
What Is Cancer?

Cancer is a group of diseases where abnormal cells grow out of control and crowd out normal cells. It affects 1 in 3 people in the United States. Chances are that you or someone you know has been affected by cancer. Here is some information to help you better understand what cancer is.

- [What makes something cancer?](#)
- [What causes cancer?](#)
- [Cancer is more than just one disease](#)
- [What is the cancer stage?](#)
- [How does cancer spread \(metastasize\)?](#)
- [Learn more](#)

What makes something cancer?

There are many different kinds of cancer, but they all involve abnormal cells. Cancers often have these features:

- **Gene changes (mutations):** Cancer cells have changes in their genes that make them abnormal. Some of these gene changes may be passed down from a parent (inherited mutations), while others may happen later in life (acquired mutations).
- **Uncontrolled cell growth:** Most abnormal cells die off or are unable to reproduce. But cancer cells can keep growing and dividing to make more abnormal cells. Cancer cells can crowd out normal cells.
- **Tumor formation:** Not all cancer cells form tumors, and not all tumors are cancer. But many types of cancer cells do clump together to form tumors.
- **Cancer spread (metastasis):** Cancer cells can invade nearby tissues, and many can even spread to other parts of the body.

Many types of abnormal cell growths have some of these features, but not all of them are cancer. For example:

- **Tumors** are lumps or masses of abnormal cells (**neoplasms**) that can be **malignant** (cancer) or **benign** (not cancer).
- **Precancers** are abnormal cells that are not cancer but could become cancer over time.
- **Cysts** are abnormal sac-like growths filled with air, fluid, pus, or tissue. Most cysts do not have abnormal cells in them and are not cancer.

What causes cancer?

Cancer starts when something goes wrong in the normal process of cells growing and dividing to make new cells. A cell's genes (pieces of DNA that tell the cell how to function) change and make the cell abnormal. Most cells die if they become abnormal, but [some gene changes](#)¹ allow cells to survive, grow, and divide to make more abnormal cells.

Gene changes that lead to cancer can have many possible [causes](#)². Lifestyle habits, genes you get from your parents, and being exposed to certain chemicals or radiation can all play a role. Many times, there is no clear cause.

Cancer is more than just one disease

There are many types of cancer. Most types also have subtypes based on features like what the cells look like under a microscope.

Cancer can develop anywhere in the body. It's usually named for the part of the body where it starts, even if it spreads. For example, if cancer starts in the breast and spreads to the lungs, it's still called breast cancer. It's not considered lung cancer, but metastatic breast cancer. **Metastatic** means it has spread to another part of the body.

Some cancers are also named for the type of cell they start in. For example, carcinomas start in the skin or the lining of organs, while sarcomas begin in bone, muscle, or connective tissue.

Two main types of cancer

Cancers are often grouped into two main categories:

- [Blood \(hematologic\) cancers](#)³ start in blood cells or blood-forming tissues. These include leukemia, lymphoma, and multiple myeloma.
- [Solid tumor cancers](#)⁴ develop in organs or tissues. The most common solid tumors are breast, prostate, lung, and colorectal cancers.

Why cancer types matter

While all cancers involve uncontrolled cell growth, different types can behave in different ways. For example:

- Some grow and spread fast, while others are slower
- Some depend on hormones to grow
- Some are more likely to stay in one place, while others spread more easily.
- Some are treated with surgery; others respond better to radiation therapy or drugs such as chemotherapy, targeted therapy, or immunotherapy. For many cancers, more than one treatment is often used to get the best treatment outcome.

It's very important to know the type (and subtype) of cancer before starting treatment, if possible. Knowing the exact type helps doctors know which treatment will work best.

What is the cancer stage?

When cancer is found, tests are done to see how big it is and whether it has spread. This is called [staging the cancer](#)⁵.

A lower stage (like stage 1 or 2) means the cancer has either not spread or has spread to lymph nodes or just outside the **primary site** (the place it started). A higher stage (like stage 3 or 4) means it has spread farther.

The stage of a cancer is very important to know. Along with other testing on the tumor, doctors use the stage to figure out the best treatment options for a person.

How does cancer spread (metastasize)?

Cancer cells have the unique ability to:

- Grow quickly and out of control
- Spread to other parts of the body
- Invade other organs and tissues

When cancer cells break away from the original tumor, they can travel through the bloodstream or the [lymphatic \(lymph\) system](#)⁶ to other parts of the body. Most of these cells die. But some might survive, settle in a new area, and form new tumors. Learn more in [How Does Cancer Spread?](#)

Learn more

- [What Are Neoplasms and Tumors?](#)
- [What Happens When Blood Cells Don't Form Normally?](#)

Hyperlinks

1. www.cancer.org/cancer/understanding-cancer/genes-and-cancer/gene-changes.html
2. www.cancer.org/cancer/risk-prevention.html
3. www.cancer.org/cancer/types/blood-cancer.html
4. www.cancer.org/cancer/types.html
5. www.cancer.org/cancer/diagnosis-staging/staging.html
6. www.cancer.org/cancer/understanding-cancer/anatomy-gallery/lymphatic-system.html

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What Are Neoplasms and Tumors?

A **neoplasm** is an abnormal growth of cells in the body. It happens when the body's normal process of making and replacing cells doesn't work as it should.

When a neoplasm forms into an abnormal growth, mass, or lesion, it's called a **tumor**. Unlike **cysts**, tumors are usually solid and firm because they are filled with clumps of abnormal cells. Neoplasms don't always form tumors, but many do, and the two terms are often used interchangeably.

Not all tumors or neoplasms are cancer – they can be **benign** (not cancer) or **malignant** (cancer).

- [Signs of a tumor or neoplasm](#)
- [Benign versus malignant neoplasms and tumors](#)
- [Benign neoplasms and tumors](#)
- [Malignant neoplasms and tumors](#)
- [Do all neoplasms and tumors need to be removed?](#)

Signs of a tumor or neoplasm

Tumors can feel different depending on their size, location, and type. Some can be felt with your hand, while others may be too deep inside the body to find without imaging tests.

A tumor may:

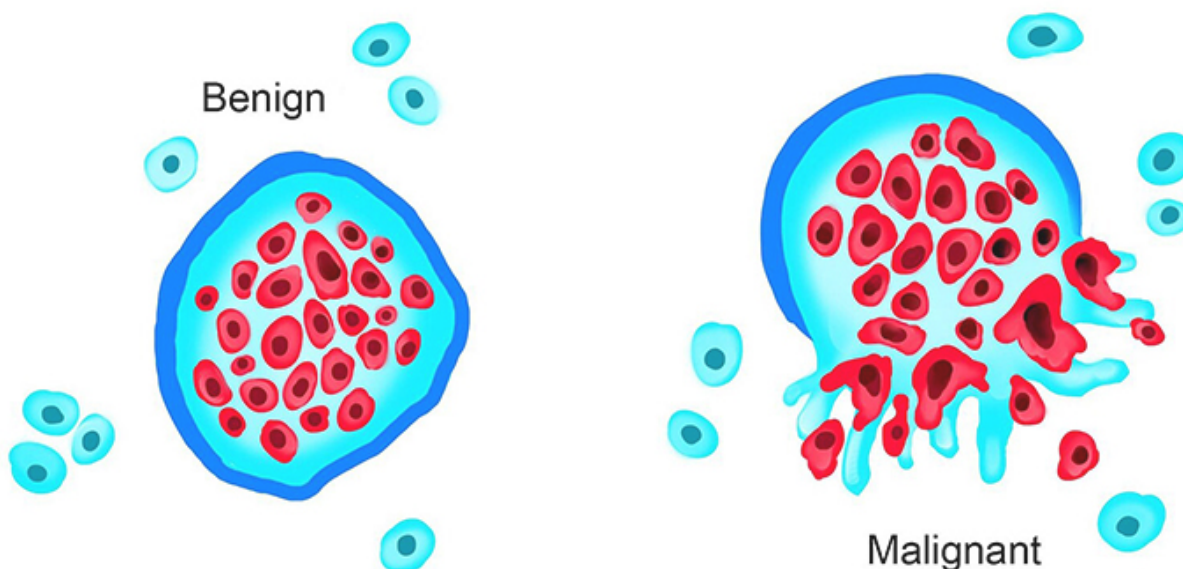
- Feel firm, solid, soft, smooth, or bumpy
- Sometimes cause pain or discomfort
- Often be seen only with x-rays or other imaging tests

Because neoplasms and tumors can be serious, any lump, growth, mass, or lesion you might notice or feel should be evaluated by a doctor.

Benign versus malignant neoplasms and tumors

Not all tumors are cancer. Tumors and neoplasms are considered **malignant** if their abnormal cells can invade surrounding tissue and spread to other parts of the body. The ability of cancer cells to grow into and spread to other parts of the body is called [metastasis](#)¹.

If the abnormal cells cannot do this, the tumor is **benign** (not cancer).



Benign neoplasms and tumors

A **benign neoplasm or tumor** is a noncancerous growth. This means it:

- Does not have cancer cells inside it
- Tends to grow slowly
- Is usually not serious
- Is usually contained to one area
- Cannot spread to other parts of the body

However, benign tumors can sometimes grow quite large or press on organs, nerves, or blood vessels. In these cases, it can be serious and might need to be removed.

Examples of **benign** neoplasms or tumors:

- **Lipoma:** A benign growth filled with fat cells. It usually grows just under the skin, such as on the breast.
- **Fibroma:** A benign growth filled with fibrous tissue, such as scar tissue. These are mostly found in the skin or lungs.
- **Adenoma:** A benign growth in glands or glandular tissue, usually found in the thyroid or colon. These might be called nodules, such as a thyroid nodule. They can also be called polyps, such as an adenomatous polyp, a common type found in the colon or rectum.
- **Hemangioma:** A benign cluster of blood vessels that form a reddish or purplish lump. These are commonly found on the skin.
- **Meningioma:** A benign growth in the layers of the brain and spinal cord. These are often removed because they can cause problems if they put pressure on the brain or spinal cord.

Malignant neoplasms and tumors

A **malignant neoplasm or tumor** is a cancer. The term “malignant” means cancer cells are present, and the tumor is considered cancerous. Tests are done to know the exact type of cancer cells and to [determine the cancer’s stage²](#).

Malignant tumors:

- Tend to grow quickly
- Can invade nearby tissue
- Can spread to other parts of the body
- Are serious and often life-threatening

How serious a malignant neoplasm or tumor is depends on:

- The type of cancer cells found in it
- Where it’s located
- How big it is

- Whether it has spread
- How it's affecting the person's health

Examples of malignant neoplasms or tumors include all cancers:

- [Hematologic \(blood\) cancers](#)³: These are cancers of the blood cells, including leukemia, lymphoma, and multiple myeloma. These cancers do not always form tumors, but are still considered a type of neoplasm.
- [Solid tumor cancers](#)⁴: Cancers of any of the other body organs or tissues. The most common solid tumors are breast, prostate, lung, and colorectal cancers.

Do all neoplasms and tumors need to be removed?

The decision to remove a tumor or neoplasm depends on its size, location, type, and whether it is benign or malignant.

- **Benign** neoplasms and tumors may need to be removed, or a person may choose to have them removed. In some cases, they can be left alone or watched and rechecked to see if they change or grow in any way.
- **Malignant** neoplasms and tumors, or cancers, are approached differently. Ideally, doctors want to be able to completely get rid of a malignancy. In some cases, all of it can be removed with surgery. In other cases, only part of the cancer can be removed. And for some, the cancer can't be removed and is considered to be inoperable.

A tumor or neoplasm might **not** be removed if it:

- Is very large
- Is in a hard-to-reach area
- Is in a sensitive place next to important organs, blood vessels, or nerves, and if removing the cancer could cause damage to the surrounding tissues and structures
- Has its own blood supply and removing it might cause excessive bleeding
- Is a very aggressive type of cancer or the cancer has already spread
- Another treatment would be more effective

Hyperlinks

1. www.cancer.org/cancer/diagnosis-staging/staging.html
2. www.cancer.org/cancer/types/blood-cancer.html
3. www.cancer.org/cancer/types.html

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What Are Precancers and Precancerous Cells?

Precancerous cells, also called **premalignant cells**, are abnormal cells that have

changes in how they look or grow. The cells are not cancer, but they show changes that raise the risk of turning into cancer over time.

A **precancer** is a group, mass, or clump of precancerous cells. Sometimes they are called precancerous or premalignant lesions and conditions.

- [Types of precancerous cells](#)
- [Is a polyp a precancer?](#)
- [How serious are precancers and precancerous cells?](#)
- [How long does it take for precancerous cells to become cancer?](#)
- [Do precancers always need to be removed?](#)
- [Can precancers and precancerous cells come back?](#)

Types of precancerous cells

Precancers are usually named or described based on where they are located in the body and what type of cell change they have. Two common types are dysplasia and hyperplasia.

Dysplasia

Dysplasia means cells are growing abnormally and have changes in their structure that are not yet cancerous. It can range from mild to severe, depending on how abnormal the cells are. Common places where dysplasia can develop are:

- [Cervix](#)¹ or lower part of the uterus (cervical dysplasia and cervical intraepithelial neoplasia, or CIN)
- [Colon or rectum](#)² (adenomatous polyps)
- Mouth (leukoplakia and erythroplakia)
- [Skin](#)³ (actinic keratosis, Bowen disease, and keratoacanthoma)

Hyperplasia

Hyperplasia means there are more cells than usual in a tissue, but the cells look normal and are not cancer. Common types of hyperplasia include:

- [Breast hyperplasia](#)⁴
- [Prostate hyperplasia](#)⁵

- [Endometrial \(uterine\) hyperplasia](#)⁶

Is a polyp a precancer?

A **polyp** is an abnormal growth or bump that can form in certain tissues. Not all polyps are considered precancers. Some are harmless. Others may contain precancerous cells, such as dysplasia, or may eventually become cancer if not removed.

Common types of polyps include:

- [Colon or colorectal polyps](#)⁷
- [Stomach polyps](#)⁸
- [Nasal \(nose\) polyps](#)⁹

How serious are precancers and precancerous cells?

Precancerous cells aren't cancer and don't have the ability to spread to different parts of the body like cancer cells do. But they can still be serious because they have the potential to turn into cancer if not treated or removed.

How long does it take for precancerous cells to become cancer?

This depends on the type and features of the cell. The process of becoming cancer can take many years. But early detection and treatment of precancers can prevent cancer from developing. Getting regular check-ups and [recommended cancer screenings](#)¹⁰, like cervical and colorectal screening tests, helps find precancers and precancerous cell changes early so they can be removed or treated.

Do precancers always need to be removed?

While not all precancers will turn into cancer, they are warning signs. Ideally, precancers are removed when they are found or shortly after.

If precancers aren't removed, they need to be tested and monitored regularly. Depending on the type of precancerous cells, other treatments, like topical medicines, freezing (cryotherapy), or laser therapy might be used instead of surgery.

Can precancers and precancerous cells come back?

Yes, a precancerous condition can come back. This might happen if:

- The precancerous cells were not completely removed
- Known risk factors, such as smoking, inflammation, or infection are not addressed
- Treatment for the precancers was not successful

Ongoing monitoring after being diagnosed with a precancer or precancerous condition is very important. Regular check-ups and follow-up testing can help find any sign of more or new precancerous changes. If caught early, these changes can be treated again before they turn into cancer.

Hyperlinks

1. www.cancer.org/cancer/types/cervical-cancer/about/what-is-cervical-cancer.html
2. www.cancer.org/cancer/types/colon-rectal-cancer/about/what-is-colorectal-cancer.html
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10. www.cancer.org/cancer/screening/get-screened.html

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Patel A. Benign vs Malignant Tumors. *JAMA Oncol*. 2020;6(9):1488. doi:10.1001/jamaoncol.2020.2592

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What Is a Cyst?

A **cyst** is an abnormal sac-like growth or mass that looks like a pouch or capsule. Cysts can be filled with air, fluid, pus, or tissue. They can form just about anywhere in the body. Cysts are different from tumors, and are almost always benign (not cancer.)

- [What causes a cyst?](#)
- [Types of cysts](#)
- [Symptoms of cysts](#)
- [Is a cyst cancer?](#)
- [Cyst versus tumor or neoplasm](#)
- [Does a cyst need to be removed?](#)

What causes a cyst?

A cyst develops when a structure in the body gets blocked, such as a duct that carries or drains fluids. The blockage can be caused by an infection or another problem in the duct or nearby tissue or organ. The blockage can cause air, fluid, blood, or pus to build

up, leading to a sac forming around the buildup. The sac and its contents make up what is called a cyst.

Types of cysts

Examples of common cysts include:

- Cysts found under the skin, such as ganglion, sebaceous, pilonidal, and dermoid cysts
- [Fibrous and simple breast cysts](#)¹
- Follicular and dermoid ovarian cysts and polycystic ovaries
- Simple renal (kidney) cysts and polycystic kidney disease

Symptoms of cysts

Cysts can have many different sizes and shapes. Some cysts can be felt with your hand, but some are deeper inside the body and can only be seen with x-rays or other imaging tests. If a cyst is in a spot where you can see and feel it, it may be soft or pliable to the touch if it contains air or fluid. But if it is filled with tissue, it can feel more firm and solid.

Is a cyst cancer?

Almost all cysts are benign (not cancer). This means they do not have cancer cells inside them. While cysts have some cells, they are not usually filled with abnormal cells like cancerous neoplasms or tumors are. However, some cysts may contain cells that show signs of abnormal changes, and it's possible they can turn into cancer.

Cyst versus tumor or neoplasm

A cyst is different from a [neoplasm or tumor](#). Here are the key differences:

- Most cysts are benign. Tumors and neoplasms can be benign or malignant.
- Cysts are sacs or pouches filled with air, fluid, pus, or tissue. Tumors and neoplasms are made up of abnormal cells.
- Cysts form due to a blockage or infection in the body. Tumors and neoplasms form when something happens during the cell cycle process that results in abnormal

cells forming, growing, and developing into a lump or mass.

Does a cyst need to be removed?

Some cysts might be removed due to size, location, or other concerns, while others can be left alone. If the cyst has fluid or pus that can be drained out, the cyst might go away after it's drained. Sometimes it can refill with fluid or pus, or another cyst might form in the same area.

While most cysts are harmless, any cyst that changes in size or shape, or causes symptoms, should be checked by a doctor. They can help you understand what might have caused a cyst to form and decide if it should be removed or not.

Hyperlinks

1. www.cancer.org/cancer/types/breast-cancer/non-cancerous-breast-conditions/fibrosis-and-simple-cysts-in-the-breast.html

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What Happens When Blood Cells Don't Form Normally?

To work correctly, your body needs healthy blood cells. It makes new ones every day. But blood cells don't always mature like they should.

When this happens, your body sometimes makes too many, too few, or the wrong kinds of blood cells. This can lead to health problems, including some types of cancer.

- [How do blood cells normally mature?](#)
- [Why do some blood cells fail to mature normally?](#)
- [What problems can this cause?](#)
- [Learn more](#)

How do blood cells normally mature?

[Blood cells](#)¹ start in your bone marrow as **stem cells**.

When an old blood cell dies, it signals to your body that it needs to be replaced. The signal is picked up by a stem cell in your bone marrow. The stem cell matures and turns into the exact type of blood cell your body needs.

The myeloid and lymphoid pathways

The stem cell follows one of two pathways to become a fully mature blood cell.

- **Myeloid pathway:** A stem cell follows this path to become an RBC, platelet, granulocyte, or monocyte.
- **Lymphoid pathway:** A stem cell follows this path to become a lymphocyte, including B cells, T cells, and natural killer (NK) cells.

Some blood cancers and other blood disorders are named based on which of these pathways is involved.

Blast cells

Once a stem cell chooses a pathway, it starts to change into a specific type of blood cell. At this point, the cell is no longer a stem cell, but it's not a fully mature cell either. As the cell goes through this step, it's called a **blast cell**.

There are two main types of blast cells that form in the process of making a mature blood cell:

- A **myeloblast** is a partially mature or young blood cell moving through the myeloid pathway to become a granulocyte or monocyte.
- A **lymphoblast** is a partially mature or young blood cell moving through the lymphoid pathway.

Leukemias sometimes happen when certain cells stay in the blast stage and don't mature normally.

Mature blood cells

As it moves through its chosen pathway, the blast cell continues to grow and take on more features of its final blood cell type. When it is fully mature, it does its job until its lifespan is complete and it dies off.

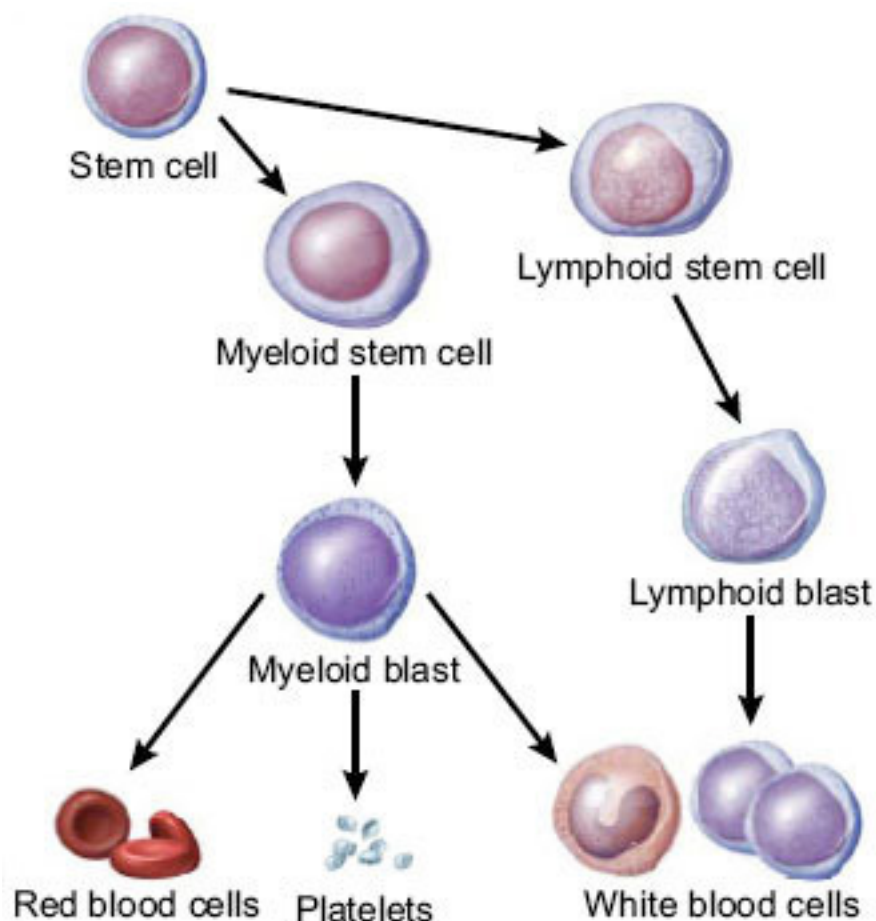


Image courtesy lbdipcan2015

Why do some blood cells fail to mature normally?

Several things can happen in your bone marrow that cause a blood cell to not fully mature or to be abnormal in other ways.

This includes:

- **Bone marrow failure:** The bone marrow stops working the way it should, and it can't make enough healthy blood cells. This can happen because of a condition passed down from a parent (inherited) or from exposure to radiation or certain chemicals.
- **Bone marrow infiltration or replacement:** Something crowds out or takes over the bone marrow and pushes out the healthy blood cells. This can happen with certain types of cancer or myeloproliferative conditions.
- **Bone marrow suppression:** Bone marrow function is slower than normal. It isn't

making blood cells as fast as it should. Sometimes this is caused by inflammation, infection, or certain medicines (including chemo).

- **Nutrition problems:** Some nutrients you take in are key to helping your bone marrow stay healthy. This includes protein, iron, vitamin A, vitamin B12 (folate), copper, and zinc. Without enough of these nutrients, your body can't make the blood cells it needs.

What problems can this cause?

When blood cells don't form normally, it can cause serious problems. This includes infections, blood disorders, and certain types of cancer.

Infections: If WBCs don't develop as they should, your body can't do a good job of fighting off germs.

Blood disorders: When blood cells don't form correctly, your body can try to correct the problem by making too few or too many of them.

- Too few blood cells can cause blood disorders like leukopenia or neutropenia (low WBCs), anemia (low RBCs), or thrombocytopenia (low platelets).
- Too many abnormal blood cells can lead to myelodysplastic syndromes, clotting disorders, and leukemia.

Certain types of cancer: When blood cells don't form normally, this can lead to some types of cancer. [Blood cancers](#)² are most common, including myelodysplastic syndromes, leukemia, lymphoma, and multiple myeloma.

Learn more

- Anatomy Gallery: [Blood Cells and Bone Marrow](#)³
- Learn about your type of cancer (including if and how it is related to abnormal blood cells) in [Cancer Types](#)⁴.

Hyperlinks

1. www.cancer.org/cancer/understanding-cancer/anatomy-gallery/blood-cells-bone-marrow.html
2. www.cancer.org/cancer/types/blood-cancer.html
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What Are Advanced and Metastatic Cancers?

While the terms “advanced” and “metastatic” are related, they have different meanings when talking about a cancer diagnosis. Some people may use “advanced” to describe metastatic cancer, while others might use it to describe cancer that is locally advanced

but hasn't spread to other distant parts of the body. These terms can have different implications for treatment and prognosis. If you or a loved one is told that you have advanced or metastatic cancer, it's very important to ask your doctor exactly what the terms mean in your specific case.

- [What is advanced cancer?](#)
- [What is metastatic cancer?](#)
- [What's the difference between metastatic cancer, cancer recurrence, cancer relapse, and a second cancer?](#)
- [How do I know if cancer has advanced or spread?](#)

What is advanced cancer?

Advanced cancer is often used to describe cancers that are highly unlikely to be cured. This means that while treatable, the cancers won't go away and stay away completely. However, some types of advanced cancer can be controlled over a long period of time and are thought of as an [ongoing \(or chronic\) illness](#)¹. And a few may potentially be cured.

Even if advanced cancer can't be cured, treatment can sometimes:

- Shrink the cancer
- Slow its growth
- Help relieve symptoms
- Help you live longer

For some people, the cancer may already be advanced when they first learn they have the disease. For others, the cancer may not become advanced until years after it was first diagnosed. This happens when cancers continue to grow despite treatment or spread to other parts of the body.

Depending on their size and location, advanced cancers can be described as locally advanced or metastatic:

- **Locally advanced** means the cancer has grown beyond the place it started and into nearby tissues or lymph nodes, but it hasn't yet spread to distant parts of the body. Some cancers, such as locally advanced breast and prostate cancers, may be potentially curable, while other types, such as some locally advanced brain cancers, are not considered curable due to their large size or closeness to

important organs or blood vessels.

- **Metastatic cancers** (described in more detail below) have spread from where they started to other, often distant, parts of the body. Cancers that have spread are often thought of as advanced when they can't be cured or controlled with treatment. But not all metastatic cancers are advanced cancers. Some cancers, such as testicular cancer, can spread to other parts of the body and still be very curable based on how well they respond to certain treatments.

As advanced cancer grows, it can cause [symptoms](#)². These symptoms can almost always be managed with treatment, even when the cancer itself no longer responds to treatment.

What is metastatic cancer?

Metastatic cancer is a cancer that has spread from the [part of the body where it started \(the primary site\) to other parts of the body](#)³. Metastasis might be described based on how far from the primary site it has spread:

- **Local metastasis** means cancer cells have spread to nearby tissues or lymph nodes. This is an early stage of metastasis.
- **Regional metastasis** means the cancer has spread farther, but still in the same region of the body.
- **Distant metastasis** means cancer cells have spread to form tumors far from the primary site.

Metastatic cancer might also be described based on how large the new area of cancer is:

- When only a few cells have spread, it's called **micrometastasis**. These small areas are often too small to be seen on an imaging test.
- A larger area of cancer spread might be called **macrometastasis**, but this term is used less often.

Sometimes the metastatic tumors have already begun to grow when the cancer is first found. And sometimes, a metastasis may be found *before* the original (primary) tumor is found. If a cancer has already spread to other parts of the body before it is first diagnosed, it may be hard to figure out where it started. Your doctor will order blood tests and imaging tests to help identify where it started.

No matter how near or far the distance, when cancer spreads to a new area, it's still named after the part of the body where it started. For instance, breast cancer that has spread to the lungs is breast cancer in the lungs, not lung cancer. This is because the cancer is made up of breast cancer cells, even though they have spread (metastasized) outside of the breast. This distinction is important because treatment is based on where the cancer started and the type of cancer cells involved.

What's the difference between metastatic cancer, cancer recurrence, cancer relapse, and a second cancer?

Metastatic cancer, cancer recurrence, cancer relapse, and second cancer are similar but different terms. The differences depend on when it happens in relation to treatment, where the cancer is found, and what type of cancer it is:

- **Metastatic cancer** is cancer that has spread.
- **Cancer recurrence**⁴ is cancer that has returned after a period of time following successful treatment. Cancer can recur in the same place it started (**local recurrence**), but it can also come back somewhere else in the body. If it recurs near the original cancer, it is called **regional recurrence**. If it recurs far from the original cancer, it is called **distant recurrence**.
- **Cancer relapse** is the return of cancer or its symptoms after a period of improvement without signs or symptoms of disease.
- **Second cancer**⁵ is a new, unrelated cancer that develops after the initial cancer. A second cancer is different from recurrence, relapse, and metastasis because the cancer cells are different from the cells of the original cancer. It can also be a late effect of your first cancer or its treatment.

If cancer is found somewhere new, your cancer team will likely do a biopsy of the new area to find out if it is a metastasis or a second cancer.

How do I know if cancer has advanced or spread?

When you are first diagnosed

If you are diagnosed with cancer, your cancer care team will do additional exams and tests to find out how advanced the cancer is and whether it has spread. This process is called **staging**⁶.

During treatment

As you go through treatment, your care team will watch you closely to find out how treatment is working. If exams and tests show the cancer is growing or spreading, it might mean you need a different type of treatment.

After treatment

For months or years after treatment, you will have [follow-up visits](#)⁷ with your cancer care team to check for signs the cancer has come back. You might get imaging scans, blood tests, or other tests to look for metastasis.

Symptoms of advanced or metastatic cancer

Advanced or metastatic cancer may not always cause symptoms. When symptoms do appear, they often depend on the size and location of where the cancer has spread. Some of the more common symptoms include:

- [Shortness of breath](#)⁸ or trouble breathing, if the cancer has spread to the [lung](#)⁹
- [Pain](#)¹⁰ in the affected area (especially bone)
- Headache, vision problems, dizziness, or [seizures](#)¹¹, if the cancer has spread to the [brain](#)¹²
- Bone fractures, if the cancer has spread to the [bone](#)¹³
- Jaundice (yellowing of skin and eyes) and abdominal (belly) swelling, if the cancer has spread to the [liver](#)¹⁴

General signs and symptoms of advanced and metastatic cancer can include:

- Extreme loss of energy and feeling tired and/or weak ([fatigue](#)¹⁵)
- Weight loss (without trying)
- Finding a new lump or swollen lymph node

These signs and symptoms don't always mean cancer has advanced or spread. But it's important to talk to your care team about any symptoms you have so the cause can be found and treated if needed.

Hyperlinks

1. www.cancer.org/cancer/survivorship/long-term-health-concerns/cancer-as-a-chronic-illness.html
2. www.cancer.org/cancer/managing-cancer/advanced-cancer.html
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How Does Cancer Spread?

Cancer can spread from where it started (the primary site) to other parts of the body. When cancer cells break away from a tumor, they can travel to other areas of the body through either the bloodstream or the lymph system. This process is called **metastasis**.

- [How do cancer cells spread to new parts of the body?](#)
- [Why are cancer cells able to spread?](#)
- [What determines where cancer might spread?](#)
- [Where does cancer most often spread?](#)

How do cancer cells spread to new parts of the body?

When cancer cells break away from a tumor, they can travel to other parts of the body, usually through the bloodstream ([circulatory system](#)¹) or the [lymph system](#)².

For cancer cells to spread to new parts of the body, they must:

- Escape from the original tumor and invade nearby tissue.
- Attach to the wall of a nearby blood or lymph vessel, move through it, and travel along it to a new organ or [lymph node](#)³.
- Stop in the new organ or lymph node, invade its wall, and move into the tissue.
- Find ways to grow and thrive in their new location, including creating new blood vessels (**angiogenesis**).
- Avoid attacks from the body's immune system.

The nervous system can be affected when cancer spreads, too. It's possible for cancer cells to enter nerves or release substances that can affect how nerves function to protect the body. In these cases, the cancer cells invade the outer part of the nerve (called the sheath) and spread up toward the skin or deeper into the body. This is called **perineural spread or invasion**.

Why are cancer cells able to spread?

Cancer cells are physically different from normal cells in ways that help them spread. They are:

- Less “sticky,” so they can break away from the tumor more easily.
- Better at moving and spreading through body tissues.
- Able to make proteins that break down surrounding tissue, helping them invade nearby areas.

What determines where cancer might spread?

The **type of cancer and its location** affects where it might be most likely to spread. The location is important because most cancer cells that break free from the primary tumor travel through the blood or lymph system until they get trapped in the next “downstream” organ or set of lymph nodes. For example, breast cancer often spreads to

the lymph nodes under the arm (**axillary lymph nodes**) because these lymph nodes are closest to the breast. Similarly, many cancers spread to the lungs because blood passes through the lungs as it circulates throughout the body.

The **type of cells that the cancer grows in** matters, too. This is known as the **tumor microenvironment**. It can vary for different cancer types and is affected by:

- How much blood flow it has
- How many nutrients are there
- Whether it has certain hormone receptors
- What kinds of immune cells are there, like macrophages, neutrophils, and natural killer (NK) cells

Some areas of the body are easier for certain cancer cells to grow in. For example, prostate cancer often spreads to the bones because bone tissue provides conditions that help those cancer cells survive and grow.

Certain [gene changes](#)⁴ (**mutations**) in cancer cells can also affect where they can spread, making it easier for cancer cells to grow in certain organs.

Where does cancer most often spread?

In addition to lymph nodes, the [lungs](#)⁵, [liver](#)⁶, [bones](#)⁷, and [brain](#)⁸ are common places certain cancers might spread to. But different types of cancer tend to spread to different places. Here are some common types of cancer and the places they most often spread:

- **Bladder cancer** may spread to the bones, liver, or lungs
- **Breast cancer** may spread to the bones, brain, liver, or lungs
- **Colorectal, ovarian, stomach, and pancreatic cancers** may spread to the liver, lungs, or peritoneum (lining of the abdominal cavity)
- **Kidney cancer** may spread to the adrenal glands, bones, brain, liver, or lungs
- **Lung cancer** may spread to the adrenal glands, bones, brain, liver, or the other lung
- **Melanoma** may spread to other areas of the skin, to muscle tissue, or to the bone, brain, liver, or lungs
- **Prostate cancer** may spread to the adrenal glands, bones, liver, or lungs
- **Thyroid cancer** may spread to the bone, liver, or lungs
- **Uterine (endometrial) cancer** may spread to the bone, liver, lung, peritoneum, vagina

Hyperlinks

1. www.cancer.org/cancer/understanding-cancer/anatomy-gallery/cardiovascular-system.html
2. www.cancer.org/cancer/understanding-cancer/anatomy-gallery/lymphatic-system.html
3. www.cancer.org/cancer/diagnosis-staging/lymph-nodes-and-cancer.html
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