

What is breast cancer?

Normal breast cells grow and divide in a controlled manner to replace cells that have died because of damage or age. Breast cancer is a disease in which abnormal breast cells increase in size, divide and destroy normal tissue.¹

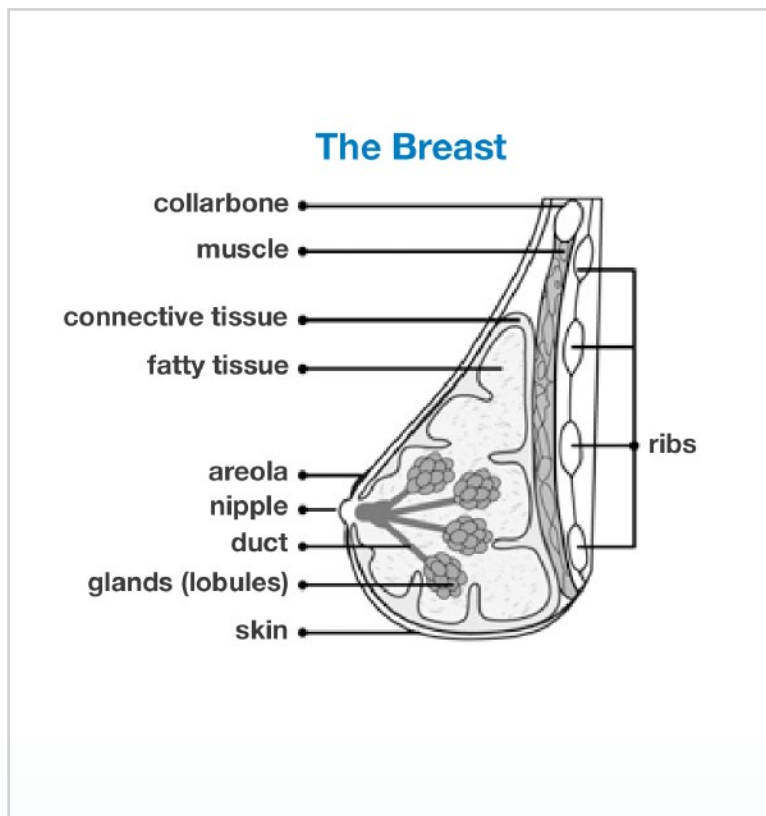
As the cancer cells grow out of control for several months or years, they can form different types of cancerous tumours. One is called an in situ carcinoma (cancer), which means the cancer cells are growing inside a boundary that separates the tumour from surrounding tissues. This boundary is like a capsule that contains the tumour. The cells may acquire the ability to become invasive, which is another form of tumour in which some cells break through the boundary and invade nearby tissues.¹

This type of cancer is life-threatening if the cells reach vital organs like the kidneys, lungs, or liver. The danger is even greater if the cells become malignant, and the invasive tumour cells gain the ability to enter the blood stream or lymphatic system and travel to distant areas in the body to form new tumours, which is called metastatic cancer.¹

Breast cancer is usually detected as a painless lump in the breast or armpit. You or your partner may discover the lump, or it may be found in a routine physical exam by your doctor, or during a screening mammogram.²

How common is breast cancer?⁴

- Breast cancer is the most common cancer among Canadian women.
- In 2009, it was estimated that 22,700 women would be diagnosed with breast cancer and 5,400 would die of it. It was also estimated that 180 men would be diagnosed with breast cancer and 50 would die of it.
- On average, 437 Canadian women are diagnosed with breast cancer every week.
- On average, 104 Canadian women die of breast cancer every week.
- One in 9 women is expected to develop breast cancer during her lifetime. One in 28 will die of it.
- Breast cancer death rates have declined in all ages combined and in every age group since at least the mid 1990s.
- Incidence and death rates for breast cancer have declined since 1969 in women aged 20–39.



What increases your risk of breast cancer?⁵

Most women who develop breast cancer have no risk factors other than simply being a woman and getting older (especially being over 50). Talk to your doctor about your risk.

Some risk factors for breast cancer include:

- Having had breast cancer before
- Family history of breast cancer (especially in a mother, sister or daughter diagnosed before menopause or if mutations on BRCA1 or BRCA2 genes are present)
- Family history of ovarian cancer
- An above-average exposure to the hormone estrogen, which your body produces naturally, perhaps because you:
 - Have never given birth or gave birth for the first time after age 30
 - Began menstruating at a young age
 - Reached menopause later than average
 - Have taken hormone replacement therapy (estrogen plus progestin) for more than five years
- Have dense breast tissue (as shown on a mammogram)
- Have a history of breast biopsies showing certain breast changes, such as an increased number of abnormal cells that are not cancerous (*atypical hyperplasia*)
- Had radiation treatment to the chest area (for example, to treat Hodgkin's lymphoma), especially before age 30

Other factors slightly increase your risk of breast cancer. You may be at slightly higher risk if you:

- Are obese (especially after menopause)
- Drink alcohol
- Take birth control pills for four or more years before your first full term pregnancy⁶

Some women develop breast cancer without having any of these risk factors. Most women with breast cancer do not have a family history of the disease.

How can I help prevent breast cancer?⁶

Here are some strategies that may help you decrease your risk of breast cancer:

Limit alcohol. There is a link between alcohol consumption and breast cancer, though how strong a link is yet to be determined. The type of alcohol consumed seems to make no difference, be it wine, beer or mixed drinks. Consider limiting alcohol to less than one drink a day or avoid alcohol completely to protect yourself from breast cancer.

Maintain a healthy weight. There is a clear link between weighing more than is appropriate for your age and height (obesity) and breast cancer. This is especially true if the weight is gained later in life, particularly after menopause. The speculation is that estrogen production in fatty tissue may be the link between obesity and breast cancer risk.



Stay physically active. This can help you stay at a healthy weight, which may in turn help in breast cancer prevention. A good target is at least 30 minutes of exercise on most days of the week. If you haven't been that active in the past, start exercising slowly and gradually work up to a greater intensity. Be sure to include weight-bearing exercises such as walking, jogging or aerobics. These also help to keep your bones strong.

Consider limiting fat in your diet. Results from the most definitive study to date of dietary fat and breast cancer risk suggest a decrease in risk of invasive breast cancer for women who eat a low-fat diet—though it's a modest effect at best. Still, reducing the amount of fat in your diet may decrease your risk of other diseases, such as diabetes, cardiovascular disease and stroke. Plus, a low-fat diet may help protect against breast cancer if it helps you maintain a healthy weight—another factor in breast cancer risk. Limit your fat intake to less than 35 percent of your daily calories and restrict foods high in saturated fat for the protective benefit.

Avoid exposure to pesticides. Some pesticides closely resemble estrogen in molecular structure. This means they may attach to estrogen receptor sites in your body. Although studies haven't found a definite link between most pesticides and breast cancer, researchers have learned that women with elevated levels of pesticides in their breast tissue have a greater breast cancer risk.

Avoid unnecessary antibiotics. Scientists recently found that the risk of breast cancer increases with an increase in length of antibiotic use. Researchers caution, however, that other factors, such as underlying illness or a weakened immune system, rather than antibiotics themselves, may account for the elevated cancer risk.

Aim for early detection. In addition to lifestyle changes, focus on early detection of breast cancer. Start having yearly mammograms at age 40. Some countries recommend 40, but some others, such as Canada, recommend 50. If you notice any breast changes, such as a new lump or skin changes, make an appointment to see your doctor for evaluation.

What are the symptoms of breast cancer?²

Breast cancer is most often noticed first as a painless lump in the breast or armpit. You or your partner may discover the lump, or your doctor may find it during a routine physical exam or screening mammogram. Other signs might include:

- Lump or swelling in the armpit
- Changes in breast size or shape
- Dimpling or puckering of the skin—thickening and dimpling skin is sometimes called “orange peel”
- Redness, swelling and increased warmth in the affected breast (these may be symptoms of inflammatory breast cancer)
- Inverted nipple (nipple turns inwards)
- Crusting or scaling on the nipple

Fortunately, these symptoms are often caused by health problems other than cancer. Testing is necessary to make a diagnosis. Remember, most lumps are not breast cancer—lumps in the breast are very common, especially just before your period.

How is breast cancer diagnosed?⁷

There are several common reasons for your doctor to suspect that you have breast cancer:

- A routine screening mammogram showed a problem

- You reported a change in your breast or nipple
- He/She examined your breasts and talked with you about your health and your personal and family medical history

If you have a lump, your doctor will feel its size, shape and texture, and will check to see if it moves easily. Non-cancerous lumps often feel different from cancerous lumps. To confirm the diagnosis, your doctor will arrange special tests (see the list below), which may also be used to *stage* and *grade* the cancer. You may have one or more of the following tests.

Imaging studies. These allow tissues, organs and bones to be seen in more detail. x-rays, ultrasounds, CT scans, or bone scans help your healthcare team get a picture of the size of the tumour and whether it has spread. These tests are usually painless and do not require an anesthetic. A Breast MRI can be done with a machine that uses a magnet and radio waves to create pictures of the interior of your breast. Before a breast MRI, you receive an injection of dye.

A diagnostic mammogram is performed even if you've already had a screening mammogram. It involves more x-ray pictures of the areas in the breast that looked abnormal on the screening mammogram. Mammograms can be uncomfortable and may even hurt, because the breast is pressed between two glass plates. You'll need to stay still for less than a minute while the pictures are taken.

Biopsy. This is usually necessary to make a definite diagnosis of cancer. Cells are removed from the body and checked under a microscope. If the cells are cancerous, they may be studied further to see how fast they are growing. There are several ways to do a breast biopsy:

- A *fine needle aspiration* uses a thin needle to remove fluid or cells from the lump. This procedure is quick, but it may be uncomfortable because the breast is so sensitive.
- A *core needle biopsy* involves inserting a needle through a small cut in the breast to remove one or more samples of breast tissue. If necessary, ultrasound or x-ray imaging is used to guide the needle into the lump. A local anesthetic (freezing) will be used to numb the area. You may have some breast tenderness and bruising for a short time afterwards.
- A *surgical biopsy* is an operation to remove part or all of a breast lump or suspicious breast tissue. There are two types of surgical biopsies. An *incisional* biopsy takes a sample of a lump or abnormal area. An *excisional* biopsy takes out the entire lump or all the suspicious tissue. The biopsy can be performed in the doctor's office or in the hospital as an outpatient, which means you won't need to stay overnight. A local anesthetic will be used to numb the area.

Laboratory tests. If cancer cells are found in the biopsy sample, your doctor may order more laboratory tests on the breast tissue that was removed. These tests help your doctor learn more about the cancer and plan the best treatment options for you.

- The *hormone receptor status test* shows whether the cells have certain hormone receptors. Breast cancer cells that have these receptors need estrogen and progesterone hormones to grow. If the biopsy sample has these receptors, the tumour is called *hormone-positive*. Knowing the hormone receptor status of the tumour helps predict how the tumour will behave and whether or not the cancer is likely to respond to hormonal therapy. *Hormone-positive* tumours are more common in post-menopausal women.
- The *Her2* test looks for the cancer gene that controls the Her2 protein. Her2 stands for *human epidermal growth factor* receptor 2. Her2 is a protein on the surface of breast cells that promotes growth. Some breast cancer cells have a lot more Her2 than others. If the tissue has too much Her2 protein or too many copies of the gene that controls it, the tumour is called Her2-positive. Her2-positive breast cancers behave differently than other breast cancers and need specific treatment.

- Sometimes *blood tests* may be ordered. Blood is taken and studied to see if the different types of blood cells look normal and if they are normal in number. This shows the doctor how well your organs are working and may suggest whether or not there is cancer or if the cancer has spread.

How is breast cancer treated?

Surgery. The size of the tumour and its location will affect the decision about what type of surgery will be recommended. All or part of the tumour will be removed, along with some healthy tissue around the tumour. Surgery is done under general anesthetic (while you are unconscious) and you may stay in the hospital for several days afterward. There are two types of breast surgery:

- Breast-conserving (lumpectomy): removal of a lump and some tissue, but not the whole breast
- Mastectomy: removal of the whole breast

The most common surgery in Canada today is breast-conserving, but the treatment depends on the stage of the cancer.³

The surgeon will usually remove some lymph nodes from your armpit to see if the cancer has spread.⁸

Radiation therapy. External beam radiation therapy involves a beam of radiation aimed at the tumour or surgery site. This damages cells in the path of the radiation, both normal and cancer cells. It is almost always given after a lumpectomy to destroy any cancer cells that may remain. It may also be performed on the lymph node area, and is sometimes used after a mastectomy. Brachytherapy, or internal radiation therapy, involves placing radioactive material directly into or near the tumour.⁸

Hormone therapy. Hormone therapy is a treatment that removes hormones from your body or blocks their action and stops cancer cells from growing. Drugs, radiation, or surgery can be used to change hormone levels. If you have a tumour that is hormone-receptor positive, your doctor may offer you hormone therapy.⁸ Some of the different types of hormone therapy include:

- **Selective Estrogen Receptor Modulators (SERMS)**, for example tamoxifen, are designed to block the effects of estrogen in the breast tissue, whose purpose is to tell cells to grow and multiply. They are called selective because they block estrogen's effects only in breast cells.¹²
- **Aromatase inhibitors (AIs)**, exemestane, anastrozole and letrozole, stop the production of estrogen in post-menopausal women. These drugs work by blocking the enzyme aromatase, which turns another enzyme, androgen, into small amounts of estrogen in the body.⁹

Chemotherapy. Chemotherapy drugs interfere with the ability of cancer cells to grow and spread. However, they also damage healthy cells, which can recover over time. Chemotherapy may be given as pills or by injection.⁸

Biological therapy. This therapy uses drugs to interfere with how breast cancer cells grow and may sometimes use the body's immune system to destroy cancer cells. It may be used for breast cancer with too much of the Her2 protein. It is given by injection, and may be administered with chemotherapy.⁸

Research studies or clinical trials. Your oncologist may ask you to take part in a study of a new treatment or a new way of giving treatment. Research studies with patients are called clinical trials. Joining in such studies is voluntary and may offer you more options over and above the standard treatment. You will be given information to help you make this decision. If you decide not to join, you will continue to receive the best possible care.



As medical oncologists learn more about breast cancer, new drugs and new groups of existing drugs are being tested to increase the chances of improving treatment, and even finding a cure. There are many new drugs being developed for cancer every year.¹⁰

Complementary therapies. Some women decide to try other treatments at the same time as they are taking chemotherapy, hormone therapy or radiation therapy. Complementary therapies include acupuncture, herbs, biofeedback, visualization, yoga and diet changes. Talk to your doctor, pharmacist and/or nurse about these therapies to make sure they do not interfere with the treatments your oncologist has prescribed.¹¹

Patient Resources

Useful websites (Canada)

Abreast in the West

www.abreastinthewest.ca

Fax: 604-708-2009

Atlantic Breast Cancer Net

www.abcn.ca

Tel.: 902-465-2685

Anne Katz, RN, PhD

www.drannekatz.com

Anne Katz is the sexuality counsellor at CancerCare Manitoba, where she counsels men and women with cancer who are experiencing sexual difficulties as a consequence of cancer and cancer therapy. She has several books available online and in bookstores including:

Woman Cancer Sex: A Self-help Book for Women with Cancer

Sex When You're Sick: Reclaiming Sexual Health After Illness or Injury

Canadian Breast Cancer Network (CBCN)

www.cbcn.ca

Tel.: 1-800-685-8820

Canadian Cancer Society (CCS)

www.cancer.ca

Tel.: 416-961-7223

Canada's Food Guide

www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php

Canadian Task Force on Preventive Health Care (CTFPH)

www.ctfphc.org

Tel.: 519-850-2511 ext. 86013

Caring Voices

www.caringvoices.ca

Health Canada

www.hc-sc.gc.ca/hl-vs/iyh-vsv/diseases-maladies/breast-sein-eng.php



Look Good, Feel Better

www.lookgoodfeelbetter.ca

Tel.: 1-800-914-5665

National Cancer Institute of Canada (NCIC) Clinical Trials Group

www.ctg.queensu.ca

Tel.: 613-533-6430

Ontario Breast Cancer Exchange Partnership (OBCEP)

www.obcep.ca

Tel.: 1-888-837-9071

Organisation Multiressources pour les Personnes Atteintes de Cancer (OMPAC) (in French only)

www.ompac.org

Rob Rutledge, MD

www.robrutledge.ca

Dr. Rob Rutledge is a full time radiation oncologist and assistant professor in the Faculty of Medicine at Dalhousie University in Halifax. He pioneered Skills for Healing Weekend Retreats, a cancer support group.

Wellspring

www.wellspring.ca

Willow Breast Cancer Support and Resources Services

www.willow.org

Tel.: 1-888-778-3100

Regional cancer boards or agencies

British Columbia Cancer Agency (BCCA)

www.bccancer.bc.ca

Alberta Cancer Board

www.cancerboard.ab.ca

Tel.: 780-643-4500

Saskatchewan Cancer Agency

www.saskcancer.ca

Tel.: 306-585-1831

Cancer Care Manitoba

www.cancercare.mb.ca

Tel.: 1-866-561-1026

Cancer Care Ontario

www.cancercare.on.ca

Tel.: 416-971-9800

Quebec Breast Cancer Foundation (QBCF)

www.rubanrose.org

Tel.: 1-877-990-7171



La Fondation québécoise du cancer (in French only)

www.fqc.qc.ca

New Brunswick Cancer Network

www.gnb.ca/0051/cancer

Cancer Care Nova Scotia

www.cancercare.ns.ca

Tel.: 1-866-599-2267

Prince Edward Island Cancer Treatment Centre

www.cancercentre.pe.ca

Tel.: 902-894-2027

Newfoundland Cancer Treatment and Research Foundation

www.easternhealth.ca

Tel.: 709-777-6480

Useful websites (U.S.)

National Cancer Institute (NCI)

www.cancer.gov

Tel.: 1-800-4-CANCER (1-800-422-6237)

National Comprehensive Cancer Network (NCCN)

www.nccn.org

Oncolink

www.oncolink.com

Cancer.Net (American Society of Clinical Oncology [ASCO])

www.cancer.net

Dr. Susan Love Research Foundation

www.dsllrf.org

Support services and programs:

- **Reach to Recovery**—a visiting program that allows cancer patients to meet with a visitor (a woman who has learned to cope and live with breast cancer). The visitor also brings a gift bag with informational pamphlets and instructions for buying a prosthesis.
- **Cancer Connection**—a free telephone service in Ontario that allows you to connect with other people who have breast cancer.
- **Cancer Information Service (CIS)**—an information service available in English and French from Monday to Friday. It provides up-to-date information about cancer.

You can access the above services by calling the Canadian Cancer Society at **1-888-939-3333**.

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