

# Breast Cancer

## Breast cancer

Breast cancer is a cancer that develops from breast tissue. Signs of breast cancer may include a lump in the breast, a change in breast shape, dimpling - Breast cancer is a cancer that develops from breast tissue. Signs of breast cancer may include a lump in the breast, a change in breast shape, dimpling of the skin, milk rejection, fluid coming from the nipple, a newly inverted nipple, or a red or scaly patch of skin. In those with distant spread of the disease, there may be bone pain, swollen lymph nodes, shortness of breath, or yellow skin.

Risk factors for developing breast cancer include obesity, a lack of physical exercise, alcohol consumption, hormone replacement therapy during menopause, ionizing radiation, an early age at first menstruation, having children late in life (or not at all), older age, having a prior history of breast cancer, and a family history of breast cancer. About five to ten percent of cases are the result of an inherited genetic predisposition, including BRCA mutations among others. Breast cancer most commonly develops in cells from the lining of milk ducts and the lobules that supply these ducts with milk. Cancers developing from the ducts are known as ductal carcinomas, while those developing from lobules are known as lobular carcinomas. There are more than 18 other sub-types of breast cancer. Some, such as ductal carcinoma in situ, develop from pre-invasive lesions. The diagnosis of breast cancer is confirmed by taking a biopsy of the concerning tissue. Once the diagnosis is made, further tests are carried out to determine if the cancer has spread beyond the breast and which treatments are most likely to be effective.

Breast cancer screening can be instrumental, given that the size of a breast cancer and its spread are among the most critical factors in predicting the prognosis of the disease. Breast cancers found during screening are typically smaller and less likely to have spread outside the breast. Training health workers to do clinical breast examination may have potential to detect breast cancer at an early stage. A 2013 Cochrane review found that it was unclear whether mammographic screening does more harm than good, in that a large proportion of women who test positive turn out not to have the disease. A 2009 review for the US Preventive Services Task Force found evidence of benefit in those 40 to 70 years of age, and the organization recommends screening every two years in women 50 to 74 years of age. The medications tamoxifen or raloxifene may be used in an effort to prevent breast cancer in those who are at high risk of developing it. Surgical removal of both breasts is another preventive measure in some high risk women. In those who have been diagnosed with cancer, a number of treatments may be used, including surgery, radiation therapy, chemotherapy, hormonal therapy, and targeted therapy. Types of surgery vary from breast-conserving surgery to mastectomy. Breast reconstruction may take place at the time of surgery or at a later date. In those in whom the cancer has spread to other parts of the body, treatments are mostly aimed at improving quality of life and comfort.

Outcomes for breast cancer vary depending on the cancer type, the extent of disease, and the person's age. The five-year survival rates in England and the United States are between 80 and 90%. In developing countries, five-year survival rates are lower. Worldwide, breast cancer is the leading type of cancer in women, accounting for 25% of all cases. In 2018, it resulted in two million new cases and 627,000 deaths. It is more common in developed countries, and is more than 100 times more common in women than in men. For transgender individuals on gender-affirming hormone therapy, breast cancer is 5 times more common in cisgender women than in transgender men, and 46 times more common in transgender women than in cisgender men.

## Metastatic breast cancer

breast cancer, also referred to as metastases, advanced breast cancer, secondary tumors, secondaries or stage IV breast cancer, is a stage of breast cancer - Metastatic breast cancer, also referred to as metastases, advanced breast cancer, secondary tumors, secondaries or stage IV breast cancer, is a stage of breast cancer where the breast cancer cells have spread to distant sites beyond the axillary lymph nodes. There is no cure for metastatic breast cancer; there is no stage after IV.

Metastases can occur several years after the primary breast cancer, although it is sometimes diagnosed at the same time as the primary breast cancer or, rarely, before the primary breast cancer has been diagnosed.

Metastatic breast cancer cells frequently differ from the preceding primary breast cancer in properties such as receptor status. The cells have often developed resistance to several lines of previous treatment and have acquired special properties that permit them to metastasize to distant sites. Metastatic breast cancer can be treated, sometimes for many years, but it cannot be cured. Distant metastases are the cause of about 90% of deaths due to breast cancer.

Breast cancer can metastasize anywhere in body but primarily metastasizes to the bone, lungs, regional lymph nodes, liver and brain, with the most common site being the bone. Treatment of metastatic breast cancer depends on location of the metastatic tumors and includes surgery, radiation, chemotherapy, biological, and hormonal therapy.

Typical environmental barriers in a metastatic event include physical (a basement membrane), chemical (reactive oxygen species or ROS, hypoxia and low pH) and biological (immune surveillance, inhibitory cytokines and regulatory extra-cellular matrix (ECM) peptides) components. Organ-specific anatomic considerations also influence metastasis; these include blood-flow patterns from the primary tumor and the homing ability of cancer cells to certain tissues. The targeting by cancer cells of specific organs is probably regulated by chemo-attractant factors and adhesion molecules produced by the target organ, along with cell-surface receptors expressed by the tumor cells.

## Male breast cancer

Male breast cancer (MBC) is a cancer in males that originates in their breasts. Males account for less than 1% of new breast cancers with about 20,000 - Male breast cancer (MBC) is a cancer in males that originates in their breasts. Males account for less than 1% of new breast cancers with about 20,000 new cases being diagnosed

worldwide every year. Its incidence rates in males vs. females are, respectively, 0.4 and 66.7 per 100,000 person-years (person-years is the number of new cases divided by the product of the relevant population's size multiplied by the average number of years of observation, i.e.  $\text{new cases} \div [\text{population} \times \text{years}]$ ). The worldwide incidences of male as well as female breast cancers have been increasing over the last few decades. Currently, one of every 800 men are estimated to develop this cancer during their lifetimes.

Because it has a far lower incidence in males and because large-scale breast cancer studies have routinely excluded males, current knowledge of male breast cancer is far less than female breast cancer and often rests on small, retrospective, single-center studies. Consequently, the majority of strategies for evaluating and treating MBC have been adopted from those used for female breast cancer. However, MBC appears to have some features that warrant clinical approaches differing from those for female breast cancer. Features of male breast cancers that differ from those in females include variations in their presentations, associations with

other diseases, associations with non-medical predisposing conditions, expressions of key breast cancer-related hormones, causes (including frequency and forms of genetic alterations), tumor types, and treatments.

## Inflammatory breast cancer

Inflammatory breast cancer (IBC) is one of the most aggressive types of breast cancer. It can occur in women of any age (and, extremely rarely, in men - Inflammatory breast cancer (IBC) is one of the most aggressive types of breast cancer. It can occur in women of any age (and, extremely rarely, in men, see male breast cancer). It is referred to as "inflammatory" due to its frequent presentation with symptoms resembling a skin inflammation, such as erysipelas.

Inflammatory breast cancer presents with variable signs and symptoms, frequently without detectable lumps or tumors; it therefore is often not detected by mammography or ultrasound. Typical presentation is rapid breast swelling, sometimes associated with skin changes (peau d'orange), and nipple retraction. Other signs include redness, persistent itching, and unusually warm skin. IBC often initially resembles mastitis. Approximately 50% to 75% of cases have the typical presentation; an atypical presentation makes diagnosis more difficult. In some cases, a sign such as acute central venous thrombosis may be the sole presenting indication of the disease.

IBC comprises a small proportion of breast cancer cases (1% to 6% in the USA). African-Americans are usually diagnosed with IBC at younger ages than Caucasian women, and they are also at higher risk for the disease. Recent advances in therapy have improved the prognosis considerably; at least one-third of women will survive with IBC for ten years or longer.

## Breast Cancer Awareness Month

Breast Cancer Awareness Month (BCAM), also referred to in the United States as National Breast Cancer Awareness Month (NBCAM), is an annual international - Breast Cancer Awareness Month (BCAM), also referred to in the United States as National Breast Cancer Awareness Month (NBCAM), is an annual international health campaign organized by major breast cancer charities every October to increase awareness of the disease and raise funds for research into its cause, prevention, diagnosis, treatment, and cure.

Observances of the event have faced criticism for corporate involvement by drug companies, as well as instances of pinkwashing associated with the events.

## Abortion–breast cancer hypothesis

The abortion–breast cancer hypothesis posits that having an induced abortion can increase the risk of getting breast cancer. This hypothesis is at odds - The abortion–breast cancer hypothesis posits that having an induced abortion can increase the risk of getting breast cancer. This hypothesis is at odds with mainstream scientific opinion and is rejected by major medical professional organizations; despite this, it continues to be widely propagated as pseudoscience, typically in service of an anti-abortion agenda.

In early pregnancy, hormone levels increase, leading to breast growth. The hypothesis proposes that if this process is altered by an abortion, then more immature cells could be left behind, and that these immature cells could increase the risk of breast cancer over time.

The abortion–breast cancer hypothesis has been the subject of extensive scientific inquiry, and the scientific community has concluded that abortion does not cause breast cancer; and that breast cancer should not be a concern for women who are having a miscarriage or considering having an abortion. This consensus is

supported by major medical bodies, including the World Health Organization, the U.S. National Cancer Institute, the American Cancer Society, the American Congress of Obstetricians and Gynecologists, the Royal College of Obstetricians and Gynaecologists, the German Cancer Research Center, and the Canadian Cancer Society.

Some anti-abortion activists have continued to advance a discredited causal link between abortion and breast cancer. In the United States, they have advanced state legislation that in several states requires health care providers to present abortion as a cause of breast cancer when counseling women who are seeking abortion. This political intervention culminated when the George W. Bush administration altered the National Cancer Institute website to suggest that abortion might cause breast cancer. In response to public concern over this intervention, the NCI convened a 2003 workshop bringing together over 100 experts on the issue. This workshop concluded that while some studies reported a statistical correlation between breast cancer and abortion, the strongest scientific evidence from large prospective cohort studies demonstrates that abortion is not associated with an increase in breast cancer risk, and that the positive findings were likely due to response bias.

The ongoing promotion of a link between abortion and breast cancer is seen by others as part of the anti-abortion "woman-centered" strategy against abortion. Anti-abortion groups maintain they are providing information necessary for legally required informed consent, a concern shared by some politically conservative politicians. The abortion–breast cancer issue remains the subject of political controversy.

## Breast and ovarian cancer

Breast and ovarian cancer does not necessarily imply that both cancers occur at the same time, but rather that getting one cancer would lead to the development of the other. Breast and ovarian cancer does not necessarily imply that both cancers occur at the same time, but rather that getting one cancer would lead to the development of the other within a few years. Women with a history of breast cancer have a higher chance of developing ovarian cancer, vice versa.

Breast cancer refers to the uncontrolled division of breast cells. It is possible for both males and females to get breast cancer. Breast cancer is the most common cancer women face.

Ovarian cancer is a type of cancer which begins in the ovaries. Anyone with ovaries can get it, including women, trans men, non-binary people and intersex people. Although ovarian cancer is much less frequent, it is the deadliest among gynecologic cancers.

## Triple-negative breast cancer

Triple-negative breast cancer (TNBC) is any breast cancer that either lacks or shows low levels of estrogen receptor (ER), progesterone receptor (PR) - Triple-negative breast cancer (TNBC) is any breast cancer that either lacks or shows low levels of estrogen receptor (ER), progesterone receptor (PR) and human epidermal growth factor receptor 2 (HER2) overexpression and/or gene amplification (i.e. the tumor is negative on all three tests, giving it the name triple-negative). Triple-negative is sometimes used as a surrogate term for basal-like.

Triple-negative breast cancer comprises 15–20% of all breast cancer cases and affects more young women or women with a mutation in the BRCA1 gene than other breast cancers. Triple-negative breast cancers comprise a very heterogeneous group of cancers.

TNBC is the most challenging breast cancer type to treat. Hormone therapy that is used for other breast cancers does not work for TNBC. In its early stages, the cancer is typically treated through surgery, radiation and chemotherapy. In later stages where surgery is not possible or the cancer has spread from the initial localised area, treatment is limited to chemotherapy and in some cases further targeted therapy.

Triple-negative breast cancers have a relapse pattern that is very different from hormone-positive breast cancers where the risk of relapse is much higher for the first 3–5 years, but drops sharply and substantially below that of hormone-positive breast cancers afterwards.

## Breast cancer screening

Breast cancer screening is the medical screening of asymptomatic, apparently healthy women for breast cancer in an attempt to achieve an earlier diagnosis - Breast cancer screening is the medical screening of asymptomatic, apparently healthy women for breast cancer in an attempt to achieve an earlier diagnosis. The assumption is that early detection will improve outcomes. A number of screening tests have been employed, including clinical and self breast exams, mammography, genetic screening, ultrasound, and magnetic resonance imaging.

A clinical or self breast exam involves feeling the breast for lumps or other abnormalities. Medical evidence, however, does not support its use in women with a typical risk for breast cancer.

Universal screening with mammography is controversial as it may not reduce all-cause mortality and may cause harms through unnecessary treatments and medical procedures. Many national organizations recommend it for most older women. The United States Preventive Services Task Force recommends screening mammography in women at normal risk for breast cancer, every other year between the ages of 40 and 74. Other positions vary from no screening to starting at age 40 and screening yearly. Several tools are available to help target breast cancer screening to older women with longer life expectancies. Similar imaging studies can be performed with magnetic resonance imaging but evidence is lacking.

Earlier, more aggressive, and more frequent screening is recommended for women at particularly high risk of developing breast cancer, such as those with a confirmed BRCA mutation, those who have previously had breast cancer, and those with a strong family history of breast and ovarian cancer.

Abnormal findings on screening are further investigated by surgically removing a piece of the suspicious lumps (biopsy) to examine them under the microscope. Ultrasound may be used to guide the biopsy needle during the procedure. Magnetic resonance imaging is used to guide treatment, but is not an established screening method for healthy women.

## Breast

therapy. Breast cancer is a cancer that develops from breast tissue. Signs of breast cancer may include a lump in the breast, a change in breast shape, - The breasts are two prominences located on the upper ventral region of the torso among humans and other primates. Both sexes develop breasts from the same embryological tissues. The relative size and development of the breasts is a major secondary sex distinction between females and males. There is also considerable variation in size between individuals. Permanent breast growth during puberty is caused by estrogens in conjunction with the growth hormone. Female humans are the only mammals that permanently develop breasts at puberty; all other mammals develop their mammary tissue during the latter period of pregnancy.

In females, the breast serves as the mammary gland, which produces and secretes milk to feed infants. Subcutaneous fat covers and envelops a network of ducts that converge on the nipple, and these tissues give the breast its distinct size and globular shape. At the ends of the ducts are lobules, or clusters of alveoli, where milk is produced and stored in response to hormonal signals. During pregnancy, the breast responds to a complex interaction of hormones, including estrogens, progesterone, and prolactin, that mediate the completion of its development, namely lobuloalveolar maturation, in preparation of lactation and breastfeeding.

Along with their major function in providing nutrition for infants, breasts can figure prominently in the perception of a woman's body and sexual attractiveness. Breasts, especially the nipples, can be an erogenous zone, and part of sexual activity. Some cultures ascribe social and sexual characteristics to female breasts, and may regard bare breasts in public as immodest or indecent. Breasts can represent fertility, femininity, or abundance. Breasts have been featured in ancient and modern sculpture, art, and photography.

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