Stage 0 Breast Cancer
Stage 0 Breast Cancer

Breast cancer is the most common type of cancer in women. Learning that you are at risk for or have breast cancer can feel overwhelming. The goal of this book is to help you get the best care. It presents which cancer tests and treatments are recommended for carcinoma in situ by experts in breast cancer.

The National Comprehensive Cancer Network® (NCCN®) is a not-for-profit alliance of 25 of the world’s leading cancer centers. Experts from NCCN have written treatment guidelines for doctors who treat stage 0 breast cancer. These treatment guidelines suggest what the best practice is for cancer care. The information in this patient book is based on the guidelines written for doctors.

This book focuses on the treatment of Stage 0 breast cancer. NCCN also offers patient books on colon cancer, lung cancer, melanoma, and many other cancer types. Visit NCCN.org/patients for the full library of patient books as well as other patient and caregiver resources.
NCCN® aims to improve the care given to patients with cancer. NCCN staff work with experts to create helpful programs and resources for many stakeholders. Stakeholders include health providers, patients, businesses, and others. One resource is the series of books for patients called the NCCN Patient Guidelines®. Each book presents the best practice for a type of cancer.

The patient books are based on clinical practice guidelines written for cancer doctors. These guidelines are called the NCCN Guidelines®. Clinical practice guidelines list the best health care options for groups of patients. Many doctors use them to help plan cancer treatment for their patients.

Panels of experts create the NCCN Guidelines. Most of the experts are from the 25 NCCN Member Institutions. Panelists may include surgeons, radiation oncologists, medical oncologists, and patient advocates. Recommendations in the NCCN Guidelines are based on clinical trials and the experience of the panelists.

The NCCN Guidelines are updated at least once a year. When funded, the patient books are updated to reflect the most recent version of the NCCN Guidelines for doctors. For more information about the NCCN Guidelines, visit NCCN.org/clinical.asp.

NCCN staff involved in creating the guidelines for patients and doctors include:

**NCCN Patient Guidelines**
Dorothy A. Shead, MS  
Director, Patient and Clinical Information Operations

Laura J. Hanisch, PsyD  
Medical Writer/Patient Information Specialist

Lacey Marlow  
Associate Medical Writer

**NCCN Guidelines**
Rashmi Kumar, PhD  
Oncology Scientist/Senior Medical Writer

**NCCN Marketing**
Susan Kidney  
Graphic Design Specialist

**NCCN Drugs & Biologics Programs**
Rachael Clarke  
Medical Copyeditor

Supported by the NCCN Foundation®
The NCCN Foundation supports the mission of the National Comprehensive Cancer Network® (NCCN®) to improve the care of patients with cancer. One of its aims is to raise funds to create a library of books for patients. Learn more about the NCCN Foundation at NCCN.org/foundation.

© 2014 National Comprehensive Cancer Network, Inc. All rights reserved. The NCCN Guidelines for Patients® and illustrations herein may not be reproduced in any form for any purpose without the express written permission of NCCN.
Stage 0 Breast Cancer

4 How to use this book

7 Part 1 Breast cancer basics
   Explains “carcinoma in situ” breast cancer.

9 Part 2 Lobular carcinoma in situ
   Presents the recommended care for abnormal cell growth in breast lobules.

17 Part 3 Ductal carcinoma in situ
   Presents the recommended care for cancer found only in breast ducts.

29 Part 4 Breast reconstruction
   Presents the recommended care for making new breasts after cancer treatment.

33 Part 5 Treatment decisions
   Offers tips for getting the best care for you.

39 Glossary:
   40 Dictionary
   43 Acronyms

46 NCCN Panel Members

47 NCCN Member Institutions

48 Index
Who should read this book?

This book is about care of women with stage 0 breast cancer. Patients and those who support them—caregivers, family, and friends—may find this book helpful. It may help you talk with your treatment team, understand what doctors say, and prepare for treatment.

Does the whole book apply to me?

This book includes information for many situations. Thus, not everyone will get every test and treatment listed. Your treatment team can point out what applies to you and give you more information. As you read through this book, you may find it helpful to make a list of questions to ask your doctors.

The recommendations in this book are based on science and the experience of NCCN experts. However, these recommendations may not be right for you. Your doctors may suggest other tests or treatments based on your health and other factors. If other tests or treatments are suggested, feel free to ask your treatment team questions.

Making sense of medical terms

In this book, many medical words are included that describe cancer, tests, and treatments. These are words that you will likely hear from your treatment team. Most of the information may be new to you, and it may be a lot to learn. Don’t be discouraged as you read. Keep reading and review the information. Don’t be shy to ask your treatment team to explain a word or phrase that you do not understand.

Words that you may not know are defined in the text or in the Dictionary. Words in the Dictionary are underlined when first used in a page.

Acronyms are also defined when first used and in the Glossary. Acronyms are words formed from the first letters of other words. One example is LCIS for lobular carcinoma in situ.
Breast cancer basics
Women’s breasts

Before puberty, breasts have a ring of darker skin called the areola. In the middle of the areola is the raised tip of the breast called the nipple. Under the nipple, small milk ducts branch into fatty tissue like early growth from a seedling. These immature ducts are supported by connective tissue called stroma.

Among girls, increases in female hormones during puberty cause their breasts to change. The stroma increases, the ducts grow and branch out like tree limbs, and lobules form at the end of the ducts like leaves at the end of twigs. Lobules are small sacs that make breast milk after a baby is born. Breast milk drains from the millions of leaf-like lobules into the milk ducts that connect to the nipple. See Figure 1 for a look inside women’s breasts.

Carcinoma in situ

Breast cancer is a disease of cells—the building blocks of tissue in the body. Almost all breast cancers are “carcinomas.” Carcinomas are a family of cancers that begin in cells that line the inner or outer surfaces of the body. Examples include surfaces of ducts and the gut and skin.

This book focuses on carcinoma in situ of the breast. “In situ” means that no abnormal cells have grown into the stroma. Carcinoma in situ is stage 0 breast cancer.

The two kinds of carcinoma in situ are:

- **LCIS** (lobular carcinoma in situ) – Although called a carcinoma, LCIS isn’t cancer but abnormal cell growth within the lobules; and

- **DCIS** (ductal carcinoma in situ) – DCIS is cancer that started in ductal cells and hasn’t grown outside the milk ducts.
Cancer growth

Cells have a control center called the nucleus. The nucleus contains special molecules called chromosomes. Within chromosomes are coded instructions, called genes, for building new cells and controlling how cells behave. Changes in genes, called mutations, cause normal breast cells to become cancer cells. But what causes genes in breast cells to change isn’t fully known. Research has found some risk factors. A risk factor is anything that increases a woman’s chances of getting breast cancer. One example of a risk factor is LCIS. Having had LCIS increases your chances for breast cancer.

Cancer cells don’t behave like normal cells in three key ways. First, the changes in genes cause cancer cells to make too many copies of themselves. Normal cells divide and multiply when new cells are needed, but otherwise live in a resting state. Normal cells also die when old or damaged. In contrast, cancer cells make new cells that aren’t needed and don’t die quickly when old or damaged. Over time, cancer cells form a mass called the primary tumor.

The second way cancer cells differ from normal cells is that they can grow into surrounding tissues. If not treated, the primary tumor can extend beyond the walls of lobules or ducts into the stroma. Breast cancers that haven’t grown into the stroma are called “noninvasive” and breast cancers that have grown into the stroma are called “invasive.” DCIS is a noninvasive breast cancer.

Figure 1. Parts of the breast

Derivative work of Breast Anatomy by Patrick J. Lynch and C. Carl Jaffe, MD available at commons.wikimedia.org/wiki/File:Breast_anatomy_normal_scheme.png under a Creative Commons Attribution 3.0 Unported license.

Illustration Copyright © 2014 Nucleus Medical Media, All rights reserved. www.nucleusinc.com
Third, unlike normal cells, cancer cells can leave the breast and form tumors in other parts of the body. Breast cancer can spread to distant organs through blood or lymph vessels that are in the stroma. This is why it is important to find and treat breast cancer early when it is noninvasive.

Most often, breast cancer spreads through lymph. Lymph is a clear fluid that gives cells water and food. It also has white blood cells that fight germs. Lymph nodes filter lymph and remove the germs. Most of the lymph in the breast drains to the axillary lymph nodes found inside the armpit. See Figure 2. Once in the axillary nodes, cancer cells can multiply and form secondary tumors.

Review

- Inside of women’s breasts are lobules that can make milk, milk ducts, and fatty tissue called stroma.
- Breast cancer often starts in the milk ducts or lobules and then spreads into the stroma.
- LCIS is abnormal cell growth within lobules. DCIS is breast cancer that hasn’t spread outside the milk ducts.
- Breast cancer can spread outside the breast through lymph or blood.

Figure 2. Axillary lymph nodes

Illustration Copyright © 2014 Nucleus Medical Media, All rights reserved. www.nucleusinc.com
Lobular carcinoma in situ
Part 2 describes the care for LCIS. LCIS isn’t cancer but a group of abnormal cells. However, if you have had LCIS, you are more likely to get breast cancer than women without LCIS. Getting the right tests and treatments can help prevent breast cancer or find breast cancer early. In Part 2, you will find information on tests, diagnosis, risk reduction, and follow-up care.

Tests

Medical history
Your medical history includes any health events in your life and any medications you’ve taken. Your doctor will want to know about all your illnesses, breast biopsies, any radiation therapy especially within the chest, and if you are pregnant. It may help to make a list of old and new medications while at home to bring to your doctor’s office. Since breast cancer and other health conditions can run in families, your doctor will ask about the medical history of your relatives.

Physical exam
A physical exam is a review of your body for signs of disease. During this exam, your doctor will listen to your lungs, heart, and gut. He or she will also look at and touch your breasts and nearby lymph nodes to see if they feel normal. Your breasts may be felt while you sit or stand up as well as when you recline. This is called a CBE (clinical breast exam). Besides your breasts, other parts of your body will be felt to see if organs are of normal size, are soft or hard, or cause pain when touched.
Diagnostic mammography
Mammography uses x-rays to make pictures of the insides of the breast. These pictures are called mammograms. Mammography that is used for breast cancer screening often takes two pictures of each breast. Diagnostic mammography takes more pictures from different angles. A bilateral mammogram means taking pictures of both breasts.

Mammography is recommended to look for abnormal areas in either breast. It is also recommended to find cancers early before they can be felt as a lump on self-exam or CBE. Sometimes a breast ultrasound may also be needed to decide if a breast biopsy should be performed. See Getting a mammography for more information.

Getting a mammography

Figure 3. Mammography

Mammography is often easy to undergo. Don’t use or wash off deodorants, perfumes, powders, or lotions on your breasts and armpits before the test. These products can make the pictures unclear. You will also need to remove your top and bra.

In the exam room, a technician will tell you how to place your body next to the machine. As shown in the figure your breast will be placed onto a flat metal surface, called a plate. A second plate will be lowered onto your breast to flatten it. This may be painful but is important to do to get the least fuzzy image of the breast tissues. Pictures will be taken from a camera that is attached to the two plates. Mammography of both breasts takes about 20 minutes to complete.

The pictures are either printed on film or saved on a computer. An expert in mammography, called a radiologist, will view the pictures. He or she will report the test findings to your doctor.
Pathology review
If your mammogram is abnormal, it is very important for your doctor to make a correct diagnosis. This means finding out if you have diseased breast tissue, and if so, what type of breast disease you have. Diagnosis often requires a biopsy of breast tissue. A pathologist then needs to look at the biopsy samples with a microscope. A pathologist is a doctor who’s an expert in laboratory tests of tissues and cells. The pathologist will confirm if you have LCIS, DCIS, invasive breast cancer, or another condition. If you have another stage of breast cancer (I–IV), NCCN offers books for those stages.

Diagnosis
There is more than one type of biopsy used to test for breast cancer. FNA (fine-needle aspiration) and core needle biopsies use a needle to remove tissue samples. After the skin is numbed, the needle is inserted through the skin and into the breast. Core biopsies can also be done with a probe that is inserted into the breast with a needle. After the needle is removed, a vacuum is used to remove tissue through the probe. When mammography is used to guide the needle, it is called a stereotactic-guided biopsy. Ultrasound-guided biopsy uses ultrasound to guide the needle.

Excisional biopsy
Besides needle biopsies, there are other types of biopsies that use minor surgery to remove breast tissue. An incisional biopsy is a surgery that removes a sample of tissue, whereas an excisional biopsy is surgery that removes the whole tumor. If a needle, probe, or incisional biopsy was used for your biopsy, it is recommended that you have an excisional biopsy to rule out DCIS or invasive cancer. If no advanced disease is present, no further treatment is required.

Before an excisional biopsy, you may be asked to stop eating so that your stomach is nearly empty for the procedure. You may also need to stop taking some medicines. Local or general anesthesia may be used.

During an excisional biopsy, the whole tumor with some normal-looking tissue around its edge is removed using a surgical knife. The normal-looking tissue at the edge of the removed tissue is called the surgical margin. See Figure 4.

If your surgeon can’t feel a lump, a small wire will first be inserted into the area using mammography. Then your surgeon will remove the tissue at the end of the wire. This is called a wire localization biopsy. An excisional biopsy will leave a small scar and may cause some pain and swelling for a few days. Ask your treatment team for a complete list of rare and common side effects.

Risk Reduction
Besides LCIS, there are many other risk factors for breast cancer. One very important risk factor is if any of your blood relatives have had breast or ovarian cancer, especially at a young age. Using your medical and family history, your doctor will tell you, in general, how likely you are to get breast cancer.

If your risk may be high, you should be referred to a genetic counselor. A genetic counselor is an expert in gene changes related to cancer. The counselor can better determine your risk for breast cancer.

The counselor may suggest testing for mutations in genes that are related to breast cancer and passed down in families. Such mutations can occur in BRCA1 and BRCA2 genes. Normal BRCA genes help to prevent tumor growth. Women with BRCA1 and BRCA2 gene mutations are more likely to have breast and ovarian cancer than other women.
Your doctor may recommend ways to lower your risk for breast cancer based on your risk, general health, and other factors. This is called risk reduction. Three methods are used, which are:

**Lifestyle changes**
Changes in your lifestyle may reduce your chances of developing another breast tumor. Examples are eating more healthfully, exercising more, and achieving a healthy body weight. Your doctor can suggest lifestyle changes that are specific to you.

**Hormone therapy**
The second risk reduction method is taking hormone therapy drugs. Female hormones help some breast cancers grow. Thus, taking drugs that lower the amount of female hormones in your body or drugs that stop hormones from working may help. Not all women with LCIS should take hormone therapy. Your doctors can let you know if hormone therapy is right for you. The drug used may differ between women who get menstrual periods and those who don’t.

Although hormone therapy lowers breast cancer risk, it can cause hot flashes, cataracts, leg cramps, blood clots, and other cancers depending on the drug. Ask your treatment team for a complete list of side effects. Your doctor may also know about research studies of hormone therapy or other drugs that you can join.

**Surgery**
The third method of risk reduction is surgery. Surgery is mostly done among women at high risk for breast cancer. One surgical option is a bilateral mastectomy, which is the complete removal of both breasts. A total mastectomy removes all breast tissue but no lymph nodes or chest muscles. Following the mastectomy, or in some cases at the same time as the mastectomy, you may want to have breast reconstruction. See page 29 for more information.

**Figure 4. Excisional biopsy**

During an excisional biopsy, the whole tumor with some normal-looking tissue around its edge is removed using a surgical knife. The normal-looking tissue at the edge of the removed tissue is called the surgical margin.
Your doctor may suggest that you have a bilateral salpingo-oophorectomy. This surgery removes both ovaries and both fallopian tubes. It is only recommended if you likely have mutations in the BRCA1 and BRCA2 genes.

Follow-up care

Follow-up care is important. It is done to assess your general health, find any breast tumors early, and check for side effects. Tell your doctor about any side effects from hormone therapy or other treatment you’re taking. There may be ways to get relief.

Breast cancer in women who’ve had LCIS can start anywhere in the breast. It doesn’t always start where the LCIS was found. Breast cancer may start in the ducts rather than the lobules. It can also start in the breast that didn’t have LCIS. Although it's very rare, breast cancer can still occur if you’ve had a total mastectomy of both breasts. The tests used to screen for breast cancer are discussed next.

Mammography

A bilateral mammography every year is recommended once a woman has reached a certain age. You should talk with your doctor about at what age you should start having mammograms, but certainly start by the age of 50. However, mammography isn’t done if you’ve had both breasts removed for risk reduction. More information about mammography can be found on page 11.

CBE

A CBE is recommended every 6 to 12 months. This test involves your doctor feeling your breasts to see whether there is a lump or thickening that isn’t like normal breast tissue. If you had a total mastectomy of both breasts, your doctor will examine your chest or reconstructed breasts. These areas may be felt while you sit or stand up as well as when you recline. Your doctor will also check for enlarged lymph nodes in your armpits and around your collarbone. Some women feel uncomfortable having their breasts touched by their doctor. Keep in mind that this test provides important information and is quick.
Breast awareness
Examining your own breasts is important. You should know the feel and look of your breasts so that you can tell if significant changes have occurred. If you get menstrual periods, a self exam at the end of your period may provide the best information.

When you find changes that persist for more than a month, you should see your doctor. He or she can decide if you need more tests. Changes in breasts are often not cancer. But if there’s a problem, having any changes checked by your doctor will allow you to get treatment promptly.

Breast MRI
Your doctor may want you to get a breast MRI (magnetic resonance imaging) if your family has a strong history of breast cancer. Breast MRI may also be done if you’ve had radiation therapy near your breasts. Breast MRI uses powerful magnets to make pictures of the insides of your breasts.

Before the test, a contrast dye may be injected into your vein to make the pictures clearer. The dye may cause you to feel flushed or get hives. Rarely, serious allergic reactions occur. Tell your doctor if you have had bad reactions before.

For a breast MRI, you must remove your top and bra and lie face down on a table. The table has padded openings for your breasts. In the openings, there are coils that help to make pictures. During breast MRI, the table moves slowly through the tunnel of the MRI machine. A breast MRI is completed in 30 to 45 minutes.
Review

• Tests for LCIS include medical history, physical exam, and diagnostic mammography.

• An excisional biopsy that removes the whole tumor is needed to confirm LCIS.

• Lifestyle changes, hormone therapy, and surgery help to prevent breast cancer.

• Follow-up care includes breast exams by your doctor and yourself as well as mammography.
Ductal carcinoma in situ
Part 3 describes the care for DCIS. DCIS is cancer that starts in the cells that line the milk ducts of the breasts. The cancer has not extended beyond the inside of the ducts.

Getting the right tests and treatments can stop the cancer from spreading. In Part 3, you will find information on tests, genetic counseling, treatment, risk reduction, and follow-up care.

**Tests**

**Medical history**
Your medical history includes any health events in your life and any medications you’ve taken. Your doctor will want to know about all your illnesses, breast biopsies, any radiation therapy especially within the chest, and if you are pregnant. It may help to make a list of old and new medications while at home to bring to your doctor’s office. Since breast cancer and other health conditions can run in families, your doctor will ask about the medical history of your relatives.

**Physical exam**
A physical exam is a review of your body for signs of disease. During this exam, your doctor will listen to your lungs, heart, and gut. He or she will also look at and touch your breasts and nearby lymph nodes to see if they feel normal. Your breasts may be felt while you sit or stand up as well as when you recline. This is called a CBE (clinical breast exam). Besides your breasts, other parts of your body will be felt to see if organs are of normal size, are soft or hard, or cause pain when touched.
Diagnostic mammography
Mammography uses x-rays to make pictures of the insides of the breast. These pictures are called mammograms. Mammography that is used for breast cancer screening often takes two pictures of each breast. Diagnostic mammography takes more pictures from different angles. A bilateral mammogram means taking pictures of both breasts.

Mammography is recommended to look for abnormal areas in either breast. It is also recommended to find cancers early before they can be felt as a lump on self-exam or CBE. Sometimes a breast ultrasound may also be needed to decide if a breast biopsy should be performed. See Getting a mammography on page 11 for more information.

Pathology review
If your mammogram is abnormal, it is very important for your doctor to make a correct diagnosis. This means finding out if you have diseased breast tissues, and, if so, what type of breast disease you have. To determine if you have breast cancer, a sample of breast tissue needs to be removed from your body and tested for cancer cells. This is called a biopsy.

The tissue sample will be looked at by a pathologist. A pathologist is a doctor who’s an expert in lab tests of tissues and cells. The pathologist will find out if you have DCIS, invasive breast cancer, or another condition. If cancer is found, the pathologist will do other tests on the tissue to learn more about the cancer. If you have another stage of breast cancer (I–IV), NCCN offers books for those stages.

All lab results are included in a pathology report that gets sent to your doctors. Some women get more than one pathology report. The first report may include the test results of a breast biopsy. Other pathology reports may include test results of breast tissue removed during surgical treatment.

It’s a good idea to ask for a copy of your pathology reports. Also ask your treatment team any questions about the test results. These reports are used to plan treatment.

Hormone receptor test
Estrogen and progesterone are female hormones that increase during puberty in girls causing their breasts to grow. For some breast cancers, the cancer cells have receptors to which these hormones attach causing the cells to grow and divide. However, the growth of cancer cells that have hormone receptors is usually slower than cancer cells without these receptors.

Testing for hormone receptors is important because there are drugs that can be used to stop hormones from causing cancer growth. IHC (immunohistochemistry) is the lab test used to see if cancer cells have hormone receptors. For this test, the cancer cells removed during the biopsy will be stained. The stain shows how many cells have hormone receptors and the number of hormone receptors in the cells. If at least 1 out of every 100 cancer cells stain positive, the cancer is called hormone receptor–positive DCIS. If fewer cancer cells stain positive for hormone receptors, the cancer is called hormone receptor–negative DCIS.
Genetic counseling

About 10 out of 100 breast cancers are due to changes in genes that are passed down from a parent to a child. This is called hereditary breast cancer. Using your medical and family history, your doctor will assess how likely you are to have hereditary breast cancer. If your likelihood is high, he or she will refer you to a genetic counselor.

A genetic counselor is an expert in changes within genes that are related to disease. The counselor can tell you more about how likely you are to have hereditary breast cancer. He or she may suggest that you undergo genetic testing to look for changes in genes that increase your chances of developing breast cancer.

Hereditary breast cancer is most often caused by mutations in the BRCA1 and BRCA2 genes. Normal BRCA genes help to prevent tumor growth by fixing damaged cells and helping cells grow normally. Genetic testing can tell if you have a BRCA or another mutation. Your test results may be used to guide treatment planning.

Some abnormal changes in genes, called VUS (variants of unknown significance), are not fully understood by doctors. Your doctors may know of research that aims to learn more. If interested, ask your doctors about taking part in such research.

Treatment

The cancer treatment that you will receive will partly depend on your biopsy. You may have had a biopsy that only removed some of the cancer. Such biopsies include a FNA, a core needle biopsy, and a surgical biopsy. After these biopsies, surgery to remove all of the DCIS is needed.

An excisional biopsy is a minor surgery that removes tissue for cancer testing. The goal of an excisional biopsy isn't to treat cancer, but instead is to determine if cancer is or is not present. A second surgery is likely needed after this biopsy to remove all the cancer with cancer-free surgical margins.

There are two types of surgery (re-excisions) that are recommended for DCIS treatment. Lumpectomy is a breast surgery that removes any area with cancer along with a surgical margin. It's like an excisional biopsy but removes more tissue. The other surgery used to treat DCIS is a mastectomy. Depending on the type, a mastectomy removes either a large part of or the whole breast.

Before either surgery, you will be asked to stop eating, drinking, and taking some medicines for a short period of time. If you smoke, it is important to stop. The three recommended treatments for DCIS that include these surgeries are described next.
Lumpectomy only
Only a small group of women with DCIS are able to have a lumpectomy without any other cancer treatment. These women are very unlikely to have the breast cancer return after surgery because the extent of DCIS is so small. Your doctor will review your information to assess if you are at low risk. Breast cancer is less likely to return if the surgical margins are large and cancer-free, the tumor is small, and you are older than 50 years of age. Your doctor will talk with you about these and other factors so that the two of you can decide together if a lumpectomy alone is the best treatment.

For a lumpectomy, local or general anesthesia is used. Often, a surgeon will make a C-shaped cut into the breast through which the tissue is removed. See Figure 5. This cut allows the breast to heal faster. A lumpectomy is finished within 15 to 40 minutes. Afterward, a tube may be placed in your breast to drain fluid. A lumpectomy will leave a small scar and may cause some pain and swelling for about a week. Ask your treatment team for a complete list of side effects.

The tissue from the lumpectomy will be tested by a pathologist for cancer cells at or near the margin. You also may be given another mammography to look for any cancer that wasn’t removed. If it appears that cancer remains in your breast, more surgery is needed. The second surgery is often another lumpectomy but sometimes a mastectomy is needed.

Figure 5. Lumpectomy
For a lumpectomy, local or general anesthesia is used. Often, a surgeon will make a C-shaped cut into the breast through which the tissue is removed. This cut allows the tissue to heal faster. A lumpectomy is finished within 15 to 40 minutes.
Lumpectomy and radiation therapy

A **lumpectomy** followed by **radiation therapy** is strongly recommended for the treatment of DCIS. Adding radiation therapy to a lumpectomy that removes a cancer-free **surgical margin** has been shown to help stop the return of cancer within the breast. This combined treatment is called **breast-conserving therapy** because most of the normal breast tissue won’t be removed. It is an option for many but not all women with DCIS.

Radiation therapy is given after a lumpectomy that removed cancer-free margins. See page 21 for more information on a lumpectomy. Radiation therapy uses high-energy rays to treat cancer. The rays damage the genes in cells. This either kills the cancer cells or stops new cancer cells from being made.

Most of the breast will be treated with radiation. This is called **whole breast radiation**. Radiation is delivered using a machine outside the body, as shown in **Figure 6**. This method of delivery is known as **EBRT** (**external beam radiation therapy**).

Before being treated with radiation, pictures of the tumor should be taken with **CT** (**computed tomography**). A CT scan takes many x-rays of the breast from different angles to make detailed pictures, called images. Before the scan, a **contrast dye** may be injected into your vein to make the pictures clearer. Contrast dye is a safe drug but may cause you to feel flushed or get **hives**. Rarely, serious **allergic reactions** occur. Tell your doctor if you have had bad reactions before.

Imaging the breast before radiation is called **simulation**. During the scan, you will need to lie on a table that moves slowly through the tunnel in the CT machine. Your doctors will use the images to decide the radiation dose and to shape the radiation beams. Beams are shaped with computer software and

hardware added to the radiation machine. The beams are shaped so that normal tissue is spared.

There are other methods that can be used to spare normal tissue. Moreover, there are ways to protect your heart if radiation will be given in that area.

---

**Figure 6. EBRT machine**

Whole-breast radiation is delivered using an EBRT machine.

clinac2100cbyzubrowikimediaorg.jpg released under GFDL and CC-BY-SA
Ask your doctor what methods will be used for your treatment. Some methods are:

- Directing the beam not toward the heart,
- Lying face down during treatment,
- Holding your breath at times during treatment,
- Use of devices that keep you from moving during treatment,
- EBRT machines that give treatment only when the tumor is in the right spot, and
- ERBT machines that deliver very precise radiation beams. 3D machines deliver beams matched to the shape of the tumor. IMRT (Intensity-modulated radiation therapy) uses small radiation beams of different strengths based on the thickness of the tissue.

You will be alone while a technician operates the EBRT machine from a nearby room. He or she will be able to see, hear, and speak with you at all times. As treatment is given, you may hear noises. A session can take between 15 to 30 minutes. Radiation therapy is given 5 days a week for 5 to 7 weeks.

Toward the end of treatment, you may receive extra radiation called a boost. A boost is recommended if you are 50 years old or younger. The boost may be given with EBRT or by internal radiation. Internal radiation is also called brachytherapy. It involves placing radioactive seeds in the area where the tumor was. The seeds are placed using multiple small tubes (catheters) or one small catheter with a balloon at its end.

For multiple-catheter boost radiation, the seeds may remain in your body for minutes or days. If the seeds release a small dose of radiation, the catheters and seeds are left in your body for a few days. During this time, you must stay in the hospital. If the seeds release high doses of radiation, the seeds will remain in your body for 10 minutes. However, radiation is given twice a day for 5 days.

You may get side effects from radiation although not everyone does. Side effects are unhealthy or unpleasant physical or emotional responses to treatment. Often, the skin around the radiation site will look and feel as if it has been sunburned. Another common problem is extreme tiredness despite sleep. Women sometimes have pain in their armpit or chest after radiation and, rarely, heart and lung problems. Ask your treatment team for a complete list of rare and common side effects.

**Partial breast irradiation**

Recently, some doctors have given radiation only to the lumpectomy site instead of giving whole breast radiation. Radiation only to the lumpectomy site is called partial breast irradiation. If you’re interested in this treatment, it is recommended that you receive it only within a clinical trial. A clinical trial is a type of research that studies a test or treatment. Because of clinical trials, the tests and treatments in this book are now widely used to help patients.
Total mastectomy
Some women with DCIS can’t have breast-conserving therapy. Your doctor may suggest a mastectomy based on your health conditions, the tumor size, cancer in the margin, your chances of having another breast tumor, and how you want your breast to look after treatment. A mastectomy is strongly recommended if the following qualities describe you:

- You have DCIS that needs treatment while you are pregnant;
- You have had radiation close to the breast area with DCIS;
- You have two or more areas of DCIS that can’t be removed through one cut;
- You may have cancer throughout the breast; or
- You had a lumpectomy and the surgical margin had many areas of cancer.

For DCIS, a total (also called simple) mastectomy is recommended. This surgery removes the whole breast but doesn’t remove the chest muscles under the breast. It is done under general anesthesia. Often, a surgeon will make an oval-shaped cut around the nipple as shown in Figure 7. Next, the breast tissue will be detached from the skin and muscle so it can be removed. A total mastectomy is finished within 1 to 2 hours. Afterward, a tube may be placed in your chest to drain fluid.

A total mastectomy will leave a large scar and cause pain and swelling. You may also have stiffness, severe tiredness despite sleeping, and uncomfortable crawly sensations as your nerves heal. Ask your treatment team for a complete list of side effects.

Some women decide to have their breast re-made after a mastectomy. Surgery to rebuild a breast is called breast reconstruction. Breast reconstruction can be done while still under general anesthesia for the mastectomy or at a later time. See page 29 for more information.
When you have a choice: Breast conserving therapy vs. total mastectomy

Most women with DCIS have a choice of treatment. When deciding which treatment to have, consider all the facts. It is important to know that breast-conserving therapy works as well as a total mastectomy to treat DCIS. Instead, weigh the known pros and cons of each treatment. Some are listed below. The decision aids listed on page 38 may also help.

**Breast-conserving therapy**

**Pros**
1. Natural look of your skin is kept
2. Can feel sensations in your breast since not all breast tissue is removed
3. Quicker healing time after surgery

**Cons**
1. Shapes of breasts may not match
2. Weeks of radiation and its side effects
3. Lumpectomy may not remove all DCIS so a second surgery may be needed

**Total mastectomy**

**Pros**
1. Reconstruct whole breast
2. Although it’s no better than breast-conserving therapy, worry about recurrence may be less
3. Less likely to need radiation therapy

**Cons**
1. Loss of breast
2. Longer healing time after surgery
3. Side effects likely to be more serious than for breast-conserving therapy (eg, more swelling)
Sentinel lymph node biopsy
A sentinel lymph node biopsy is a surgery that removes lymph nodes to test for cancer cells. It is also called a sentinel lymph node dissection. Your doctor may suggest having this biopsy during the mastectomy if it would be hard to remove your lymph nodes, if needed, afterward.

For this biopsy, a radioactive tracer is injected into your breast. A blue dye is also injected, which the surgeon can see with his or her naked eye. The radiotracer and dye drain into lymph vessels within the breast and then travel to the breast’s lymph nodes. Most of these nodes are in the armpit (“axilla”).

The radiotracer and dye allow your surgeon to find the first few lymph nodes to which lymph travels and to which the cancer would spread. These first few nodes are called the sentinel nodes. Often, there is more than one sentinel node to which the breast drains. After the dye marks your sentinel node(s), your surgeon removes it and likely some other nearby nodes. The nodes are then sent to a pathologist for testing.

Risk reduction
After treatment for DCIS, some women take steps to lower their chances of having another breast tumor. This is called risk reduction. Risk reduction may help prevent a tumor from growing in either breast. The three methods of risk reduction are discussed next.

Lifestyle changes
Changes in your lifestyle may reduce your chances of developing another breast tumor. Examples are eating more healthfully, exercising more, and achieving a healthy body weight. Your doctor can suggest changes in lifestyle that are specific to you.

Hormone therapy
Tamoxifen is a hormone therapy drug. It works by attaching to estrogen receptors in cancer cells, which stops the receptors from telling the cells to grow. Taking tamoxifen for 5 years is one way to reduce your chances of having another breast tumor within the breast treated with lumpectomy alone or breast-conserving therapy. Tamoxifen has been shown to help if you have hormone receptor–positive DCIS, but the gain for hormone receptor–negative DCIS is unknown. Tamoxifen and other hormone therapy drugs can also be used to prevent tumors in your breast that wasn’t treated for DCIS.

Although hormone therapy can lower breast cancer risk, it can cause hot flashes, cataracts, leg cramps, blood clots, and other cancers depending on the drug. Talk to your doctor for more information. Your doctor may also know about research studies of hormone therapy or other drugs that you can join.

Surgery
The third method of risk reduction is surgery. If you have hereditary breast cancer, you may want to have a total mastectomy of your breast that didn’t have DCIS. Removing all your breast tissue greatly lowers your chances for breast cancer. Some women have breast reconstruction afterward. See page 29 for more information.

Your doctor may suggest that you have a bilateral salpingo-oophorectomy. This surgery removes both ovaries and both fallopian tubes. It is only recommended if you likely have mutations in BRCA1 and BRCA2 genes.
Follow-up care

Follow-up care is important. It is done to assess your general health, find new breast tumors early, and check for side effects of treatment. The tests recommended after DCIS treatment are discussed next.

**Medical history and physical exam**

After DCIS treatment, a medical history and physical exam are recommended every 6 to 12 months for 5 years. If test results are normal for 5 years, you should then have these tests every year. During your visit with your doctor, tell him or her about any new or worse symptoms you have. There may be ways to get relief. As part of your physical exam, your doctor may look inside your vagina for bleeding or other signs of disease if you are taking hormone therapy.

**Mammography**

Most new breast tumors after DCIS treatment occur within the breast tissue near to the DCIS site. Thus, the first mammography should be done within 6 to 12 months after lumpectomy or breast-conserving therapy. After mastectomy, mammography is recommended every year on the breast that didn’t have DCIS. If you had a mastectomy on both breasts, mammography isn’t needed.

**Breast awareness**

Examining your own breasts is important. You should know the feel and look of your breasts so that you can notice if significant changes have occurred. If you get menstrual periods, a self exam at the end of your period may provide the best information.

When you find changes that persist for more than a month, you should see your doctor. He or she can decide if you need more tests. Changes in breasts are often not cancer. But if there’s a problem, having any changes checked by your doctor will allow you to get treatment promptly.

**Breast MRI**

Your doctor may want you to get a breast MRI (magnetic resonance imaging) every year if your family has a strong history of breast cancer. Breast MRI may also be done if you’ve had radiation near your breast that didn’t have DCIS.

Breast MRI uses powerful magnets to make pictures of the insides of your breasts. Before the test, a contrast dye may be injected into your vein to make the pictures clearer. The dye may cause you to feel flushed or get hives. Rarely, serious allergic reactions occur. Tell your doctor if you have had bad reactions before.

For a breast MRI, you must remove your top and bra and lie face down on a table. The table has padded openings for your breasts. In the openings, there are coils that help to make pictures. During breast MRI, the table moves slowly through the tunnel of the MRI machine. A breast MRI is completed in 30 to 45 minutes.
Review

- DCIS should be tested for whether the cancer is hormone-receptor positive or negative.
- Genetic counseling can help assess if you have hereditary breast cancer.
- Most women with DCIS are treated with breast-conserving therapy or a total mastectomy.
- Lifestyle changes, hormone therapy, and surgery help to prevent future breast cancer.
- Follow-up care includes breast exams by your doctor and yourself as well as mammography.
Breast reconstruction
Some women choose to have breast reconstruction after a lumpectomy or mastectomy. Breast reconstruction means putting implants in or moving tissues from other body parts to make a more normal-looking breast mound.

Other women use external fake breasts or do nothing. Part 4 gives the NCCN recommendations for breast reconstruction. Talk with your doctor about these options. For more information on breast reconstruction, visit the websites listed in Part 5.

**After lumpectomy**

**Volume displacement**

If you will have a lumpectomy, your breast can be re-shaped using volume displacement. Volume displacement is the shifting of the remaining breast tissue so as to fill the hole left by the lumpectomy. Shifting of the breast tissue is often done right after the lumpectomy by the cancer surgeon. A larger piece of breast tissue is removed for a volume displacement, but this likely reduces your chances of cancer returning in that breast. Another benefit is that the natural look of your breast is kept. If you don’t like the results of the volume displacement, having breast revision surgery may help. Breast revision surgery is done by a plastic surgeon. You may have another volume displacement, or you may want to get implants or flaps, which are described below.
After mastectomy

Sparing breast skin
If you will have a total mastectomy, your surgeon may be able to save much of your breast skin. This is called a skin-sparing mastectomy. Only the nipple, areola, and skin near the biopsy site are removed. Surgery that spares the nipple and areola should only be done as part of a clinical trial.

There are benefits to having a skin-sparing mastectomy. The size of the mastectomy scar will be smaller, your breast will have a more natural shape, and you will be able to have the reconstruction right away if you want. To get the best results, your cancer and plastic surgeons need to work together.

Timing of reconstruction
You can have reconstruction at any time if you have a total mastectomy. Reconstruction at the same time as the cancer surgery is called immediate reconstruction. Delayed reconstruction can occur months or years after the cancer surgery.

Types of reconstruction
There are three ways to reconstruct breasts after a mastectomy. All involve having plastic surgery. Breast reconstruction is generally safe, but with any surgery, there are risks. Ask your treatment team for a complete list of side effects. The three ways to reconstruct breasts are:

Implants
Breasts can be reconstructed using breast implants. Breast implants are small bags filled with salt water, silicone gel, or both that are placed under the breast skin and muscle. Implants have a small risk of breaking and leaking. A balloon-like device, called an expander, may first be placed under your skin and inflated to stretch out your muscle and skin. Every few weeks for two to three months, the expander will be enlarged until the implant will fit in place. You may feel pain from the expander stretching your skin and muscle. Some women will also have pain from the implant, scar tissue, or tissue death (necrosis).

Flaps
Another type of reconstruction uses tissue from your body, known as “flaps.” Tissue is taken from the belly area, butt, or from under the shoulder blade to form breasts. Some flaps are completely removed from your body and then sewn in place. Other flaps stay attached and then are slid over to the breast area and are sewn into place. Women who have diabetes or who smoke are more likely to have problems with flaps than other women. Some risks of flaps are tissue death, lumps from death of fat, and muscle weakness that may cause a hernia.

Implants and flaps
Some breasts are reconstructed with both implants and flaps. Using both types may give the reconstructed breast more volume and help match its shape to the other breast. However, for any reconstruction, you may need surgery on your real breast so that the two breasts match in size and shape.

Nipple replacement
Like your breast, you can have your nipple remade, use a fake nipple, or do nothing. The plastic surgeon can recreate a nipple mound with the surrounding tissues or, sometimes, tissue can be moved from other parts of your body, such as your vulva, thigh, or other nipple. You may lose feeling in your real nipple if tissue is removed. Tissue used from other areas of your body to make a nipple can be darkened in color with a tattoo.
Review

- Breast tissue can be shifted to fill in the hole made by a lumpectomy. This is called volume displacement.

- A skin-sparing mastectomy aims to keep as much skin as possible to use for breast reconstruction.

- Breast reconstruction can be done at any time if you have DCIS.

- Implants, flaps, or both can be used for breast reconstruction.

- Nipples can also be reconstructed from other body parts and darkened with a tattoo.
Treatment decisions
### Have a treatment plan

Learning that you have carcinoma in situ starts an unplanned journey to an unknown place. A treatment plan is like having a roadmap for your journey. It is a written course of action through treatment and beyond. A treatment plan for carcinoma in situ often has the following parts:

- **Your treatment team** – Cancer care is a team effort. It’s helpful to have the names and contact information of all your health providers.

- **Test results** – Since breast cancers can greatly differ, test results that describe the cancer or other breast disease are included.

- **Cancer treatment** – There is no single treatment practice for all women. The treatment that you agree to have should be reported along with all known side effects.

---

### Parts 2 through 4 gave the treatment recommendations of breast cancer experts from NCCN. These recommendations are based on science and agreement among NCCN experts. Part 5 has useful information on getting the best care for you.

### Have a treatment plan

Having carcinoma in situ can be very stressful. While absorbing the fact that you are at risk for or have cancer, you have to learn about tests and treatments and accept a treatment plan.
Treatment decisions

- **Symptom control** – Cancer and its treatment can cause mental and physical symptoms. Treatment of symptoms, including breast reconstruction, should be addressed.

- **Survivorship care** – The end of cancer treatment is not the end of your health care. Risk reduction, follow-up tests, and care of your general health are ongoing concerns.

Get a 2nd opinion

Your doctor may agree with the recommendations in this booklet or may recommend another treatment plan. While carcinoma in situ shouldn’t be ignored, there is time to choose which treatment plan is best for you. You can have another doctor review your test results and recommend treatment. This is called getting a 2nd opinion. Getting a 2nd opinion may help you feel more at peace about your treatment plan.

Your test results will need to be sent to the doctor giving the 2nd opinion. You may feel uneasy asking for your test results to be sent. However, a 2nd opinion is a normal part of cancer care. When doctors have cancer, most will talk with more than one doctor before choosing their treatment. What’s more, some health plans require a 2nd opinion. If your health plan doesn’t pay for a 2nd opinion, you have the choice of paying for it yourself.
Questions about testing to ask your doctor

Ask your doctor questions:

1. What tests do you recommend?
2. Where will the tests take place? Will I have to go to the hospital?
3. How long will the tests take?
4. Will any tests hurt?
5. What if I am pregnant?
6. How do I prepare for testing? Should I bring a list of my medications?
7. Should I bring someone with me?
8. How soon will I know the results and who will explain them to me?
9. Can I have a copy of the test results including the pathology report?
10. Who will talk with me about the next steps? When?
Questions about treatment to ask your doctor

Ask your doctor questions:

1. What treatments do you recommend?
2. What are the risks and benefits of each treatment?
3. How do my age, health, and other factors affect my choices?
4. Would you help me get a 2nd opinion?
5. What can I do to prepare for treatment?
6. How soon should I start treatment?
7. How much will the treatment cost? How can I find out how much my health insurance will cover?
8. How likely is it that I’ll be cancer-free after treatment?
9. What symptoms of treatment should I look out for?
10. What are my chances that the cancer will return?
11. What are my options for breast reconstruction?
Review

• Having a treatment plan is like having a roadmap for your journey.
• Getting a 2nd opinion may help you feel more at peace about your treatment plan.
• Ask your doctors questions about testing and treatment.

• More information on the tests and treatments described in this book can be found on the internet.
• Decision aids are another resource that may help you decide between breast-conserving therapy and mastectomy.

Websites

American Cancer Society  
www.cancer.org/Cancer/BreastCancer/index

Breastcancer.org  
www.breastcancer.org

Cancer Support Community  
www.cancersupportcommunity.org

Komen Foundation  
www5.komen.org

Living Beyond Breast Cancer  
www.lbbc.org

National Cancer Institute  
www.cancer.gov/cancertopics/types/breast

National Coalition for Cancer Survivorship  
www.canceradvocacy.org

Decision aids

For breast conserving therapy vs mastectomy:

National Cancer Institute  
www.cancer.gov/cancertopics/treatment/breast/surgerychoices

WebMD  
www.webmd.com/breast-cancer/should-i-have-breast-conserving-surgery-or-a-mastectomy-to-treat-early-stage-breast-cancer
areola  
A darker, circular area of skin on the breast surrounding the nipple.

axillary lymph node  
Group of special disease-fighting cells located near the armpit.

bilateral  
Involving both sides of the body or both breasts.

bilateral salpingo-oophorectomy  
Surgery that removes both ovaries and both fallopian tubes.

biopsy  
Removal of small amounts of tissue or fluid to be tested for disease.

boost  
An extra dose of radiation to a specific area of the body.

brachytherapy  
Radiation received from a radioactive object placed near or in the tumor.

breast-conserving therapy  
Cancer treatment that includes removing the breast lump and radiation therapy.

breast implant  
A small bag filled with salt water, gel, or both that is used to remake breasts.

breast reconstruction  
Surgery to rebuild breasts.

cancer stage  
Rating of the growth and spread of tumors.

carcinoma  
Cancer that starts in cells that form the lining of organs and structures in the body.

carcinoma in situ  
Abnormal or cancer cells have not grown into the next layer of tissue.

cataract  
A health condition in which the lens of the eye becomes cloudy.

catheter  
A flexible tube inserted in the body to give treatment or drain fluid from the body.

clinical breast exam  
A physical exam of the breasts by a health professional to feel for disease.

clinical trial  
Research on a test or treatment to assess its safety or how well it works.

computed tomography (CT)  
A test that uses x-rays from many angles to make a picture of the inside of the body.

connective tissue  
Supporting and binding tissue that surrounds other tissues and organs.

contrast  
A dye put into your body to make clearer pictures during imaging tests.

core needle biopsy  
Use of a needle to remove a large tissue sample to test for cancer cells.

diabetes  
A disease that causes high levels of blood sugar.

duct  
A tube in the breast that drains breast milk.

ductal carcinoma in situ (DCIS)  
Cancer that started within and hasn't grown beyond the breast ducts.

estrogen  
A hormone that develops female body traits.

excisional biopsy  
Surgery that removes an entire tumor to test for cancer cells.

external beam radiation therapy (EBRT)  
Treatment with radiation received from a machine outside the body.

fine-needle aspiration (FNA)  
Removal of a small tissue sample with a very thin needle.
gene
Coded instructions in cells for making new cells and controlling how cells behave.

general anesthesia
A controlled loss of wakefulness from drugs.

genetic counseling
Discussion with a health expert about the risk for a disease caused by changes in genes.

hereditary
Passed down from parent to child through coded information in cells.

hernia
A health condition in which muscles weaken or tear allowing organs or tissue to extend out.

hormone
Chemical in the body that activates cells or organs.

hormone receptor
Proteins inside of cells that bind with hormones.

hormone receptor–negative
Cancer cells that don’t use hormones to grow.

hormone receptor–positive
Cancer cells that use hormones to grow.

hormone therapy
Treatment that stops the making or action of hormones in the body.

hot flashes
A health condition of intense body heat and sweat for short periods.

immunohistochemistry (IHC)
A lab test of cancer cells to find specific cell traits involved in abnormal cell growth.

in situ
In its original place – cancer cells have not spread from where they first formed.

incisional biopsy
A minor surgery that removes a tissue sample from a tumor.

internal radiation
Treatment with radiation received from an object placed near or in the tumor.

invasive breast cancer
Cancer cells have grown into the supporting tissue of the breast.

lobular carcinoma in situ (LCIS)
Abnormal cells within the breast lobules only.

lobule
A gland in the breast that makes breast milk.

local anesthesia
A controlled loss of feeling in a small area of the body from drugs.

lumpectomy
Surgery to remove a breast lump and some normal tissue around it.

lymph
A clear fluid containing white blood cells.

lymph node
Small groups of special disease-fighting cells located throughout the body.

magnetic resonance imaging (MRI)
A test that uses radio waves and powerful magnets to make pictures of the insides of the body.

mammogram
A picture of the insides of the breast that is made by an x-ray test.

mammography
A test that uses x-rays to make pictures of the inside of the breast.

mastectomy
Surgery to remove the whole breast.

medical history
All health events and medications taken to date.

multiple-catheter radiation
Use of multiple small tubes to place radioactive seeds in your body for treatment.

mutation
An abnormal change in the instructions in cells for making and controlling cells.

needle biopsy
Use of a needle to remove tissue for testing.
**noninvasive breast cancer**
Cancer cells have not grown into the supporting tissue of the breast.

**partial breast irradiation**
Treatment with radiation that is only directed at the surgery site.

**pathologist**
A doctor who’s an expert in testing cells and tissue to find disease.

**physical exam**
A review of the body by a health expert for signs of disease.

**primary tumor**
The first mass of cancer cells in the body.

**progesterone**
A hormone in women that is involved in sexual development, menstruation, and pregnancy.

**puberty**
The time when teens sexually develop.

**radiation therapy**
The use of high-energy rays to destroy cancer cells.

**risk factor**
Something that increases the chance of getting a disease.

**risk reduction**
Something that is done to try to lessen the chance of getting a disease.

**sentinel lymph node biopsy**
Surgery to remove the first lymph node(s) to which cancer cells spread after leaving the breast tumor. Also called sentinel lymph node dissection.

**sentinel node**
The first lymph node to which cancer cells spread after leaving the breast tumor.

**side effect**
An unhealthy physical or emotional response to treatment.

**simple mastectomy**
Surgery that removes the entire breast but no chest muscles. Also called total mastectomy.

**simulation**
The steps needed to prepare for treatment with radiation.

**skin-sparing mastectomy**
A surgery that removes all breast tissue but saves as much breast skin as possible.

**stereotactic-guided biopsy**
Use of mammography to guide a needle into a breast tumor to remove samples.

**stroma**
Supportive tissue in the breast.

**surgeon**
A doctor who’s an expert in operations to remove or repair a part of the body.

**surgical margin**
The normal tissue around the edge of a tumor that is removed during surgery.

**tamoxifen**
A drug that lowers the amount of estrogen in the body.

**total mastectomy**
Surgery that removes the entire breast but no chest muscles. Also called simple mastectomy.

**treatment plan**
A written course of action through cancer treatment and beyond.

**ultrasound**
Use of sound waves to make pictures of the insides of the body.

**ultrasound-guided biopsy**
Use of ultrasound to guide a needle into a breast tumor to remove samples.

**vulva**
The female organs between the legs.

**whole breast radiation**
Treatment of the entire breast with radiation from a machine outside the body.

**wire localization biopsy**
Use of wire guided into a tumor by mammography to find the right spot for removing tissue samples.
Glossary

Acronyms

CBE  
clinical breast exam

CT  
computed tomography

DCIS  
ductal carcinoma in situ

EBRT  
external beam radiation therapy

FNA  
fine-needle aspiration

IHC  
immunohistochemistry

IMRT  
intensity-modulated radiation therapy

LCIS  
lobular carcinoma in situ

MRI  
magnetic resonance imaging

NCCN Abbreviations and Acronyms

NCCN®  
National Comprehensive Cancer Network®

NCCN Patient Guidelines®  
NCCN Guidelines for Patients®

NCCN Guidelines®  
NCCN Clinical Practice Guidelines in Oncology®
NCCN Guidelines for Patients®

The same authoritative sources referenced by physicians and other health care professionals are available for patients:

• Caring for Adolescents and Young Adults
• Chronic Myelogenous Leukemia
• Colon Cancer
• Esophageal Cancer
• Lung Cancer Screening
• Malignant Pleural Mesothelioma
• Melanoma
• Multiple Myeloma
• Non-Small Cell Lung Cancer
• Ovarian Cancer
• Pancreatic Cancer
• Prostate Cancer
• Stage 0 Breast Cancer
• Stages I and II Breast Cancer
• Stage III Breast Cancer
• Stage IV Breast Cancer

Available at NCCN.org/patients
To request a printed copy, e-mail: patientguidelines@nccn.org

pay it forward

NCCN.org/patients – For Patients | NCCN.org – For Clinicians
State Fundraising Notices

**Florida:** A COPY OF THE OFFICIAL REGISTRATION AND FINANCIAL INFORMATION OF NCCN FOUNDATION MAY BE OBTAINED FROM THE DIVISION OF CONSUMER SERVICES BY CALLING TOLL-FREE WITHIN THE STATE 1-800-HELP-FLA. REGISTRATION DOES NOT IMPLY ENDORSEMENT, APPROVAL, OR RECOMMENDATION BY THE STATE. FLORIDA REGISTRATION #CH33263. **GEORGIA:** The following information will be sent upon request: (A) A full and fair description of the programs and activities of NCCN Foundation; and (B) A financial statement or summary which shall be consistent with the financial statement required to be filed with the Secretary of State pursuant to Code Section 43-17-5. **KANSAS:** The annual financial report for NCCN Foundation, 275 Commerce Drive, Suite 300, Fort Washington, PA 19034, 215-690-0300, State Registration # 445-497-1, is filed with the Secretary of State. **MARYLAND:** A copy of the NCCN Foundation financial report is available by calling NCCN Foundation at 215-690-0300 or writing to 275 Commerce Drive, Suite 300, Fort Washington, PA 19034. For the cost of copying and postage, documents and information filed under the Maryland charitable organizations law can be obtained from the Secretary of State, Charitable Division, State House, Annapolis, MD 21401, 1-410-974-5534. **MICHIGAN:** Registration Number MICS 45298. **MISSISSIPPI:** The official registration and financial information of NCCN Foundation may be obtained from the Mississippi Secretary of State’s office by calling 888-236-6167. Registration by the Secretary of State does not imply endorsement by the Secretary of State. **NEW JERSEY:** INFORMATION FILED WITH THE ATTORNEY GENERAL CONCERNING THIS CHARITABLE SOLICITATION AND THE PERCENTAGE OF CONTRIBUTIONS RECEIVED BY THE CHARITY DURING THE LAST REPORTING PERIOD THAT WERE DEDICATED TO THE CHARITABLE PURPOSE MAY BE OBTAINED FROM THE ATTORNEY GENERAL OF THE STATE OF NEW JERSEY BY CALLING (973) 504-6215 AND IS AVAILABLE ON THE INTERNET AT www.njconsumeraffairs.gov/ocp.htm#charity. REGISTRATION WITH THE ATTORNEY GENERAL DOES NOT IMPLY ENDORSEMENT. **NEW YORK:** A copy of the latest annual report may be obtained from NCCN Foundation, 275 Commerce Drive, Suite 300, Fort Washington, PA 19034, or the Charities Bureau, Department of Law, 120 Broadway, New York, NY 10271. **NORTH CAROLINA:** FINANCIAL INFORMATION ABOUT THIS ORGANIZATION AND A COPY OF ITS LICENSE ARE AVAILABLE FROM THE STATE SOLICITATION LICENSING BRANCH AT 888-830-4989 (within North Carolina) or (919) 807-2214 (outside of North Carolina). THE LICENSE IS NOT AN ENDORSEMENT BY THE STATE. **Pennsylvania:** The official registration and financial information of NCCN Foundation may be obtained from the Pennsylvania Department of State by calling toll-free within Pennsylvania, 800-732-0999. Registration does not imply endorsement. **Virginia:** A financial statement for the most recent fiscal year is available upon request from the State Division of Consumer Affairs, P.O. Box 1163, Richmond, VA 23218; 1-804-786-1343. **Washington:** Our charity is registered with the Secretary of State and information relating to our financial affairs is available from the Secretary of State, toll free for Washington residents 800-332-4483. **West Virginia:** West Virginia residents may obtain a summary of the registration and financial documents from the Secretary of State, State Capitol, Charleston, WV 25305. Registration does not imply endorsement.

Consult with the IRS or your tax professional regarding tax deductibility. REGISTRATION OR LICENSING WITH A STATE AGENCY DOES NOT CONSTITUTE OR IMPLY ENDORSEMENT, APPROVAL, OR RECOMMENDATION BY THAT STATE. We care about your privacy and how we communicate with you, and how we use and share your information. For a copy of NCCN Foundation’s Privacy Policy, please call 215-690-0300 or visit our website at nccn.org.
NCCN Panel Members for Breast Cancer

William J. Gradishar, MD / Chair
Robert H. Lurie Comprehensive Cancer Center of Northwestern University

Benjamin O. Anderson, MD / Vice Chair
Fred Hutchinson Cancer Research Center/Seattle Cancer Care Alliance

Sarah L. Blair, MD
UC San Diego Moores Cancer Center

Harold J. Burstein, MD, PhD
Dana-Farber/Brigham and Women’s Cancer Center

Amy Cyr, MD
Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine

Anthony D. Elias, MD
University of Colorado Cancer Center

William B. Farrar, MD
The Ohio State University Comprehensive Cancer Center - James Cancer Hospital and Solove Research Institute

Andres Forero, MD
University of Alabama at Birmingham Comprehensive Cancer Center

Sharon Hermes Giordano, MD, MPH
The University of Texas MD Anderson Cancer Center

Lori J. Goldstein, MD
Fox Chase Cancer Center

Daniel F. Hayes, MD
University of Michigan Comprehensive Cancer Center

Clifford A. Hudis, MD
Memorial Sloan Kettering Cancer Center

Steven Jay Isakoff, MD, PhD
Massachusetts General Hospital Cancer Center

P. Kelly Marcom, MD
Duke Cancer Institute

Ingrid A. Mayer, MD
Vanderbilt-Ingram Cancer Center

Beryl McCormick, MD
Memorial Sloan Kettering Cancer Center

Robert S. Miller, MD
The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins

Mark Pegram, MD
Stanford Cancer Institute

Lori J. Pierce, MD
University of Michigan Comprehensive Cancer Center

Elizabeth C. Reed, MD
Fred & Pamela Buffett Cancer Center at The Nebraska Medical Center

Kilian E. Salerno, MD
Roswell Park Cancer Institute

Lee S. Schwartzberg, MD, FACP
St. Jude Children’s Research Hospital/The University of Tennessee Health Science Center

Mary Lou Smith, JD, MBA
Patient Advocate
Research Advocacy Network

Hatem Soliman, MD
Moffitt Cancer Center

George Somlo, MD
City of Hope Comprehensive Cancer Center

John H. Ward, MD
Huntsman Cancer Institute at the University of Utah

Richard Zellars, MD
The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins

For disclosures, visit www.nccn.org/about/disclosure.aspx
NCCN Member Institutions

Fred & Pamela Buffett Cancer Center at The Nebraska Medical Center
Omaha, Nebraska
800.999.5465
nebraskamed.com/cancer

City of Hope Comprehensive Cancer Center
Los Angeles, California
800.826.4673
cityofhope.org

Dana-Farber/Brigham and Women’s Cancer Center
Massachusetts General Hospital Cancer Center
Boston, Massachusetts
877.332.4294
dfbwcc.org
massgeneral.org/cancer

Duke Cancer Institute
Durham, North Carolina
888.275.3853
dukecancerinstitute.org

Fox Chase Cancer Center
Philadelphia, Pennsylvania
888.369.2427
foxchase.org

Huntsman Cancer Institute
at the University of Utah
Salt Lake City, Utah
877.585.0303
huntsmancancer.org

Fred Hutchinson Cancer Research Center/
Seattle Cancer Care Alliance
Seattle, Washington
206.288.7222 • seattlecca.org
206.667.5000 • fhcrc.org

The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins
Baltimore, Maryland
410.955.6964
hopkinskimmelcancercenter.org

Robert H. Lurie Comprehensive Cancer Center of Northwestern University
Chicago, Illinois
866.587.4322
cancer.northwestern.edu

Mayo Clinic Cancer Center
Phoenix/Scottsdale, Arizona
Jacksonville, Florida
Rochester, Minnesota
800.446.2279 • Arizona
904.953.0853 • Florida
507.538.3270 • Minnesota
mayoclinic.org/departments-centers/mayo-clinic-cancer-center

Memorial Sloan Kettering Cancer Center
New York, New York
800.525.2225
mskcc.org

Moffitt Cancer Center
Tampa, Florida
800.456.3434
moffitt.org

The Ohio State University Comprehensive Cancer Center - James Cancer Hospital and Solove Research Institute
Columbus, Ohio
800.293.5066
cancer.osu.edu

Roswell Park Cancer Institute
Buffalo, New York
877.275.7724
roswellpark.org

Siteman Cancer Center
at Barnes-Jewish Hospital and Washington University School of Medicine
St. Louis, Missouri
800.600.3606
siteman.wustl.edu

St. Jude Children’s Research Hospital/
The University of Tennessee Health Science Center
Memphis, Tennessee
888.226.4343 • stjude.org
901.683.0055 • westclinic.com

Stanford Cancer Institute
Stanford, California
877.668.7535
cancer.stanford.edu

University of Alabama at Birmingham Comprehensive Cancer Center
Birmingham, Alabama
800.822.0933
www3.ccc.uab.edu

UC San Diego Moores Cancer Center
La Jolla, California
858.667.7000
cancer.ucsd.edu

UCSF Helen Diller Family Comprehensive Cancer Center
San Francisco, California
800.689.8273
cancer.ucsf.edu

University of Colorado Cancer Center
Aurora, Colorado
720.848.0300
coloradocancercenter.org

University of Michigan Comprehensive Cancer Center
Ann Arbor, Michigan
800.865.1125
mcancer.org

The University of Texas MD Anderson Cancer Center
Houston, Texas
800.392.1611
mdanderson.org

Vanderbilt-Ingram Cancer Center
Nashville, Tennessee
800.811.8480
vicc.org

Yale Cancer Center/
Smilow Cancer Hospital
New Haven, Connecticut
855.4.SMILOW
yalecancercenter.org
Index

2nd opinion  35
axillary lymph nodes  8
biopsy  12, 9–20, 33
breast awareness  15, 27
breast parts  6
breast reconstruction  30–32
carcinoma in situ  6
clinical breast exam (CBE)  10, 14, 18
genetic counseling  20
hormone receptor  19, 26
hormone therapy  13, 26
immunohistochemistry  19
lumpectomy  20–22, 25
lymph  8
magnetic resonance imaging (MRI)  15, 27
mammography  11, 14, 19, 27
mastectomy  13, 20, 24–26
medical history  10, 18, 27
member institutions  47
nipple replacement  31
panel members  46
pathology review  12, 19
physical exam  10, 18, 27
radiation therapy  22–23, 25
risk reduction  12–14, 26
salpingo-oophorectomy  14, 26
sentinel lymph node dissection  26
treatment plan  34–35