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Tubes, Lines, Ports, and Catheters Used in Cancer Treatment

If you need surgery, chemotherapy, or other types of treatment, equipment like tubes, lines, ports, and catheters might be used. The type of equipment that's used depends mostly on the reason it's needed, but it will also depend on your health and preferences, as well as the preferences of your cancer care team.

Tubes, lines, ports, and catheters might be needed to give cancer treatments, other medicines, fluids, blood products, oxygen, and liquid nourishment (food or feedings). Sometimes tubes are used to pull or drain fluid from the body after surgery or during other treatment-related procedures.

You may not have to take care of any kinds of equipment like this. But if you do, you will be taught how to safely use the equipment and care for the area where they attach to your body.

Tubes used to give medicine or nourishment

Liquid medicines or feedings might be given through a tube placed in the stomach or the small intestine. They are often called *tube feedings*. If these feedings will only be needed for a short time, a tube can be put in through the nose and directed down to the stomach without needing surgery. If liquid food is needed for a longer period of time, surgery might be done to insert a feeding tube through the skin of the belly and directly into the stomach (a *gastrostomy tube*, or G tube) or the small intestine (a *jejunostomy tube*, or J tube).

Tubes used for tube feeding should be kept clean but don't have to be sterile. The bags used to give feedings can be cleaned and re-used for the same person. Your nurse will teach you how to clean them and when they should no longer be re-used.

Oxygen tubes

If you need oxygen, it can be given through a mask or tube (called a *nasal cannula*) placed just under your nose. Tubing connects the mask or cannula to an oxygen tank or oxygen concentrator. Oxygen flows through the tubes continuously by itself. It's very important to use oxygen safely. Make sure you know how to care for the tank and other equipment and that you follow all instructions. Don't allow anyone to smoke or use open flames, including candles, in areas where oxygen is being used.

Tubes used to drain fluids from the body

Draining tubes might be used to help drain extra fluid that builds up after surgery or a procedure, or because of a tumor blockage. Draining tubes can be used in different ways. For example, a tube might be:

- Put in through the nose that goes to the stomach, called a *nasogastric (NG) tube* might be used if there's a blockage or obstruction. Or, a tube can be put into the stomach (*gastric tube*) or rectum (*rectal tube*) to drain excess fluid or help with a blockage.
- Inserted into the chest between two ribs to drain extra fluid from the lungs or to help keep lungs filled with air.
- Inserted into the abdomen to drain extra fluid that builds up due to certain cancers.
- Put into the bladder to drain urine after surgery or because of other problems that might come up.
- Put into a colostomy or the rectum to help drain intestinal waste if needed.

If you leave the hospital with any drainage tubes, your nurse will teach you how to care for them and what problems to watch for.

Intravenous (IV) lines, catheters, and ports

Intravenous (IV) lines are thin, flexible, plastic hoses that run from a bottle or bag of medicine into a tiny needle or intravenous catheter (a small, flexible tube) placed in a vein in your body. IV lines must always be germ-free ("sterile") to be sure no infections get into your blood. IV supplies are used only once and are never re-used. They are used to put medicines, blood products, nutrients, or fluids right into your blood. Sometimes, they can also be used to take out blood for testing.

Medicines can be given through these catheters at different speeds (called *rates*).

Sometimes medicines are given through the catheters in just a few minutes, while other medicines may need to be given over a period of hours. The speed depends on the type of treatment being given and the type of catheter being used. Sometimes medicines can be given just by attaching a syringe to the catheter and pushing the medication into it, while other times the medication is attached to a mechanical pump that makes sure only a certain amount of medication is sent through the catheter each hour.

There are different kinds of IV lines and catheters. Which kind is used depends on what the IV is needed for, how often it is needed, the type of medicine that will be given through it, and the care it might need.

If you leave the hospital with an IV line, catheter, or port, your nurse will teach you how to care for it and what problems to watch for.

Peripheral IVs

Regular IVs are placed into a vein in your arm or hand, and are only there for a short period of time. These are called *peripheral IV lines*. This 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. An adhesive dressing is put on top of the hub. A peripheral IV can only stay in for a few days, at most, so if you're getting treatment at a clinic, it will be put in before your treatment and taken out before you leave. If you need to be treated over weeks or months, you will need many IVs, or your doctor might recommend a central venous catheter.

Central venous catheters (CVCs): Ports and catheters

Central venous catheters (CVCs) are also called *central venous access devices (CVADs)*, *central catheters*, or *central lines*. The catheter is a soft, narrow tube that is placed into a large vein near your heart. The other end of the catheter, where medicine and fluid is given, looks different depending on the type of CVC you have. CVC catheters are bigger and longer than peripheral IVs.

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

- You have fragile or hard-to-find veins.
- One or both of the arms cannot be used for IVs.
- Your veins have been damaged from treatment.
- Your treatment is expected to last several months or longer.

- You need to be given a drug that can be very hard on the veins or could cause skin damage if it leaks outside a peripheral IV.
- You need to be given lots of different medicines and treatments at the same time.
- You will need hyperalimentation (TPN), a liquid form of nourishment that is given by IV. This can be very hard on veins, and might be needed for an extended period of time.

As long as a CVC is cared for and doesn't develop problems, it can stay in for as long as you're getting treatment. Some types can be left in place even after treatment ends.

There are different kinds of CVCs. Here are some of the most common (more details are in the sections below):

- **Implanted port:** This is a catheter that's inserted through your chest into a large vein near your heart, or sometimes into a vein in your arm or abdomen. It has an access port at the end of the catheter, underneath your skin. Nothing sticks out of your skin, but there is a small bulge where the port is located. To use the port, your nurse will insert a special needle through your skin where the port is located. Then a dressing is put over it, and the needle is connected to a syringe or IV line to infuse or inject (give) your medicine or fluids. Most blood tests can also be drawn from a port.
- **Peripherally inserted central catheter (PICC line):** This type is inserted into your arm and threaded through a vein that connects to a large vein near your heart. The end of the catheter sticks out of your arm through your skin, with a dressing over it. When needed, a nurse will connect it to an IV line to infuse or inject the medicine or fluid you need. Sometimes blood can be drawn this way, too.
- **Other types of CVCs:** Some CVCs are inserted into your chest and threaded into a large vein near your heart. The end of the catheter might have 1, 2, or 3 different tubes sticking out of the skin in your chest, with a dressing over it. The tubes are used to connect an IV line so your medicine or fluids can be infused or injected, or the catheters can be used to have blood drawn.

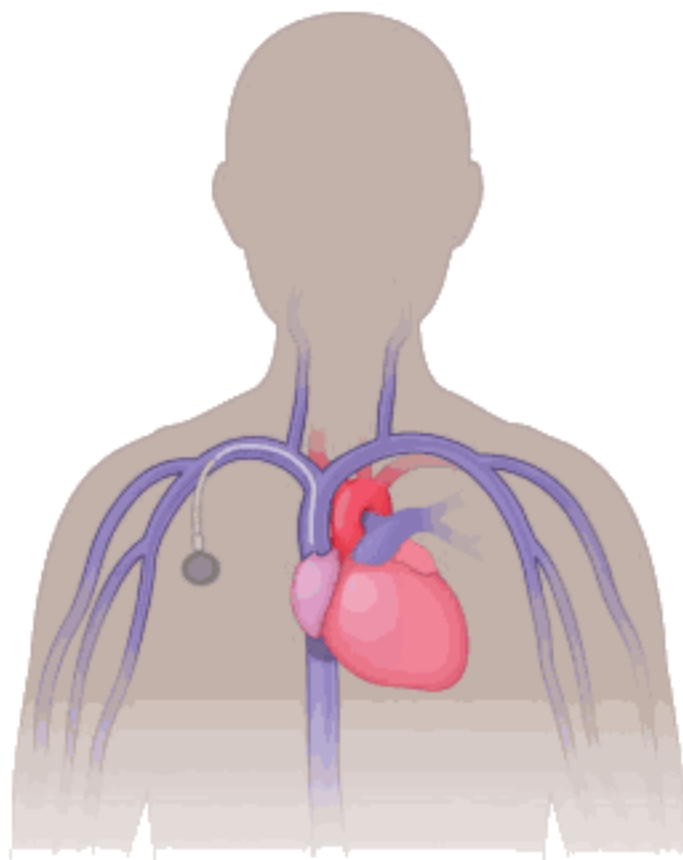
Before you agree to get a CVC, talk with your cancer care team about the type they recommend and why. They can help you decide if you need a CVC and the right type of CVC for you. Some of these devices can restrict certain activities, and safety can be a concern. Each type comes with its own specific care and possible problems and complications.

Implanted port

An implanted port (also called an *implantable venous access port*) is a common choice for people with cancer. The port is placed under the skin of the chest or arm during surgery. With certain types of cancer, a port might be placed in the abdomen (belly) to allow medicine to be given into the area where a tumor is. It stays underneath your skin, but there will be a small bulge where the port is located. The port is a small drum made of plastic or metal, with a thin tube (called a *line*) going into a large vein. The drum is covered with a self-sealing membrane (called a *septum*) made of silicone.

To use the port, a nurse sticks special needle through the skin and into the port's septum. Ports can be removed when treatment is done, or they can be left in place for months or years.

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



Caring for an implanted port

Once the port is inserted and the incision heals, the skin around it doesn't require any special care. You can bathe, shower, or even swim. Your cancer care team will tell you when it's OK to do these things.

When a port is used for treatment or to draw blood, a special needle (called a *non-coring needle*) is used to access the port through the skin. This will hurt a little, since it's a needle going through your skin.

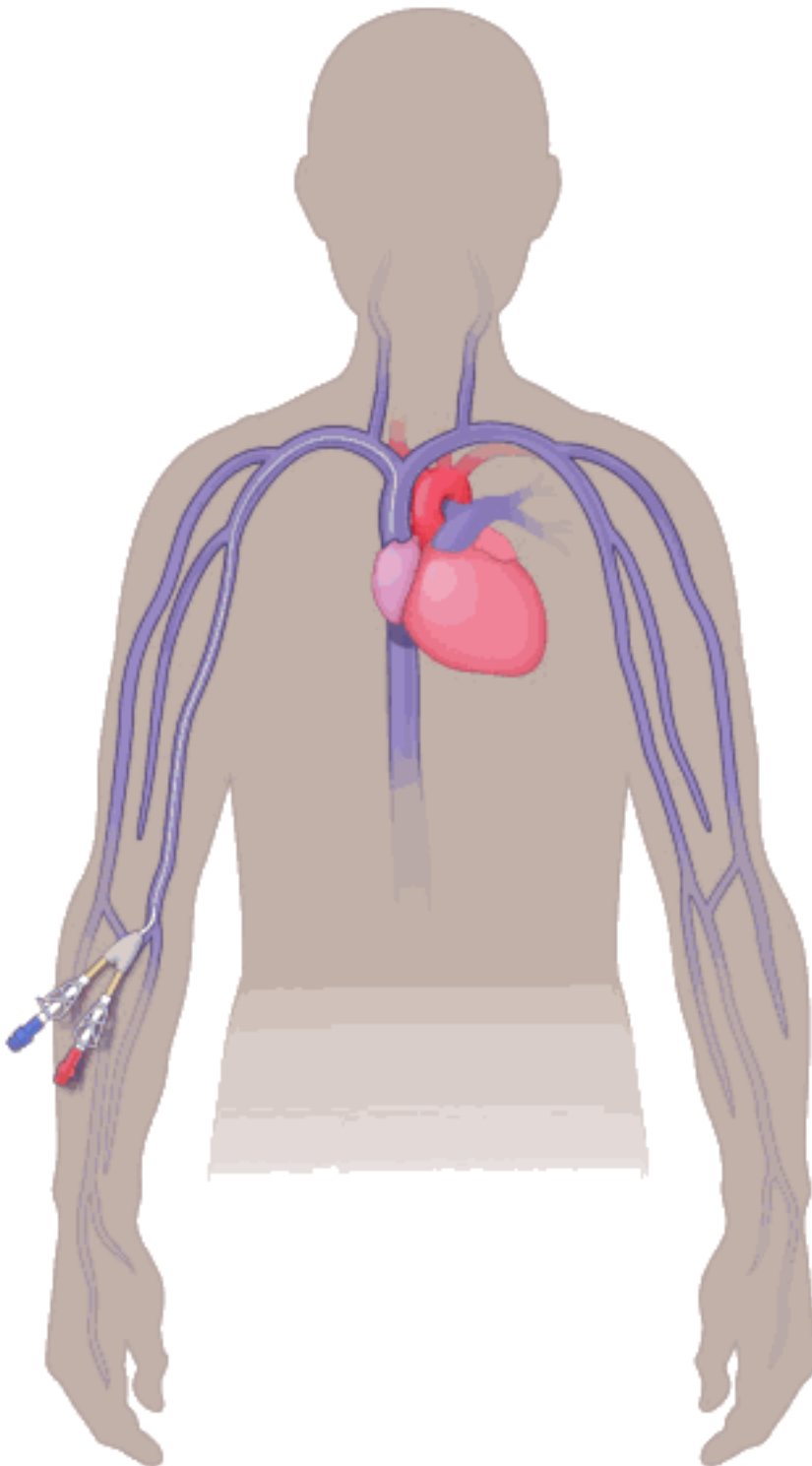
When it's not being used, you will likely need to have the port flushed out about once a month. This involves using the special non-coring needle to access the port and flushing some fluid through it. This regular flushing is sometimes called *maintenance flushing*. It's done so the port and catheter inside stay open and clear in case you need to use it

again.

PICC line

A PICC line (peripherally inserted central catheter) is a soft tube that is placed into a vein in the arm. A needle is used to put the PICC line into the vein, and the catheter (or line) is threaded through the needle, up through the arm 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. After it's in place, there may be one or more "tails" (catheters or lines sticking out of the skin) on the PICC. It can be left in for many weeks to months.

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



Caring for a PICC line

The PICC and the dressing cannot get wet, so you will need to cover it when you bathe. The catheter and the skin around it will need special care and regular flushing. Your cancer care team will teach you what to do when you're caring for a PICC at home.

Midline catheters

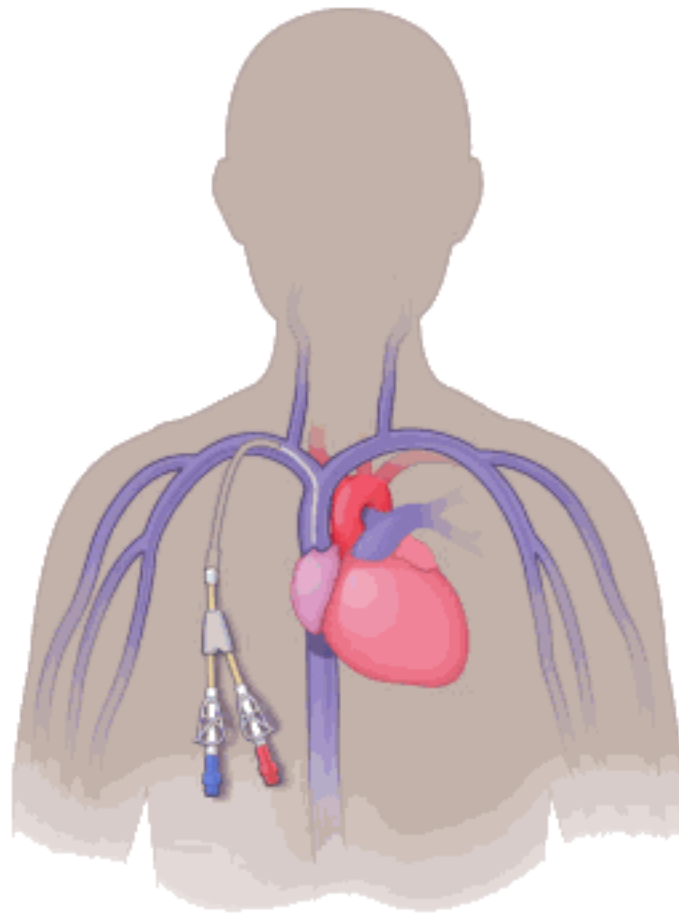
A midline catheter is a lot like a short PICC line. It's also put in a vein in the arm through a needle, but the catheter is not threaded as far as a PICC. (It's really not a CVC, because it isn't threaded to a big vein in the chest.) No surgery is needed. Brand names include Per-Q-Cath Midline and Groshong Midline.

Care of the external catheter and regular flushing will be needed.

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. Brand names include Hickman, Broviac, Groshong, and Neostar. This catheter can be left in place for months or years.

The external catheter and the skin around it will need care and regular flushing.



Problems that might happen with central venous catheters (CVCs)

Potential problems could develop in CVCs. What kind of problems might happen depend on the type of catheter that's used.

Possible problems when a CVC is inserted, or 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 used might damage the vein or another blood 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.
- Your 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.

Problems that could happen later with CVCs:

- 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 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. This might happen if the catheter is clamped in the same spot often, which can weaken that area. Sometimes it can happen if too much force is used when flushing the catheter. 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 reduce 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.

When to call your cancer care team

Your cancer care team will give you instructions on the types of problems that you need to tell 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

Caring for your 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. Implanted ports don't need much care after the site has healed. But other types of CVCs do need some care.

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 comes off.

If you have lots of tubes, lines, or catheters

For all kinds of tubes, you will be taught how to care for them and what problems to watch for. Learn as much as you can about how to use the tubes, lines, and equipment you have. Ask questions and be sure you know what to do and when to contact your cancer care team or other care team.

If you have many different kinds tubes, you may want to color code them with colored tape. For example, you might pick one color for IV lines, another color for a feeding tube, and a third color for oxygen tubing. Wrap tape around the catheter or tube near the point where you put medicine into it (if an IV) or where you connect the liquid food to it (for the feeding tube), and write on the tape to say what kind of tube it is. Make a chart that shows which color belongs to which kind of tube, and post the chart in the place where you get medicine or tube feedings.

Remember to take your time and to check and re-check which tube you are handling. Remember that IV tubes must be kept germ-free and should be handled as little as possible.

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