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Intravenous (IV) Lines, Catheters, and Ports Used in Cancer Treatment

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What is intravenous (IV) therapy?

IV therapy is used to give medicines, fluids, blood products, or nutrition into the bloodstream. This is done by placing a flexible plastic tube (called an **IV line** or **catheter**) through the skin into a vein. It may also be called **infusion therapy**.

There are many types of infusions that are given through an IV:

- Chemotherapy
- Immunotherapy
- Targeted therapy
- Blood products
- Anti-nausea medicines
- IV fluids
- Electrolytes (such as potassium, magnesium, etc.)
- Antibiotics
- Nutrition

IV therapy may be given in many settings including the hospital, infusion clinic, doctor's office, or even at home.

Types of IV catheters

The type of IV catheter you have will depend on what you need it for, how often you need it, what your doctor recommends, and what your preferences are. Types of IVs that may be used are:

- Peripheral IV
- Central venous catheter
- Midline catheter

Peripheral IVs (or IVs)

You may have had a peripheral IV in the past. They are usually placed in the hand or arm through the skin into a vein. A nurse or other health care provider will place the IV and put a clear plastic dressing on top. Peripheral IVs can only be used for a few days, so they are a better choice for short term treatments. Medicines that can damage veins should **not** be given through a peripheral IV.

Central venous catheters (CVCs)

Central venous catheters (CVCs) are also called **central venous access devices (CVADs)**, **central catheters**, or **central lines**. Most CVCs have a soft, flexible tube that ends in or near a large vein that goes into the heart called the **superior vena cava (SVC)**.

Not everyone getting cancer treatment will need a CVC, but there are times where they can be helpful. You might need a CVC if:

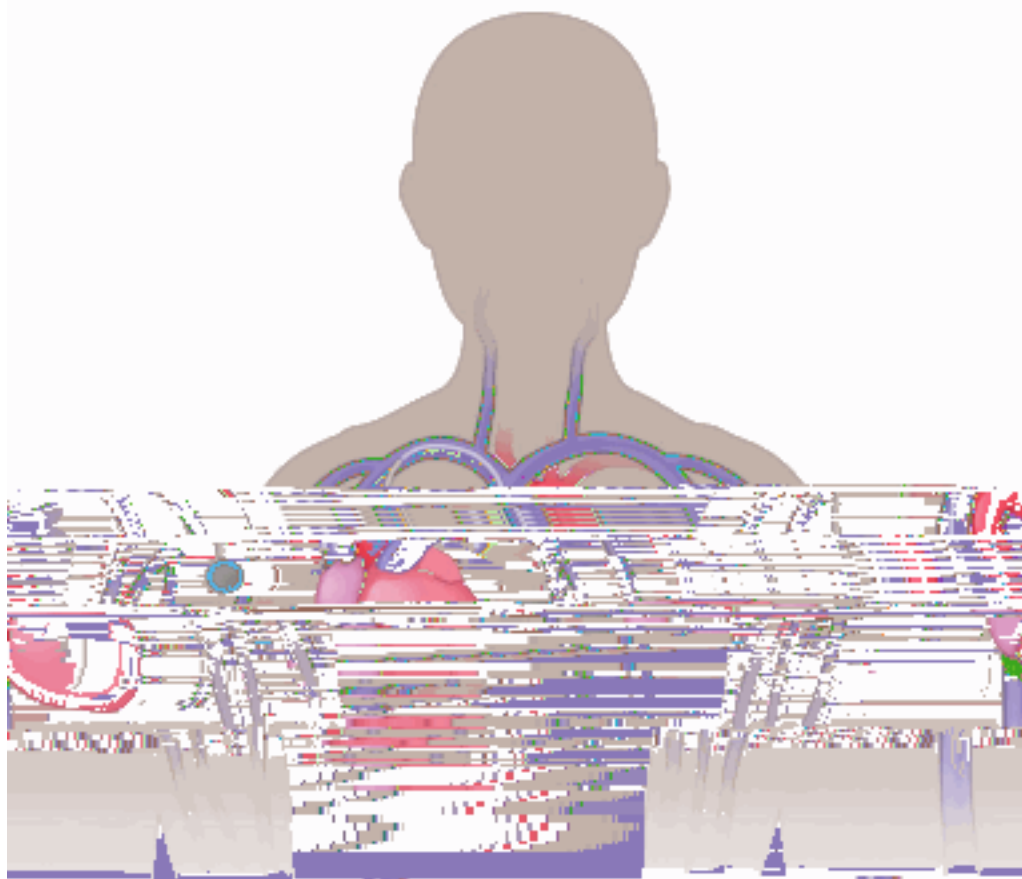
- You have fragile or hard-to-find veins.
- One or both arms cannot be used for IVs.
- Your treatment is expected to last for months or longer.
- Your veins have been damaged from treatment.
- You need a medicine that can be hard on the veins or can cause skin damage if it leaks outside a peripheral IV.
- You need lots of different medicines and treatments at once that each need an IV.
- You need total parenteral nutrition (TPN), a kind of liquid nutrition that is given by IV.

There are several types of CVCs. You and your doctor will discuss which is best for you. The kinds of CVCs commonly used during cancer treatment are:

- Implanted ports
- Tunneled catheters
- PICCs

Implanted ports (also called a port, Mediport, or port-a-cath)

- Ports are placed under the skin. They are usually placed in the upper chest but can sometimes go in the arm or abdomen (belly).
- Implanting a port is a short surgical procedure. The area will be numbed and you might be given medicine to help you relax.
- When the port is used, a nurse or other health care provider will place a needle through the skin and into the port. You might hear this called “accessing” your port. Sometimes a numbing cream is rubbed on the skin before the needle is placed into the port.
- The port needle is connected to tubing for treatments.
- After the infusion is complete, the needle will be removed. The port itself is all under the skin, so when it is not being used it looks like a small bump.
- After the port is placed and the incision heals, and while it is not being accessed, you can bathe, shower, and swim with the port in place.
- Your port will be flushed before and after each use. If the port will not be used for a while, you may need to have it flushed occasionally to keep the line working.
- Single and double ports are available. Single ports allow one infusion at a time. Double ports allow two infusions at the same time.
- Ports can stay in for months or years.
- When you don’t need the port anymore, you will have a short procedure to remove it.



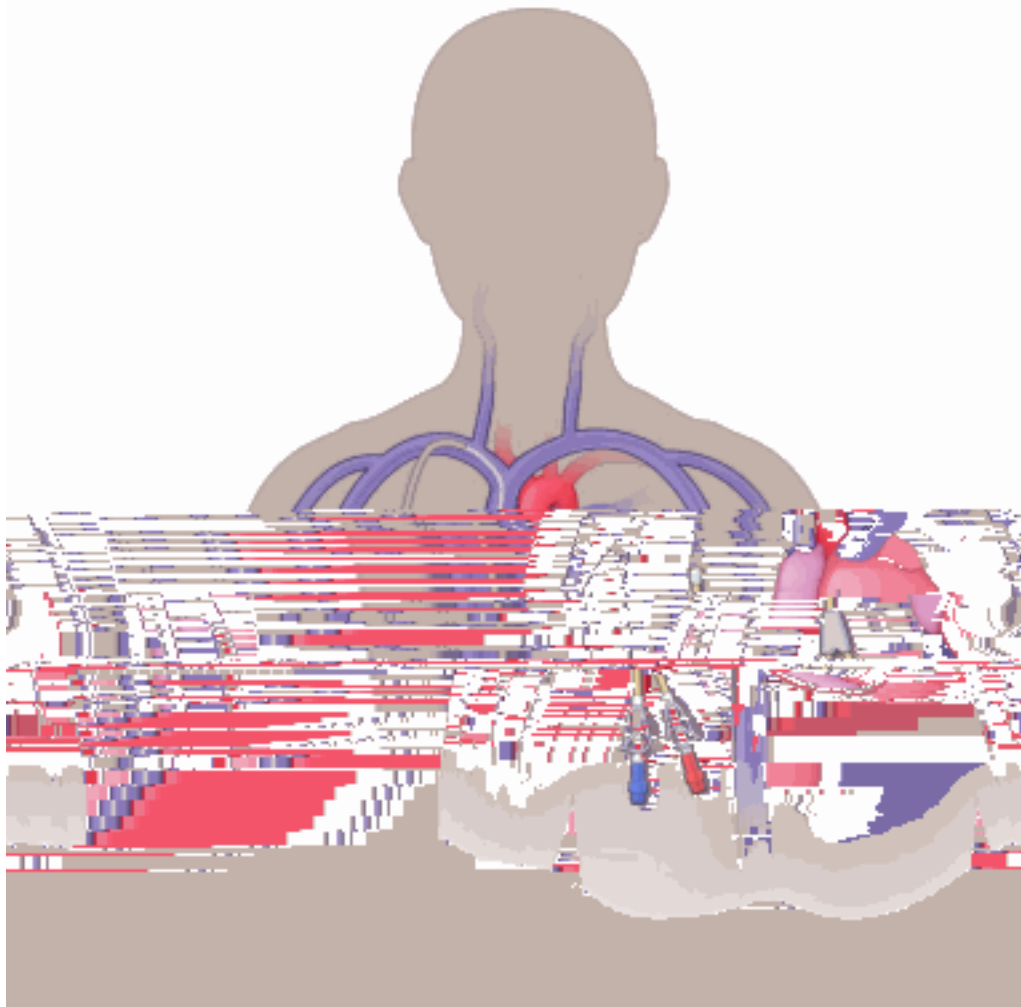
Peripherally inserted central catheters (PICCs)

- PICC lines are placed into a vein in the arm and passed through a vein that leads to the superior vena cava (SVC) near the heart. They are placed by a nurse or other health care provider.
- The end of the catheter sticks out of your arm through the skin and a clear dressing is placed over it.
- Since PICCs stick out of the skin, they cannot get wet. You will need to cover the PICC and dressing while bathing or showering.
- PICCs are flushed before and after each use. If it will not be used for a while, you may need to have it flushed occasionally to keep it working.
- PICCs may have one to three lines, so that more than one infusion can be given at the same time, if needed.



Tunneled CVCs (also called Hickman, Groshong, or Broviac catheters)

- A tunneled CVC is placed into a vein in the chest or neck through a small incision (insertion site). It is tunneled under the skin and brought out through a separate incision (exit site). The end of the catheter tubing sticks out of the skin and is stitched in place.
- The catheter is placed this way to lower the risk of infection. Having the catheter partly under the skin also lowers the risk it will accidentally be pulled out.
- Since tunneled CVCs stick out of the skin, they cannot get wet. You will need to cover the CVC and dressing while bathing or showering.
- Tunneled CVCs are flushed before and after each use. If it will not be used for a while, you may need to have it flushed occasionally to keep it working.
- There are usually one to three lines, which allows for multiple infusions at once.
- Tunneled CVCs can be left in place for weeks to months.
- When you don't need the CVC anymore, it can be removed by a nurse or other health care provider.



Midline catheters

Midlines are like CVCs, but they are shorter and don't go all the way to the superior vena cava (SVC). Midlines may be used when a person has fragile veins or need medicines for days to weeks. Because infection is less likely with a midline, it is sometimes preferred over a CVC. But midlines cannot be used to give medicines that can damage veins or those that require a CVC (such as total parenteral nutrition, or TPN).

What are the benefits and risks of having a CVC?

- **Fewer needle sticks.** A peripheral IV must be taken out and a new one placed every few days, or sooner if the IV becomes displaced or irritated. CVCs can stay in place for weeks, month, or years depending on the type of CVC.
- **Several treatments at once.** Some CVCs have multiple lines so that more than one infusion can be done at the same time. For example, you might have chemo going into one line, while IV fluids, antibiotics, or blood products go into another line at the same time.
- **Less risk of tissue damage.** Since CVCs have a longer catheter, they are less likely to become displaced. Displaced IVs can leak fluids into the tissue and cause irritation or damage.
- **Treatment at home.** Some people who have a CVC may be able to get fluids, medicines, or chemo at home instead of at the hospital or cancer center.

Risks of having a CVC:

- **Pain.** There may be some pain or discomfort during or after a CVC is placed. You may get a numbing medicine on the skin before placement. You may also get medicine to make you feel relaxed and sleepy. You may also feel some soreness around the area of the CVC. This is usually mild and goes away in a day or two.
- **Bleeding.** There may be some bleeding or bruising around the area where the CVC was placed. This is usually mild and goes away in few days.
- **Infection.** Having a CVC increases the risk of infection. You and anyone touching your CVC should always wash their hands or use hand sanitizer first. Tell your cancer care team if the dressing is loose or coming off or replace the dressing if you have been taught how. Tell your care team if you have any signs or symptoms

something and pulled.

- **Collapsed lung.** Very rarely, a lung can collapse (pneumothorax) when a CVC is placed. A pneumothorax develops when the lung is punctured and air collects in the chest outside the lung. Doctors often use imaging tools like ultrasound and fluoroscopy to see the veins and lungs during placement. This lowers the risk of a collapsed lung.

How do I care for my CVC?

Your cancer care team will teach you or a caregiver how to take care of your CVC. Here are some things you can do:

- **Clean your hands.** Always wash your hands or use hand sanitizer before touching your CVC. Make sure anyone else touching your CVC cleans their hands first.
- **Keep it dry.** When you shower, cover and tape over your CVC with a waterproof material (like plastic wrap). If your dressing gets wet or loose, put a new dressing on. Moisture attracts bacteria, which can lead to infection.
- **Keep it secure.** Don't pull on or bend your CVC tubing. If you use tape to secure it, don't bend the tubing.
- **Be prepared.** Know what you need and keep enough supplies to care for your catheter. Have extra supplies on hand in case the dressing gets wet or comes off.
- **Watch for signs of infection.** Tell your cancer care team if you have fever, chills, or new redness, swelling, or oozing around your CVC.

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