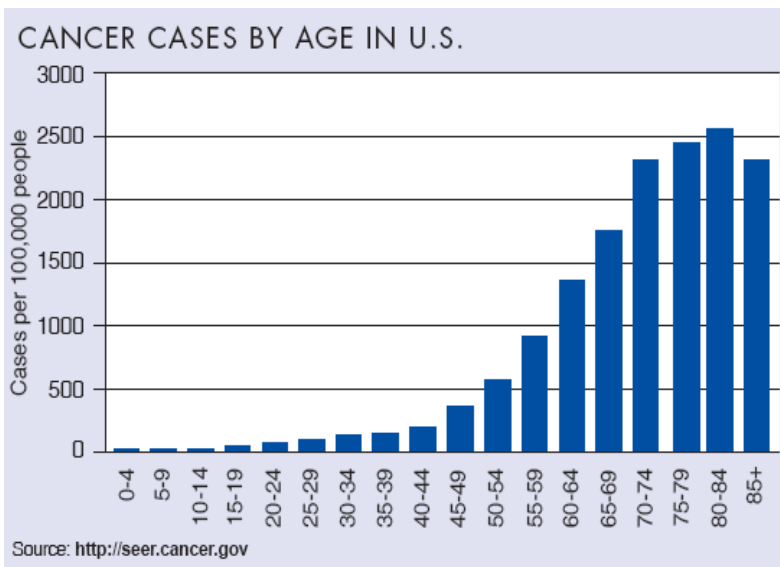


CANCER

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WHAT IS CANCER?

- Cancer is a term that is used to refer to a number of conditions where the body's cells begin to grow and reproduce in an uncontrollable way. This rapid growth of cancerous cells is known as a **malignant tumour**. These cells can then invade and destroy healthy tissue, including organs.

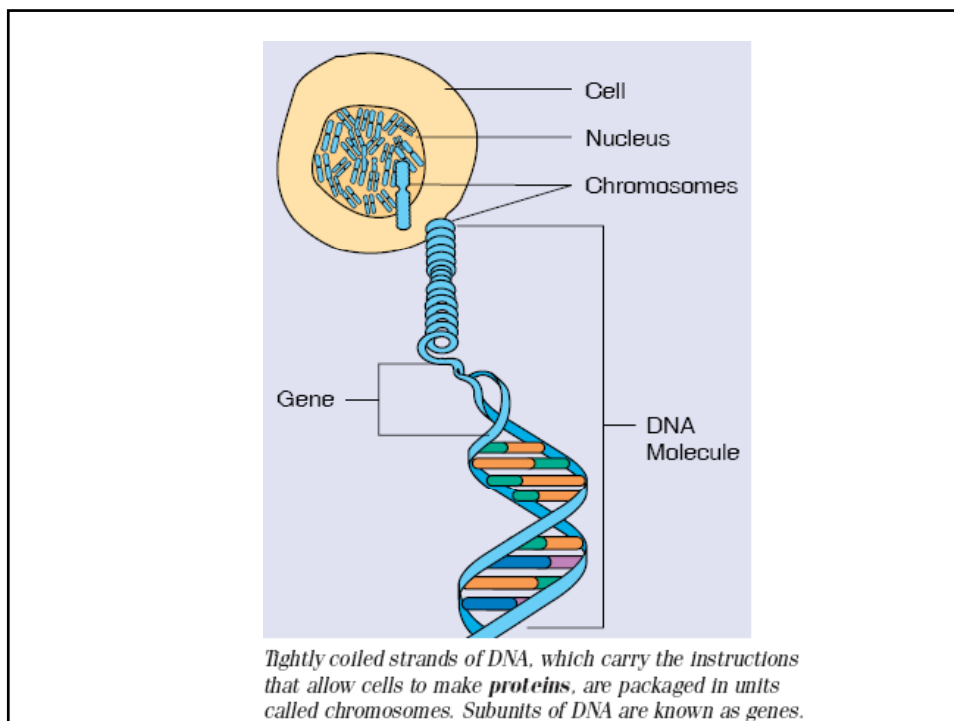
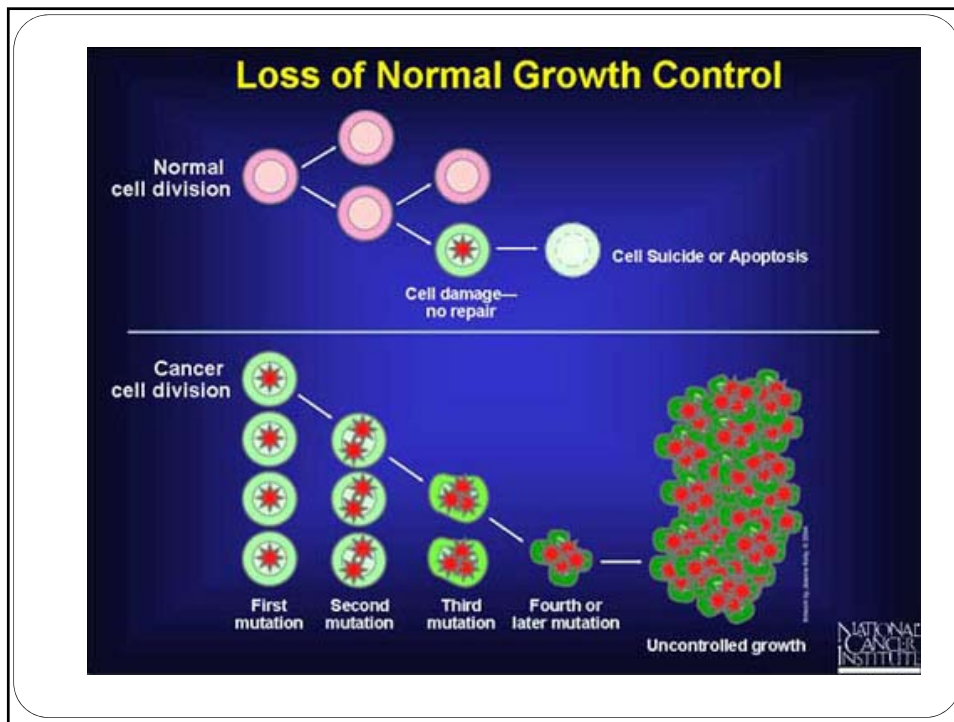
WHAT IS CANCER?

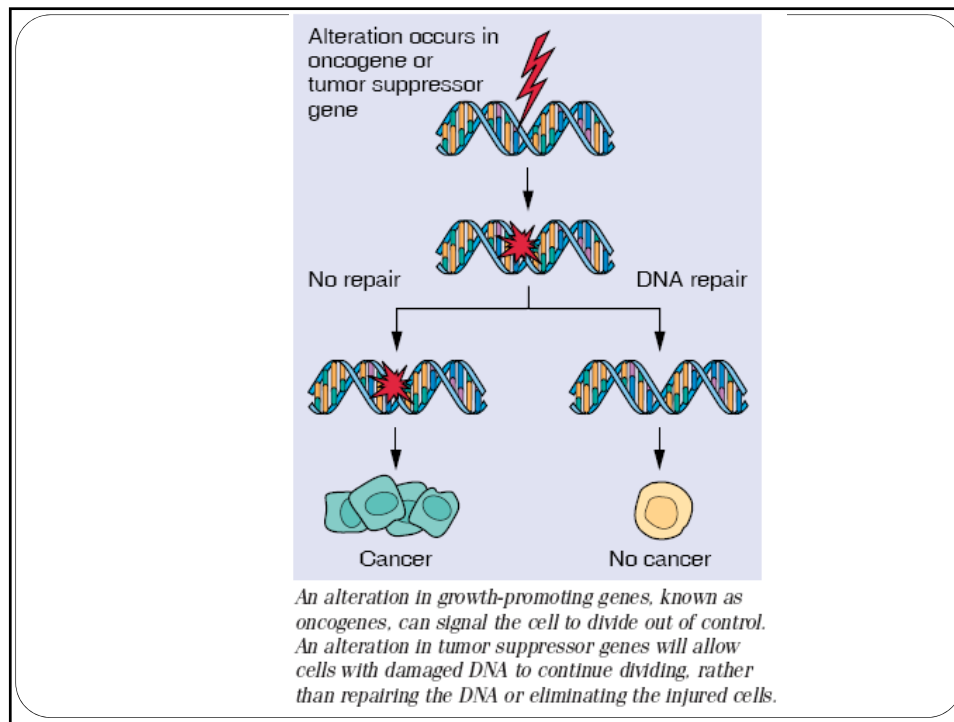
- Cancer cells can spread to other parts of the body through the blood and lymph systems.
- Cancer is not just one disease but many diseases. There are more than 100 different types of cancer.
- Cancer is caused by both **external factors** (Tobacco, chemicals, radiations, and infectious organisms) and **internal factors** (inherited mutations, hormones, immune conditions). These casual factors may act together or in sequence to initiate or promote carcinogenesis. Ten or more years often pass between exposure to external factors and detectable cancer.

Origins of Cancer

- All cancers begin in cells, the body's basic unit of life. To understand cancer, it's helpful to know what happens when normal cells become cancer cells.
- The body is made up of many types of cells. These cells grow and divide in a controlled way to produce more cells as they are needed to keep the body healthy. When cells become old or damaged, they die and are replaced with new cells.

- However, sometimes this orderly process goes wrong. The genetic material (**DNA**) of a cell can become damaged or changed, producing **mutations** that affect normal cell growth and division. When this happens, cells do not die when they should and new cells form when the body does not need them. The extra cells may form a mass of tissue called a **tumor**.





- Not all tumors are cancerous; tumors can be benign or malignant.
- Benign tumors **aren't** cancerous. They can often be removed, and, in most cases, they do not come back. Cells in benign tumors do not spread to other parts of the body.
- Malignant tumors are cancerous. Cells in these tumors can invade nearby tissues and spread to other parts of the body. The spread of cancer from one part of the body to another is called metastasis.
- Some cancers do not form tumors. For example, leukemia is a cancer of the bone marrow and blood.

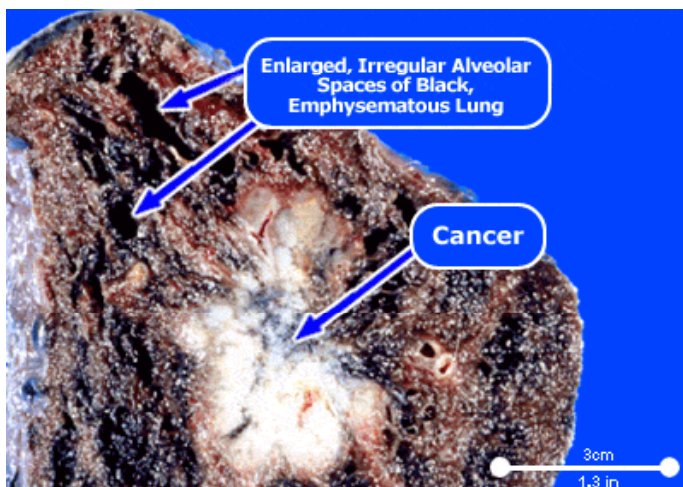
Metastasis

- **Metastasis** is where cancer cells spread away from the origin they started.
- Spread through blood stream, lymphatic system or locally.
- When Metastasis takes place it is hard to control the disease.

Types of Cancers

- **Leukemias:** Cancer of the blood
- **Lymphomas:** cancer of the lymphatic system
- **Melanoma:** cancer of the skin and eyes.
- **Sarcomas:** cancer that arise from cells of bone, cartilage, muscles and fat.
- **Carcinoma:** arises from epithelial tissues(tissues that lines the surface of organs like lung, stomach , breast etc...)

Cancer Lung



Cancer and Hereditary

- All cancer is triggered by altered genes. However, only five to 10 per cent of cancers are actually hereditary.
- Heredity may sometimes appear to be the reason for a cancer, especially when the same types of cancers run in families.

Risk Factors

- Doctors often cannot explain why one person develops cancer and another does not. But research shows that certain *risk factors* increase the chance that a person will develop cancer.

The Most Common Risk Factors For Cancer

- Growing older
- Tobacco
- Sunlight
- *Ionizing radiation*
- Certain chemicals and other substances
- Some *viruses* and *bacteria*
- Certain *hormones*
- Family history of cancer
- Alcohol
- Poor diet, lack of physical activity, or being overweight

- Many of these risk factors can be avoided. Others, such as family history, cannot be avoided. People can help protect themselves by staying away from known risk factors whenever possible.
- Over time, several factors may act together to cause normal cells to become cancerous.

Thinking about your risk of getting cancer, these are some things to keep in mind:

- Not everything causes cancer.
- Cancer is not caused by an injury, such as a bump or bruise.
- Cancer is not contagious. Although being infected with certain viruses or bacteria may increase the risk of some types of cancer, no one can "catch" cancer from another person.
- Having one or more risk factors does not mean that you will get cancer. Most people who have risk factors never develop cancer.
- Some people are more sensitive than others to the known risk factors.

Cancer and Hereditary

- Cancers with a genetic component
These cancers do appear to have some genetic link:
- Breast cancer
- Bowel (colon) cancer
- Stomach cancer
- Prostate cancer.

Cancer And Environment

- Exposure to a wide variety of natural and man-made substances in the environment accounts for at least two thirds of all cancer cases in the USA.

Cancer And Environment

- Environmental factors include:
 - Life style: cigarettes, excessive alcohol, poor diet, excessive sunlight exposure and sexual behavior.
 - Medications, hormones, radiation, viruses, bacteria, and environmental chemicals

Carcinogenic Substances in The Environment

- **Tobacco:** Tobacco use is the most preventable cause of death. Each year, more than 180,000 Americans die from cancer that is related to tobacco use.
- **Diet/weight/physical activity:**
Heavy consumption of red and preserved meats, salt preserved foods increase the risk of stomach and colon cancer.
obesity is one important cause of cancer after tobacco.

Cancer and Environment

- **Alcoholic drinks:** Cancers associated with heavy drinking include cancers of mouth, throat, liver, and esophagus.
- **Ultraviolet radiation from the sun, tanning beds** causes premature aging and DNA damage leading to **melanoma** (malignant skin cancer)

Melanoma(Skin Cancer)



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Viruses Bacteria and Cancer

- **Viruses and bacteria:**
- **Human papilloma virus (HPV)** a STD, is the primary cause of cervical cancer.
- **Hepatitis B and C:** major cause of liver cancer
- Epstein-Barr virus is linked with lymphoma.
- Ionizing radiations and Radon
- ***Helicobacter pylori (H.Pylori)***: This bacterium can cause stomach ulcers. It also can cause stomach cancer and lymphoma in the stomach lining.

- **Pesticides:** blood and lymphatic cancers
- **Solvents:** **benzene** causes leukemia.
- **Chemical wastes:** **DIOXIN**
- **Metals:** Arsenic
- **Diesel exhaust particles**

Cancer Prevention

- **At least one-third of all cancer cases are preventable.**
- **Prevention offers the most cost-effective long-term strategy for the control of cancer**

Ways to Reduce The Developing of Cancer

- **Do not smoke and avoid smoke-filled rooms**
- **Lose weight if you are overweight. Obesity is strongly linked to breast cancer in older women and cancer of uterus, kidney, colon and esophagus.**
- **Exercise regularly at least 30 minutes/day.**
- **Avoid consuming large amounts of red and preserved meats and salt preserved food.**

Ways To Reduce The Developing Of Cancer

- Eat fresh fruits and vegetables, whole grain and whole grain bread.
- Drink alcohol in moderation.
- Avoid too much sunlight.
- Avoid contacts with pesticides
- Get Screened.
- Avoid viral and bacterial infections
 - Safe sex to avoid STD
 - Get vaccinated against hepatitis B and HPV(females)

Detecting Cancer At An Early Stage

- Breast: mammography screening every 1-2 years after age 40.
- Cervix: PAP test; the most successful screening tool for cancer cervix
- Colon and rectum: colonoscopy done at the age of 50 and every 5 years.
- PSA: blood test for prostate cancer that is done routinely every year after the age of 50.
- CHEST X-Ray every 5 years after the age of 40 mainly in smokers.

Detecting Cancer At An Early Stage

- Symptoms and signs like:
 - Any change in bowel habits more than 6 weeks
 - Bleeding from rectum, blood in urine or in sputum
 - Feeling lumps in the breast or neck or axilla
 - Hoarseness or chronic cough
 - Weight loss in short period.
- **DEFINITE DIAGNOSIS IS CONFIRMED BY TISSUE BIOPSY (SAMPLING FROM CANCER TISSUE)**

Treatment of Cancer

- Surgery.
- Chemotherapy or hormonal therapy.
- Radiation therapy: could be x-rays beam targeted to the site of cancer or radioactive pill like radioactive iodine.
- Any one alone or a combination of the above methods.