

Understanding Breast Cancer

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The Breast

- The breast is a collection of glands and fatty tissue that lies between the skin and the chest wall.
- Each gland is also called a lobule, and many lobules make up a lobe. There are 15 to 20 lobes in each breast. The milk gets to the nipple from the glands by way of tubes called ducts.
- The tissue that is most responsible for the size and shape the breast is the fatty tissue. There are also dense blood vessels and lymph vessels in the breast tissue. Most lymph nodes that drain the breast are under the arm in the axilla and have a powerful role in detoxification of the breast tissue.

Australian Breast Cancer Statistics

- Over 11,000 women are diagnosed with breast cancer each year in Australia.
- Breast cancer can occur at any age. The average age of women when they are diagnosed with breast cancer is 58 years.
- However, one-third of women diagnosed with breast cancer are younger than 50 years.

Key facts about breast cancer in Australia

- One in 11 women will be diagnosed with breast cancer before the age of 75.
- Breast cancer is the most common cause of cancer-related death in women in Australia.
- A total of 2594 women died from breast cancer in Australia in 2001 (last available national figures).
- Breast cancer is the second most common cancer among Australian women, after non-melanoma skin cancer.

Key facts about breast cancer in Australia

- In Australia in 2001 a total of 11,791 women and 95 men were diagnosed with breast cancer.
- The risk of breast cancer increases with age. Almost 24 per cent of new breast cancer cases diagnosed in 2001 were in women aged 20-49; 49 per cent in women aged 50-69; and 27 per cent in women aged 70 and over.
- The incidence of breast cancer in women rose from 100.5 cases per 100,000 population in 1991 to 117.2 cases per 100,000 population in 2001; an average increase of 1.4 % per annum.

Key facts about breast cancer in Australia

- The increase in incidence in the 50-69 year old age group in 1993 and 1994 was most likely the result of the introduction of the national breast cancer screening program, given that this has been the main target age group.
- From 1991 to 2001, the breast cancer mortality rate declined by an average of 2.2 per cent per annum.

Key facts about breast cancer in Australia

- The five-year relative survival rate for Australian women with breast cancer during 1992-97 was 84 per cent, compared with 72.3 per cent in 1982-86.

Breast Cancer in Younger Women

- Although over 75% of cases of breast cancer develop in women 50 years and older, more younger women are developing the disease.
- In addition, in younger women breast cancers are likely to be larger and more aggressive than in older women.

Breast Cancer in Younger Women

- In Australia each year, about 700 women under the age of 40 years are diagnosed with breast cancer.
- Overall survival from breast cancer has increased in recent years. Our most recent data show that 85% of women aged between 40 and 69 years at diagnosis will be alive after five years.
- However, for women younger than 40 years, survival is lower. Of younger women diagnosed with breast cancer, about 72% of those aged 20 to 29 years and 80% of those aged 30 to 39 years will be alive 5 years after diagnosis.

Australian Institute of Health and Welfare (AIHW) and Australasian Association of Cancer Registries (AACR) 2001. Cancer survival in Australia 2001. Part 1: National summary statistics. AIHW cat. no. CAN 13. Canberra: Australian Institute of Health and Welfare (Cancer Series No. 18). These are the latest national statistics available.

Breast Cancer Statistics in Australia

Age (years)	New cases (1992 to 1997)	Five year relative survival (%)	Deaths (1992 to 1997)
0 to 19	9	*	1
20 to 29	370	72.4	98
30 to 39	3,575	79.8	727
40 to 49	11,244	85.8	1,694
50 to 59	12,834	85.7	1,976
60 to 69	12,351	86.1	2,317
70 to 79	10,159	82.8	3,041
80 to 89	4,619	72.2	2,522
90 to 99	654	64.7	513
All ages	55,815	84.0	12,889

Breast Cancer

- Breast cancer starts in the ducts or lobules of the breast.
- If the cancer cells spread outside the ducts or lobules of the breast into the surrounding tissue, this is called invasive breast cancer.
- Early breast cancer is an invasive breast cancer. Invasive cancer cells often metastasizes outside the breast. They do this by moving through blood vessels, such as veins, or through lymphatic vessels. Lymphatic vessels are next to veins in the body, and are connected to lymph nodes (glands).

Breast Cancer

- If the cancer cells are contained in the breast and armpit area, then the cancer is 'early breast cancer'.
- If the cancer has spread to places near the breast, such as the chest (including the skin, muscles or bones of the chest), but the cancer isn't found in other areas of the body, this is called locally advanced breast cancer.
- If the cancer cells spread from the breast and are found in other areas of the body, such as the bones or the lungs, this is known as metastasis breast cancer.

Diagnosis

- Most breast changes are not due to breast cancer and are often related to hormonal changes or conditions such as fibrocystic breast disease.
- Initial investigation including:
 - examination of your breasts by your doctor
 - mammography and/or ultrasound
 - a fine needle biopsy or core biopsy

Risk factors- What causes breast cancer?

- According to allopathic medical opinion, it is not possible to say what exactly causes a woman's breast cancer. However, research has shown that some factors might increase a woman's risk or chance of developing breast cancer.
- Risk factors acknowledged by oncologists:
 - age
 - strong family history of breast cancer or having the gene for breast cancer
 - having previously been diagnosed with breast cancer or DCIS (Ductal carcinoma in situ)
- Armstrong, K., Eisen, A., & Weber, B. (2000) Primary Care: Assessing the Risk of Breast Cancer. The New England Journal of Medicine, 342(8), 564-571.

Risk factors- What causes breast cancer?

Other factors that seem to slightly increase a woman's risk of developing breast cancer include:

- starting menstruation at a relatively early age (before 12 years); and starting menopause, or 'change of life', at a relatively late age (after 55 years)- i.e. more exposure to oestrogen over your lifetime
- not having children, or having a first child after 30 years of age

Risk factors- What causes breast cancer?

Other factors that seem to slightly increase a woman's risk of developing breast cancer include (continued):

- not breastfeeding – the more months spent breastfeeding, the lower the risk of developing breast cancer
- taking combined Hormone Replacement Therapy (HRT) after menopause, especially when taken for 5 years or longer

Risk factors- What causes breast cancer?

Other factors that seem to slightly increase a woman's risk of developing breast cancer include (continued):

- putting on a lot of weight in adulthood, especially after menopause
- drinking alcohol (more than 2 standard drinks a day)
- having previously been diagnosed with lobular carcinoma in situ (LCIS) or atypical hyperplasia (AH).

Armstrong, K., Eisen, A., & Weber, B. (2000) Primary Care: Assessing the Risk of Breast Cancer. *The New England Journal of Medicine*, 342(8), 564-571.

Risk factors: The Breast Cancer Gene

- Between 3% to 10% of breast cancers may be related to changes in either the gene BRCA1 or the gene BRCA2.
- Women can inherit these mutations from their parents and it may be worth testing for either mutation if a woman has a particularly strong family history of breast cancer (meaning multiple relatives affected, especially if they are under 50 years old when they get the disease).
- If a woman is found to carry either mutation, she has a 50% chance of getting breast cancer before she is 70.

Armstrong, K., Eisen, A., & Weber, B. (2000) Primary Care: Assessing the Risk of Breast Cancer. *The New England Journal of Medicine*, 342(8), 564-571.

Breast Changes

From time to time, a woman or her doctor may find breast changes, such as:

- A lump or lumpiness
- Any change in the shape or appearance of the breast such as dimpling or redness
- An area that feels different to the rest
- A discharge from the nipple
- Any change in the shape or appearance of the nipple such as pulling in or scaliness (nipple inversion or retraction)
- Pain

Types of Breast Changes

Breast changes to look out for:

- A lump, lumpiness or thickening:
 - For younger women - if this is not related to your normal monthly cycle and remains after your period.
 - For women of all ages - if this is a new change in one breast only.
- Changes to the nipple: such as a change in shape, crusting, a sore or an ulcer, redness or in-drawing of the nipple.
- Discharge from the nipple: if this is from one nipple and is bloodstained, or occurs without squeezing.

Types of Breast Changes

- Changes in the skin of the breast: such as any puckering or dimpling of the skin, unusual redness or other colour change
- Persistent unusual pain: if this is not related to normal monthly cycle, remains after your period and occurs in one breast only.
- Change in the size or shape of the breast: this might be either an increase or a decrease in size

Nipple Changes

- Most nipple discharges are not cancer.
- However, a cancer may be present if the nipple discharge:
 - Comes out without squeezing the nipple or expressing the discharge.
 - Comes from a single duct in one nipple.
 - Tests positive for blood.
 - Is in a woman who is over 60 and the discharge is new.

Nipple Changes

Nipple inversion

- Nipple inversion is when the nipple grows inwards instead of out. If the nipple inversion is a new change, the doctor will examine the woman's breasts to determine whether she requires more tests.
- A cancer may be present if the nipple inversion:
 - Looks like it is all pulled in together, rather than forming a slit shape.
 - Cannot be pulled out to a normal shape.
 - Has any scaliness, change in colour or ulcers.
 - If a lump can be felt behind the nipple.

Breast Changes

Breast lumps

- A breast lump is a localized swelling, protuberance, or lump in the breast.
- Normal breast tissue is present in both males and females of all ages. This tissue responds to hormonal changes and, therefore, certain lumps can come and go. However if they notice a lump that is not part of the normal menstrual cycle, further investigation is warranted.
- Even though most breast lumps are benign, they still need to be checked carefully to rule out the possibility of cancer.

Breast Changes

- Common causes of benign breast lumps are cysts or fibroadenomas.
- Breast lumps or changes may also be found following a routine screening mammogram that is recommended for all women between the ages of 50 and 69.
- Breast Screen Australia the free national public screening program has set a goal of achieving a 30% reduction in breast cancer deaths based on a participation rate of 70% in mammographic screening for women aged 50 to 69.

Other Breast Changes

Other breast changes to look out for are:

- When the breast looks red and inflamed and feels warm and swollen. Ridges or raised marks may appear on the breast skin, or the skin may have pitted appearance, like the peel of an orange.
- Lump or thickening in the breast.
- Pain in the breast or nipple.

Types of Breast Cancer

- The term "breast cancer" actually describes a variety of cancers that occur within the breast.
- The different breast cancer types are generally categorized by two factors - where the cancerous cells are located and whether the cancer is prone to spreading.

Ductal Carcinoma

- Ductal carcinoma is the most common form of breast cancer. It develops in the ducts that carry the milk from the lobules (milk glands) to the nipple. Ductal carcinomas can be either in situ or invasive breast cancer.
 - Ductal Carcinoma In Situ (DCIS): In ductal carcinoma in situ, cancer cells are present inside the milk ducts but they have not yet spread through the walls of the ducts into the fatty tissue of the breast. For this reason, nearly 100% of women diagnosed at an early stage can be cured. The best way to monitor and prevent getting ductal carcinoma in situ is with a yearly mammogram. Left unchecked, it may develop into invasive breast cancer.

Ductal Carcinoma

- Invasive Ductal Carcinoma (IDC):
 - Invasive ductal carcinoma accounts for nearly 80% of breast cancers.
 - It also begins in a milk duct, but unlike ductal carcinoma in situ, it invades the fatty tissue of the breast.
 - This invasive carcinoma has the potential to metastasize to other parts of the body through the bloodstream or lymphatic system. It is important to detect and treat invasive ductal carcinoma before it has had time to metastasize and spread to other organs.

Lobular Carcinoma

- Lobular carcinoma is found in the milk-producing glands of the breast. It is far less common than ductal carcinoma, but it can present itself in both breasts more often than other types of breast cancer. Lobular carcinoma can be either in situ or invasive breast cancer.

Lobular Carcinoma

Lobular Carcinoma In Situ (LCIS):

- Technically, lobular carcinoma in situ is not even a cancer. Sometimes called lobular neoplasia, it is classified as pre-cancerous growth that begins in the milk-producing glands.
- Lobular carcinoma in situ does not penetrate through the wall of the lobules, and most researchers believe it does not usually become an invasive breast cancer. However, women who develop lobular carcinoma in situ have a higher future risk of developing invasive breast cancer in the same or opposite breast.

Lobular Carcinoma

- Invasive Lobular Carcinoma (ILC)
 - Similar to invasive ductal carcinoma, invasive lobular carcinoma has the potential to metastasize and spread to other parts of the body. It begins in the milk-producing glands, where it extends into the fatty tissue of the breast.
 - About 10% to 15% of breast cancers are invasive lobular carcinomas.
 - Invasive lobular carcinoma also can be more difficult to detect by mammogram than LCIS, making it important to have mammograms annually.

Inflammatory Breast Cancer

- This rare type of invasive breast cancer accounts for about 1% of all breast cancers.
- Inflammatory breast cancer makes the skin of the breast look red and feel warm, as if it were infected.
- The skin develops a thick, pitted appearance that doctors often describe as resembling an orange peel.
- Sometimes the breast develops ridges and small bumps that look like hives.
- Cancer cells blocking lymph vessels or channels in the skin over the breast cause these symptoms.

Medullary Carcinoma

- This special type of invasive breast cancer has a relatively well-defined boundary between the tumour tissue and normal tissue.
- This prevents rapid spreading of the cancer, and it often can be treated more effectively compared to other types of invasive breast cancer.
- Medullary carcinomas account for about 5% of breast cancers.

Mucinous Carcinoma

- Mucinous carcinoma is another rare type of invasive breast cancer.
- It is formed in the breast by mucus-producing cancer cells which spread the disease into the surrounding breast tissue.
- This type of breast cancer is treatable and offers a higher rate of recovery compared with other types of invasive breast cancer.

Paget's Disease of the Nipple

- This type of breast cancer starts in the milk ducts and spreads to the skin of the nipple and areola. The nipple and areola will often appear crusted, scaly and red. The patient may experience burning, itching or notice some bloody discharge from the nipple.
- Paget's Disease is a rare form of breast cancer, occurring in only 1% of all cases.
- It can be associated with in situ carcinoma as well as invasive carcinoma.
- If no lump can be felt in the breast tissue and the biopsy shows the growth to be in situ and not invasive, treatment for Paget's Disease is very effective.

Phyllodes Tumour

- This rare breast tumour forms from the stroma (connective tissue) of the breast, in contrast to carcinomas which develop in the ducts or lobules.
- Phyllodes tumours are usually benign, but on rare occasions have been found to be malignant (cancerous with the potential to metastasize).
- These occurrences are extremely rare, with fewer than 10 women dying each year as a result of this breast cancer.

Phyllodes Tumour

- Phyllodes tumours do not respond to hormonal therapy and are less likely to respond to other breast cancer treatments such as chemotherapy or radiation therapy.
As a result, benign Phyllodes tumours are treated by removing the mass and a narrow margin of the surrounding breast tissue.
- Malignant Phyllodes tumours are removed in the same manner with a wider margin of breast tissue, or by mastectomy.

Tubular Carcinoma

- Tubular carcinoma is similar to invasive ductal carcinoma (IDC) and accounts for approximately 2% of all breast cancers.
- However, the treatment for tubular carcinoma is more effective than that of other invasive breast cancers.

Staging of Breast Cancer

The staging system is somewhat complex, but here is a simplified version of it:

Stage 0 (carcinoma in situ)

- Lobular carcinoma in situ (LCIS) refers to abnormal cells lining a gland in the breast. This is a risk factor for the future development of cancer, but this is not felt to represent a cancer itself.
- Ductal carcinoma in situ (DCIS) refers to abnormal cells lining a duct. Women with DCIS have an increased risk of getting invasive breast cancer in that breast. Treatment options are similar to patients with Stage I breast cancers.

Staging of Breast Cancer

Stage 1

- Early stage breast cancer where the tumour is less than 2 cm across and hasn't spread beyond the breast

Staging of Breast Cancer

Stage II

- Early stage breast cancer where the tumour is either less than 2 cm across and has spread to the lymph nodes under the arm; or the tumour is between 2 and 5 cm (with or without spread to the lymph nodes under the arm); or the tumour is greater than 5 cm and hasn't spread outside the breast

Staging of Breast Cancer

Stage III

- locally advanced breast cancer where the tumour is greater than 5 cm across and has spread to the lymph nodes under the arm; or the cancer is extensive in the underarm lymph nodes; or the cancer has spread to lymph nodes near the breastbone or to other tissues near the breast

Staging of Breast Cancer

Stage IV

- Metastatic breast cancer where the cancer has spread outside the breast to other organs in the body

Medical Approach to Treatment

Surgery

- Almost all women with breast cancer will have some type of surgery in the course of their treatment.
- The purpose of surgery is to remove as much of the cancer as possible, and there are many different ways that the surgery can be carried out.

Medical Approach to Treatment

Surgery

- Some women will be candidates for what is called breast conservation therapy (BCT).
- BCT always needs to be combined with radiation therapy to make it an option for treating breast cancer.
- At the time of the surgery, the surgeon may also dissect the lymph nodes under the arm so the pathologist can review them for signs of cancer.
- Sometimes, the surgeon will remove a larger part of the breast-segmental or partial mastectomy.
- This needs to be combined with radiation therapy as well. In early stage cancers (like stage I and II), BCT is as effective as removal of the entire breast via mastectomy.
- The advantage of BCT is that the patient will not need a reconstruction or prosthesis to appear like she did before the procedure.

Medical Approach to Treatment

Surgery

- More advanced breast cancers are usually treated with a modified radical mastectomy.
- Modified radical mastectomy means removing the entire breast and dissecting the lymph nodes under the arm.
- Patients with DCIS that have a mastectomy do not need to have the lymph nodes removed from under the arm.
- Some patients are candidates for BCT but choose modified radical mastectomy for personal reasons.
- Most women who have modified radical mastectomies choose to undergo a reconstruction.

Medical Approach to Treatment

Chemotherapy

- In order to decrease a patient's risk of recurrence, many breast cancer patients are offered chemotherapy.
- In early stage patients, the risk of recurrence may be small, and thus the benefits of the chemotherapy are even smaller. However, the option to receive chemotherapy should be offered to most patients with breast cancer and they can decide if the potential benefits of chemotherapy outweigh its side effects in their own particular case.

Medical Approach to Treatment

Chemotherapy

- There are many different chemotherapy drugs, and they are usually given in combinations for 3 to 6 months after you receive your surgery.
- Two of the most common regimens are AC (doxorubicin and cyclophosphamide) for 3 months or CMF (cyclophosphamide, methotrexate, and fluorouracil) for 6 months.

Hortobagyi, G.N., (1998) Drug Therapy: Treatment of Breast Cancer. *The New England Journal of Medicine*, 339(14), 974-984.

Medical Approach to Treatment

Radiotherapy

- Breast cancer commonly receives radiation therapy.
- It comes from an external source, and it requires patients to come in 5 days a week for up to 6 weeks to a radiation therapy treatment centre.
- The treatment takes just a few minutes, and it is painless. Radiation therapy is used in all patients who receive breast conservation therapy (BCT).
- It is also recommended for patients after a mastectomy who had large tumours, lymph node involvement, or close/positive margins after the surgery.

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Medical Approach to Treatment

Hormonal Therapy

- When the pathologist examines a tumour specimen, they will determine if the tumour is expressing oestrogen and progesterone receptors.
- Patients whose tumours express oestrogen receptors are candidates for therapy with an oestrogen blocking drug called Tamoxifen.
- Tamoxifen is taken for 5 years after your surgery.
- This drug has been shown to drastically reduce your risk of recurrence if your tumour expresses oestrogen receptors.

Medical Approach to Treatment

Hormonal Therapy

Tamoxifen

- There are side effects commonly associated with Tamoxifen including weight gain, hot flashes and vaginal discharge that patients may be bothered by.
- There are also very uncommon side effects like blood clots, strokes, or uterine cancer that may scare patients from choosing to use tamoxifen.

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Medical Approach to Treatment

Hormonal Therapy

Aromatase Inhibitors

- There are also newer drugs, called aromatase inhibitors that act by decreasing your body's supply of oestrogen; these drugs are reserved for patients who have are post menopausal.

Hortobagyi, G.N., (1998) Drug Therapy: Treatment of Breast Cancer. The New England Journal of Medicine, 339(14), 974-984.

Medical Approach to Treatment

Hormonal Therapy

Biologic Therapy

- The pathologist also examines your tumour for the presence of HER-2/neu over expression.
- HER-2/neu is a receptor that some breast cancers express.
- If the cancer expresses it, the patient usually have a higher chance tumour recurancer after surgery.
- A compound called Herceptin (or Trastuzumab) is a substance that blocks this receptor and helps stop the breast cancer from growing. Some patients are candidates for this medicine.

Prevention & Co Management

The Naturopathic View Point

- In fact, most textbooks do not even discuss the function of a healthy breast.
- That is mostly because there is so little that the medical community understands about the breasts.
- Many doctors assume that the breasts have no function until the birth of a baby at which point the breasts become functional for a period of time, after which they return to their natural dormant state.
- There is virtually no other part of the body that only has function for so limited a period of time.

Prevention & Co Management

The Naturopathic View Point

- We also have very little information about the role of hormones in non-lactating breast tissue as well as which hormones are present in any given concentrations.
- For example, a study in the American Journal of Pathology found that breast tissue contains large numbers of receptors for gastrin-releasing peptide, although we have no idea why.
- GRP is released by the vagus nerve to stimulate the G cells of the stomach to release gastrin for digestion. Why would the breast tissue contain such high volumes of receptors for GRP? These questions and more remain unanswerable to medicine at this point in time.

Prevention & Co Management The Naturopathic View Point

- From a holistic viewpoint, it is very important to keep the breast healthy, for reasons beyond purely prevention of breast cancers.
- Herbal medicine, clinical nutrition, environmental awareness, diet and lifestyle are all essential components to healthy functioning breast tissue and preventions of the growing number of diseases and disorders affecting breasts of women and men.

Prevention & Co Management

The Naturopathic View Point

- The American Institute for Cancer Research agreed when it stated that as much as 33% of breast cancer could be prevented by diet, exercise and a healthy body weight.

Prevention & Co Management

The Naturopathic View Point

- It is vitally important for us to explore the mysteries of breast tissue and develop an understanding of their structure, physiology and life process so that we can learn how to prevent breast cancer and breast disease conditions.