What to know about cancer

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Cancer causes cells to divide uncontrollably. This can result in tumors, damage to the immune system, and other impairment that can be fatal.

Cancer can affect various parts of the body, such as the breasts, lungs, prostate, and skin.

In this article, we examine types of cancer, how the disease develops, and how doctors may treat it. We also explore different types of cancer and disease outlook. Finally, we answer some common questions about cancer.

Cancer resources

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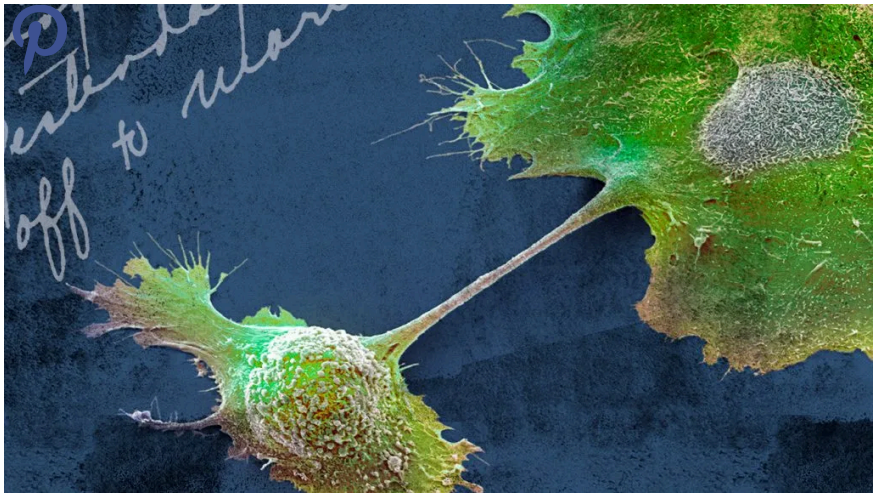
What is cancer?



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Cancer is a broad term. It describes the disease that results when cellular changes cause the uncontrolled growth and division of cells.

Some types of cancer cause rapid cell growth, while others cause cells to grow and divide at a slower rate.

Certain forms of cancer result in visible growths called tumors, while others, such as leukemia, do not.

Most of the body's cells have specific functions and fixed lifespans. Cell death is part of a natural and beneficial phenomenon, which healthcare professionals call apoptosis.

A cell receives instructions to die so that the body can replace it with a newer cell that functions better. Cancerous cells lack the components that instruct them to stop dividing and to die.

As a result, they build up in the body, using oxygen and nutrients that would usually nourish other cells. Cancerous cells can form tumors, impair the immune system and cause other changes that prevent the body from functioning regularly.

Cancerous cells may appear in one area, then spread via the lymph nodes. These are clusters of immune cells located throughout the body.

Causes

There are many causes of cancer, and some are preventable.

Risk factors

Preventable risk factors for cancer include:

- smoking

- heavy alcohol consumption
- excess body weight
- physical inactivity
- poor nutrition
- human papillomavirus infection

Other risk factors for cancer are not preventable. Currently, the most significant unpreventable risk factor is age. According to the American Cancer Society (ACS), doctors in the United States diagnose 88% of cancer cases in people ages 50 years or older.

Is cancer genetic?

Genetic factors can contribute to the development of cancer.

A person's genetic code tells their cells when to divide and expire. Changes in the genes can lead to faulty instructions, and cancer can result.

Genes also influence the cells' production of proteins, and proteins carry many of the instructions for cellular growth and division.

Some genes change proteins that would usually repair damaged cells. This can lead to a predisposition for cancer. If a parent has these genes, they may pass on the altered instructions to their offspring. A doctor may refer to this as an inherited gene mutation. These mutations may contribute to the development of up to 10% of cancer cases.

Some genetic mutations that increase the risk of developing cancer occur after birth. Healthcare professionals refer to these changes as "acquired gene mutations". Possible causes include smoking and sun exposure. These genetic changes cause cancer more commonly than inherited gene mutations.

Other changes that can result in cancer take place in the chemical signals that determine how the cells turn specific genes on and off. Doctors may call these "epigenetic changes".

Treatments

Doctors usually prescribe treatments based on the type of cancer, its stage at diagnosis, and the person's overall health.

Some examples of cancer treatment include:

- **Chemotherapy** aims to kill cancerous cells with medications that target rapidly dividing cells. The drugs can also help shrink tumors, but the side effects can be severe.
- **Hormone therapy** involves taking medications that change how certain hormones work or interfere with the body's ability to produce them. When hormones play a significant role, as with prostate and breast cancers, this is a common approach.
- **Immunotherapy** uses medications and other treatments to boost the immune system and encourage it to fight cancerous cells.
- **Radiation therapy** uses high-dose radiation to kill cancerous cells. Also, a doctor may recommend using radiation to shrink a tumor before surgery or reduce tumor-related symptoms.
- **Stem cell transplant** can be especially beneficial for people with blood-related cancers, such as leukemia or lymphoma. It involves removing cells, such as red or white blood cells, that chemotherapy or radiation has destroyed. Lab technicians then strengthen the cells and put them back into the body.
- **Surgery** is often a part of a treatment plan when a person has a cancerous tumor. Also, a surgeon may remove lymph nodes to reduce or prevent the disease's spread.
- **Targeted therapies** perform functions within cancerous cells to prevent them from multiplying. They can also boost the immune system. Two examples of these therapies are small-molecule drugs and monoclonal antibodies.

Doctors will often employ more than one type of treatment to maximize effectiveness.

Types

The most common type of cancer in the U.S. is breast cancer, followed by lung and prostate cancers, according to the National Cancer Institute, which excluded nonmelanoma skin cancers from these findings.

Each year, more than 40,000 people in the country receive a diagnosis of one of the following types of cancer:

- bladder
- colon and rectal
- endometrial
- kidney
- leukemia
- liver
- melanoma
- non-Hodgkin's lymphoma
- pancreatic
- thyroid

Other forms are less common. According to the National Cancer Institute, there are over 100 types of cancer.

Cancer development and cell division

Doctors classify cancer by its location in the body and the tissues that it forms in.

For example, sarcomas develop in bones or soft tissues, while carcinomas form in cells that cover internal or external surfaces in the body. Basal cell carcinomas develop in the skin, while adenocarcinomas can form in the glands.

When cancerous cells spread to other parts of the body, the medical term for this is metastasis.

A person can also have more than one type of cancer at a time.

Outlook

Improvements in cancer detection, increased awareness of the risks of smoking, and a drop in tobacco use have all contributed to a year-on-year decrease in the number of cancer diagnoses and deaths.

According to the ACS, the overall cancer death rate declined by 33% between 1991 and 2020.

When a person has cancer, their outlook will depend on whether the disease has spread and on its type, severity, and location.

Frequently asked questions

Below are some common questions and answers about cancer.

How do I recognize cancer before it starts to cause serious health problems?

Some cancers cause early symptoms, but others do not exhibit symptoms until they are more advanced. Many of these symptoms are often from causes unrelated to cancer.

The best way to identify cancer early is to report any unusual, persistent symptoms to a doctor so they can offer advice about any further testing that may be needed.

Can people with cancer live a long life?

Each individual's outlook varies depending on the type of cancer they have and other factors, such as their overall health and whether the disease has spread.

However, the ACS indicates that the overall cancer death rate has declined by 33% between 1991 and 2020.

How long can someone live with cancer without knowing?

Some types of cancer do not cause symptoms in the early stages. Therefore, a person may not know they are living with the disease until it reaches more advanced stages.

For example, research indicates that carcinoid tumors may not present with any symptoms for years.

Summary

Cancer causes cells to divide uncontrollably. It also prevents them from dying at the natural point in their life cycle.

Genetic factors and lifestyle choices, such as smoking, can contribute to the development of the disease. Several elements affect the ways that DNA communicates with cells and directs their division and death.

After nonmelanoma skin cancer, breast cancer is the most common type in the U.S.

Treatments are constantly improving. Examples of current methods include chemotherapy, radiation therapy, and surgery. Some people benefit from newer options, such as stem cell transplantation and precision medicine.

The diagnosis and death rates of cancer are dropping yearly.

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