



[cancer.org](https://www.cancer.org) | 1.800.227.2345

---

## Infections in People with Cancer

People who have cancer or who are getting cancer treatment often have a higher risk of getting an infection, and infections can be more serious than in people who don't have cancer. It's important for patients and caregivers to know the signs of an infection and when to get help.

[Why Are People with Cancer More Likely to Get Infections?](#)

[Managing Infections and Sepsis in People with Cancer](#)

[Preventing Infections in People with Cancer](#)

[Fevers](#)

[Vaccinations and Flu Shots for People with Cancer](#)

### Related Topics

- [Neutropenia \(Low White Blood Cell Counts\)](#)
- [Food Safety During Cancer Treatment](#)
- [Caring for Pets During Cancer Treatment](#)
- [Questions About COVID-19 and Cancer](#)
- [COVID-19 Vaccines in People with Cancer](#)

### Video

Find out how to protect your body from getting sick if you have cancer. Follow these tips to help stay healthy during and after cancer treatment.

[Watch this video on YouTube](#)

---

# Why Are People with Cancer More Likely to Get Infections?

People with cancer may have a higher risk of infection because of changes in the immune system that control their body's defense systems.

- [What types of cancer increase a person's infection risk?](#)
- [Which cancer treatments increase infection risk?](#)
- [Nutrition and infection risks in people with cancer](#)

Many treatments for cancer can lower your white blood cell counts (causing a condition called **neutropenia**) and other cells in your immune system. This makes people with cancer more likely to get an infection because their immune system isn't working as well as it should. Other things that can increase your risk of infection include :

- Certain types of cancer and cancer treatments
- Having a [central line, tube, or drain](#)<sup>1</sup>
- Mouth or throat sores
- Being in the hospital for a very long time
- Having had a [bone marrow or stem cell transplant](#)<sup>2</sup>
- Having had an organ transplant
- Not getting enough sleep
- Poor nutrition
- Other medicines that affect your immune system (such as steroids)
- Having other health conditions such as diabetes, heart or lung problems, or autoimmune disorders

Talk to your cancer care team about what might put you at higher risk for infection.

## What types of cancer increase a person's infection risk?

Some types of cancer can increase the risk for infection:

- Cancers that grow in the bone marrow and crowd out normal blood cells (such as leukemias, lymphomas, and multiple myeloma)
- Tumors that damage or break through tissues inside the body and let in germs.

## Which cancer treatments increase infection risk?

Some [cancer treatments](#)<sup>3</sup> cause immune system problems for a short time. Others can cause long-term immune problems.

The most common cancer treatments that can increase risk for infection include:

- Surgery
- Chemotherapy
- Radiation therapy
- Immunotherapy
- Targeted drug therapy
- Bone marrow or stem cell transplant

## Nutrition and infection risks in people with cancer

All cells need nutrients to work. Nutrients can include calories, protein, carbohydrates, fats, vitamins, minerals, and fluids.

For many people with cancer it can be hard to get enough nutrients because:

- The cancer itself can make it hard to eat or digest food. This is common in people with cancers of the digestive system, mouth, or throat.
- Cancer treatments such as radiation therapy and chemotherapy can cause nausea and a loss of appetite (this can lead to developing a condition called **cancer-related anorexia**).
- Cancer cells use up nutrients, leaving less for normal, healthy cells.

Poor nutrition, also called **malnutrition**, can weaken a person's immune system and make it harder for them to fight an infection if they do get sick. Poor nutrition and infection are two of the most common side effects of cancer and cancer treatment.

Learn more about what to eat during cancer treatment in [Nutrition for the Person with Cancer](#)<sup>4</sup>.

## Hyperlinks

1. [www.cancer.org/cancer/managing-cancer/making-treatment-decisions/tubes-catheters-drains.html](http://www.cancer.org/cancer/managing-cancer/making-treatment-decisions/tubes-catheters-drains.html)
2. [www.cancer.org/cancer/managing-cancer/treatment-types/stem-cell-transplant.html](http://www.cancer.org/cancer/managing-cancer/treatment-types/stem-cell-transplant.html)
3. [www.cancer.org/cancer/managing-cancer/treatment-types.html](http://www.cancer.org/cancer/managing-cancer/treatment-types.html)
4. [www.cancer.org/cancer/survivorship/coping/nutrition.html](http://www.cancer.org/cancer/survivorship/coping/nutrition.html)
5. [www.uptodate.com/contents/infection-prevention-precautions-for-preventing-transmission-of-infection?source=history\\_widget](https://www.uptodate.com/contents/infection-prevention-precautions-for-preventing-transmission-of-infection?source=history_widget)

## References

Anderson DJ. Infection prevention: precautions for preventing transmission of infection. *UpToDate*. UpToDate Inc; 2023. Updated March 2023. Accessed November 29, 2023. <https://www.uptodate.com/contents/infection-prevention-precautions-for-preventing-transmission-of-infection?>

Jatoi A & Loprinzi C. Pathogenesis, clinical features, and assessment of cancer cachexia. *UpToDate*. UpToDate Inc; 2023. Updated April 2022. Accessed November 29, 2023. <https://www.uptodate.com/contents/pathogenesis-clinical-features-and-assessment-of-cancer-cachexia?>

National Comprehensive Cancer Network (NCCN). Anemia and neutropenia: Low red and white blood cell counts. NCCN Guidelines for Patients. Updated 2021. Accessed November 21, 2023. <https://www.nccn.org/patients/guidelines/content/PDF/anemia-patient-guideline.pdf>

National Comprehensive Cancer Network (NCCN). Prevention and treatment of cancer-related infections. Version 1.2023. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines). Updated June 2023. Accessed November 21, 2023. [https://www.nccn.org/professionals/physician\\_gls/pdf/infections.pdf](https://www.nccn.org/professionals/physician_gls/pdf/infections.pdf)

<sup>5</sup>Wingard JR. Prophylaxis of infection during chemotherapy-induced neutropenia in high-risk adults. *UpToDate*. UpToDate Inc; 2023. Updated July 2022. Accessed November 21, 2023. <https://www.uptodate.com/contents/prophylaxis-of-infection-during-chemotherapy-induced-neutropenia-in-high-risk-adults?>

Last Revised: February 13, 2024

# Managing Infections and Sepsis in People with Cancer

Sepsis is a very serious condition that can develop in anyone when their body overreacts to infection, but people with a weak immune system or neutropenia have a higher risk. Instead of just attacking the infection, sepsis causes inflammation throughout the body, attacking the tissues and organs.

- [Signs and symptoms of infection](#)
- [Finding the cause of infection](#)
- [Treating infections in people with cancer](#)
- [Signs and symptoms of sepsis](#)
- [When to get help](#)

## Signs and symptoms of infection

Cancer and [cancer treatments](#)<sup>1</sup> can increase a person's risk for different types of infections. Infections that might not usually be a problem can make a person with cancer very sick. Signs and symptoms of an infection depend on its cause and where the infection is. Some of the most common signs of infection for people with cancer include:

- Fevers
- Chills and sweats
- Fast heartbeat
- Breathing problems or cough
- Dizziness or lightheadedness
- Rash, redness, swelling, or sores on the skin (especially near the genitals, rectum, or around a catheter, tube, or drain)
- Pain or swelling in the joints or bones
- Pain, swelling, or sores in the gums, mouth, or throat
- Pain in the abdomen (belly) or rectum
- Pain or burning when peeing
- Sore throat
- Sores or white patches in the mouth or on the tongue

It's very important to protect yourself from infection if you have neutropenia (a lower

white blood cell count). A fever is often the only sign of an infection in people with neutropenia. Ask your cancer care team if and how often you need to check your temperature and when to call or get medical help.

Some cancer care teams can give you a thermometer if you don't have one. You can also get an oral thermometer (one that goes in your mouth) at any drugstore or pharmacy.

## Finding the cause of infection

If your doctor or cancer care team is worried you might have an infection, they'll need to know what type of infection and where in the body it is. This helps them choose the best medicines and treatment.

Depending on what signs or symptoms you're having, you'll get tests to look for the cause of the infection. This might include:

- [Blood tests](#)<sup>2</sup>
- [Imaging tests](#)<sup>3</sup> (such as an x-ray or CT scan)
- Samples of body fluids (such as sputum, urine, or stool)
- Samples of fluid from a wound or other area (such as around a catheter)

They might start you on a few medicines right away, while waiting for test results. This is to keep the infection from getting worse. Once they find out what types of germs are causing the infection, they will make sure you're taking the correct medicines for that type of infection.

## Treating infections in people with cancer

Infections are treated most effectively when the type of germ that is causing them is known. **Anti-infectives** is a general word for the different types of medicines used to treat infections. The most common types of anti-infectives used for people with cancer are:

- **Antibiotics** for infections caused by **bacteria** (such as urinary tract infections caused by *E coli* or *Pseudomonas* bacteria)
- **Antivirals** for infections caused by **viruses** (such as viral pneumonia caused by influenza or coronavirus)
- **Antifungals** for infections caused by **fungi** (such as thrush or yeast infections)

caused by candida yeast)

- **Antiprotozoals** for infections caused by **protozoa** (such as toxoplasmosis caused by a parasite called *Toxoplasma gondii*)

## Signs and symptoms of sepsis

Once there are signs of organ damage from sepsis, it's called **septic shock**. Common signs of septic shock include:

- A fast heart rate
- Low blood pressure
- Confusion
- Pale, cold, or clammy skin
- Nausea
- Breathing problems

Sepsis can turn into septic shock quickly. People with septic shock might need intensive care, medicines for blood pressure, and even breathing tubes. People with cancer who develop sepsis and septic shock have a higher risk of death than people who don't have cancer. Sepsis also increases your risk for getting a blood clot.

## When to get help

If you have a fever or other signs of infection, call your cancer care team, or get medical attention right away.

Signs of infection and sepsis to watch for:

- Fever or lower body temperature than normal
- Chills or sweats
- Cold, clammy, or pale skin
- Cough or trouble breathing
- New or worse confusion
- Feeling dizzy, lightheaded, or falling down
- Chest pain
- Not able to get out of bed for more than 24 hours
- Not having to pee or peeing only very little amounts that are dark orange or brown

**If you go to the doctor, clinic, or emergency department, wear a face mask to protect yourself from other sick people.**

## Hyperlinks

1. [www.cancer.org/cancer/managing-cancer/treatment-types.html](http://www.cancer.org/cancer/managing-cancer/treatment-types.html)
2. [www.cancer.org/cancer/diagnosis-staging/tests/understanding-your-lab-test-results.html](http://www.cancer.org/cancer/diagnosis-staging/tests/understanding-your-lab-test-results.html)
3. [www.cancer.org/cancer/diagnosis-staging/tests/imaging-tests.html](http://www.cancer.org/cancer/diagnosis-staging/tests/imaging-tests.html)

## References

Anderson DJ. Infection prevention: precautions for preventing transmission of infection. *UpToDate*. UpToDate Inc; 2023. Updated March 2023. Accessed November 29, 2023. <https://www.uptodate.com/contents/infection-prevention-precautions-for-preventing-transmission-of-infection>

National Comprehensive Cancer Network (NCCN). Anemia and neutropenia: Low red and white blood cell counts. NCCN Guidelines for Patients. Updated 2021. Accessed November 21, 2023. <https://www.nccn.org/patients/guidelines/content/PDF/anemia-patient-guideline.pdf>

National Comprehensive Cancer Network (NCCN). Prevention and treatment of cancer-related infections. Version 1.2023. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines). Updated June 2023. Accessed November 21, 2023. [https://www.nccn.org/professionals/physician\\_gls/pdf/infections.pdf](https://www.nccn.org/professionals/physician_gls/pdf/infections.pdf)

Neviere R. Sepsis syndromes in adults: Epidemiology, definitions, clinical presentation, diagnosis, and prognosis. *UpToDate*. UpToDate Inc; 2023. Updated September 2023. Accessed November 22, 2023. <https://www.uptodate.com/contents/sepsis-syndromes-in-adults-epidemiology-definitions-clinical-presentation-diagnosis-and-prognosis>

Taplitz RA, Kennedy EB, Bow EJ, et al. Antimicrobial prophylaxis for adult patients with cancer-related immunosuppression: ASCO and IDSA clinical practice guideline update. *J Clin Oncol*. 2018 Oct 20;36(30):3043-3054. doi: 10.1200/JCO.18.00374.

Wingard JR. Diagnostic approach to the adult cancer patient with neutropenic fever. *UpToDate*. UpToDate Inc; 2023. Updated September 2022. Accessed November 29,



2023. <https://www.uptodate.com/contents/diagnostic-approach-to-the-adult-cancer-patient-with-neutropenic-fever>

Wingard JR. Overview of neutropenic fever syndromes. *UpToDate*. UpToDate Inc; 2023. Updated May 2022. Accessed November 21, 2023. <https://www.uptodate.com/contents/overview-of-neutropenic-fever-syndromes>

Wingard JR. Prophylaxis of infection during chemotherapy-induced neutropenia in high-risk adults. *UpToDate*. UpToDate Inc; 2023. Updated July 2022. Accessed November 21, 2023. <https://www.uptodate.com/contents/prophylaxis-of-infection-during-chemotherapy-induced-neutropenia-in-high-risk-adults>

Last Revised: February 13, 2024

# Preventing Infections in People with Cancer

Infection is one of the most common complications of cancer and cancer treatment. It's important to know how to protect yourself from getting sick. Infections that aren't serious for many people (such as the flu) can become severe for people with weakened immune systems.

- [Types of infections in people with cancer](#)
- [Medicines to prevent infection](#)
- [Lowering your risk of infection](#)
- [Questions to ask your cancer care team](#)
- [When to get help](#)

## Types of infections in people with cancer

Bacteria are the most common cause of infection in people with cancer. Other types of germs (also called pathogens or microorganisms) include viruses, fungi, and parasites (protozoa).

## Opportunistic infections in people with cancer

Many types of infections are common and anyone can get them, but most people can recover because they have a healthy immune system. Some infections are more common or severe in people with weak immune systems. These types of infections are called **opportunistic infections** (because they take advantage of the weakened immune system).

When our immune systems aren't working well, they aren't always able to fight the infection. The infection can continue to get worse. Sometimes the infection even gets into the bloodstream (called **bacteremia**). This is why even a common illness such as the flu can be life-threatening for a person with a weakened immune system.

### **Latent infections in people with cancer**

Some people have **latent viral infections**. This means the virus is inactive in the body. It isn't creating more virus. Many people with latent viruses don't even know they have them because they often don't cause any signs or symptoms.

But cancer treatments that lower your immune system can reactivate a latent virus. If reactivated, these viruses can then cause serious or even life-threatening problems for people with cancer. Some of the most common latent viruses are:

- Herpes simplex virus (HSV)
- Varicella zoster virus (VZV)
- Cytomegalovirus (CMV)
- Hepatitis B and C (HBV and HCV)
- Human immunodeficiency virus (HIV)
- Tuberculosis (TB)

Your cancer care team might test you for some or all these conditions before starting cancer treatment. If you're found to have one of them, you might be treated for them before treatment starts.

### **Medicines to prevent infection**

Sometimes, doctors prescribe medicines to help prevent an infection in someone whose immune system is very weak – even though there's no sign of infection.

- **Antibiotics, antiviral, and antifungal medicines** are often given to people with cancer when their white blood cell counts are very low.
- **Growth factors** help the bone marrow make more white blood cells. They are also

called **granulocyte colony-stimulating factors (G-CSFs)**. They are given after certain types of chemotherapy that are known to severely weaken the immune system.

## Lowering your risk of infection

Here are things you can do to lower your risk of infection when your immune system is weak.

- The most important thing you can do to prevent infection is cleaning your hands. Use soap and water or hand sanitizer.
- Take a shower or bath every day.
- Use an unscented lotion to prevent dryness.
- Wear protective gloves if you're using sharp tools.
- Keep any cuts or wounds clean and dry.
- Take care of your mouth. Brush your teeth at least twice a day. Get dental checkups every 6 months.
- Don't share toothbrushes, forks, spoons, cups, or straws.

## Avoid common sources of infection

- Don't let your pets lick your face.
- Avoid large crowds and people who are sick. Wear a mask if you go out.
- Stay away from areas where dust from the ground is being blown into the air, such as construction sites.

## Practice food safety tips

- Cook all meats to the recommended safe temperature.
- Wash all fresh fruits and vegetables.
- Avoid buffets or self-serve food stations.
- Don't eat expired foods or foods that smell strange.

You can learn more about [food safety for people with cancer](#)<sup>1</sup> and what to watch for when you have low white blood cell counts.

## Questions to ask your cancer care team

- Ask about your white blood cell (WBC) counts. They're usually at their lowest (nadir) about 7 to 12 days after chemo starts. Even though you can get an infection at any time, this is when you're most likely to get seriously ill from an infection.
- Ask your cancer care team which vaccines you should get and when.
- If you're planning any travel, ask if there are any precautions you should take.

Always keep the cancer care team's contact information with you. Make sure you know when and who to call during and after regular office hours. If you go to the emergency room or urgent care, tell them you have cancer and recently received cancer treatment.

## When to get help

If you have a fever or other signs of infection, call your cancer care team, or get medical help as soon as possible.

If you have these signs of infection or sepsis (an extreme, life-threatening reaction to infection), go to the emergency room:

- Chills or sweats
- Cold, clammy, or pale skin
- Cough or trouble breathing
- New or worse confusion
- Feeling dizzy, lightheaded, or falling down
- Chest pain
- Not able to get out of bed for more than 24 hours
- Not having to pee or peeing only very little amounts that are dark orange or brown

**If you go to the doctor, clinic, or emergency department, wear a face mask to protect yourself from other sick people.**

If you have an infection, learn more about how they are treated in [Managing Infections and Sepsis in People with Cancer](#).

## Hyperlinks

1. [www.cancer.org/cancer/survivorship/coping/nutrition/weak-immune-system.html](http://www.cancer.org/cancer/survivorship/coping/nutrition/weak-immune-system.html)

## References

National Comprehensive Cancer Network (NCCN). Anemia and neutropenia: Low red and white blood cell counts. NCCN Guidelines for Patients. Updated 2021. Accessed November 21, 2023. <https://www.nccn.org/patients/guidelines/content/PDF/anemia-patient-guideline.pdf>

National Comprehensive Cancer Network (NCCN). Prevention and treatment of cancer-related infections. Version 1.2023. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines). Updated June 2023. Accessed November 21, 2023. [https://www.nccn.org/professionals/physician\\_gls/pdf/infections.pdf](https://www.nccn.org/professionals/physician_gls/pdf/infections.pdf)

Taplitz RA, Kennedy EB, Bow EJ, et al. Antimicrobial prophylaxis for adult patients with cancer-related immunosuppression: ASCO and IDSA clinical practice guideline update. *J Clin Oncol*. 2018 Oct 20;36(30):3043-3054. doi: 10.1200/JCO.18.00374.

Wingard JR. Overview of neutropenic fever syndromes. UpToDate. UpToDate Inc; 2023. Updated May 2022. Accessed November 21, 2023. <https://www.uptodate.com/contents/overview-of-neutropenic-fever-syndromes>

Wingard JR. Prophylaxis of infection during chemotherapy-induced neutropenia in high-risk adults. UpToDate. UpToDate Inc; 2023. Updated July 2022. Accessed November 21, 2023. <https://www.uptodate.com/contents/prophylaxis-of-infection-during-chemotherapy-induced-neutropenia-in-high-risk-adults?>

Last Revised: February 13, 2024

---

## Fevers

Infection is the most common cause of fevers in people with cancer. In patients with low white blood cells (neutropenia), fever may often be the first and sometimes only sign of infection.

- [What is a fever?](#)
- [What causes a fever?](#)
- [What are neutropenic fevers?](#)
- [If you have neutropenic fevers](#)
- [Talk to your doctor or cancer care team](#)

## What is a fever?

When your temperature is higher than normal for you, you are thought to have a fever. Normally, body temperature is between 95.5 to 99.9 (35.3 to 37.7). Your body temperature can also vary depending on your age, the time of day, and how and where it's measured. For people with cancer, a fever is defined as a temperature of 100.4 (38) or higher for at least one hour.

## What causes a fever?

Fevers can be caused by:

- Infection
- Inflammation
- Reactions to medicines or cancer treatments
- Tumors
- A [blood clot](#)<sup>1</sup> in the lungs (pulmonary embolism or PE)

In people with cancer, infection is the most common cause of fevers. People with cancer have a higher risk of infection because many cancer treatments can lower your white blood cell counts (called [neutropenia](#)<sup>2</sup>). White blood cells fight infection.

## What are neutropenic fevers?

When a person has fever **and** a low white blood cell count, it's called **neutropenic fever** or **febrile neutropenia** (FN). If you are neutropenic, it means you don't have enough neutrophils (or white blood cells) to fight off infection.

When you're neutropenic, you might not have all the common symptoms of an infection. You might not have chills, sweats, or a cough. Some people with severe neutropenia might not have any signs of infection at all or might even have a lower-than-normal body temperature.

Learn more about [neutropenia and low white blood cell counts](#).<sup>3</sup>

## Checking your temperature

Here are a few things to know about taking your temperature:

- Use a thermometer that goes in your mouth (oral). They are usually more accurate than temperatures taken from the armpit, ear, or forehead.
- Always clean your thermometer before and after use. Wash it with warm water and soap, or a cotton ball with isopropyl or rubbing alcohol.
- If you don't have a thermometer, ask your cancer care team for one or where to get one. They might have one you can take home.
- Never place a thermometer in your rectum if you're neutropenic.

## If you have neutropenic fevers

When you're neutropenic, a fever might be the only sign of infection. Infections can become life-threatening very quickly in people who have neutropenia.

Ask your cancer care team what temperature they consider to be a fever. It might be different depending on your situation, but 100.4 (38) is often used.

Ask your cancer care team if it's okay to take any over-the-counter medicines (such as Tylenol) for fever. They might want you to avoid treating any fevers and suggest not taking anything.

## Talk to your doctor or cancer care team

If you have signs or symptoms of an infection such as:

- Chills or sweats
- Cold, clammy, or pale skin
- Cough or trouble breathing
- New or worse confusion
- Having pain when you pee
- Not having to pee or peeing only very little amounts that are dark orange or brown

## Hyperlinks

1. [www.cancer.org/cancer/managing-cancer/side-effects/low-blood-counts/blood-clots.html](http://www.cancer.org/cancer/managing-cancer/side-effects/low-blood-counts/blood-clots.html)
2. [www.cancer.org/cancer/managing-cancer/side-effects/low-blood-counts/neutropenia.html](http://www.cancer.org/cancer/managing-cancer/side-effects/low-blood-counts/neutropenia.html)
3. [www.cancer.org/cancer/managing-cancer/side-effects/low-blood-counts/neutropenia.html](http://www.cancer.org/cancer/managing-cancer/side-effects/low-blood-counts/neutropenia.html)

## References

National Comprehensive Cancer Network (NCCN). Anemia and neutropenia: Low red and white blood cell counts. NCCN Guidelines for Patients. Updated 2021. Accessed November 21, 2023. <https://www.nccn.org/patients/guidelines/content/PDF/anemia-patient-guideline.pdf>

National Comprehensive Cancer Network (NCCN). Prevention and treatment of cancer-related infections. Version 1.2023. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines). Updated June 2023. Accessed November 21, 2023. [https://www.nccn.org/professionals/physician\\_gls/pdf/infections.pdf](https://www.nccn.org/professionals/physician_gls/pdf/infections.pdf)

Neviere R. Sepsis syndromes in adults: Epidemiology, definitions, clinical presentation, diagnosis, and prognosis. *UpToDate*. UpToDate Inc; 2023. Updated September 2023. Accessed November 22, 2023. <https://www.uptodate.com/contents/sepsis-syndromes-in-adults-epidemiology-definitions-clinical-presentation-diagnosis-and-prognosis>

Taplitz RA, Kennedy EB, Bow EJ, et al. Antimicrobial prophylaxis for adult patients with cancer-related immunosuppression: ASCO and IDSA clinical practice guideline update. *J Clin Oncol*. 2018 Oct 20;36(30):3043-3054. doi: 10.1200/JCO.18.00374.

Wingard JR. Overview of neutropenic fever syndromes. *UpToDate*. UpToDate Inc; 2023. Updated May 2022. Accessed November 21, 2023. <https://www.uptodate.com/contents/overview-of-neutropenic-fever-syndromes>

Wingard JR. Prophylaxis of infection during chemotherapy-induced neutropenia in high-risk adults. *UpToDate*. UpToDate Inc; 2023. Updated July 2022. Accessed November 21, 2023. <https://www.uptodate.com/contents/prophylaxis-of-infection-during-chemotherapy-induced-neutropenia-in-high-risk-adults?>



Last Revised: February 13, 2024

# Vaccinations and Flu Shots for People with Cancer

**Vaccines**, also called **immunizations** or **vaccinations**, are used to help a person's immune system recognize and fight off harmful germs, such as bacteria or viruses. Vaccines are often made up of part of the germ, a weakened or killed (inactivated) version of it, or a very similar substance. When the vaccine enters the body, it helps the immune system learn how to fight off the germ, without actually causing the disease. This can help lower the risk that a person will get sick if they're exposed to the germ in the future.

- [Should people with cancer get any vaccines?](#)
- [Live versus inactivated vaccines](#)
- [Flu vaccines](#)
- [COVID-19 vaccines](#)
- [Respiratory syncytial virus \(RSV\) vaccines](#)
- [MMR \(measles-mumps-rubella\) vaccine](#)
- [Pneumococcus \(pneumococcal pneumonia\) vaccine](#)
- [Meningococcal vaccines](#)
- [Polio vaccine](#)
- [Varicella \(chickenpox\) vaccine](#)
- [Shingles \(varicella-zoster\) vaccine](#)

## Should people with cancer get any vaccines?

People with cancer might be able to get some vaccines (and some might even be recommended). This depends on factors such as:

- The type of cancer a person has
- If the person is getting cancer treatment (and if so, which type of treatment)
- The type of vaccine the person would be getting
- The state of the person's immune system, as well as their overall health

The concern about whether a person with cancer should get a vaccine is based mainly

on whether they have a weakened immune system. People with cancer might have a weak immune system for different reasons. For example:

- The cancer itself might weaken the immune system. (This is especially true for some blood cancers such as leukemias and lymphomas.)
- Some [types of cancer treatment](#)<sup>1</sup>, such as chemotherapy, immunotherapy, radiation therapy, or a stem cell transplant, can weaken the immune system.
- Other health issues might also lead to a person having a weakened immune system.

In some situations, it's important that people with weakened immune systems get certain vaccines (such as the flu and COVID vaccines), because these people are often more likely to get seriously ill if they do get an infection.

At the same time, there are reasons why vaccines might not be recommended for people with weakened immune systems.

First, **vaccines might not always be helpful for these people**. Even if someone gets a vaccine, their immune system might be too weak to learn how to fend off the germ. Because of this, doctors will often advise waiting until the immune system is stronger before giving the vaccine. In some situations, such as when there's a high risk of infection, doctors might still advise getting the vaccine, as it might still offer some protection.

A second concern is that **some vaccines could be harmful in people with weak immune systems**. This is especially true of vaccines made from live, weakened viruses (see below). These types of vaccines don't usually cause problems in people with healthy immune systems. But they might make people with weak immune systems very sick, so they're generally not given to them.

It's important to know which vaccines are safe for people with weak immune systems. **Before you get any vaccine, talk to your doctor about your cancer, cancer treatment, risk factors for the vaccine-preventable disease, whether you need the vaccine, and the best time for you to get it.**

## Live versus inactivated vaccines

Some vaccines are made up of killed (inactivated) viruses, while others contain live (but weakened) viruses.

**For people with cancer:** In general, **anyone with a weak immune system should not get any vaccines that contain live viruses.** These vaccines can sometimes cause serious infections in people with weak immune systems.

Your doctor can help guide you about which vaccines are safe while your immune system is weak. Be sure to also talk to your doctor before anyone you spend a lot of time with (such as your children or other household members) gets any vaccines.

**For family members and caregivers of people who have cancer:** If you live with or spend a lot of time with a person who has cancer and might have a weakened immune system, it's important to talk to the doctor if you or anyone close to you is due for a vaccination of any kind. Usually, most age-appropriate vaccines can be given, but there are some exceptions.

## Flu vaccines

The Centers for Disease Control and Prevention (CDC) recommends everyone 6 months and older get a flu vaccine each year, although there are some rare exceptions.

The flu shot is a vaccine that is given to reduce your risk of getting influenza (a viral infection often called "the flu"). In people with cancer and weakened immune systems, it's important to prevent the flu because it can be serious and sometimes life-threatening. It is recommended that people with cancer get the flu shot that has an inactive (dead) flu virus every year. There is usually a different kind of flu virus expected each year, so the flu vaccines are a little different each year to help them be as effective as possible. Your cancer care team will tell you when the best time to receive the flu vaccine is depending on your cancer type and treatment.

The nasal mist version of the flu vaccine contains a weakened version of the **live virus**. **People with cancer should not get the nasal mist flu vaccine.**

**For family members and caregivers of people with weakened immunity:** It is recommended that people who live with or care for a person at high risk for flu-related problems get the flu vaccine, too. This means that if you're being treated for cancer, your family members, caregivers, and children aged 6 months and older living at home should get the flu shot.

Family members and caregivers of a person with cancer can usually get the nasal spray (at least in some flu seasons) unless the person has a severely weakened immune system and/or is being cared for in a germ-protected area. For example, household members should not get the nasal mist vaccine if a family member has recently had a

stem cell or bone marrow transplant.

Talk to your doctor for more information or if you have questions about your specific situation.

## COVID-19 vaccines

Vaccines that can help protect against COVID-19 are now available. In people with weakened immune systems, it's important to protect against COVID-19 because infections can be serious and sometimes life-threatening.

COVID-19 vaccines are made of either messenger RNA (mRNA, a type of genetic material) or a protein from the virus that causes the disease. These vaccines do not contain live viruses, so they are safe for people with weakened immune systems.

As with the flu, the virus that causes COVID-19 can change (mutate) over time, which can make previous vaccines (and previous COVID infections) less likely to be protective if a person is exposed to a newer version of the virus.

The CDC recommends everyone 6 months and older get the most updated version of the COVID vaccine. However, there are some situations in which a person might be advised to wait to get the vaccine, such as if they have a severely weakened immune system.

**For family members and caregivers of people with weakened immunity:** It's also recommended that people who live with or care for a person at high risk for COVID-related problems get the vaccine. This means that if you have a weakened immune system, your family members, caregivers, and children aged 6 months and older living at home should get the COVID vaccine.

Talk to your doctor for more information or if you have questions about your specific situation.

To learn more about these vaccines, see [COVID-19 Vaccines in People with Cancer](#).

## Respiratory syncytial virus (RSV) vaccines

In healthy older children and adults, RSV infection can cause symptoms like those from a common cold. But in very young children, older adults, and people with weakened immune systems, symptoms from an RSV infection can be more severe.

RSV vaccines are available for adults aged 60 and over. These vaccines are made of RSV proteins, not live viruses, so they are safe to give to people with weakened immune systems.

The CDC recommends that people 60 and older discuss whether to get the RSV vaccine with their doctors.

## **MMR (measles-mumps-rubella) vaccine**

This vaccine is used to protect people from 3 viral diseases: measles, mumps, and rubella.

People who have weak immune systems should not get the MMR vaccine because it contains **live viruses**. But it's usually safe for other household members to get it. If needed, your doctor may consider giving you the vaccine before cancer treatment starts.

Talk to your doctor for more information or if you have questions about your situation.

**After exposure to measles:** If you have a weakened immune system and are exposed to someone with measles, let your doctor know right away. Sometimes, medicines can be given to help fight the measles infection before it starts.

## **Pneumococcus (pneumococcal pneumonia) vaccine**

This vaccine can help people with weak immune systems fight off certain lung, blood, or brain infections caused by certain bacteria. Your doctor may recommend one or more doses of the pneumococcal vaccine, depending on your age and health. In cases where people are having their spleen removed, this vaccine may be given before surgery or sometimes after surgery.

Ask your doctor if you need to get the pneumococcal vaccine and when you need to get it.

## **Meningococcal vaccines**

This vaccine helps prevent meningococcal disease, which can cause meningitis or other infections. This vaccine is typically not given during cancer treatment. It may be offered before treatment, or after a person's immune system has recovered. In cases where a person is having their spleen removed, this vaccine may be given before surgery.

Talk to your doctor to see if and when you may need to get the meningococcal vaccine.

## Polio vaccine

This vaccine is used to prevent polio, a viral infection linked to severe illness and physical disability. Since the vaccine came out in 1955, polio has become rare in the US.

Children who have weak immune systems, as well as their siblings and others who live with them, only should get **inactivated** polio virus vaccines. Most doctors in the United States use only the inactivated polio vaccine, but you should ask to be sure. The older oral polio virus vaccine (which is taken by mouth) contains a live virus. People who get the live virus vaccine can pass the virus on to people with weak immune systems.

## Varicella (chickenpox) vaccine

This vaccine is intended to prevent chickenpox in people who have never had it.

This is a **live virus** vaccine. It should not be given to people with weak immune systems, or to people with [leukemia](#)<sup>2</sup>, [lymphoma](#)<sup>3</sup>, or any cancer of the bone marrow or lymphatic system unless it's treated and under control. It's usually OK for household members of the person with weak immunity to get the varicella vaccine.

Talk to your doctor for more information or if you have questions.

**If you're exposed to chickenpox:** A person with weak immunity who has been around someone with chickenpox should call the doctor right away.

## Shingles (varicella-zoster) vaccine

This vaccine can help prevent shingles or make symptoms of shingles less severe. It does not contain a live virus.

The CDC recommends this vaccine for adults aged 50 and older, as well as for people 19 and over who have (or will have) weakened immune systems. People should get the shingles vaccine regardless of whether they've had chickenpox or shingles in the past.

(Chickenpox and shingles are caused by the same virus. Once a person recovers from chickenpox, the virus stays dormant (inactive) in the body. It can sometimes reactivate years later and cause shingles.)

If you have a weak immune system from cancer or cancer treatment, talk to your doctor about chickenpox and shingles vaccine options and whether one of these vaccines might be right for you.

### Getting a Flu Shot When You Have Cancer

It's important to know which vaccines are safe for people with weak immune systems due to cancer and its treatment. Learn more here.

## Hyperlinks

1. [www.cancer.org/cancer/managing-cancer/treatment-types.html](http://www.cancer.org/cancer/managing-cancer/treatment-types.html)
2. [www.cancer.org/cancer/managing-cancer/coronavirus-covid-19-and-cancer/covid-19-vaccines-in-people-with-cancer.html](http://www.cancer.org/cancer/managing-cancer/coronavirus-covid-19-and-cancer/covid-19-vaccines-in-people-with-cancer.html)
3. [www.cancer.org/cancer/types/leukemia.html](http://www.cancer.org/cancer/types/leukemia.html)
4. [www.cancer.org/cancer/types/lymphoma.html](http://www.cancer.org/cancer/types/lymphoma.html)

## References

Ariza-Heredia EJ, Chemaly RF. Practical review of immunizations in adult patients with cancer. *Human Vaccines & Immunotherapy*. 2015;11(11):2606-2614.

Brant JM, Stringer LH. Neutropenia & infection. In Brown CG, ed. *A Guide to Oncology Symptom Management*. 2<sup>nd</sup> ed. Pittsburgh, PA: Oncology Nursing Society; 2015:377-378.

Centers for Disease Control and Prevention (CDC). Chickenpox Vaccination: What Everyone Should Know. 2023. Accessed at <https://www.cdc.gov/vaccines/vpd/varicella/public/index.html> on September 12, 2023.

Centers for Disease Control and Prevention (CDC). Frequently Asked Questions About RSV Vaccine for Adults. 2023. Accessed at <https://www.cdc.gov/vaccines/vpd/rsv/hcp/older-adults-faqs.html> on September 12, 2023.

Centers for Disease Control and Prevention (CDC). People at High Risk for Flu Complications. 2023. Accessed at <https://www.cdc.gov/flu/highrisk/index.htm> on September 12, 2023.

Centers for Disease Control and Prevention (CDC). Shingles Vaccination. 2023. Accessed at <https://www.cdc.gov/vaccines/vpd/shingles/public/shingrix/index.html> on September 12, 2023.

National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology: Prevention and treatment of cancer-related infections. Version 1.2023. Accessed at [https://www.nccn.org/professionals/physician\\_gls/PDF/infections.pdf](https://www.nccn.org/professionals/physician_gls/PDF/infections.pdf) on September 12, 2023.

Palmore TN, Parta M, Cuellar-Rodriguez J, Gea-Banacloche JC. Infections in the cancer patient. In DeVita VT, Lawrence TS, Rosenberg SA, eds. *DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology*. 11th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2019:2037-2068.

Shah MK, Kamboj M. Immunizing cancer patients: Which patients? Which vaccines? When to give? *Oncology*. 2018; 32(5):254-258.

Last Revised: September 14, 2023

### Written by

The American Cancer Society medical and editorial content team  
(<https://www.cancer.org/cancer/acs-medical-content-and-news-staff.html>)

Our team is made up of doctors and oncology certified nurses with deep knowledge of cancer care as well as editors and translators with extensive experience in medical writing.

American Cancer Society medical information is copyrighted material. For reprint requests, please see our Content Usage Policy ([www.cancer.org/about-us/policies/content-usage.html](http://www.cancer.org/about-us/policies/content-usage.html)).

**cancer.org | 1.800.227.2345**