



What is Breast **Cancer**?

Breast cancer is a cancer of the breast tissue. It arises from the uncontrollable cell growth of cells in the breast.

Breast cancer can be categorized in several ways. Most often it's classified by where it originates and whether it moves from that spot.

Types of breast cancer include:

1. Non-invasive breast cancer - develops in the cells of a duct or lobule and remains in that location.
 - Ductal carcinoma in situ (DCIS): abnormal cells found in the lining of the breast milk duct. The atypical cells have not spread outside of the ducts into the surrounding breast tissue.
 - Lobular carcinoma in situ (LCIS): abnormal cells are found in the lobules of the breast. The atypical cells have not spread outside of the lobules into the surrounding breast tissue.

2. Invasive breast cancer - develops in the cells of a duct or lobule, but it doesn't remain where it originated. Instead, it spreads and invades surrounding tissue.
 - Invasive ductal carcinoma (IDC): abnormal cancer cells that began forming in the milk ducts have spread beyond the ducts into other parts of the breast tissue.
 - Invasive lobular carcinoma (ILC): begins in the lobules (milk glands) of the breast and spreads to surrounding normal tissue. It can also spread through the blood and lymph systems to other parts of the body.

Although it is rare, men can and do get breast cancer. Men's breasts don't fully develop like women's do, but all men have breast tissue.

The most common kinds of breast cancer in men:-

- Invasive ductal carcinoma (IDC): Cancer cells grow outside the ducts into other parts of the breast tissue, can also spread, or metastasize, to other parts of the body.
- Invasive lobular carcinoma (ILC): Cancer cells spread from the lobules to the breast tissues that are close by, can also spread to other parts of the body.
- Ductal carcinoma in situ (DCIS): Cancer cells are only in the lining of the ducts and have not spread to other tissues in the breast.

Are All Breast Lumps Cancerous?

- 80% of breast lumps are benign and could be:
 - Fibroadenoma
 - Breast cysts
 - Infection
 - Phylloides
- 20% are cancerous

Are You at Risk?

- Significant Risk
 - Family history of breast cancer and ovarian cancer
 - Carrier of BRCA genes
 - Ovarian cancer patients
 - Patients with previous history of breast cancer
 - Presence of breast lumps – atypical hyperplasia, carcinoma in situ
- Moderate Risk
 - Single, late childbirth, no children
 - Not breastfeeding
 - Use of oral contraceptive pills
 - Use of hormonal replacement therapy
- General Risk
 - Affluent diet that is rich in fat, cholesterol, carbohydrates and red meat
 - **Obesity**, sedentary lifestyle
 - Alcohol and cigarette consumption

What Are The Other Risk Factors?

- Getting older
- Genetic mutations
- Radiation therapy treatment
- Hormone therapy treatment
- Klinefelter syndrome
- Overweight and obesity

What Can You Do To Reduce The Risk of Developing Breast Cancer?

Keeping a healthy weight, be physically active, and avoid or limit alcohol.

What Are the Symptoms of Breast Cancer?

The symptoms of breast cancer can vary widely and some types of breast cancer may not have any noticeable symptoms.

Some warning signs of breast cancer are:-

- New lump in the breast or underarm (armpit)
- Thickening or swelling of part of the breast
- Irritation or dimpling of breast skin
- Redness or scaliness of the nipple or breast skin
- Nipple discharge other than breast milk, including blood.
- Nipple pain or the nipple turning inward

Keep in mind that these symptoms can happen with other conditions that are not cancer. If you have any signs or symptoms that worry you, be sure to see your doctor right away.

How Is Breast Cancer Diagnosed?

- Blood test
- Biopsy tissues
- **Imaging** tests:
 - X-Ray
 - Ultrasound
 - Mammogram
 - CT scan
 - MRI
 - Bone scan
 - PET-CT scan

Early detection is key. Regular breast self-examinations, and mammograms help detect breast cancer in its early stages. Finding breast cancer that has not yet spread gives you the best chance of remaining healthy and cancer-free for many years.

Breast self-examination – women should do yourself breast examination regularly from the age of 20 years old you need to learn from your nurse or doctor the right way of doing breast self-examination. If you notice any lump at your breast, please consult your doctor.

Mammogram – A mammogram is an x-ray of the breast. It can detect breast cancer up to two years before the tumor can be felt by you or your doctor.

How Does Mammography Screen for Breast Cancer?

- Mammogram can detect early breast lesions that are less than 1 cm in size
- Higher possibility of being able to have breast-conserving surgery
- Can minimize the need for chemotherapy
- Survival rate is generally better

What Is the Treatment for Breast Cancer?

Treatment for breast cancer depends on how big the tumor is and how far it has spread, it may include:-

- Breast surgery
- Chemotherapy
- Radiotherapy
- Hormonal therapy
- Targeted therapy

Triple-negative Breast Cancer

Triple-negative breast cancer (TNBC) is a type of cancer that lacks the expression of three breast cancer cell receptors and cannot receive hormonal or targeted therapy. Traditional chemotherapy doesn't have significant effects on TNBC, hence it has been regarded as a difficult breast cancer to treat. Nowadays, we can combine immunotherapy with chemotherapy, allowing chemotherapy to polish off the surface of the tumor, remove its immune-protective layer and expose it, thereby assisting immune cells to recognize cancer cells and launch targeted attacks.

For a long time, breast cancer has been clinically staged based on tumour size (T), lymph node status (N), and metastasis (M), to predict patient prognosis and treatment plan. In the past 20 years, we have also included the biological characteristics of tumour cells in our medical evaluation to select targeted therapies. Breast cancer is divided into different molecular subtypes according to the biological characteristics of tumour cells, including Estrogen Receptor (ER), Progesterone Receptor (PR) and Human Epidermal Growth Factor Receptor Type II (HER-2).

TNBC is a type of breast cancer that is negative for the above three receptors. It accounts for about 10% of all breast cancer types in the world. The other 70% are hormone receptor-positive breast cancers and 20% are HER-2 positive breast cancers.

Both ER and PR are hormone receptors. If they are positive in a breast cancer, hormone therapy can block their effects on tumour cells. HER-2 is an oncogene. There are currently HER-2-targeted treatments that can inhibit tumour cell growth and control the disease. In contrast, TNBC lacks the expression of three breast cancer cell receptors and cannot receive hormonal or targeted therapy. It is regarded

as the most difficult type of breast cancer to treat. In TNBC, cancer cells also metastasize more easily to other organs.

Who are at Risk for TNBC?

TNBC afflict mostly afflict women who are relatively young. Women with TNBC on average survive up to 15 months. 17% of breast cancer patients in Malaysia have TNBC. Most of them are relatively young (less than 50 years old). Those with TNBC are often women in their 30s or 40s, but their lifespan is short due to their complicated medical condition. The 5-year survival rate of patients with other types of breast cancer is up to 93%, while that of TNBC is only about 77%.

On the other hand, carriers of the breast cancer genes 1 and 2 (BRCA 1 and BRCA 2) mutation are also more likely to develop TNBC. BRCA is a gene related to hereditary breast cancer. About 70% of patients with mutated BRCA genes have TNBC.

Treatment for TNBC

For a long time, patients with metastatic TNBC can only receive traditional chemotherapy. However, the effect is not significant. The longest survival period is 12 to 15 months. There had been no breakthrough for a long time, until the emergence of immunotherapeutic drugs, which brought new hope to these patients. The combination of immunotherapy and chemotherapy can extend the overall survival of patients with triple-negative metastatic breast cancer, while reducing the risk of cancer progression.

Currently, immunotherapy needs to be combined with chemotherapy. Chemotherapy first polishes the surface of the tumour, removes its immune protective layer and exposes it, thereby assisting the body's immune cells to recognize cancer cells in order to identify and "attack" them. However, immunotherapy is not suitable for all triple-negative breast cancer patients. They need to meet one condition: their tumour cells need to contain more than 1% PD-L1 ligand for immunotherapy to be effective. PD-L1 is a protein that is present on the surface of cells that allows the human immune system to recognize the cell as normal instead of foreign.

When the T cells of the human immune system discover a 'foreign' object, they launch an attack. However, the tumour cells produce PD-L1 on their surface and can bind to the PD-1 receptor of the T cell, causing the T cell to mistake it for a normal cell. Hence, the T cell does not send out an attack signal, and the tumour escapes the attack.

Tumour cells cleverly hide themselves in the human body. Therefore, the mode of action of traditional chemotherapy is to kill all cells regardless of whether the cells are good or bad, whereas the immunotherapy drug atezolizumab specifically binds to

PD-L1, inhibiting its interaction with PD-1. The drug activates the patient's own immune system to recognize and attack tumour cells.

Immunotherapy has less side effects than targeted therapy and chemotherapy. We still need to combine immunotherapy with chemotherapy, so patients may still experience common side effects of chemotherapy, such as hair loss, nausea, loss of appetite, and fatigue. The side effects of immunotherapy are usually weaker than those of targeted therapy and chemotherapy, but immunology is rather complicated.

Every person's immune response is different. Immunotherapy may still cause some side effects, namely immune-related inflammation, such as fever, asthma, and cough, or pneumonia, etc. This is because in the process of stimulating the immune system to recognize tumour cells, the immune response will become more active, and will sometimes attack healthy cells if it is not controlled.

Currently, immunotherapy is administered by intravenous injection. Patients do not need to be hospitalized, but the number of visits to the hospital will be more frequent. Although immunotherapy still does not cure cancer, it can prolong the survival rate. Therefore, patients with triple-negative breast cancer should not be disappointed. As long as there is a glimmer of hope, they should actively cooperate with treatment, and at the same time look forward to more effective therapies or drugs in the future.

Preventing TNBC

The symptoms of triple-negative breast cancer are no different from other types of breast cancer. Common symptoms include breast or nipple pain or depression, breast lumps, nipple discharge, and changes in breast shape. Women, especially those with family history and those belonging in the high-risk groups, are encouraged to take the initiative to undergo mammography or ultrasound.

All types of cancer, including triple-negative breast cancer, should be detected and treated as soon as possible. Women should perform self-breast examinations regularly and seek medical advice if they find something unusual. Even if triple-negative breast cancer is diagnosed, the effect of an early treatment will be better than the late or terminal stage.

Dense Breasts

Your breasts are made up of fibrous tissue (or connective tissue), glandular tissue (the type of tissue that produces milk), and fatty tissue. If you're told you have dense breasts, this means that you have more fibrous and glandular tissue and less fatty tissue.

How Do You Know If You Have Dense Breasts?

Having a mammogram is the best way to find out if dense breast tissue is present. Dense breast tissue cannot be felt in a clinical breast exam or in a breast self-exam.

A radiologist (doctor who views mammograms) will analyze the ratio of fatty tissue to dense tissue and determine the level of breast density.

What Causes Dense Breast Tissue?

Most people start with dense breast tissue and as they age or experience hormonal changes, the dense tissue turns to fatty tissue.

Other factors include:-

- Genetics
- Low body mass index
- Hormonal therapy

Are Dense Breasts A Risk Factor For Breast Cancer?

Yes, women with dense breasts have a higher risk of breast cancer than women with fatty breasts, and the risk increases with increasing breast density. This increased risk is separate from the effect of dense breasts on the ability to read a mammogram.

What Can You Do If You Have Dense Breasts?

- Make sure you have a mammogram every 12 months without delay, and try to go to a center with 3D mammography (digital breast tomosynthesis) if possible.
- Work with your doctor to consider supplemental screening.
- Perform breast self-exams so that you're aware of any changes in your breasts, which should be reported to your doctor.
- Follow all of the lifestyle recommendations for reducing breast cancer risk, such as: maintaining a healthy weight, physically active, limiting alcohol consumption, eating nutritious food.