# **Cancer Development**

## By Althea K. Moser M.A., MCHES®

## Objectives:

* Define cancer and how cancer arises
* Describe different types of cancer
* Identify cancer risks and methods for cancer prevention
* Assess personal cancer risk

## **What Is Cancer?**

Cancer is the name given to a collection of related diseases in which the body’s cells begin to divide without stopping and spread into surrounding tissues.

Cancer can start almost anywhere in the human body, which is made up of trillions of cells. Normally, human cells grow and divide to form new cells as the body needs them. When cells grow old or become damaged, they die, and new cells take their place.

When cancer develops, however, this orderly process breaks down. As cells become more and more abnormal, old or damaged cells survive when they should die, and new cells form when they are not needed. These extra cells can divide without stopping and may form growths called **tumors**.

Many cancers form solid tumors, which are masses of tissue. Cancers of the blood, such as leukemias, generally do not form solid tumors.

Cancerous tumors are **malignant**, which means they can spread into, or invade, nearby tissues. In addition, as these tumors grow, some cancer cells can break off and travel to distant places in the body through the blood or the lymph system and form new tumors far from the original tumor.

Unlike malignant tumors, **benign tumors** do not spread into, or invade, nearby tissues. Benign tumors can sometimes be quite large, however. When removed, they usually don’t grow back, whereas malignant tumors sometimes do. Unlike most benign tumors elsewhere in the body, benign brain tumors can be life threatening.

## **How Cancer Arises**

Cancer is a genetic disease—that is, it is caused by changes to genes that control the way our cells function, especially how they grow and divide.

Genetic changes that cause cancer can be inherited from our parents. They can also arise during a person’s lifetime as a result of errors that occur as cells divide or because of damage to [DNA](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000045671&version=Patient&language=English) caused by certain environmental exposures.

Cancer-causing environmental exposures include substances, such as the chemicals in tobacco smoke, and radiation, such as ultraviolet rays from the sun.

Each person’s cancer has a unique combination of genetic changes. As the cancer continues to grow, additional changes will occur. Even within the same tumor, different cells may have different genetic changes.

In general, cancer cells have more genetic changes, such as [mutations](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000046063&version=Patient&language=English) in DNA, than normal cells. Some of these changes may have nothing to do with the cancer; they may be the result of the cancer, rather than its cause.

## **Cancer Statistics**

Cancer has a major impact on society in the United States and across the world. Cancer statistics describe what happens in large groups of people and provide a picture in time of the burden of cancer on society.

Statistics tell us things such as how many people are diagnosed with and die from cancer each year, the number of people who are currently living after a cancer diagnosis, the average age at diagnosis, and the numbers of people who are still alive at a given time after diagnosis. They also tell us about differences among groups defined by age, sex, racial/ethnic group, geographic location, and other categories.

Cancer statistics also help us see trends. By looking at cancer rates over time, we can track changes in the risk of developing and dying from specific cancers as well as cancer overall.

Although statistical trends are usually not directly applicable to individual patients, they are essential for governments, policy makers, health professionals, and researchers to understand the impact of cancer on the population and to develop strategies to address the challenges that cancer poses to the society at large. Statistical trends are also important for measuring the success of efforts to control and manage cancer.

## **Statistics at a Glance: The Burden of Cancer in the United States**

* The most common cancers (listed in descending order according to estimated new cases in 2020) are breast cancer, lung and bronchus cancer, prostate cancer, colon and rectum cancer, melanoma of the skin, bladder cancer, non-Hodgkin lymphoma, kidney and renal pelvis cancer, endometrial cancer, leukemia, pancreatic cancer, thyroid cancer, and liver cancer.
* Prostate, lung, and colorectal cancers account for an estimated 43% of all cancers diagnosed in men in 2020. For women, the three most common cancers are breast, lung, and colorectal, and they will account for an estimated 50% of all new cancer diagnoses in women in 2020.
* The rate of new cases of cancer (cancer incidence) is 442.4 per 100,000 men and women per year (based on 2013–2017 cases).
* The cancer death rate (cancer mortality) is 158.3 per 100,000 men and women per year (based on 2013–2017 deaths).
* The cancer mortality rate is higher among men than women (189.5 per 100,000 men and 135.7 per 100,000 women). When comparing groups based on race/ethnicity and sex, cancer mortality is highest in African American men (227.3 per 100,000) and lowest in Asian/Pacific Islander women (85.6 per 100,000).
* As of January 2019, there were an estimated 16.9 million cancer survivors in the United States. The number of cancer survivors is projected to increase to 22.2 million by 2030.
* Approximately 39.5% of men and women will be diagnosed with cancer at some point during their lifetimes (based on 2015–2017 data).
* In 2020, an estimated 16,850 children and adolescents ages 0 to 19 were projected to be diagnosed with cancer and 1,730 will die of the disease.
* Estimated national expenditures for cancer care in the United States in 2018 were $150.8 billion. In future years, costs are likely to increase as the population ages and more people have cancer. Costs are also likely to increase as new, and often more expensive, treatments are adopted as standards of care.

The following video explores cancer incidence and mortality through 2020:

[Incidence and Mortality 2020](https://www.youtube.com/watch?v=MJp4IfboItw&feature=youtu.be)

## **Types of Cancer**

There are more than 100 types of cancer. Types of cancer are usually named for the organs or tissues where the cancers form. For example, lung cancer starts in cells of the lung and brain cancer starts in cells of the brain. Cancers may also be described by the type of cell that formed them, such as an epithelial cell or a squamous cell.

Some types of cancer are:

Breast Cancer

***Key Points:***

* Breast cancer is a disease in which malignant (cancer) cells form in the tissues of the breast.
* A family history of breast cancer and other factors increase the risk of breast cancer.
* Breast cancer is sometimes caused by inherited gene mutations (changes).
* The use of certain medicines and other factors decrease the risk of breast cancer.
* Signs of breast cancer include a lump or change in the breast.
* Tests that examine the breasts are used to diagnose breast cancer.
* If cancer is found, tests are done to study the cancer cells.
* Certain factors affect prognosis (chance of recovery) and treatment options.

The breast is made up of lobes and ducts. Each breast has 15 to 20 sections called lobes. Each lobe has many smaller sections called lobules. Lobules end in dozens of tiny bulbs that can make milk. The lobes, lobules, and bulbs are linked by thin tubes called ducts. Each breast also has blood vessels and lymph vessels.

The most common type of breast cancer is ductal carcinoma, which begins in the cells of the ducts. Cancer that begins in the lobes or lobules is called lobular carcinoma and is more often found in both breasts than are other types of breast cancer. Inflammatory breast cancer is an uncommon type of breast cancer in which the breast is warm, red, and swollen.

**Breast cancer is the second most common type of cancer in American women.**

Women in the United States get breast cancer more than any other type of cancer except skin cancer. Breast cancer is second to lung cancer as a cause of cancer death in American women. Deaths from breast cancer have decreased slightly each year between 2013 and 2017.

Breast cancer also occurs in men, but the number of new cases is small.

Some screening tests for breast cancer include:

* ***Breast Exam***

A **clinical breast exam** is an exam of the breast by a doctor or other health professional. He or she will carefully feel the breasts and under the arms for lumps or anything else that seems unusual. It is not known if having clinical breast exams decreases the chance of dying from breast cancer.

**Breast self-exams** may be done by women or men to check their breasts for lumps or other changes. If you feel any lumps or notice any other changes in your breasts, talk to your doctor. Doing regular breast self-exams has not been shown to decrease the chance of dying from breast cancer.

The following link explains how to perform a Breast Self-Exam:

[**Breast Self-Exam (BSE)**](https://www.maurerfoundation.org/about-breast-cancer-breast-health/how-to-do-a-bse-breast-self-exam/)

* ***Mammography***

Mammography is the most common screening test for breast cancer. A [mammogram](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45775&version=patient&language=English&dictionary=Cancer.gov) is an [x-ray](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45944&version=patient&language=English&dictionary=Cancer.gov) picture of the [breast](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=304766&version=patient&language=English&dictionary=Cancer.gov). [Mammography](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45996&version=patient&language=English&dictionary=Cancer.gov) may find [tumors](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46634&version=patient&language=English&dictionary=Cancer.gov) that are too small to feel. It may also find [ductal carcinoma in situ](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45674&version=patient&language=English&dictionary=Cancer.gov) (DCIS). In DCIS, [abnormal](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=44636&version=patient&language=English&dictionary=Cancer.gov) [cells](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46476&version=patient&language=English&dictionary=Cancer.gov) line the breast [duct](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46441&version=patient&language=English&dictionary=Cancer.gov), and in some women may become [invasive cancer](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45741&version=patient&language=English&dictionary=Cancer.gov).

Mammography is less likely to find breast tumors in women with [dense breast tissue](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=335487&version=patient&language=English&dictionary=Cancer.gov). Because both tumors and dense breast tissue appear white on a mammogram, it can be harder to find a tumor when there is dense breast tissue. Younger women are more likely to have dense breast tissue.

Women aged 50 to 69 years who have [screening mammograms](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=304744&version=patient&language=English&dictionary=Cancer.gov) have a lower chance of dying from breast cancer than women who do not have screening mammograms.

* ***Breast MRI***Magnetic resonance imaging (MRI) may be used to screen women who have a high risk of breast cancer. [MRI](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45788&version=patient&language=English&dictionary=Cancer.gov) is a procedure that uses a magnet, [radio waves](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=651209&version=patient&language=English&dictionary=Cancer.gov), and a computer to make a series of detailed pictures of areas inside the body. MRI does not use any x-rays and the woman is not exposed to [radiation](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45072&version=patient&language=English&dictionary=Cancer.gov).

Whether a woman should be screened for breast cancer and the screening test to use depends on certain factors. Women with [risk factors](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45873&version=patient&language=English&dictionary=Cancer.gov) for breast cancer, such as certain changes in the *BRCA1* or *BRCA2* gene or certain genetic syndromes may be screened at a younger age and more often.

Cervical Cancer

***Key Points:***

* Cervical cancer is a disease in which malignant (cancer) cells form in the tissues of the cervix.
* **Human papillomavirus (HPV) infection is the major risk factor for cervical cancer**.
* There are usually no signs or symptoms of early cervical cancer but it can be detected early with regular check-ups.
* Signs and symptoms of cervical cancer include vaginal bleeding and pelvic pain.
* Tests that examine the cervix are used to detect (find) and diagnose cervical cancer.
* Certain factors affect prognosis (chance of recovery) and treatment options.

The [cervix](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46133&version=patient&language=English&dictionary=Cancer.gov) is the lower, narrow end of the [uterus](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46645&version=patient&language=English&dictionary=Cancer.gov) (the hollow, pear-shaped [organ](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=257523&version=patient&language=English&dictionary=Cancer.gov) where a [fetus](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46400&version=patient&language=English&dictionary=Cancer.gov) grows). The cervix leads from the uterus to the [vagina](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46646&version=patient&language=English&dictionary=Cancer.gov) (birth canal).

[Cervical cancer](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=444973&version=patient&language=English&dictionary=Cancer.gov) usually develops slowly over time. Before [cancer](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45333&version=patient&language=English&dictionary=Cancer.gov) appears in the cervix, the [cells](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46476&version=patient&language=English&dictionary=Cancer.gov) of the cervix go through changes known as [dysplasia](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45675&version=patient&language=English&dictionary=Cancer.gov), in which [abnormal](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=44636&version=patient&language=English&dictionary=Cancer.gov) cells begin to appear in the [cervical](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=44102&version=patient&language=English&dictionary=Cancer.gov) [tissue](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46683&version=patient&language=English&dictionary=Cancer.gov). Over time, the abnormal cells may become cancer cells and start to grow and spread more deeply into the cervix and to surrounding areas.

Some screening tests for cervical cancer include:

* [***Pelvic Exam***](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=322873&version=patient&language=English&dictionary=Cancer.gov)

An exam of the vagina, cervix, uterus, [fallopian tubes](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45687&version=patient&language=English&dictionary=Cancer.gov), [ovaries](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46687&version=patient&language=English&dictionary=Cancer.gov), and [rectum](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46555&version=patient&language=English&dictionary=Cancer.gov). A [speculum](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46588&version=patient&language=English&dictionary=Cancer.gov) is inserted into the vagina and the doctor or [nurse](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=269445&version=patient&language=English&dictionary=Cancer.gov) looks at the vagina and cervix for signs of disease. A [Pap test](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45978&version=patient&language=English&dictionary=Cancer.gov) of the cervix is usually done. The doctor or nurse also inserts one or two [lubricated](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46302&version=patient&language=English&dictionary=Cancer.gov), gloved fingers of one hand into the vagina and places the other hand over the lower [abdomen](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45070&version=patient&language=English&dictionary=Cancer.gov) to feel the size, shape, and position of the uterus and ovaries. The doctor or nurse also inserts a lubricated, gloved finger into the rectum to feel for lumps or abnormal areas.

* ***Pap Test***

A procedure to collect cells from the surface of the cervix and vagina. A piece of cotton, a brush, or a small wooden stick is used to gently scrape cells from the cervix and vagina. The cells are viewed under a [microscope](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=638184&version=patient&language=English&dictionary=Cancer.gov) to find out if they are abnormal. This procedure is also called a Pap smear.

* [***Human Papillomavirus (HPV) Test***](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=666689&version=patient&language=English&dictionary=Cancer.gov)

A [laboratory test](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46590&version=patient&language=English&dictionary=Cancer.gov) used to check [DNA](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45671&version=patient&language=English&dictionary=Cancer.gov) or [RNA](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46568&version=patient&language=English&dictionary=Cancer.gov) for certain types of HPV [infection](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45364&version=patient&language=English&dictionary=Cancer.gov). Cells are collected from the cervix and DNA or RNA from the cells is checked to find out if an infection is caused by a type of HPV that is linked to cervical cancer. This test may be done using the sample of cells removed during a Pap test. This test may also be done if the results of a Pap test show certain abnormal cervical cells.

**Studies show that screening for cervical cancer helps decrease the number of deaths from the disease.**

Regular screening of women between the ages of 21 and 65 years with the [Pap test](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45978&version=patient&language=English&dictionary=Cancer.gov) decreases their chance of dying from [cervical cancer](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=444973&version=patient&language=English&dictionary=Cancer.gov).

Colorectal Cancer

***Key Points:***

* Colorectal cancer is a disease in which malignant (cancer) cells form in the tissues of the colon or the rectum.
* **Colorectal cancer is the third leading cause of death from cancer in the United States.**

[Colorectal cancer](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000444983&version=Patient&language=English) is a disease in which abnormal cells in the [colon](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000046462&version=Patient&language=English) or [rectum](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000046555&version=Patient&language=English) divide uncontrollably, ultimately forming a [malignant](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000045772&version=Patient&language=English) [tumor](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000046634&version=Patient&language=English). (The colon and rectum are parts of the body’s [digestive system](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000046446&version=Patient&language=English), which takes up [nutrients](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000044697&version=Patient&language=English) from food and water and stores solid waste until it passes out of the body.)

Most colorectal cancers begin as a growth, or [lesion](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000046324&version=Patient&language=en), in the tissue that lines the inner surface of the colon or rectum. Lesions may appear as raised [**polyps**](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000045844&version=Patient&language=en), or, less commonly, they may appear flat or slightly indented.

Some screening tests for colorectal cancer include:

* ***Stool Tests***

Both polyps and colorectal cancers can bleed, and stool tests check for tiny amounts of blood in feces (stool) that cannot be seen visually. (Blood in stool may also indicate the presence of conditions that are not cancer, such as [hemorrhoids](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000044207&version=Patient&language=en).)

* ***Colonoscopy***

In this test, the rectum and entire colon are examined using a [colonoscope](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000046463&version=Patient&language=en), a flexible lighted tube with a lens for viewing and a tool for removing tissue. During colonoscopy, any abnormal growths in the entire colon and the rectum can be removed.

Expert medical groups, including the US Preventive Services Task Force (USPSTF), strongly recommend screening for colorectal cancer. Although some details of the recommendations vary, most groups generally recommend that people at average risk of colorectal cancer get screened at regular intervals beginning at age 50, although the American Cancer Society recommends that routine screening begin at age 45. USPSTF recommends that screening continue to age 75; for those aged 75–85 years, the decision to screen is based on the patient’s life expectancy, health status, comorbid conditions, and prior screening results.

People who are at increased risk of colorectal cancer because of a [family history](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000302456&version=Patient&language=en) of colorectal cancer or documented advanced [polyps](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000045844&version=Patient&language=en) or because they have [inflammatory bowel disease](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000045737&version=Patient&language=en) or certain [inherited](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000045098&version=Patient&language=en) conditions (such as [Lynch syndrome](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000044882&version=Patient&language=en) and [familial adenomatous polyposis](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000045100&version=Patient&language=en)) may be advised to start screening earlier and/or have more frequent screening.

Lung Cancer

***Key Points:***

* Lung cancer is a disease in which malignant (cancer) cells form in the tissues of the lung.
* **Lung cancer is the leading cause of cancer death in both men and women*.***

There are two types of lung cancer: [small cell lung cancer](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45327&version=patient&language=English&dictionary=Cancer.gov) and [non-small cell lung cancer](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45323&version=patient&language=English&dictionary=Cancer.gov).

Lung cancer is the third most common type of non-[skin cancer](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=445084&version=patient&language=English&dictionary=Cancer.gov) in the United States.

The number of new cases and deaths from lung cancer is highest in black men.

[Tobacco](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=439432&version=patient&language=English&dictionary=Cancer.gov) smoking is the most important risk factor for lung cancer. [Cigarette](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=748148&version=patient&language=English&dictionary=Cancer.gov), [cigar](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=748146&version=patient&language=English&dictionary=Cancer.gov), and [pipe](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=748824&version=patient&language=English&dictionary=Cancer.gov) smoking all increase the risk of lung cancer. Tobacco smoking causes about 9 out of 10 cases of lung cancer in men and about 8 out of 10 cases of lung cancer in women. **The best way to prevent lung cancer is to not smoke**.

Some screening tests for lung cancer include:

* ***Low-dose Computed Tomography (LDCT)***

A procedure that uses low-dose [radiation](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45072&version=patient&language=English&dictionary=Cancer.gov) to make a series of very detailed pictures of areas inside the body using an [x-ray](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45944&version=patient&language=English&dictionary=Cancer.gov) machine that [scans](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46570&version=patient&language=English&dictionary=Cancer.gov) the body in a spiral path. This procedure is also called spiral scan or helical scan.

Screening with LDCT scans has been shown to decrease the risk of dying from lung cancer in heavy smokers.

* [***Chest X-ray***](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=304687&version=patient&language=English&dictionary=Cancer.gov)

An x-ray of the [organs](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=257523&version=patient&language=English&dictionary=Cancer.gov) and bones inside the chest.

* [***Sputum Cytology***](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=335080&version=patient&language=English&dictionary=Cancer.gov)

Sputum cytology is a procedure in which a sample of [sputum](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45883&version=patient&language=English&dictionary=Cancer.gov) ([mucus](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46274&version=patient&language=English&dictionary=Cancer.gov) that is coughed up from the [lungs](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=270740&version=patient&language=English&dictionary=Cancer.gov)) is viewed under a [microscope](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=638184&version=patient&language=English&dictionary=Cancer.gov) to check for cancer [cells](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46476&version=patient&language=English&dictionary=Cancer.gov).

Prostate Cancer

***Key Points:***

* Prostate cancer is a disease in which malignant (cancer) cells form in the tissues of the prostate.
* **Prostate cancer is the second most common cancer among men in the United States.**

The [prostate](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46539&version=patient&language=English&dictionary=Cancer.gov) is a [gland](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46386&version=patient&language=English&dictionary=Cancer.gov) in the male [reproductive system](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46564&version=patient&language=English&dictionary=Cancer.gov). The prostate is just below the [bladder](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46501&version=patient&language=English&dictionary=Cancer.gov) (the [organ](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=257523&version=patient&language=English&dictionary=Cancer.gov) that collects and empties [urine](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46642&version=patient&language=English&dictionary=Cancer.gov)) and in front of the [rectum](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46555&version=patient&language=English&dictionary=Cancer.gov) (the lower part of the [intestine](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46335&version=patient&language=English&dictionary=Cancer.gov)). It is about the size of a walnut and surrounds part of the [urethra](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46640&version=patient&language=English&dictionary=Cancer.gov) (the tube that empties urine from the bladder). The prostate gland produces [fluid](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=44669&version=patient&language=English&dictionary=Cancer.gov) that makes up part of the [semen](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46703&version=patient&language=English&dictionary=Cancer.gov).

Prostate cancer is found mainly in older men. Although the number of men with prostate cancer is large, most men [diagnosed](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46450&version=patient&language=English&dictionary=Cancer.gov) with this disease do not die from it. Prostate cancer causes more deaths in men than any other cancer except [lung cancer](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=445043&version=patient&language=English&dictionary=Cancer.gov). Prostate cancer occurs more often in African-American men than in white men. African-American men with prostate cancer are more likely to die from the disease than white men with prostate cancer.

A man whose father, brother, or son has had prostate cancer has a higher-than-average risk of prostate cancer.

**There is no standard or routine screening test for prostate cancer.**

Although there are no standard or routine screening tests for [prostate cancer](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=445079&version=patient&language=English&dictionary=Cancer.gov), the following tests are being used or studied to screen for it:

* ***Digital Rectal Exam***

[Digital rectal exam](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45668&version=patient&language=English&dictionary=Cancer.gov) (DRE) is an exam of the [rectum](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46555&version=patient&language=English&dictionary=Cancer.gov). The doctor or [nurse](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=269445&version=patient&language=English&dictionary=Cancer.gov) inserts a [lubricated](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46302&version=patient&language=English&dictionary=Cancer.gov), gloved finger into the lower part of the rectum to feel the [prostate](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46539&version=patient&language=English&dictionary=Cancer.gov) for lumps or anything else that seems unusual.

* ***Prostate-specific Antigen Test***

A [prostate-specific antigen (PSA) test](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=322878&version=patient&language=English&dictionary=Cancer.gov) is a test that measures the level of [PSA](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=44867&version=patient&language=English&dictionary=Cancer.gov) in the [blood](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=270735&version=patient&language=English&dictionary=Cancer.gov). PSA is a substance made mostly by the prostate that may be found in an increased amount in the blood of men who have prostate cancer.

**Skin Cancer**

***Key Points:***

* Skin cancer is a disease in which malignant (cancer) cells form in the tissues of the skin.
* There are several types of skin cancer.
* **Skin cancer is the most common cancer in the United States.**

Skin cancer can occur anywhere on the body, but it is most common in areas exposed to sunlight, such as the face, neck, hands, and arms.

The most common types of skin cancer are [squamous cell carcinoma](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=787988&version=patient&language=English&dictionary=Cancer.gov), which forms in the squamous cells and [basal cell carcinoma](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46515&version=patient&language=English&dictionary=Cancer.gov), which forms in the basal cells. Squamous cell carcinoma and basal cell carcinoma are also called [nonmelanoma skin cancers](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46261&version=patient&language=English&dictionary=Cancer.gov). The number of new cases of nonmelanoma skin cancer appears to be increasing every year. These nonmelanoma skin cancers can usually be [cured](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=318813&version=patient&language=English&dictionary=Cancer.gov).

[Melanoma](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45135&version=patient&language=English&dictionary=Cancer.gov), which forms in the melanocytes, is a less common type of skin cancer that grows and spreads quickly. The number of new cases of melanoma has been increasing for at least 40 years. Melanoma is more likely to spread to nearby [tissues](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46683&version=patient&language=English&dictionary=Cancer.gov) and other parts of the body and can be harder to cure. Finding and treating melanoma skin cancer early may help prevent death from melanoma.

Some screening tests for skin cancer include:

* ***Visual Self-exam & Clinical Exam***

A visual self-exam by the patient and a

clinical examination by the health care provider may be used.

* ***Skin Exam***

During a skin exam a doctor or [nurse](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=269445&version=patient&language=English&dictionary=Cancer.gov) checks the skin for [moles](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46286&version=patient&language=English&dictionary=Cancer.gov), birthmarks, or other pigmented areas that look [abnormal](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=44636&version=patient&language=English&dictionary=Cancer.gov) in color, size, shape, or texture.

Skin exams to screen for skin cancer have not been shown to decrease the number of deaths from the disease.

Regular skin checks by a doctor are important for people who have already had skin cancer. If you are checking your skin and find a worrisome change, you should report it to your doctor.

If an area on the skin looks abnormal, a [biopsy](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45164&version=patient&language=English&dictionary=Cancer.gov) is usually done. The doctor will remove as much of the suspicious [tissue](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46683&version=patient&language=English&dictionary=Cancer.gov) as possible with a [local](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45755&version=patient&language=English&dictionary=Cancer.gov) [excision](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=269459&version=patient&language=English&dictionary=Cancer.gov).

Testicular Cancer

***Key Points:***

* Testicular cancer is a disease in which malignant (cancer) cells form in the tissues of one or both testicles.
* Health history can affect the risk of testicular cancer.
* Signs and symptoms of testicular cancer include swelling or discomfort in the scrotum.
* Tests that examine the testicles and blood are used to detect (find) and diagnose testicular cancer.
* Certain factors affect prognosis (chance of recovery) and treatment options.
* Treatment for testicular cancer can cause infertility.

The [testicles](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46611&version=patient&language=English&dictionary=Cancer.gov) are 2 egg-shaped [glands](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46386&version=patient&language=English&dictionary=Cancer.gov) located inside the [scrotum](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46573&version=patient&language=English&dictionary=Cancer.gov) (a sac of loose skin that lies directly below the [penis](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=257215&version=patient&language=English&dictionary=Cancer.gov)). The testicles are held within the scrotum by the [spermatic cord](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=615541&version=patient&language=English&dictionary=Cancer.gov), which also contains the [vas deferens](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=44309&version=patient&language=English&dictionary=Cancer.gov) and vessels and [nerves](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=373935&version=patient&language=English&dictionary=Cancer.gov) of the testicles.

The testicles are the male sex glands and produce [testosterone](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45581&version=patient&language=English&dictionary=Cancer.gov) and [sperm](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=257221&version=patient&language=English&dictionary=Cancer.gov). [Germ cells](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46382&version=patient&language=English&dictionary=Cancer.gov) within the testicles produce immature sperm that travel through a network of tubules (tiny tubes) and larger tubes into the [epididymis](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=615503&version=patient&language=English&dictionary=Cancer.gov) (a long coiled tube next to the testicles) where the sperm mature and are stored.

Almost all [testicular cancers](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=445090&version=patient&language=English&dictionary=Cancer.gov) start in the germ cells. The two main types of [testicular germ cell tumors](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=695185&version=patient&language=English&dictionary=Cancer.gov) are [seminomas](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46577&version=patient&language=English&dictionary=Cancer.gov) and [nonseminomas](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46255&version=patient&language=English&dictionary=Cancer.gov). These 2 types grow and spread differently and are treated differently. Nonseminomas tend to grow and spread more quickly than seminomas. Seminomas are more sensitive to [radiation](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45072&version=patient&language=English&dictionary=Cancer.gov). A testicular [tumor](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46634&version=patient&language=English&dictionary=Cancer.gov) that contains both seminoma and nonseminoma [cells](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46476&version=patient&language=English&dictionary=Cancer.gov) is treated as a nonseminoma.

Testicular cancer is very rare, but it is the **most common** [**cancer**](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45333&version=patient&language=English&dictionary=Cancer.gov) **found in men between the ages of 15 and 34**.

White men are four times more likely than black men to have testicular cancer.

Signs and symptoms of testicular cancer include swelling or discomfort in the scrotum.

**Testicular cancer can usually be cured.**

Although the number of new cases of testicular cancer has doubled in the last 40 years, the number of deaths caused by testicular cancer has decreased greatly because of better treatments.

There is no standard or routine screening test used for early detection of [testicular cancer](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=445090&version=patient&language=English&dictionary=Cancer.gov). Most often, testicular cancer is first found by men themselves, either by chance or during self-exam. Sometimes the cancer is found by a doctor during a routine [physical exam](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=270871&version=patient&language=English&dictionary=Cancer.gov).

Tests that examine the testicles and blood are used to detect (find) and diagnose testicular cancer.

* [**Physical Exam**](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=270871&version=patient&language=English&dictionary=Cancer.gov) **and** [**History**](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=689078&version=patient&language=English&dictionary=Cancer.gov):

An exam of the body to check general signs of health, including checking for signs of disease, such as lumps or anything else that seems unusual. The testicles will be examined to check for lumps, swelling, or pain. A history of the patient's health habits and past illnesses and treatments will also be taken.

* [**Ultrasound**](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46157&version=patient&language=English&dictionary=Cancer.gov) **Exam of the** [**Testes**](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=367406&version=patient&language=English&dictionary=Cancer.gov):

A procedure in which high-energy sound waves (ultrasound) are bounced off internal [tissues](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46683&version=patient&language=English&dictionary=Cancer.gov) or [organs](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=257523&version=patient&language=English&dictionary=Cancer.gov) and make echoes. The echoes form a picture of body tissues called a [sonogram](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46587&version=patient&language=English&dictionary=Cancer.gov).

Certain treatments for testicular cancer can cause [infertility](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46348&version=patient&language=English&dictionary=Cancer.gov) that may be permanent. Patients who may wish to have children should consider [sperm banking](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=43974&version=patient&language=English&dictionary=Cancer.gov) before having treatment. Sperm banking is the process of freezing sperm and storing it for later use.

The following video explains how to perform a testicular self-exam:

[**Testicular Self-Exam**](https://www.youtube.com/watch?v=NvDglB_HXyE#t=11)

Leukemia

Leukemia is a broad term for cancers of the blood cells. The type of leukemia depends on the type of blood cell that becomes cancer and whether it grows quickly or slowly.

Leukemia occurs most often in adults older than 55, but it is also the most common cancer in children younger than 15.

Lymphoma

Lymphoma is a broad term for cancer that begins in cells of the lymph system. The two main types are Hodgkin lymphoma and non-Hodgkin lymphoma (NHL).

Hodgkin lymphoma can often be cured. The prognosis of NHL depends on the specific type.

## **Risk Factors for Cancer**

It is usually impossible to know why one person develops cancer and another does not. But research has shown that certain risk factors may increase a person’s chances of developing cancer. There are also factors—called protective risk factors, or just protective factors—that are linked to a lower risk of cancer.

Cancer risk factors include exposure to chemicals or other substances, as well as certain behaviors. They also include circumstances that people cannot control, like age and family history. A family history of certain cancers can be a sign of a possible inherited cancer syndrome.

Most cancer risks, as well as protective factors, are initially identified in epidemiology studies. In these studies, scientists look at large groups of people and compare those who develop cancer with those who do not. These studies may show that those who develop cancer are more or less likely to behave in certain ways, or to be exposed to certain substances, than those who do not develop cancer.

On their own, such studies cannot prove that a behavior or substance causes cancer. For example, the finding could be a result of chance, or the true risk factor could be something other than the suspected risk factor. But findings of this type sometimes get attention in the media, and this can lead to false beliefs about how cancer starts and spreads.

When many studies all point to a similar association between a potential risk factor and an increased risk of cancer, and when a possible mechanism exists that could explain how the risk factor could actually cause cancer, scientists can be more confident about the relationship between the two.

Although some risk factors can be avoided, others—such as growing older—cannot. Limiting exposure to avoidable risk factors may lower a person’s risk of developing certain cancers.

Some of the most studied risk factors for cancer are listed below.

Age

Advancing age is the most important risk factor for cancer overall, and for many specific types of cancer. According to the most recent statistical data from the National Cancer Institute’s [Surveillance, Epidemiology, and End Results program](http://seer.cancer.gov/), the median age of a cancer diagnosis is 66 years. This means that half of cancer cases occur in people below this age and half in people above this age. One-quarter of new cancer cases are diagnosed in people aged from 65 to 74.

But the disease can occur at any age. For example, bone cancer is most frequently diagnosed among people under age 20, with more than one-fourth of cases occurring in this age group. And 10 percent of leukemias are diagnosed in children and adolescents under 20 years of age, whereas only 1 percent of cancer overall is diagnosed in that age group.

Alcohol

Drinking alcohol can increase a person’s risk of cancer of the mouth, throat, esophagus, larynx (voice box), liver, and breast. The more a person consumes alcohol, the higher his or her risk. The risk of cancer is much higher for those who drink alcohol and also use tobacco.

Doctors advise people who drink to do so in moderate amounts. The federal government’s Dietary Guidelines for Americans defines moderate alcohol drinking as up to one drink per day for women and up to two drinks per day for men.

It has been suggested that certain substances in red wine, such as resveratrol, have anticancer properties. However, no evidence exists that drinking red wine reduces the risk of cancer.

Cancer-Causing Substances in the Environment

Cancer is caused by changes to certain genes that alter the way our cells function. Some of these genetic changes occur naturally when DNA is replicated during the process of cell division. But others are the result of environmental exposures that damage DNA. These exposures may include substances known as **carcinogens***,* any substance that causes cancer*,* such as the chemicals in tobacco smoke; and radiation, such as ultraviolet rays from the sun.

People can avoid some cancer-causing exposures, such as tobacco smoke and the sun’s rays. But others are harder to avoid, especially if they are found in the air, water, and food, or the materials people use to do their jobs. Scientists are studying which exposures may cause or contribute to the development of cancer. Understanding which exposures are harmful, and where they are found, may help people avoid them.

Simply because a substance has been designated as a carcinogen, however, that does not mean that the substance will necessarily cause cancer. Many factors influence whether a person exposed to a carcinogen will develop cancer, including the amount and duration of the exposure and the individual’s genetic background.

Diet

Many studies have looked at the possibility that specific dietary components or [nutrients](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000044697&version=Patient&language=English) are associated with increases or decreases in cancer risk. Studies of cancer cells in the laboratory and of animal models have sometimes provided evidence that isolated compounds may be carcinogenic, or have anticancer activity.

But with few exceptions, studies of human populations have not yet shown definitively that any dietary component causes or protects against cancer. Sometimes the results of [epidemiologic](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000257225&version=Patient&language=English) studies, which compare the diets of people with and without cancer have indicated that people with and without cancer differ in their intake of a particular dietary component.

However, these results show only that the dietary component is associated with a change in cancer risk, not that the dietary component is responsible for, or causes, the change in risk. For example, participants with and without cancer could differ in other ways besides their diet, and it is possible that some other difference accounts for the variance in cancer risk.

Hormones

Estrogens, a group of female sex hormones, are known human carcinogens. Although these hormones have essential physiological roles in both females and males, they have also been associated with an increased risk of certain cancers. For instance, taking combined menopausal hormone therapy (estrogen plus progestin, which is a synthetic version of the female hormone progesterone) can increase a woman’s risk of breast cancer. Menopausal hormone therapy with estrogen alone increases the risk of endometrial cancer and is used only in women who have had a hysterectomy.

A woman who is considering menopausal hormone therapy should discuss the possible risks and benefits with her doctor.

Studies have also shown that a woman’s risk of breast cancer is related to the estrogen and progesterone made by her ovaries, known as endogenous estrogen and progesterone. Being exposed for a long time and/or to high levels of these hormones has been linked to an increased risk of breast cancer. Increases in exposure can be caused by starting menstruation early, going through menopause late, being older at first pregnancy, and never having given birth. Conversely, having given birth is a protective factor for breast cancer.

Obesity

People who are obese may have an increased risk of several types of cancer, including cancers of the breast (in women who have been through menopause), colon, rectum, esophagus, kidney, pancreas, gallbladder, and the lining of the uterus, called the **endometrium**.

Conversely, eating a healthy diet, being physically active, and maintaining a healthy weight may reduce the risk of some cancers. These healthy behaviors also lessen the risk of other illnesses, such as heart disease, type II diabetes, and high blood pressure.

Sunlight

The sun, sunlamps, and tanning booths all give off [ultraviolet (UV) radiation](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000045934&version=Patient&language=English). Exposure to UV radiation causes early aging of the skin and skin damage that can lead to skin cancer.

People of all ages should limit the amount of time they spend in the sun, especially between mid-morning and late afternoon, and avoid other sources of UV radiation, such as tanning beds. It is important to keep in mind that UV radiation is reflected by sand, water, snow, and ice and can go through windshields and windows.

The best way to lessen UV damage when spending time in the sun is to wear long sleeves, long pants, a hat with a wide brim, and sunglasses with lenses that absorb UV radiation. Sunscreen with a sun protection factor (SPF) of at least 15 may help prevent skin cancer but does not work as well as staying out of the sun and wearing protective clothing.

Tobacco

Tobacco use is a leading cause of cancer and of death from cancer. People who use tobacco products, or are regularly exposed to [environmental tobacco smoke](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000046431&version=Patient&language=English) (called **secondhand smoke**), have an increased risk of cancer because tobacco products and secondhand smoke have many chemicals that damage DNA.

Tobacco use causes many types of cancer, including cancer of the lung, larynx, mouth, esophagus, throat, bladder, kidney, liver, stomach, pancreas, colon and rectum, and cervix, as well as acute myeloid leukemia. People who use [smokeless tobacco](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000748220&version=Patient&language=English), such as snuff or chewing tobacco, have increased risks of cancers of the mouth, esophagus, and pancreas.

No level of tobacco use is safe. People who use any type of tobacco product are strongly urged to quit.  People who quit smoking, regardless of their age, have substantial gains in life expectancy compared with those who continue to smoke. Also, quitting smoking at the time of a cancer diagnosis reduces the risk of death.

Cancer Prevention Overview

[Cancer](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45333&version=Patient&language=English) [prevention](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=439419&version=Patient&language=English) is action taken to lower the chance of getting cancer. In addition to the physical problems and emotional [distress](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=454701&version=Patient&language=English) caused by cancer, the high costs of care are also a burden to patients, their families, and to the public. Preventative measures can lower the number of new cases and cancer deaths, and reduce the burden of cancer on society.

[Scientists](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=44724&version=Patient&language=English) are studying ways to prevent cancer, including the following:

* avoiding or controlling factors known to cause cancer
* improving [diet](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=44660&version=Patient&language=English) and adopting a healthier lifestyle
* finding [precancerous](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=46220&version=Patient&language=English) [conditions](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=651193&version=Patient&language=English) early
* incorporating [chemoprevention](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=45487&version=Patient&language=English): the use of [medicines](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=482419&version=Patient&language=English) that treat precancerous conditions or prevent cancer from starting

Cancer Treatment

Patients and their doctors must choose from a plethora of cancer treatments. The types of treatment a patient receives depend on the type of cancer a person has and how advanced it is. Some people with cancer will have only one treatment. But most people have a combination of treatments, such as [surgery](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000045570&version=Patient&language=English) with [chemotherapy](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000045214&version=Patient&language=English) and/or [radiation therapy](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000044971&version=Patient&language=English). They may also undergo [immunotherapy](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000045729&version=Patient&language=English), [targeted therapy](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000270742&version=Patient&language=English), or [hormone therapy](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000045110&version=Patient&language=English).

[Clinical trials](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000045961&version=Patient&language=English) are also an option for some patients. Clinical trials are [research studies](https://www.cancer.gov/Common/PopUps/popDefinition.aspx?id=CDR0000651211&version=Patient&language=English) that involve people. Understanding what they are and how they work can help patients decide if taking part in a trial is a good option.

When seeking treatment for cancer, patients have a lot to learn and consider. It is normal for them to feel overwhelmed and confused. Talking with their doctor and learning all they can about their treatment options, including clinical trials, can help them make a decision they feel good about.

## **Assessing Your Personal Risk of Cancer**

Complete the following Lab to assess your personal risk of cancer, and submit it per your instructor’s directions:

[**Assess Your Risk of Cancer**](http://media.pearsoncmg.com/bc/bc_hopson_health_2/labs/hopson2_lab12_1.pdf)

**Terminology Checklist:**

**Cancer:** The name given to a collection of related diseases in which the body’s cells begin to divide without stopping and spread into surrounding tissues.

**Malignant:** Cancerous tumors that can spread into or invade nearby tissues.

**Benign:** Tumors that do not invade nearby tissues.

**Carcinogens:** Any substance that causes cancer*,* such as the chemicals in tobacco smoke; and radiation, such as ultraviolet rays from the sun.

**Breast cancer:** Breast cancer is a disease in which malignant (cancer) cells form in the tissues of the breast. It can occur in both men and women.

**Cervical cancer:** Cervical cancer is a disease in which malignant (cancer) cells form in the tissues of the cervix. Human papillomavirus (HPV) infection is the major risk factor for cervical cancer.

**Colorectal cancer:** Colorectal cancer is a disease in which malignant (cancer) cells form in the tissues of the colon or the rectum.

**Lung cancer:** Lung cancer is a disease in which malignant (cancer) cells form in the tissues of the lung. Most cases of lung cancer are caused by smoking.

**Prostate cancer:** Prostate cancer is a disease in which malignant (cancer) cells form in the tissues of the prostate. Prostate cancer is the second most common cancer among men in the United States.

**Skin cancer:** Skin cancer is the most common type of cancer. It usually forms in skin that has been exposed to sunlight but can occur anywhere on the body.

**Testicular cancer:** Testicular cancer is a disease in which malignant (cancer) cells form in the tissues of one or both testicles.

Testicular cancer is the most common cancer in men aged from 15 to 34 years.

**Test Your Knowledge:**

1. Benign tumors in the breast can be life threatening. T F

2. When comparing groups based on race/ethnicity and sex, cancer mortality is highest in:

a) Caucasian women

b) African-American men

c) Pacific Islander women

d) Caucasian men

3. Cancer of the lung, larynx (voice box), mouth, esophagus, throat, pancreas, as well as acute myeloid leukemia are often the result of:

a) alcohol abuse

b) exposure to UV radiation

c) tobacco use

d) hormonal imbalances

4. Leukemia is cancer of the \_\_\_\_\_\_\_\_\_\_\_\_\_.

5. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can check for abnormal cells in the cervix.

**Answers:** 1. F, 2. B, 3. C, 4. Blood cells, 5. Pap Test

**Source:**

The website of the National Cancer Institute ([https://www.cancer.gov](https://www.cancer.gov/))

Copyright Disclaimer:

Most of the information on the National Cancer Institute (NCI) website, www.cancer.gov, is in the public domain and is not subject to copyright restrictions. No special permission is required to use or reproduce public domain material. NCI's public domain information includes health professional and patient information in NCI's Physician Data Query (PDQ®) cancer information database and patient education brochures, booklets, and fact sheets.

However, any reproduced material should acknowledge NCI as the originator and the NCI website, www.cancer.gov, as the source.

The source can be cited as:

The website of the National Cancer Institute ([https://www.cancer.gov](https://www.cancer.gov/))