

What Is Cancer?

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What Is cancer?

- Not a single disease; it is a group of more than 100 different diseases
- Many different types of cancer exist
- Uncontrolled growth and spread of abnormal cells in the body

What Is Cancer?

- All cancers are not the same
- Different types of cancer have different rates of occurrence, different causes, and different chances for survival
- The development of cancer is a multi-step process
- The “latency period” is usually decades long, often 30 years or longer

What Is Cancer?

- This means that many cancers diagnosed today may be due to genetic changes that occurred in cells a long time ago.
- Cancer is the irregular growth of abnormal cells.
- In the human body, normal cells grow, divide and die in a normal process.
- Cancer cells outlive normal cells and continue to grow and make new abnormal cells.

Cancer Spreads

- Cancer cells will clump together and form tumors.
- These tumors can invade and destroy normal cells and tissue. Tumors can be malignant (cancerous) or benign (non-cancerous).
- Cancer cells can travel (metastasize through the blood or the lymph system to other areas of the body where they can settle and form new tumors)

Cancer Occurrence

- Some cancers, such as leukemia, do not form tumors, but invade the blood and blood-forming organs.
- Benign (noncancerous) tumors do not spread to other parts of the body and are usually not life-threatening (unless they are in the brain).

Causes of Cancer

- In many cases, the exact cause of cancer is not known.
- We know certain changes in our cells can cause cancer to start, but we don't yet know exactly how this happens.
- There are a lot things we **do** know about cancer.

Causes of Cancer

- Since cancer is not a single disease, it does not have a single cause.
- The causes of cancer are better known as “risk factors.”
- These factors act over many years to increase an individual’s chance of developing cancer.
- There are things we do in our daily lives that can increase our chance of developing cancer.

Causes of Cancer

What Causes Cancer?

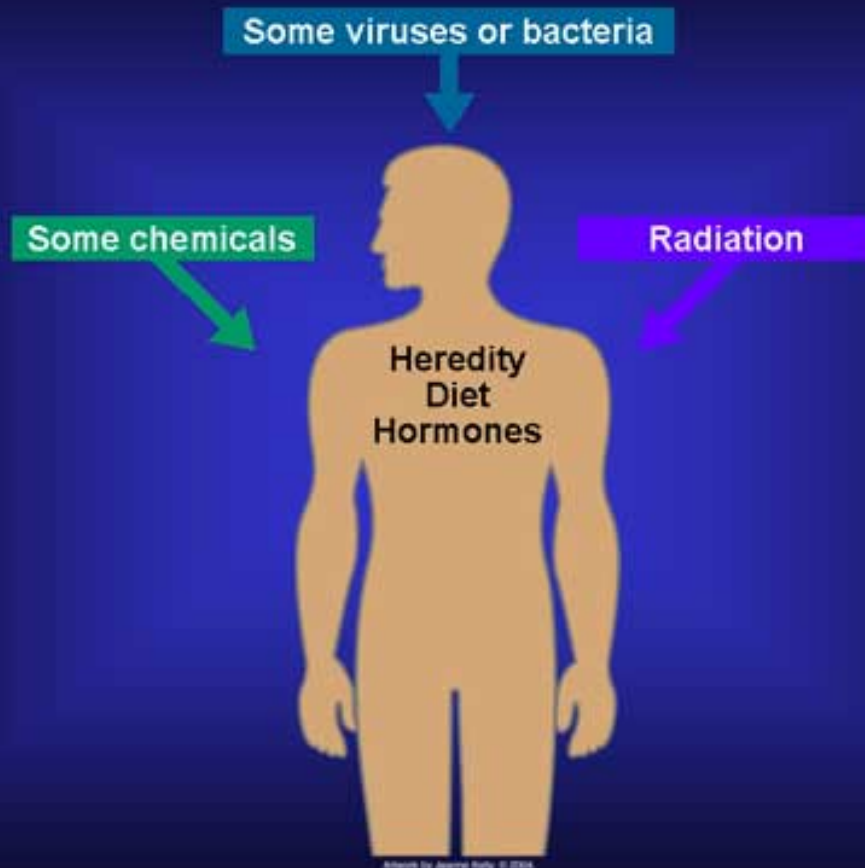


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Risk Factors

- A risk factor is anything that increases a person's chance of getting a disease.
- Some risk factors, such as tobacco use, can be changed, and others, such as age, cannot.
- “Lifestyle factors” include: cigarette smoking; heavy drinking; eating foods that have excess calories or high fat; and not eating enough vegetables.
- Other lifestyle factors that increase risk have to do with reproductive patterns, sexual behavior, and exposure to sunlight

Risk Factors

- Having a risk factor for cancer means a person is more likely to develop the disease at some point in his or her life.
- However, having one or more risk factors does not always mean a person will get cancer.
- Some people with one or more risk factors never develop the disease.

Risk Factors

- Even when a person who has a risk factor is diagnosed with cancer, there is no way to prove the risk factor actually caused the cancer.
- In reality, getting cancer is probably due to the combination of risk factors rather than one single factor.

Causes of Cancer

- Cigarette smoking is a leading cause of cancer deaths in the U.S. today.
- Approximately 30 percent of all cancer deaths are related to smoking.
- In fact, smoking is the most preventable cause of death in our society.

Source: National Cancer Institute

Cigarette Smoking and Cancer

Tobacco Use and Cancer

Some Cancer-Causing Chemicals in Tobacco Smoke

aminostilbene
arsenic
benz[a]anthracene
benz[a]pyrene
benzene
benzo[b]fluoranthene
benzo[c]phenanthrene
benzo[f]fluoranthene
cadmium
chrysene
dibenz[a,c]anthracene
dibenzo[a,e]fluoranthene
dibenz[a,h]acridine
dibenz[a,j]acridine
dibenzo[c,g]carbazone
N-dibutyl nitrosamine
2,3-dimethylchrysene
indeno[1,2,3-c,d]pyrene
S-methylchrysene
S-methylfluoranthene
alpha-naphthylamine
nickel compounds
N-nitrosodimethylamine
N-nitrosomethylethylamine
N-nitrosodiethylamine
N-nitrosoornicotine
N-nitrosoanabasine
N-nitrosopiperidine
polonium-210



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Who Gets Cancer?

- Cancer may strike at any age.
- However, cancer is mostly a disease of middle and old age.
- Cancer is the second-leading cause of death in the United States.
- It is estimated that half of all men and one-third of all women in the United States will develop cancer during their lifetimes.

Risk Factors and Cancer

- Cancers in different parts of the body are often caused by different risk factors.
- For example, smoking and asbestos are recognized risk factors for lung cancer, but not for breast cancer.
- Exposure to radiation or benzene is among the risk factors for certain types of leukemia, but not for colon cancer.

Other Causes of Cancer

- What you eat and how long you sit are factors for colon cancer.
- Exposure to sunlight is a risk factor for skin cancer, but not for most other cancers.

Other Causes of Cancer

- Using tobacco products, a poor diet and lack of physical activity account for about 65% of cancer deaths.
- Less than 5% of cancers are believed to be due to factors in the environment.

Avoiding Causes of Cancer

- The risk of developing most types of cancers can be reduced by changes in a person's lifestyle.
- By quitting smoking, eating healthier, and exercising, you can reduce your risk of developing cancer.

Genetic Causes of Cancer

- For many cancers, such as breast and colon cancer, genetics play a role.
- This means that a family history can be a risk factor for some types of cancers.
- It is not unusual for several cases of the same type of cancer to occur within a family.

What About Cancer in Children?

- Many pediatric cancers occur early in life and parents want to know why.
- Nearly 1 in 450 children will be diagnosed with cancer before the age of 15.
- In most cases the causes remain largely unknown.

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Cancer in Children

- Organ systems of children are especially vulnerable to injury when undergoing periods of rapid growth and development.
- Factors that are *suspected* of playing a role in childhood cancers: genetics, infectious diseases, prenatal conditions, environmental pollutants, radiation, and medications.

Cancer in Children

- The types of cancer most often seen in children are different from those seen in adults.
- The three most common types of cancer in children are:
 - (1) leukemias;
 - (2) tumors of the brain and nervous system; and
 - (3) lymph-node cancers.

In contrast, the most common types of cancer in adults are:

- lung cancer;
- breast cancer;
- colon or rectal cancer; and
- prostate cancer.

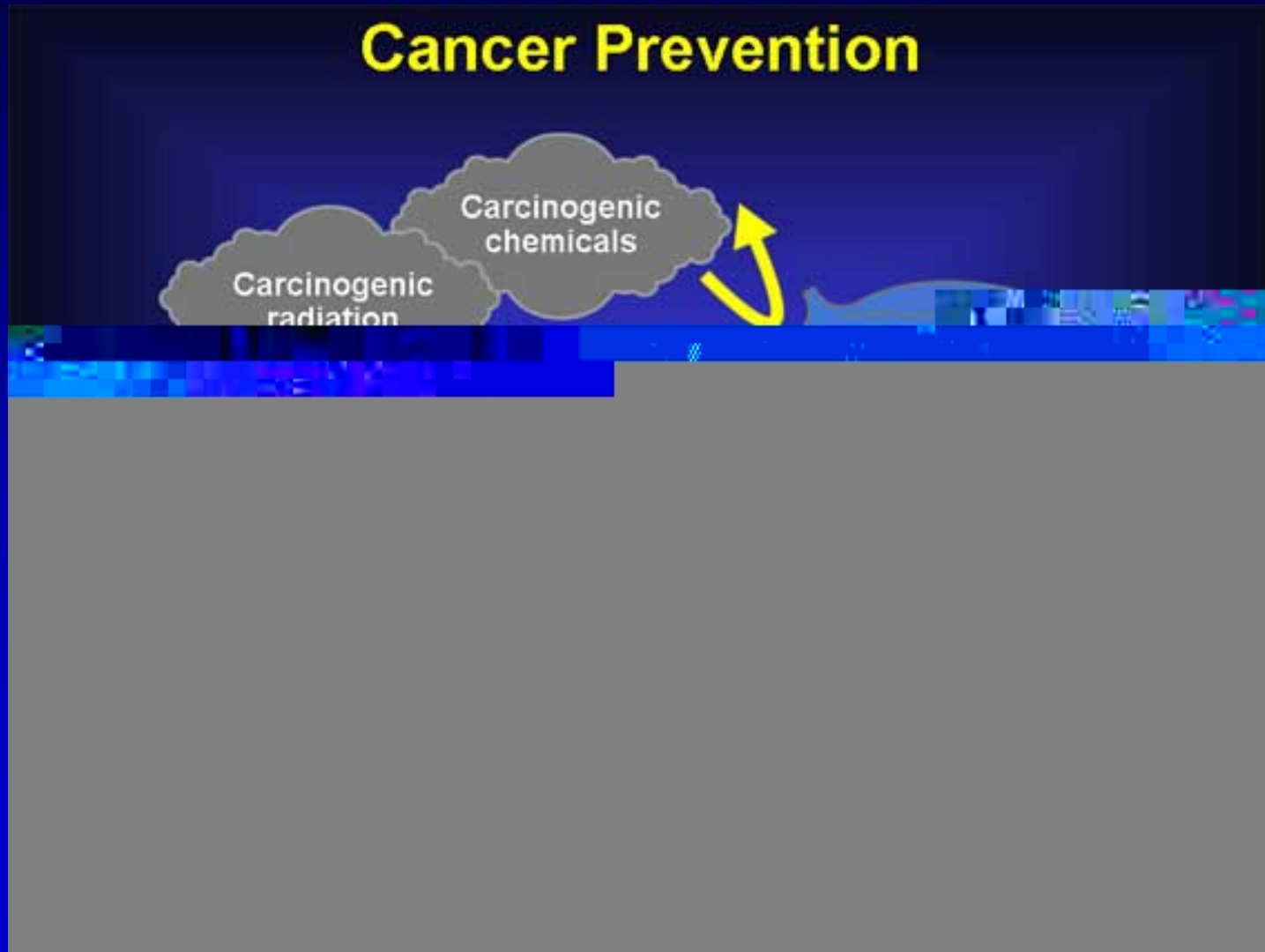
Chemicals in the Environment

- Exposures to certain chemicals in the environment may also contribute to an individual's risk of developing cancer.
- Some toxic substances can increase the risk of cancer to those who are exposed to these substances.
- The IARC has classified these substances as “*known human carcinogens.*”

Chemicals in the Environment

- Some chemicals have been shown to cause cancer in animals, but there is not enough evidence to show that these chemicals cause cancer in humans.
- These chemicals are classified by IARC as “*possible or probable (suspected) human carcinogens.*”

Prevention of Cancer





Questions????

