
Central Line Infections

You need a central line as part of your treatment. It's also called a central venous access device (CVAD) or central venous catheter (CVC). A small, soft tube called a catheter is put in a vein that leads to your heart. The central line is used instead of a standard IV (intravenous) line. It does not need to be replaced as often as a standard IV. This means less pain and fewer needlesticks during treatment. But central lines come with a risk of infection. This sheet tells you more about central line infections and what hospitals are doing to prevent them. And it explains how an infection is treated if one occurs.

Types of central lines

With a central line, a catheter is inserted into your body through a vein that leads to the large vein near the heart (vena cava). Types of central lines and their risk of infection are listed below. Which type is best for you depends on your needs and your overall health. Your healthcare provider will talk with you which type of line you need, and why.

- **Peripherally inserted central catheter (PICC).** This is placed in a large vein in the upper arm, or near the bend of the elbow.
- **Subclavian line.** This is placed in a vein that runs behind the collarbone.
- **Internal jugular line.** This is placed in a large vein in the neck. Infection risk is higher than with a PICC or subclavian line, but lower than with a femoral line.
- **Femoral line.** This may be placed in a large vein in the groin. This site is generally not used because of an increased risk for infection.
- **Tunneled catheter.** This is run through the soft tissue under the skin before it enters a vein. A small cuff helps hold the catheter in place. Both the tunnel and the cuff help lower your chances for infection. This type of catheter may be placed in any of the above locations.
- **Port.** This small device is placed completely under the skin on the arm or chest. It's connected to a catheter that is threaded into the vena cava.

Types of infections

A central line provides a direct path into your bloodstream. This gives germs possible access into your body. All types of central lines are associated with some risk of infection. Often, the germs that cause a central line infection come from your own skin. There are two possible types of infection:

- **Local infection.** This can occur where the central line enters your body. Symptoms include redness, pain, or swelling at or near the catheter site. This is the area where the catheter enters your body. You may also have pain or tenderness along the path of the catheter, and drainage from the skin around the catheter.
- **Systemic infection (also called bacteremia).** This can occur if germs get into the bloodstream. This is very serious and can be fatal. Symptoms include sudden fever, shaking chills, a racing heartbeat, confusion, changes in behavior, and a skin rash.

Risk factors for infection

Anyone who has a central line can get an infection. Your risk is higher if you:

- Are in the intensive care unit (ICU)
- Have a weak immune system or serious illness
- Are getting bone marrow or chemotherapy
- Have the line in for an extended time
- Have a central line in your neck or groin
- Have the catheter used often to draw blood or give you medicines

How central line infections are treated

Treatment depends on the type of central line placed, how severe the infection is, and your overall health. Your healthcare provider will prescribe antibiotics to fight the infection. The line may also need to be removed. In some cases, the line may be flushed with high doses of antibiotics. This may kill the germs causing the infection, so the line doesn't have to be removed.

What hospitals do to prevent infection

Hospitals have a plan to reduce central line infections. This plan includes:

- Using good hand hygiene. Hospital staff clean their hands before and after touching the line. They wash their hands with soap and water. Or they use an alcohol-based hand sanitizer containing at least 60% alcohol.
- Using sterile practices during placement. The healthcare provider who places the line wears germ-free (sterile) clothing including a long-sleeved gown, a mask, hat, and gloves. Before the line is placed, your skin is cleaned with an antiseptic solution. During placement, you are fully covered with a large sterile sheet (a sterile drape). Only the spot where the line is being placed is exposed. After placement, the site where the line enters the body is covered with a sterile bandage (dressing). Whenever the dressing is soiled or loose, they change it right away.
- Choosing a lower-risk vein. Whenever possible, the line is placed in a vein that's right for your treatment and has the lowest infection risk. Some hospitals use lines coated with an antimicrobial substance to reduce the chance of infection. An antibiotic patch may also be placed over the line.
- Limiting how often blood is drawn from your central line. Each time your line is used, the risk for infection increases.
- Scrubbing the cap (hub) of your catheter vigorously with an antiseptic, such as a 70% alcohol swab, before each use.
- Checking for infection. The line is checked often for infection. It's removed as soon as you no longer need it.
- Cleaning your body every day with a soap called chlorhexidine gluconate (CHG). This soap helps reduce the risk for infection.

What you can do to prevent infection



Before you get a central line, ask questions. Find out why you need the line and where it will be placed. Learn what steps the hospital is taking to reduce your infection risk. Once the line has been placed, you, your caregivers, and any visitors can help prevent infection by doing the following:

- Use good hand hygiene. Wash your hands often with soap and clean, running water (warm or cold), and use alcohol-based hand sanitizer with at least 60% alcohol as directed. To clean your hands well, follow the guidelines on this sheet. Visitors should wash their hands well when they arrive and when they leave.
- Make sure healthcare staff and your visitors clean their hands. They should use soap and clean, running water or an alcohol-based hand sanitizer before and after checking the line. Don't be afraid to remind them.
- Follow your hospital team's personal hygiene instructions. This may include bathing every day with CHG soap.
- Talk with your healthcare team about how often your line needs to be used for drawing blood. If possible, have them draw blood from lower risk veins in your arm.
- Keep the line dry. Follow your healthcare provider's guidelines for bathing. If the dressing does get wet, tell your healthcare provider right away.
- Limit touching your line. Even when your hands are clean, try not to touch the catheter or dressing. Remind visitors not to touch your line.
- Learn the sterile dressing technique. This is important if you will be caring for the line at home. Your healthcare team will show you how to use sterile method to change your dressing. Tell your healthcare team if the dressing or area around it gets wet, dirty, or if the bandage is loose.
- At home, follow all instructions from your healthcare team about how to care for your line and dressing. Change your dressing right away if it's loose or gets dirty.

Risk for blood clot

If a blood clot forms, it can block blood flow through the vein where the catheter is placed. Signs of a blood clot include pain or swelling in the neck, face, chest, or arm. If you have

any of these symptoms, call your healthcare provider right away. You may need an ultrasound exam to locate the blood clot and receive treatment.

Handwashing

To protect the central line from germs, it's very important to wash your hands often and clean them well. You and anyone who comes in contact with you should follow these steps:

- Wet your hands with clean, running water (cold or warm). Don't use hot water. It can cause skin irritation when you wash your hands often.
- Apply enough soap to cover the entire surface of your hands, including your fingers.
- Rub your hands together briskly for at least 20 seconds. Make sure to rub the front and back of each hand up to the wrist, your fingers and fingernails, between the fingers, and each thumb.
- Rinse your hands with clean, running water.
- Dry your hands completely with a new, unused paper towel. Don't use a cloth towel or other reusable towel. These can harbor germs.
- Use the paper towel to turn off the faucet, then throw it away. If you're in a bathroom, also use a paper towel to open the door instead of touching the handle.

When you can't use soap and water, alcohol-based hand sanitizers are a good choice for cleaning your hands. The sanitizer should have at least 60% alcohol. Note that some germs can't be killed by alcohol. Your healthcare team can answer any questions you have about when to use a hand sanitizer, or when it's better to wash with soap and water. Follow these steps:

- Spread the hand sanitizer in the palm of one hand. (Check the package for specific guidelines.)
- Rub your hands together briskly. Clean the backs of your hands, the palms, between your fingers, and up your wrists.
- Rub until the sanitizer is gone and your hands are completely dry.

When to seek medical care

Call your healthcare provider right away if you have a central line and develop any of the following:

- Pain or burning in your shoulder, chest, back, arm, or leg
- Fever of 100.4° F (38°C) or higher, or as advised by your healthcare provider
- Chills
- Pain, redness, drainage, burning, or stinging at the catheter site
- Coughing, wheezing, or shortness of breath
- A racing or irregular heartbeat
- Muscle stiffness or trouble moving

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- Gurgling noises coming from the catheter
 - Catheter falling out, breaking, cracking, leaking, or other damage
 - Bleeding from the catheter or where it enters the skin