

Cancer: Causes, Types and Treatment

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Key Points

- Cancer begins when genetic alterations disrupt the ordered process of cell breakdown.
- Genetic mutations can be passed down from parents to children.
- Carcinogens & risk factors are of different types.
- Different treatment options.

A cell is a basic unit that makes up the human body. Cells grow and divide, creating new cells when the body needs them. Cells usually die if they are too old or damaged. Then the new cell is used instead. Cancer begins when genetic alterations disrupt this ordered process. The cells begin to grow out of control. These cells can form a mass called a tumor. Tumors can be malignant or benign. Malignant tumors are malignant. That is, the tumor can grow and spread to other parts of the body. A benign tumor means that the tumor can grow but cannot spread. Some types of cancer do not form tumors. These include leukemia, most types of lymphoma, and myeloma.¹

Causes:

Cancer is caused by mutations in the DNA in your cells. Mutations can be passed down from parents to their children. Environmental forces can also cause post-birth sounds.²

Carcinogens are extrinsic causes that can include:

- Physical Carcinogens: Radiation and ultraviolet light
- Chemical Carcinogens: Cigarette smoke, asbestos, alcohol, air pollution and contaminated food and water.
- Biological Carcinogens: viruses, bacteria and parasite

Risk factors:

Certain risk factors can make you more likely to get cancer.

Risk factors include tobacco use and excessive alcohol consumption³, a lack of physical activity, air pollution, radiation, unprotected UV light exposure, such as sunlight, and infection with viruses such as H. pylori, Human papillomavirus (HPV), Hepatitis B, Hepatitis C, HIV, and the Epstein-Barr virus which causes infectious mononucleosis.⁴

According to a 2017 analysis, an unhealthy diet that includes red and processed meat, sugary drinks and salty snacks, starchy foods, and refined carbohydrates such as sugars and processed grains.¹

The likelihood of having cancer rises with age. According to the National Cancer Institute, the chance of acquiring cancer appears to rise until the age of 70 to 80T.⁵

Types:

Cancers are named after the location where they begin and the type of cell they are made of, even if they spread to other places of the body. A cancer that starts in the lungs and progresses to the liver, for example, is still referred to as lung cancer.

There are also other clinical terms for various forms of cancer:

- Carcinoma is a cancer that starts in the skin or the tissues that line other organs.
- Sarcoma is a type of cancer that affects connective tissues like bones, muscles, cartilage, and blood vessels.

- Leukemia is a type of cancer that affects the bone marrow, which produces blood cells.
- Lymphoma and myeloma are immune system malignancies.

The following are a few specific types of cancers.⁶

- Brain cancer is caused by the proliferation of malignant cells in your brain. Cancer cells generate tumours, which can grow slowly or quickly depending on the type of tumour.
- Breast cancer is a type of cancer that begins in the breast cells. Typically, breast cancer develops in either the lobules or the ducts.
- Leukaemia is a type of blood cell cancer. Blood cells are classified into three types: red blood cells (RBCs), white blood cells (WBCs), and platelets. Leukaemia, in general, refers to malignancies of the white blood cells. The WBCs in leukaemia do not operate normally. They can also divide excessively quickly, crowding out regular cells.
- Lung Cancer is one of the leading causes of cancer death. Lung cancer is a type of cancer that begins in the lungs and spreads to other parts of the body. Early lung cancer signs can be mild, but the sooner you are discovered, the better your treatment options and potential outcomes. Surgery, chemotherapy, and radiation are the most common treatments for lung cancer. Immunotherapy and targeted therapy are two newer approaches.
- The most frequent type of cancer is skin cancer. It happens when skin cells proliferate in an uneven pattern. The cells are also used by doctors to determine the type of skin cancer. Skin cancers include basal cell carcinoma, squamous cell carcinoma, melanomas, Merkel cell skin cancer and lymphoma of the skin.
- Bone cancer develops when a tumour, or an abnormal mass of tissue, grows in the bone. These are known as bone sarcomas. Bone cancer can develop in any bone in your body,

but it is most usually seen in the pelvic bone or long bones in your legs or arms. Cancer that starts in the bones is unusual. It can, however, be aggressive therefore early detection is critical.

- Pancreatic cancer develops in the pancreas' tissues, which is a key endocrine organ located beneath the stomach. The pancreas aids digestion by creating enzymes required by the body to breakdown fats, carbs, and proteins. Pancreatic cancer can be difficult to detect due to its location and is commonly found in later stages of the disease. According to the American Cancer Society, pancreatic cancer accounts for roughly 3% of cancer diagnoses and 7% of cancer fatalities in the United States.

Possible Treatment:

Cancer treatment methods vary based on the type of cancer and how advanced it is.

- Localized therapy. Localized treatment typically entails performing procedures such as surgery or local radiation therapy on a specific area of the body or tumour.
- Systemic therapy. Chemotherapy, targeted therapy, and immunotherapy are examples of systemic pharmacological treatments that can affect the entire body.
- Palliative medicine. Palliative care focuses on alleviating cancer-related symptoms such as difficulty breathing and discomfort.

Various cancer treatments are frequently used in tandem to remove or destroy as many malignant cells as feasible.

The following are the most prevalent types of treatment:

Surgery:

The malignancy is removed as much as possible during surgery. Surgery is frequently performed in conjunction with other therapies to ensure that all cancer cells are eradicated.

Chemotherapy:

Chemotherapy is a type of aggressive cancer treatment in which toxic drugs are used to kill quickly dividing cancer cells. It can be used to reduce the size of a tumour or the number of cells in your body, lowering the chances of cancer spreading.

Radiation treatment:

Radiation therapy kills cancer cells by delivering intense, focused beams of radiation. Internal radiation therapy is known as brachytherapy, whereas external beam radiation is known as external beam radiation.

Transplantation of stem cells (bone marrow):

This treatment uses healthy stem cells to mend damaged bone marrow. Stem cells are undifferentiated cells with a wide range of functions. These transplants enable doctors to treat cancer with stronger dosages of chemotherapy. A stem cell transplant is a typical treatment for leukaemia.

Immunotherapy (biological therapy):

Immunotherapy targets cancer cells using your body's own immune system. These medicines assist your antibodies in recognizing cancer and utilizing your body's natural defenses to eliminate cancer cells.

Hormone replacement treatment:

Hormone treatment inhibits the growth of cancer cells by removing or blocking hormones that fuel specific malignancies. This medication is commonly used to treat malignancies that utilize hormones to develop and spread, such as certain forms of breast and prostate cancer.

Drug therapy that is targeted drug therapy involves the use of medications to interfere with specific chemicals that aid in the growth and survival of cancer cells. If you are eligible for this form of therapy, genetic testing may show it. It may be determined by the type of cancer you have, as well as the genetic alterations and molecular properties of your tumour.

Conclusion:

Cancer is a collection of deadly diseases caused by genetic alterations in your cells. Cancer cells that divide abnormally quickly can develop tumours.

Smoking, consuming alcohol, a lack of physical activity, a poor diet, having a high BMI, and contracting certain viruses and bacteria are all risk factors for cancer.

Screenings may aid in the early detection of cancer when it is easier to treat. The treatment strategy and outlook for cancer patients can vary depending on the type of cancer, the stage at which it is found, as well as their age and overall health.

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