them through a CVC rather than in a short-term IV reduces the risk that the drug will leak and damage tissues.
Many people talk about central venous catheter (CVC) options with their cancer care team before starting treatment. Some find out during treatment that they need a CVC because the veins in their hands and arms aren’t going to be able to be used to complete the planned chemo.

- The type of CVC you need depends on:
  - How long you’ll be getting treatment
  - How long it takes to infuse each dose of chemo
  - How many drugs need to be given at once
  - Your preferences
  - Your doctor’s preferences
  - The care required to maintain the CVC
  - Cost
  - Other medical problems you may have, for instance clotting problems or lymphedema (swelling)

**Regular IV catheters**

A regular IV catheter is a tiny plastic tube about an inch long with a plastic hub. A needle is used to put the catheter into a vein in your forearm or hand, and then the needle is removed, leaving the catheter in the vein with the hub outside the skin. A regular IV catheter can only stay in for a few days, at most, so if you need to be treated over weeks or months, you will need many IVs.

**Central venous catheters**

The central venous catheter or CVC is a bigger, longer catheter that's put into a large vein in the chest or upper arm. It stays in as long as you’re getting treatment so you won’t need to be stuck with a needle each time. Some types of CVCs can stay in for weeks, months, or even years.

Before you agree to get a CVC, talk with your doctor about the type he or she recommends and why. Your cancer care team can help you decide if you need a CVC and the right type of CVC for you.

Some of these devices can restrict certain activities, and safety can be a concern. Each type comes with its own specific care and possible problems and complications. (General problems are covered in the section called “What kinds of problems are linked to CVCs?”) Ask about your choices to be sure that you get the type that will work best for you while still meeting your treatment needs. Be sure to find out if your health
insurance will cover the costs of the CVC.

**What’s a port?**

A port is a type of central venous catheter. It also called an *implantable venous access port*. It’s a small drum made of plastic or metal with a thin tube (called a *line*) going from the drum into a large vein. Ports are permanently placed under the skin of the chest or arm during surgery. The drum has a silicone septum (self-sealing membrane) across the top and special needles are stuck through the skin into the septum to use the port. Single and double ports are available. A single port is shown in the picture below; a double port looks like 2 drums attached to each other.

A port can stay in for many years. It doesn’t require any special care when there’s no
needle in it. Once the area around it has healed, you can bathe, shower, or even swim. Your cancer care team will tell you when it’s OK to do these things.

When it’s not being used, you will need to flush out the port about once a month.

Some brand names of ports include Port-A-Cath®, BardPort®, PassPort®, Medi-port®, and Infusaport®.

**What’s a PICC line?**

Some central venous catheters are soft tubes that stick out of the skin. A PICC (pronounced “pick”) line is an example of this. A needle is used to put the PICC line into a vein in the arm, and the catheter (or line) is threaded through the needle to end in a large vein in the chest near the heart. The needle is then removed. You won’t need surgery to get a PICC line.
A PICC line may stay in for many weeks to months. There may be one or more “tails” (lines sticking out of the skin) on the PICC.

The PICC and the dressing cannot get wet. You will need to cover it when you bathe.

The catheter and the skin around it will need care and regular flushing. Your cancer care team will teach you what to do.

Some brand names of PICC lines are Per-Q-Cath® and Groshong PICC®.

**What are some other types of catheters or CVCs?**

**Midline catheters**

A midline catheter is a lot like a short PICC line. It’s also put in a vein in the arm through a needle, but the catheter is not threaded as far as a PICC. (It’s really not a CVC, because it isn’t threaded to a big vein in the chest.) No surgery is needed. Care of the external catheter and regular flushing is needed.

Some brand names are Per-Q-Cath Midline®, Groshong Midline®.

**Tunneled central venous catheters**

This type of catheter can have many separate channels or tubes (called lumens) and is surgically placed in a large (central) vein in the chest. The catheter is tunneled under the skin, but the openings to the lumens stick out of the skin on the chest. This catheter is good for months to years. The external catheter and the skin around it will need care and regular flushing.

Some brands include Hickman®, Broviac®, Groshong®, and Neostar®.
What kinds of problems are linked to central venous catheters (CVCs)?

Potential problems when the catheter is put in

- You may have pain where the catheter is put in or where it lies under your skin.
- The needle or catheter that’s put inside the blood vessel might damage the vessel. This can cause bruising or bleeding at the puncture site, or infection.
- Tests will be done before the CVC is put in to be sure that your blood clots normally. Even when it does clot normally, blood can leak out of the vein and cause bruising, pressure on other blood vessels or organs, and other problems. In most cases, bleeding is mild and stops on its own.
- Sometimes a condition called a collapsed lung (pneumothorax) may develop when
a CVC is placed in the chest or neck. This happens when a lung is punctured and air collects in the chest outside the lung. CVC placement guided by ultrasound or fluoroscopy greatly decreases this risk.

- Normal heart rhythm may be disturbed when the catheter is put in. This is usually only temporary and the normal rhythm returns when the catheter is repositioned. It rarely causes serious problems.
- In rare cases, the catheter will go into the wrong place, like an artery instead of a vein. If this happens, the catheter will have to be taken out. If there are no other complications, the artery usually heals by itself.
- Infection may develop at the place in the skin that’s cut or punctured to put in the catheter. Be sure to follow any instructions about caring for the skin around the catheter as it heals.

When to contact your cancer care team

You’ll be told how to care for your CVC and given instructions on the types of problems that you need to tell your cancer care team about right away. Some of these problems are:

- Pain, redness, drainage, or warmth at the CVC that’s getting worse
- Bleeding where the CVC goes into your body
- New trouble breathing or shortness of breath
- Changes in your heartbeat
- Dizziness
- Fever

Problems that could happen later with CVCs

- Infection – skin infection can start where the catheter or port goes into the body. More serious bloodstream infections can also happen. The chance of infection can be lessened if you (and anyone else who handles the catheter) wash your hands before using it, change the dressing carefully, check the skin each time the dressing is changed, and use careful sterile technique when using the catheter. (You’ll be taught how to do these things.) Contact your cancer care team if you notice any changes in how the skin looks around the CVC. Also let them know if you develop a fever or chills. These can be signs of a blood infection.
- A hole or break in the catheter may lead to a fluid leak. It’s important to not always clamp the catheter in the same spot, which can weaken that area. Never use too
much force when flushing it. If you do notice leaking, clamp the tubing between your body and the leak. Call your cancer care team right away to find out what to do next.

- The catheter can shift, move, or become kinked or twisted in the vein. If this happens it may need to be repositioned or removed.
- Any type of catheter may become blocked by clotted blood. You can minimize this risk by carefully flushing the catheter as instructed. Once a catheter becomes blocked off (occluded), it sometimes can be opened by injecting certain medicines, but it might need to be removed or replaced.
- Some types of CVCs can move or be pulled out if not taped or sutured to the skin. If the CVC has been pulled, or the tubing sticking out of your skin seems longer, call your cancer care team right away.
- Certain catheters need to be clamped when not in use, and caps should be screwed on tightly to keep air from getting in. (A large amount of air in the catheter may create an emergency that causes chest pain or shortness of breath.) Know how to clamp your catheter and be sure you have an extra clamp at home.
- Sometimes a blood clot forms around the catheter. This can cause swelling in your arm, shoulder, neck, or head. Contact your cancer care team right away if you notice new swelling. The clot may be treated with blood thinners, but in some cases, the CVC will have to be removed.

Be sure you understand the benefits and risks of having a CVC. Know what problems to watch for, what to do about them, and when to call your cancer care team.

**What will I need to do to take care of my CVC?**

Your nurses will teach you how to care for your CVC. The type of care needed will depend on the type of CVC you have.

Here are some things you can do to help take good care of your CVC:

- Always wash your hands before touching your CVC.
- Try to keep the dressing dry. This can help prevent infection. When you shower, cover the site with waterproof material (such as plastic wrap taped over it). Be sure you cover both the dressing and the cap(s).
- Tape the tube(s) to your body to help keep from pulling on it. Do not bend or crimp the tubing.
- Know what you need and keep enough supplies on hand to care for your catheter. Always be sure to have extra dressing change kits in case the dressing gets wet or