Cancer Overview

What is cancer?

Cancer is an abnormal growth of cells. The whole body is made of cells that act and grow in controlled ways as the body needs them. Cells are controlled by genes. The genes in any cell in the body can be damaged. Then the cell can grow out of control and become cancer.

Cancer cells quickly grow and divide. This happens even when there's not enough space and nutrients for them. They also grow despite signals sent from the body telling them to stop.

Cancer cells don't look the same as healthy cells. They don't work the way they should. They can spread from where they started to other parts of the body. Tumors, masses, or lesions are names for abnormal growths of cells that can become cancer.

Oncology is the branch of medicine that studies and treats cancer.

How to say it

Ahn-KAH-loh-gee

What do benign and malignant mean?

Tumors can be benign or malignant.

Benign tumors are not cancer. They tend to grow slowly. They don't spread to other parts of the body.

Malignant tumors are cancer. They can grow quickly. They grow into and destroy nearby normal tissues. Over time, they can spread to other parts of the body.

How to say it

Bee-NINE

Muh-LIHG-nuhnt

What do locally invasive and metastatic mean?

Cancer can be locally invasive and metastatic.

Locally invasive cancer has spread to tissues near where it first started. It can cause problems by pressing on nearby tissues and organs. This can make them unable to work the way they should.

Metastatic cancer has spread beyond where it first started. It's growing in and affecting another part of the body. Cancer cells spread by getting into the blood stream or lymph system.

The lymph system is a series of small vessels that carry a fluid called lymph. Lymph collects waste from cells. It carries it into lymph nodes where the waste is filtered out. Lymph then drains into the bloodstream.

Cancer cells can travel through blood or lymph to any part of the body. Then they grow and form a tumor there.

What are primary tumors?

The original tumor is called the primary tumor. This is the place where the cancer first started. The cancer cells can break off and travel through the body. Then they can form new tumors in other parts of the body.

These new tumors are called secondary tumors. The cancer cells travel through the blood or lymph system to form these tumors. The cancer cells in the secondary tumor are the same as those in the primary tumor, even though they're in a different place.

How is each cancer type named?

Cancer is named after the part of the body where it first started. This is the place the primary tumor formed.

When cancer spreads, it keeps this same name. For instance, if primary colon cancer spreads to the lungs, it's still called colon cancer. The cancer in the lung is a secondary tumor. The cancer cells in the lung look like the cancer cells in the colon. They don't look like lung cancer cells. This may be called colon cancer with lung metastasis or metastatic colon cancer to the lung. It's not lung cancer.

What are the different types of cancer?

There are more than 100 kinds of cancer. It's not just 1 disease. Cancers are defined by the kind of cell they start in. Or they can be defined by the place in the body where they first started. Some cancers are of mixed types.

These are the most common categories of cancer that start in certain kinds of cells:

- **Carcinoma.** This is cancer that starts in cells that make up epithelial tissue. This tissue covers or lines inside and outside surfaces of the body, like organs, glands, and the skin. Carcinoma usually forms a solid tumor. Carcinomas are the most common type of cancer. For instance, cancers that start in the lung, colon, breast, and prostate are most often carcinomas.

- **Sarcoma.** This is cancer that starts in connective tissue cells. This includes blood and lymph vessel, cartilage, fat, muscle, tendon, and bone cells. For instance, osteosarcoma is the most common type of cancer that starts in the bone.

- **Lymphoma.** This cancer starts in a type of white blood cell called a lymphocyte. These cells are part of the immune system. Lymphoma cells can build up in lymph nodes and other lymph tissues. Lymphomas are grouped into 2 categories: Hodgkin lymphoma and non-Hodgkin lymphoma.

- **Leukemia.** This is called a blood cancer. It starts in the cells in the bone marrow that make blood cells. This type of cancer keeps the bone marrow from making normal red and white blood cells and platelets. (White blood cells are needed to fight infections. Red blood cells carry oxygen and carbon dioxide throughout the body. Platelets help the blood clot to prevent bleeding.)

  There are 4 main types of leukemia:

  - Acute myelogenous leukemia (AML)
  - Chronic myelogenous leukemia (CML)
  - Acute lymphocytic leukemia (ALL)
  - Chronic lymphocytic leukemia (CLL).

  The terms myelogenous and lymphocytic mean the type of cells that are involved. Acute and chronic tell how fast the cells are growing.

- **Myeloma.** This type of blood cancer starts in the plasma cells of bone marrow. In some cases, the myeloma cells collect in 1 bone and form a single tumor. This is called a plasmacytoma. In other cases, the myeloma cells collect in many bones and form many tumors. This is called multiple myeloma.

What causes cancer?

Cancer has no single cause. Experts think that it's the interaction of many factors that leads to cell damage that can become cancer. The factors may be genetic, environmental, or lifestyle. These factors change the genes of a cell so that it divides and grows in an uncontrolled way.

Who is at risk for cancer?

Some cancers have been linked with risk factors. A risk factor is anything that may increase your chance of getting a disease. A risk factor doesn't always cause the disease. But it may mean you're more likely to get it.

People with an increased risk of certain cancers can help reduce their risk by getting regular screening tests. This allows precancer cell changes to be found and treated before they turn into cancer cells. Some colon, rectal, and cervical cancers can be prevented with screening.

Regular screening tests can also help find cancer early when it's small and hasn't spread. Treatment tends to work better when cancer is found early.

Some risk factors for cancer can be controlled, but some cannot. Some known risk factors for cancer in adults include:

- **Lifestyle factors.** These include smoking, a high-fat diet, and exposure to ultraviolet light (UV) from the sun or UV lamps. These risk factors are linked to cancer in adults. Most children with cancer are too young to have been exposed to lifestyle factors long enough to have them cause cancer.
- **Genetic factors.** Family health history and genes play a role in some cancers. Some cancers run in families. Some gene changes are inherited. This means people in these families have a higher risk for some types of cancers. But not every family will get cancer. In many cases, it isn't known if the disease is caused by a gene change, other factors, or a coincidence.
- **Virus exposure.** Certain viruses have been linked to cancer. These include the human papillomavirus (HPV), Epstein-Barr virus (EBV), and HIV, the virus that causes AIDS. These viruses can cause cell changes that may lead to cancer over time. But cancer isn't contagious. You can't get it from contact with another person.
- **Environmental factors.** People with certain jobs seem to have a higher risk of some cancers. This includes painters, farmers, construction workers, and people in the chemical industry. This is likely due to contact with certain chemicals. Some environmental factors in your home may be linked to cancer. These can include a natural radioactive gas called radon, and arsenic in well water.

Reducing risk factors that can be controlled can help decrease cancer risk. For instance, tobacco is the leading cause of cancer and cancer death. Not using any form of tobacco and staying away from secondhand smoke can help reduce the risk of many kinds of cancer.

How do genes affect cancer growth?

Certain genes have been linked to cancer. All cancer cells have some type of genetic change (mutation). A small number of these mutations are passed in families or inherited. But most of them happen by chance.

There are 3 main types of genes that can affect cell growth. They are changed (mutated) in certain types of cancers. These include:

- **Oncogenes.** These genes help cells grow. When they're mutated, they can be permanently "turned on" when they shouldn't be. This allows abnormal cancer cells to grow out of control.
- **Tumor suppressor genes.** These genes can slow cell growth, spot abnormal growth and reproduction of damaged cells (like cancer cells), and can tell cells when to die. But if the tumor suppressor genes are mutated and "turned off," cancer cells can grow out of control.
- **Mismatch-repair genes.** These genes help find errors when the DNA of a gene is copied to make a new cell. If the DNA doesn't match perfectly, these genes repair the mismatch and correct the error. But if these genes aren't working well, errors in DNA can be transferred to the new cells. This causes them to be damaged and can lead to cancer.

In most cases, the number of cells in our body tissues is tightly controlled. New cells are made for normal growth and development. They're also made to replace damaged or dead cells. Cancer is a loss of this balance. It starts when genetic changes "tip the balance" in favor of excessive cell growth.

How do childhood and adult cancers differ?

Diagnosis, treatment, and prognosis for childhood cancers are different than for adult cancers. The main differences are the survival rate and the cause of the cancer.

The 5-year survival rate for childhood cancer is about 84%. This means that 84 out of 100 children with cancer will survive 5 years. The 5-year survival rate for adult cancers is about 68%. This may be because cancer in children responds better to certain treatments. Or, it may be because children tend to get, and better tolerate, more intense treatments. And unlike adults, children usually don't have other health problems that can get worse with cancer treatment.

Children get different kinds of cancer than adults. Most childhood cancers are caused by a random cell change or mutation–one that occurred by chance. In adults, lifestyle and environmental risk factors are strongly linked to cancer.

Another key difference is clinical trials. More than 9 out of 10 children are treated at special childhood cancer centers and most are treated as part of a clinical trial. This means they're treated by experts. They get the very best available, cutting-edge treatments that help improve childhood cancer treatment at a rapid rate. Fewer than 1 in 10 adults take part in cancer clinical trials. This has a huge impact on the progress of new procedures and treatments.

How daily issues affect your health

Many things in your daily life impact your health. This can include transportation, money problems, housing, access to food, and child care. If you can’t get to medical appointments, you may not receive the care you need. When money is tight, it may be difficult to pay for medicines. And living far from a grocery store can make it hard to buy healthy food.

If you have concerns in any of these or other areas, talk with your healthcare team. They may know of local resources to assist you. Or they may have a staff person who can help.