Introduction
Breast cancer is a disease in which malignant (cancerous) cells form in the tissues of the breast. It is considered a heterogeneous disease because it differs by individual, age group, and even the kinds of cells within the tumours itself (National Breast Cancer Foundation).

Breast cancer is the most common cancer among South African women. According to the National Cancer Registry (2003) breast cancer (excluding cancer of the skin) is the number one (1) cancer among all females except for Black females where it is the number two (2) cancer.

Although breast cancer is mainly a disease of women, some men also develop breast cancer. Breast cancer is about 100 times less common among men than among women. For men, the lifetime risk of getting breast cancer is about 1 in 794. The prognosis (outlook) for men with breast cancer was once thought to be worse than that for women, but recent studies have not found this to be true. In fact, men and women with the same stage of breast cancer have a fairly similar outlook for survival (American Cancer Society; National Cancer Registry).

According to the National Cancer Registry (2003) the lifetime risk of all females developing breast cancer is 1 : 31.

Breast Cancer
In breast cancer, abnormal cells in the breast become malignant (cancerous) and may invade and destroy nearby tissue (Mayo Clinic).

Breast Cancer in Women
There are two (2) main categories of breast cancer and are named depending on where in the breast the cancer originates:

- Ductal carcinoma – where the cancer starts in the ducts (tubes) that move milk from the breast to the nipple (most breast cancers are of this type).
- Lobular carcinoma – where the cancer starts in the parts of the breast called lobules, that produce milk.

In rare cases, breast cancer can start in other areas of the breast. (PubMed Health).

Breast cancer can be invasive or non-invasive. Invasive means it has spread from the milk duct or lobule to other tissues in the breast whereas non-invasive cancer means it has not yet invaded other breast tissue. Non-invasive breast cancer is called “in situ” (PubMed Health).

There are several different types of breast cancer. Some are more common than others, and there are also combinations of cancers. Some of the most common types of breast cancer are as follows (National Breast Cancer Foundation; Mayo Clinic):
Ductal Carcinoma In-Situ (DCIS) - is the presence of abnormal cells inside a milk duct in the breast. DCIS is considered the earliest form of breast cancer. DCIS is non-invasive, meaning it hasn't spread out of the milk duct to invade other parts of the breast.

DCIS is usually found during a mammogram done as part of breast cancer screening. Because of increased screening with mammograms, the rate at which DCIS is diagnosed has increased dramatically in recent years.

While DCIS isn't life-threatening, it does require treatment to prevent the condition from becoming invasive. Most women with DCIS are effectively treated with breast-conserving surgery and radiation therapy (Mayo Clinic).

Infiltrating Ductal Carcinoma (IDC) sometimes also referred to as Invasive Ductal Carcinoma – is the most common invasive breast cancer, accounting for 70 percent of all cases. A very hard lump that has irregular borders and seems anchored in surrounding tissues is characteristic of infiltrating ductal carcinoma. The skin over the area or the nipple may retract (pull in). On mammography, there are often micro-calcifications found in the tumour area, since this tumour has a history of internal cell death (necrosis). The tumour varies in size and cell division time, with some cells growing more rapidly than others.

When symptoms are found, a biopsy can reveal the exact characteristics of the tumour. These include how fast it is dividing; whether it is stimulated (caused to grow) by oestrogen, progesterone or prolactin hormones; and how much the cells have changed from the parent cell (differentiation). These findings, combined with your menopausal status, age, and general health, will determine surgery and treatment options. These include: lumpectomy with axillary sampling followed with radiation; lumpectomy with axillary sampling followed with chemotherapy and radiation therapy; mastectomy with lymph node removal with or without chemotherapy or radiation. Hormonal therapy may be used with any of these treatments if the tumour is positive for oestrogen or progesterone receptors (Saint Michael’s Medical Centre).

Lobular Carcinoma In-Situ - Lobular carcinoma in situ (LCIS) is an area (or areas) of abnormal cell growth that increases a person’s risk of developing invasive breast cancer later on in life. Lobular means that the abnormal cells start growing in the lobules, the milk-producing glands at the end of breast ducts. Carcinoma refers to any cancer that begins in the skin or other tissues that cover internal organs — such as breast tissue. In situ or “in its original place” means that the abnormal growth remains inside the lobule and does not spread to surrounding tissues. People diagnosed with LCIS tend to have more than one lobule affected.

Despite the fact that its name includes the term “carcinoma,” LCIS is not a true breast cancer. Rather, LCIS is an indication that a person is at higher-than-average risk for getting breast cancer at some point in the future. For this reason, some experts prefer the term “lobular neoplasia” instead of “lobular carcinoma.” A neoplasia is a collection of abnormal cells.
LCIS is usually diagnosed before menopause, most often between the ages of 40 and 50. Less than 10% of women diagnosed with LCIS have already gone through menopause. LCIS is extremely uncommon in men.

LCIS is viewed as an uncommon condition, but we don't know exactly how many people are affected. That's because LCIS does not cause symptoms and usually does not show up on a mammogram. It tends to be diagnosed as a result of a biopsy performed on the breast for some other reason.

- **Infiltrating Lobular Carcinoma (ILC) sometimes also referred to as Invasive Lobular Carcinoma** - Invasive lobular carcinoma is a type of breast cancer that begins in the milk-producing glands (lobules) of the breast. Invasive lobular carcinoma is invasive cancer, which means the cancer cells have broken out of the lobule where they began and they have the potential to spread to other areas of the body.

Invasive lobular carcinoma makes up a small portion of all breast cancers. The most common type of breast cancer begins in the breast ducts (ductal carcinoma). Some breast cancers contain both lobular and ductal cancer cells.

Invasive lobular carcinoma typically doesn't form a lump, as most women expect with breast cancer. Instead, invasive lobular carcinoma more often causes a thickening of the tissue or fullness in one part of the breast (Mayo Clinic).

- **Medullary Carcinoma** - Medullary carcinoma of the breast is a less common form of invasive breast cancer. It is a type of invasive ductal carcinoma (IDC) and takes its name from its colour, which is close to the colour of brain tissue, or medulla. It starts in the milk ducts, with large cancer cells that look very different from healthy cells. These medullary carcinoma cells tend to form a clear boundary between the tumour and healthy tissue right next to them. This type of tumour shows up well on a mammogram.

This type of breast cancer is found in only 3 to 5% of all breast cancers diagnosed. It is quite difficult to distinguish from invasive ductal carcinoma and is usually treated the same as IDC. Medullary carcinoma has been found in about 5% of breast cancer diagnoses.

Medullary carcinoma of the breast may not always feel like a lump, but rather, like a thick, spongy area of breast tissue. This type of breast cancer can produce swelling from within the breast. Since the cells for medullary carcinoma are large and tend to stay together and expand in one place, the tumour may feel rather smooth-sided, like a breast cyst (About.Com).

- **Tubular Carcinoma** - Tubular carcinoma of the breast is a rare subtype of invasive ductal carcinoma (cancer that begins inside the milk duct and spreads beyond it). Tubular carcinoma accounts for about 1-2% of all breast cancer cases. In this type of cancer, the tumor is usually small and made up of tube-shaped cells that are low grade. "Low grade" means they look somewhat similar to normal, healthy cells and tend to grow slowly.
Tubular carcinoma of the breast is less likely to spread outside the breast than other types of breast cancer. It’s also easier to treat.

Studies have found that the average age of diagnosis for tubular carcinoma ranges from the mid-40s to late 60s (BreastCancer.Org).

- **Mucinous Carcinoma** - Mucinous carcinoma of the breast — sometimes called colloid carcinoma — is a rare form of invasive ductal carcinoma (cancer that begins in the milk duct and spreads beyond it). Mucinous carcinoma of the breast accounts for about 2-3% of all breast cancer cases. In this type of cancer, the tumor is formed from abnormal cells that “float” in pools of mucin, a key ingredient in the slimy, slippery substance known as mucus.

  Normally, mucus lines most of the inner surface of our bodies, such as our digestive tract, lungs, liver, and other vital organs. Many types of cancer cells — including most breast cancer cells — produce some mucus. In mucinous carcinoma, however, the mucus becomes a main part of the tumor and surrounds the breast cancer cells.

  Mucinous carcinoma tends to affect women after they’ve gone through menopause. Some studies have found that the usual age at diagnosis is 60 or older.

  Mucinous carcinoma is less likely to spread to the lymph nodes than other types of breast cancer. It is also easier to treat.

- **Inflammatory Breast Cancer (IBC)** - Inflammatory breast cancer is a rare type of breast cancer that develops rapidly, making the affected breast red, swollen and tender. Inflammatory breast cancer occurs when cancer cells block the lymphatic vessels in the breast, causing the characteristic red, swollen appearance of the breast.

  Inflammatory breast cancer is considered a locally advanced cancer — meaning it has spread from its point of origin to nearby tissue and possibly to nearby lymph nodes.

  Inflammatory breast cancer can easily be confused with a breast infection. Seek medical attention promptly if you notice skin changes on your breast, to help distinguish a breast infection from other breast disorders, such as inflammatory breast cancer (Mayo Clinic).

- **Triple-negative Breast Cancer** - The pathology report may say that the breast cancer cells tested negative for oestrogen receptors (ER-), progesterone receptors (PR-) and HER2 (HER2-). Testing negative for all three means the cancer is **triple-negative**.

  These negative results mean that the growth of the cancer is not supported by the hormones oestrogen and progesterone, nor by the presence of too many HER2 receptors. Therefore, triple-negative breast cancer does not respond to hormonal therapy (such as tamoxifen or aromatase inhibitors) or therapies that target HER2 receptors, such as Herceptin (chemical name: trastuzumab). However, other medicines can be used to treat triple-negative breast cancer.
About 10-20% of breast cancers — more than one out of every 10 — are found to be triple-negative. For doctors and researchers, there is intense interest in finding new medications that can treat this kind of breast cancer. Early studies are trying to find out whether certain medications can interfere with the processes that cause triple-negative breast cancer to grow (BreastCancer.Org).

- **Adenoid Cystic Carcinoma (ACC)** - Named for their microscopic appearance, adenoid cystic cancer cells resemble adenoid (glandular) and cystic cells. Usually not aggressive, this type of breast cancer has a good chance of recovery after treatment. Adenoid cystic carcinoma (ACC) is not a breast fibro-adenoma nor is it a breast cyst, both of which are benign breast conditions.

  ACC of the breast is rare, occurring in less than 1% of all breast cancers. ACC may occur in women ages 37 to 94 years old, with the majority of patients being postmenopausal women.

  It is also known as Adenoid cystic breast cancer, ACC, ACCB, AbCC, or adenocystic carcinoma

  ACC may be quite small or it can be large enough to be felt as a breast lump, which sometimes causes swelling and breast pain. The size of an adenoid cystic breast carcinoma can vary from 0.5cm to 20mm (About.Com).

- **Paget’s Disease of the Nipple** - Paget disease of the nipple, also called Paget disease of the breast, is an uncommon type of cancer that forms in or around the nipple. More than 95% of people with Paget disease of the nipple also have underlying breast cancer; however, Paget disease of the nipple accounts for less than 5 percent of all breast cancers.

  Most patients diagnosed with Paget disease of the nipple are over age 50, but rare cases have been diagnosed in patients in their 20s. The average age at diagnosis is 62 for women and 69 for men. The disease is rare among both women and men.

  Paget disease of the nipple was named after Sir James Paget, a scientist who noted an association between changes in the appearance of the nipple and underlying breast cancer (National Cancer Institute).

- **Papillary Carcinoma of the Breast** - papillary carcinoma of the breast is a type of ductal carcinoma in situ (DCIS). This type of breast cancer is rarely invasive, and usually stays within the milk ducts of your breast. It has a *good chance of recovery* after treatment. Papilla *(a projection)* refers to the microscopic shape of the cancer cells, which resemble fingers, or threads.

- **Phyllodes Tumour** - Phyllodes tumours are rare solid lumps that usually present as a mass found during a woman’s breast self-examination or on a routine physical examination. Smaller masses may be detected mammographically. Phyllodes tumours
appear very similar to a benign lump known as a fibro-adenoma. These lumps are usually well circumscribed and painless. Imaging evaluation including a mammogram and ultrasound is usually performed and when a solid lump is identified a biopsy is important to obtain tissue for accurate diagnosis. A phyllodes tumour cannot be differentiated from a fibro-adenoma by a needle biopsy. This means that your doctor may not be able to accurately tell you whether a solid lump is a benign fibro-adenoma or a phyllodes tumour. Risk factors for phyllodes tumour are rapid growth and size greater than 2 cms at the time of the evaluation. In many cases your doctor may recommend complete surgical removal of this mass to ensure that it is not an underlying phyllodes tumour.

Phyllodes tumours are not all cancerous. Many will be classified as benign and not require further evaluation. A skilled pathologist is needed to distinguish a benign phyllodes tumour from one with more aggressive malignant potential. In any event, women who undergo surgery for removal of a phyllodes tumour require close surveillance with follow-up mammogram and physical examination at regular intervals. Malignant phyllodes tumours are best managed with a wide excision of normal breast tissue around the tumour to obtain clean margins. In most cases, radiation therapy is not required. Very large malignant phyllodes tumours may require complete removal of the breast for management (University of Rochester Medical Center).

- **Angiosarcoma of the Breast** - A breast angiosarcoma is a rare type of breast cancer which starts in cells that line the blood vessels within your breast or underarm area. It can occur due to breast and upper arm radiation treatments, and is apt to grow and spread quickly. Breast angiosarcoma may at first appear similar to a skin rash, infection, or bruising.

  A sarcoma is a type of cancer that grows in soft or connective tissue, and an angiosarcoma can occur in any organ of your body. Less than 10% of all angiosarcomas originate in the breast. Angiosarcoma of the breast accounts for about 0.04%, or one in 2,500 cases of all breast cancer diagnoses.

  Primary angiosarcoma of the breast is usually diagnosed in young women, between the ages of 20 to 40. These primary cancers show up as an ill-defined mass in the breast. Secondary angiosarcoma is often diagnosed in women over 40, 5 to 10 years after they have had radiation treatment for breast cancer. The American Cancer Society states that angiosarcoma is a very rare complication of breast radiation. Women who developed lymphoedema as a result of lymph node removal may also be diagnosed with angiosarcoma, particularly if their underarm area received radiation.

  It is also known as angiosarcoma of the breast, mammary angiosarcoma, haemangiosarcoma of the breast, lymphangiosarcoma, if it occurs in lymph node area (About.Com).

**Types of Breast Cancer in Men**

Male breast cancer can occur at any age. When men do get breast cancer, they often tend have a more advanced disease and are more likely to die from it (Pittman; National Cancer Institute). Men diagnosed with male breast cancer at an early age have a good chance for a cure,
However, many men delay seeing their doctor if they notice unusual signs or symptoms, such as a breast lump. For this reason, many male breast cancers are diagnosed when the disease is more advanced (Mayo Clinic).

There are five (5) main types of breast cancer that occur in males.

**The following types of breast cancer can occur in men:**

- **Ductal carcinoma in situ (DCIS)** – which is also known as intraductal carcinoma, where cancer cells form in the breast ducts but do not grow through the walls of the ducts into the fatty tissue. DCIS accounts for about 1:10 cases of breast cancer in men. It is almost always curable with surgery.
- **Infiltrating ductal carcinoma (IDC)** – is a type of breast cancer where the cancer breaks through the wall of the duct and grows through the fatty tissue of the breast. At this point, it can spread to other parts of the body. At least 8 out of 10 male breast cancers are IDC’s.
- **Infiltrating lobular carcinoma (ILC)** – where the cancer starts in the breast lobules and grows into the fatty tissue of the breast. ILC is very rare in men, accounting for only about 2% of male breast cancers.
- **Lobular carcinoma in situ (LCIS)** – where abnormal cells form in the lobules, but they do not grow into the fatty tissue of the breast or spread outside the breast. As with invasive lobular carcinoma, LCIS is very rare in men.
- **Paget disease of the nipple** – this type of breast cancer starts in the breast ducts and spreads to the nipple. It may also spread to the areola. The skin of the nipple usually appears crusted, scaly, and red, with areas of itching, oozing, burning, or bleeding. It may be associated with DCIS or with infiltrating ductal carcinoma. It accounts for about 1% of female breast cancers but a higher percentage of male breast cancers. (National Cancer Institute).

**Causes of Breast Cancer**
The causes of breast cancer are not yet fully known, although a number of risk factors have been identified.

**Risk Factors for Breast Cancer**
A risk factor is something that affects a person’s chance of getting a particular disease. Different cancers have different risk factors. Having a risk factor, or even several risk factors, does not mean that a person will get the disease. Not having any risk factors also does not mean that someone will not get the disease (American Cancer Society).

**Risk Factors for Female Breast Cancer**
The following risk factors have been identified for female breast cancer:

- **Age**: The risk for developing breast cancer increases as one gets older. Most advanced breast cancer cases are found in women over the age of 50.
- **Sex**: Women are 100 times more likely to get breast cancer than men.
- **Family history of breast cancer**: There is a higher risk for breast cancer if there is a history of a close relative who has had breast, uterine, ovarian, or colon cancer. About 20-30% of women with breast cancer have a family history of the disease.
Genetic predisposition: Some people have genes that make them more likely to develop breast cancer. The most common gene defects are found in the BRCA1 and BRCA2 genes. These genes normally produce proteins that protect one from cancer. Women with one of the defects have up to an 80% chance of getting breast cancer sometime during her life.

Menstrual cycle: Women who started commencement of a menstrual cycle before age 12 or who went through menopause late (after age 55) as they have an increased risk for breast cancer.

Alcohol use: drinking more than one (1) standard alcoholic drink per day (in the case of women) and drinking more than two (2) standard alcoholic drinks per day (in the case of men).

Childbirth: Women who have never had children or who had them only after the age of 30 years have an increased risk for breast cancer. Being pregnant more than once or becoming pregnant at an early age reduces the risk of breast cancer.

DES (diethylstilbestrol): Women who took diethylstilbestrol (DES) to prevent miscarriage may have an increased risk for breast cancer after age 40. This drug was given to women in the 1940’s to 1960’s.

Hormone Replacement Therapy (HRT): There is a higher risk of breast cancer in women who have received hormone replacement therapy with oestrogen for several years.

Radiation: Persons who have had radiation therapy as a child or young adult to treat cancer of the chest area have a much higher risk for developing breast cancer. The younger the age during radiation and the higher the dose, the higher the risk (especially of the radiation was given during breast development).

Obesity: Obesity has been linked to breast cancer, although this link is controversial. The theory is that obese women produce more oestrogen, which can fuel the development of breast cancer.

Dense breast tissue: Dense breast tissue means there is more gland tissue and less fatty tissue. Women with denser breast tissue have a higher risk of breast cancer. Dense tissue can also make it harder for doctors to spot problems on mammograms.

Race: Being White (Caucasian). Overall, white women are more likely to get breast cancer than Black women.

Lack of exercise: Studies have shown that exercise reduces breast cancer risk. The only question is how much exercise is needed. The American Cancer Society suggests that exercise of 45 to 60 minutes five (5) days a week should be sufficient.

Taking hormones such as oestrogen and progesterone: Long-term combination hormone therapy increases the risk of breast cancer. A medical practitioner should be consulted to enquire about the lowest dose that will be effective to control symptoms.

Breast implants, using antiperspirants, and wearing underwire brassieres: There is no evidence of a direct link between the aforesaid and breast cancer.

Night work: A few studies have suggested that women who work at night (nurses on the night shift, for instance) have a higher risk of breast cancer. This is a fairly recent finding (2011), and more studies are being done to look at this.

(Risk Factors for Male Breast Cancer

It's important to understand the risk factors for male breast cancer — particularly because men are not routinely screened for the disease and don't think about the possibility that they'll get it. As a result, breast cancer tends to be more advanced in men than in women when it is first detected (Pittman).
A number of factors can increase a man's risk of getting breast cancer:

- **Growing older:** This is the biggest factor. Just as is the case for women, risk increases as age increases. The median age of men diagnosed with breast cancer is about 67. This means that half the men who are diagnosed are over 67 and half are under.

- **High oestrogen levels:** Breast cell growth — both normal and abnormal — is stimulated by the presence of oestrogen. Men can have high oestrogen levels as a result of:
  - taking hormonal medicines
  - being overweight, which increases the production of oestrogen
  - having been exposed to oestrogens in the environment (such as oestrogen and other hormones fed to fatten up beef cattle, or the breakdown products of the pesticide DDT, which can mimic the effects of oestrogen in the body)
  - being heavy users of alcohol, which can limit the liver's ability to regulate blood oestrogen levels
  - having liver disease, which usually leads to lower levels of androgens (male hormones) and higher levels of oestrogen (female hormones). This increases the risk of developing gynaeomastia (breast tissue growth that is non-cancerous) as well as breast cancer.

- **Klinefelter syndrome:** Men with Klinefelter syndrome have lower levels of androgens (male hormones) and higher levels of oestrogen (female hormones). Therefore, they have a higher risk of developing gynecomastia (breast tissue growth that is non-cancerous) and breast cancer. Klinefelter syndrome is a condition present at birth that affects about 1 in 1,000 men. Normally men have a single X and single Y chromosome. Men with Klinefelter syndrome have more than one X chromosome (sometimes as many as four). Symptoms of Klinefelter syndrome include having longer legs, a higher voice, and a thinner beard than average men; having smaller than normal testicles; and being infertile (unable to produce sperm).

- **A strong family history of breast cancer or genetic alterations:** Family history can increase the risk of breast cancer in men — particularly if other men in the family have had breast cancer. The risk is also higher if there is a proven breast cancer gene abnormality in the family. Men who inherit abnormal BRCA1 or BRCA2 genes (BR stands for BReast, and CA stands for CAnce) have an increased risk for male breast cancer. This risk of developing breast cancer by age 70 is approximately 1% with the BRCA1 gene and 6% with the BRCA2 gene. Overall, that's about 80 times greater than the lifetime risk of men without BRCA1 or BRCA2 abnormalities. Also, a family in which male breast cancer has occurred has a 60% to 76% risk of having an abnormal BRCA2 gene. An abnormal BRCA2 gene accounts for up to 40% of male breast cancers. Because of this strong association between male breast cancer and an abnormal BRCA2 gene, first-degree relatives (siblings, parents, and children) of a man diagnosed with breast cancer may want to ask their doctors about genetic testing for abnormal breast cancer genes. Still, the majority of male breast cancers happen in men who have no family history of breast cancer and no inherited gene abnormality.

- **Radiation exposure:** Having radiation therapy to the chest before age 30, and particularly during adolescence, may increase the risk of developing breast cancer. This has been seen in young people receiving radiation to treat Hodgkin's disease. (This does NOT include radiation therapy to treat breast cancer.)

- **Alcohol use:** Men who drink more than two (2) standard alcoholic drinks per day (BreastCancer.Org).
**Staging of Breast Cancer**
Every patient that has been diagnosed with breast cancer must have other tests performed to determine whether the cancer has spread. This process is known as breast cancer staging. An appropriate treatment plan can be developed once the stage of the cancer is known. According to the National Breast Cancer Foundation the following five (5) stages are used to stage breast cancer.

*Stage 0* – In Stage 0 breast cancer, atypical cells have not spread outside of the ducts or lobules, the milk producing organs, into the surrounding breast tissue. It is referred to as carcinoma in-situ.

*Stage I* – In Stage I breast cancer, the cancer is no larger than two (2) centimeters and has not spread to surrounding lymph nodes or outside of the breast.

*Stage II* – Stage II breast cancer is divided into two (2) categories according to the size of the tumour and whether or not it has spread to the lymph nodes:
- Stage IIA – the tumour is less than two (2) centimeters and has spread up to three auxiliary underarm lymph nodes.
  Or
  the tumour has grown bigger than two (2) centimeters, but not larger than five (5) centimeters and has not spread to surrounding lymph nodes.
- Stage IIB – the tumour has grown to between two (2) and five (5) centimeters and has spread to up to three auxiliary underarm lymph nodes.
  Or
  the tumour is larger than five (5) centimeters, but has not spread to the surrounding lymph nodes.

*Stage III* – Stage III breast cancer is also divided into two (2) categories:
- Stage IIIA – the tumour is larger than two (2) centimeters but smaller than five (5) centimeters and has spread to up to nine auxiliary underarm lymph nodes.
- Stage IIIB – the cancer has spread to tissue near the breast including the skin chest wall, ribs, muscles, or lymph nodes in the chest wall or above the collarbone.

*Stage IV* – In Stage IV breast cancer, the cancer has spread to other organs or tissues, such as the liver, lungs, brain, bones, or lymph nodes near the collarbone.

**Breast Cancer Survival Rates**
The 5-year survival statistics quoted below come from the National Cancer Database of the National Cancer Institute, and are based on patients who were diagnosed in the United States of America with breast cancer in 2001 and 2002.

<table>
<thead>
<tr>
<th>Stage</th>
<th>5-year Survival</th>
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<tbody>
<tr>
<td>Stage 0</td>
<td>93%</td>
</tr>
<tr>
<td>Stage I</td>
<td>88%</td>
</tr>
<tr>
<td>Stage IIA</td>
<td>81%</td>
</tr>
</tbody>
</table>
Stage IIIB 74%
Stage IIIA 67%
Stage IIIB 41%
Stage IV 15%

[* The 5-year relative survival rate refers to the percentage of patients who live at least 5 years after being diagnosed with cancer. Many of these patients live much longer than 5 years after diagnosis. The rates quoted above take into account the fact that some patients with cancer will die from other causes and compare the observed survival with what would be expected for people without the cancer. This is seen to be a better way to see the impact of the cancer on survival.]

**Signs and Symptoms of Breast Cancer**

Breast cancer may cause any of the following signs and symptoms:

- General pain in or on any part of the breast
- Irritated or itchy breasts
- Presence of a lump in or near the breast or in the under-arm area
- Thickening in or near the breast or in the under-arm area
- A change in the size or shape of the breast
- A dimple or puckering in the skin of the breast
- A nipple turned inward into the breast
- Fluid, other than breast milk, coming from the nipple, especially if it is bloody
- Scaly, red, or swollen skin on the breast, nipple, or areola (the dark area of skin that is around the nipple)
- A change in breast colour
- Changes in touch (the breast may feel hard, tender or warm)
- Changes in the appearance of one or both nipples
- Dimples in the breast that look like the skin of an orange (called *peau d’orange*)
- Skin changes, such as swelling, redness, or other visible differences in one or both breasts

These signs and symptoms may be attributed to a number of conditions other than cancer. It is, therefore, important to consult a medical professional for an accurate diagnosis.

(National Cancer Institute; Cancer Treatment Centers of America; MedlinePlus Medical Encyclopedia).

**Diagnosis of Breast Cancer**

State-of-the-art screening and diagnostics are used in the diagnosis of breast cancer. This includes:

- Mammography
- Magnetic resonance imaging (MRI)
- Ultrasound
- Stereotatic breast biopsies
- MRI-guided breast biopsies
- Surgical biopsies that may be one of the following:
  - Fine needle aspiration biopsy: using a thin needle to remove cells or fluid from a breast lump
  - Core biopsy: using a wide needle to remove a sample of breast tissue
  - Skin biopsy: in the case of skin changes, a small sample of skin is removed
  - Surgical biopsy: removing only a sample of tissue
- Incisional biopsy: taking out a part of the lump or abnormal area
- Excisional biopsy: taking out the entire lump or abnormal area

- Blood chemistry studies
- If cancer is found, other tests may be done to study the cancer cells, e.g.:
  - Oestrogen and progesterone receptor test
  - Human epidermal growth factor type 2 receptor (HER2/neu)
  - Multi-gene test

(Mayo Clinic; National Cancer Institute).

Certain factors affect the prognosis (chance of recovery) and treatment options. These factors include:

- The stage of the breast cancer
- The type of breast cancer
- Oestrogen receptor and progesterone receptor levels in the tumour tissue
- Human epidermal growth factor type 2 receptor (HER2/neu)
- Whether the tumour tissue is triple-negative
- How fast the tumour is growing
- How likely the tumour is to recur
- The women’s age, general health, and menopausal status
- Whether the cancer has just been diagnosed or has recurred (come back)

(National Cancer Institute).

Treatment of Breast Cancer
Breast cancer is treated in several ways. It depends on the type of breast cancer and how far it has spread. Treatments include surgery, chemotherapy, hormonal therapy, biological therapy, and radiation. People with breast cancer often get more than one kind of treatment in combination.

**Surgery**: an operation is performed where doctors cut out and remove cancer tissue.
Chemotherapy: use is made of special medicines to shrink or kill the cancer cells. The drugs can be pills or medicines administered through and intravenous (IV) tube. Sometimes both oral and IV medicines are used in combination.

Surgical options for breast cancer treatment include:

- **Lumpectomy**: Lumpectomy is a component of breast conservation therapy. It saves as much of the breast as possible by removing only the tumour plus a margin of surrounding normal tissue. Lumpectomy also may be called partial mastectomy, wide local excision or segmental mastectomy.

  Lumpectomy is an option for most women with breast cancer. It may not be an option if:
  - The tumour is too large and does not shrink with preoperative chemotherapy
  - The patient has received breast radiation previously
  - The patient has certain connective tissue disorders

- **Modified Radical Mastectomy**: In a modified radical mastectomy, the entire breast is removed, including the skin, areola and nipple, as well as most of the lymph nodes in the armpit area.
Modified radical mastectomy is usually recommended if the tumour is large and cancer has already spread to the lymph nodes.

- **Nipple-sparing Mastectomy:**
  This procedure should only be done if the primary cancer is distant from the nipple areola complex, the breast surgeon is experienced in this technique, and the nipple is in a relatively good position for the reconstruction. Otherwise, a skin sparing mastectomy is the better choice.

  The nipple sparing mastectomy and reconstruction has obvious aesthetic benefits but few patients are candidates and not all patients are willing to accept the risks. In addition, the nipple saved undergoes changes due to the mastectomy. If during the mastectomy the nipple is spared, the breast tissue at the base of the nipple is removed. Some breast surgeons will send biopsy of the tissue removed from under the nipple to be certain there is no cancer at that location. If there are any cancer cells on the frozen section, then the nipple is removed as part of the mastectomy.

  The advantage of maintaining the existing nipple and areola is that no further surgery is necessary to create the nipple areola complex. However, there are a number of potential downsides to this technique which may include:
  - Need for removal in the future if cancer recurs in the nipple
  - Loss of sensation
  - Lack of nipple projection
  - Nipple malposition
  - Wound healing complications of the nipple
  - Possible partial or complete nipple areola loss.
  (Breastflap.Com).

- **Sentinel Lymph Node Biopsy:**
  Sentinel lymph nodes are the first lymph nodes reached by cancer cells metastasising (transferring from one part of the body to another) from a tumour. Breast cancer usually spreads first to the lymph nodes in the axilla (armpit area). These sentinel lymph nodes are the first to receive lymph drainage from the breast and are also the most likely nodes to contain cancer if it has spread.

  Surgeons used to perform axillary node dissection (removal of most of the lymph nodes under the arm) to determine whether breast cancer had spread to the lymph nodes. Axillary node dissection may cause numbness and lymphoedema (a serious swelling of the arm.)

- **Simple or Total Mastectomy:**
  In simple mastectomy, the entire breast is removed, including the nipple and the areola, the darker-colored area of skin around the nipple. This procedure is also called total mastectomy. Simple mastectomy is advised when there is a need or desire to remove the entire breast.

- **Skin-sparing Mastectomy:**
  In skin-sparing mastectomy, the entire breast, nipple and areola are removed without removal of the breast skin. The surgeon makes a small incision around the areola that maintains the rest of the breast skin to optimize the results of cosmetic reconstruction.
Skin-sparing mastectomy is often performed when breast removal and reconstruction are completed during the same operation. If an axillary dissection or a sentinel lymph node biopsy is necessary, another incision is often made under the arm (Mayo Clinic).

**Hormonal therapy:** some cancers need certain hormones to grow. Hormonal treatment is used to block cancer cells from getting the hormones it needs to grow.

**Biological therapy:** this treatment works with the body’s immune system to help it fight cancer or to control side effects from other cancer treatments. Side effects are how the body reacts to drugs or other treatments. Biological therapy is different from chemotherapy, which attacks cancer cells directly.

**Radiation therapy:** use is made of high-energy rays to kill the cancer cells. The rays are aimed at the art of the body where the cancer is located. Radiation therapy may include:

- **External beam therapy:** also called external radiation therapy, is a method for delivering a beam or several beams of high-energy x-rays to a patient's tumour.
- **Intensity-Modulated Radiation Therapy (IMR):** Intensity-modulated radiation therapy (IMRT) is an advanced mode of high-precision radiotherapy that utilizes computer-controlled linear accelerators to deliver precise radiation doses to a malignant tumour or specific areas within the tumour.
- **Interstitial Therapy (brachytherapy):** the temporary placement of radioactive materials within the breast, usually employed to give an extra dose of radiation to the area of the excision site. (RadiologyInfo.Org).

It is common for doctors from different specialties to work together in treating breast cancer. Surgeons are doctors that perform operations. Medical oncologists are doctors that treat cancers with special medicines. Radiation oncologists are doctors that treat cancers with radiation therapy (Centers for Disease Control and Prevention).

**Follow-up Care and Treatment**

Anyone who has been treated for cancer may be concerned about what the future holds. They may have questions regarding what care and support there is for them and what follow-up care they can expect.

Follow-up treatment involves regular medical checkups that may include the following:

- A review of the patient's medical history
- A physical examination
- Imaging procedures where X-rays or scans are done
- Endoscopy examination where a lighted tube is used to examine inside parts of the body
- Blood tests
- And sometimes other laboratory tests. (National Cancer Institute).
Follow-up care is important because it monitors the health of the patient. The purpose of follow-up care includes:

- To check for possible recurrence of the cancer
- To check for the possible presence of a new cancer
- To check for signs of the possible spread of the cancer to another part of the body
- Addressing possible ongoing problems due to the original cancer or its treatment
- Checking for physical and/or psychosocial effects that may develop months or even years after treatment (National Cancer Institute).

All cancer survivors should actively participate in a structured follow-up programme.

**Prevention of Breast Cancer**

Cancer prevention is action taken to lower the chance of getting cancer. To prevent new cancers from starting, scientists look at risk factors and protective factors. Anything that decreases the chance of developing cancer is called a cancer protective factor. Some risk factors can be avoided, but many cannot. For example, both smoking and inheriting certain genes are risk factors for some types of cancer, but only smoking can be avoided. Regular exercise and a healthy diet may be protective factors for some types of cancer. Avoiding risk factors and increasing protective factors may lower the risk (National Cancer Institute).

The following can help lower the risk of breast cancer:

- Doing regular monthly breast self-examinations
- Being screened regularly for breast cancer
- Knowing your family history of breast cancer
- Determining the risks and benefits of hormone replacement therapy (Centers for Disease Control and Prevention)

There is some agreement that lifestyle changes may contribute to prevent breast cancer. The best advice is to eat a well-balanced diet and avoid focusing on one “cancer-fighting” food. The following guidelines may be helpful:

- Choose foods and portion sizes that promote a healthy weight
- Maintain a healthy body weight
- Choose whole grains instead of refined grain products
- Eat 5 or more servings of fruits and vegetables each day
- Limit the intake of red and processed meat in the diet
- Limit alcohol intake as listed above under Risk Factors for Female Breast Cancer
- Do not smoke – if already smoking – obtain assistance to quit smoking (PubMed Health; MedlinePlus Medical Encyclopedia).

**CANSA Support**
The Cancer Association of South Africa (CANSA): www.cansa.org.za
Toll free line (08:00 to 16:30 on weekdays): 0800 22 66 22
E-mail: info@cansa.org.za

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References and Consulted Sources


American Cancer Society. Breast Cancer.


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