



Breast Cancer Early Detection and Diagnosis

Can Breast Cancer Be Found Early?

Breast cancer is sometimes found after symptoms appear, but many women with breast cancer have no symptoms. This is why regular breast cancer screening is so important. Learn more.

- [American Cancer Society Recommendations for the Early Detection of Breast Cancer](#)

Imaging Tests to Find Breast Cancer

Different tests can be used to look for and diagnose breast cancer. If your doctor finds an area of concern on a screening test (a mammogram), or if you have symptoms that could mean breast cancer, you will need more tests to know for sure if it's cancer.

- [Mammograms](#)
- [Breast Ultrasound](#)
- [Breast MRI Scans](#)
- [Experimental Breast Imaging](#)

Biopsy

A biopsy is done when mammograms, other imaging tests, or a physical exam shows a breast change that may be cancer. A biopsy is the only way to know for sure if it's cancer.

- [Breast Biopsy](#)

Tests to look for breast cancer spread

If your doctor suspects your cancer may have spread to other parts of your body, you may need more tests, such as chest x-rays, CT scans, bone scans, or MRI scans.

- [Tests to Find Out if Breast Cancer Has Spread \(CT, PET, Bone Scan, MRI\)](#)

Finding breast cancer during pregnancy

Breast cancer during pregnancy is rare. But if you find a lump or notice any unusual changes in your breasts that concern you, tell your doctor or nurse right away.

- [Finding Breast Cancer During Pregnancy](#)

American Cancer Society Recommendations for the Early Detection of Breast Cancer

Finding breast cancer early and getting state-of-the-art cancer treatment are the most important strategies to prevent deaths from breast cancer. Breast cancer that's found early, when it's small and has not spread, is easier to treat successfully. Getting regular screening tests is the most reliable way to find breast cancer early. The American Cancer Society has screening guidelines for women at average risk of breast cancer, and for those at higher-than-average risk for breast cancer.

What are screening tests?

The goal of screening tests for breast cancer is to find it before it causes symptoms (like a lump that can be felt). *Screening* refers to tests and exams used to find a disease in people who don't have any symptoms. *Early detection* means finding and diagnosing a disease earlier than if you'd waited for symptoms to start.

Breast cancers found during screening exams are more likely to be smaller and still confined to the breast. The size of a breast cancer and how far it has spread are some of the most important factors in predicting the *prognosis* (outlook) of a woman with this disease.

American Cancer Society screenings recommendations for women at average breast cancer

risk

These guidelines are for women at **average risk** for breast cancer. A woman at average risk doesn't have a personal history of breast cancer, a family history of breast cancer, a genetic mutation known to increase risk of breast cancer (such as BRCA), and has not had chest radiation therapy before the age of 30. (See below for guidelines for women at higher than average risk.)

Women between 40 and 44 have the option to start screening with a mammogram every year.

Women 45 to 54 should get mammograms every year.

Women 55 and older can switch to a mammogram every other year, or they can choose to continue yearly mammograms. Screening should continue as long as a woman is in good health and is expected to live 10 more years or longer.

All women should be familiar with how their breasts normally look and feel and report any changes to a health care provider right away.

All women should understand what to expect when getting a mammogram for breast cancer screening – what the test can and cannot do.

Mammograms

Regular [mammograms](#) can help find breast cancer at an early stage, when treatment is most successful. A mammogram can find breast changes that could be cancer years before physical symptoms develop. Results from many decades of research clearly show that women who have regular mammograms are more likely to have breast cancer found early, are less likely to need aggressive treatment like surgery to remove the breast (mastectomy) and chemotherapy, and are more likely to be cured.

Mammograms are not perfect. They miss some cancers. And sometimes a woman will need more tests to find out if something found on a mammogram is or is not cancer. There's also a small possibility of being diagnosed with a cancer that never would have caused any problems had it not been found during screening. It's important that women getting mammograms know what to expect and understand the benefits and limitations of screening.

Clinical breast exam and breast self-exam

Research has not shown a clear benefit of physical breast exams done by either a health professional or by yourself for breast cancer screening. There is very little evidence that these tests help find breast cancer early when women also get screening mammograms. Because of this, a regular clinical breast exam and breast self-exam are not recommended. Still, all women should be familiar with how their breasts normally look and feel and report any changes to a health care provider right away.

American Cancer Society screening recommendations for women at higher than average risk

Women who are at **high risk** for breast cancer based on certain factors should get an [MRI](#) and a mammogram every year. This includes women who:

- Have a lifetime risk of breast cancer of about 20% to 25% or greater, according to risk assessment tools that are based mainly on family history (such as the Claus model – see below)
- Have a known [BRCA1 or BRCA2 gene mutation](#)
- Have a first-degree relative (parent, brother, sister, or child) with a BRCA1 or BRCA2 gene mutation, and have not had genetic testing themselves
- Had radiation therapy to the chest when they were between the ages of 10 and 30 years
- Have Li-Fraumeni syndrome, Cowden syndrome, or Bannayan-Riley-Ruvalcaba syndrome, or have first-degree relatives with one of these syndromes

The American Cancer Society recommends against MRI screening for women whose lifetime risk of breast cancer is less than 15%.

There's not enough evidence to make a recommendation for or against yearly MRI screening for women who have a moderately increased risk of breast cancer (a lifetime risk of 15% to 20% according to risk assessment tools that are based mainly on family history) or who may be at increased risk of breast cancer based on certain factors, such as:

- Having a personal history of breast cancer, ductal carcinoma in situ (DCIS), lobular carcinoma in situ (LCIS), atypical ductal hyperplasia (ADH), or atypical lobular hyperplasia (ALH)
- Having “extremely” or “heterogeneously” dense breasts as seen on a mammogram

If MRI is used, it should be in addition to, not instead of, a screening mammogram. This is because although an MRI is more likely to detect cancer than a mammogram, it may still miss some cancers that a mammogram would detect.

Most women at high risk should begin screening with MRI and mammograms when they are 30 and continue for as long as they are in good health. But a woman at high risk should make the decision to start with her health care providers, taking into account personal circumstances and preferences.

Tools used to assess breast cancer risk

Several risk assessment tools, with names such as the Gail model, the Claus model, and the Tyrer-Cuzick model, are available to help health professionals estimate a woman's breast cancer risk. These tools give approximate, rather than precise, estimates of breast cancer risk based on different combinations of risk factors and different data sets.

Because the different tools use different factors to estimate risk, they may give different risk estimates for the same woman. For example, the Gail model bases its risk estimates on certain personal risk factors, like current age, age at first menstrual period and history of prior breast biopsies, along with any history of breast cancer in first-degree relatives. In contrast, the Claus model estimates risk based only on family history of breast cancer in both first and second-degree relatives. These 2 models could easily give different estimates for the same person.

Risk assessment tools (like the Gail model, for example) that are not based mainly on family history are not appropriate to use with the ACS guidelines to decide if a woman should have MRI screening. The use of any of the risk assessment tools and its results should be discussed by a woman with her health care provider.

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Mammograms

What is a mammogram?

A mammogram is an x-ray of the breast that looks for changes that may be signs of breast cancer. [Get the basics about mammograms.](#)

What to know about getting a mammogram

Whether you're a mammogram newbie or a veteran, [knowing what to expect](#) may help the process go more smoothly.

Mammograms for women with breast implants

If you have breast implants you, can and should get mammograms [as recommended](#). But you might need to have extra pictures taken so the doctor can see as much breast tissue as possible.

What does the doctor look for on a mammogram

The [doctor reading your mammogram](#) will be looking for different types of breast changes, such as small white spots called calcifications, lumps or tumors called masses, and other suspicious areas that could be signs of cancer.

Getting called back after a mammogram

[Getting called back after a screening mammogram](#) is fairly common and doesn't mean you have cancer. Often, it just means more pictures or an ultrasound needs to be done to get a closer look at an area of concern.

Can a mammogram misdiagnose a breast cancer?

Mammograms are the best breast cancer screening tests we have at this time. But [mammography has limitations](#).

Understanding your mammogram result

Doctors use a standard system to describe [mammogram findings and results](#). This system is called the Breast Imaging Reporting and Data System or BI-RADS.

Mammograms after breast cancer

Women who have had one breast cancer are at higher risk of developing a new cancer in the other breast. The American Cancer Society does not have specific recommendations or guidelines for mammograms or other breast imaging tests [for](#)

[women who have been treated for breast cancer](#), but there is information about what these women will likely need to do.

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Mammogram Basics

A mammogram is a low-dose x-ray that allows specialists to look for changes in breast tissue. Screening mammograms are used to look for breast changes in women who do not appear to have breast problems. A diagnostic mammogram is used to get more information about breast changes in women who have breast symptoms or an abnormal screening mammogram.

Why do I need mammograms?

A mammogram can often find or detect breast cancer early, when it's small and even before a lump can be felt. This is when it's easiest to treat.

What are the types of mammograms?

Screening Mammograms

A *screening mammogram* is used to look for signs of breast cancer in women who don't have any breast symptoms or problems. X-ray pictures of each breast are taken from 2 different angles.

Diagnostic Mammograms

Mammograms can also be used to look at a woman's breast if she has a breast problem or a change is seen on a screening mammogram. When used in this way, they are called *diagnostic mammograms*. They may include extra views (images) of the breast that aren't part of screening mammograms. Sometimes diagnostic mammograms are used to screen women who were treated for breast cancer in the past.

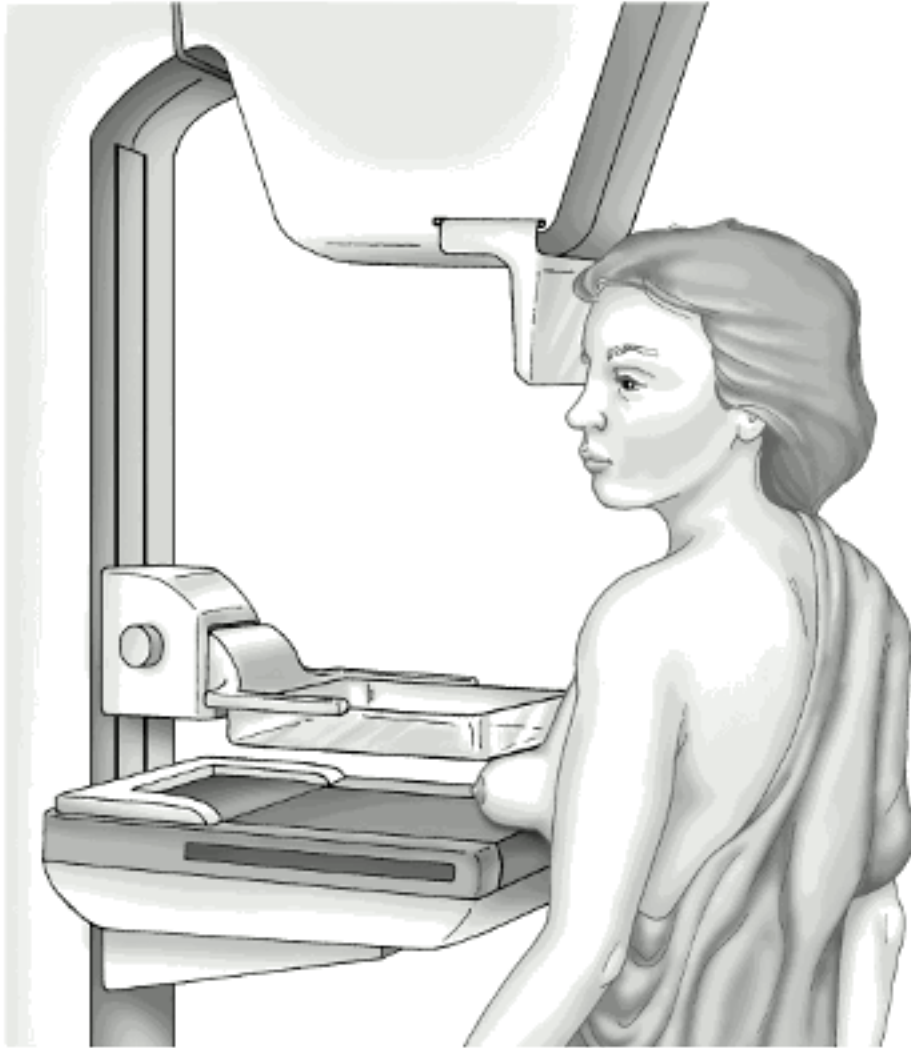
What do mammograms show?

Mammograms can't prove that an abnormal area is cancer, but they can help health care providers decide whether more testing is needed. The 2 main types of breast changes found with a mammogram are calcifications and masses. Learn more about these and other breast changes in the section about calcifications and masses.

How do mammograms work?

A mammogram uses a machine designed to look only at breast tissue. The machine takes x-rays at lower doses than usual x-rays. Because these x-rays don't go through tissue easily, the machine has 2 plates that compress or flatten the breast to spread the tissue apart. This gives a better picture and allows less radiation to be used.

Find more on our page about what you can expect when getting a mammogram.



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Mammogram

A **digital mammogram** (also known as *full-field digital mammography* or FFDM) is like a standard mammogram in that x-rays are used to make pictures of the breast. The differences are in the way the picture is made, looked at, and stored. Standard mammograms are printed on large sheets of film. Digital images are recorded and saved as files in a computer. Digital mammograms are becoming more widely available. They may be better than standard film mammograms for some women, but they're not clearly better for everyone. Women should not skip their regular mammogram because a digital one isn't available.

A newer type of mammogram is known as *breast tomosynthesis* or **3D mammography**. For this, the breast is compressed once and a machine takes many low-dose x-rays as

it moves over the breast. A computer then puts the images together into a 3-dimensional picture. This uses more radiation than most standard 2-view mammograms, but it may allow doctors to see the breast tissues more clearly. Some studies have suggested it might lower the chance of being called back for follow-up testing. It may also be able to find more cancers. But not all health insurances cover tomosynthesis.

Are mammograms safe?

The benefits of mammography outweigh any possible harm from the [radiation exposure](#). Modern machines use low radiation doses to get breast x-rays that are high in image quality. On average the total dose for a typical mammogram with 2 views of each breast is about 0.4 mSv. (A mSv is a measure of radiation dose.)

To put dose into perspective, people in the US are normally exposed to an average of about 3 mSv of radiation each year just from their natural surroundings. (This is called background radiation.) The dose of radiation used for a screening mammogram of both breasts is about the same amount of radiation a woman would get from her natural surroundings over about 7 weeks.

If there's any chance you might be pregnant, let your health care provider and x-ray technologist know. Although the risk to the fetus is likely very small, screening mammograms aren't routinely done in pregnant women.

Mammograms: What to Know Before You Go

A mammogram is an important step in taking care of yourself and your breasts. Whether you're a mammogram newbie or a veteran, knowing what to expect may help the process go more smoothly.

How to prepare for your mammogram

- If you have a choice, use a facility that specializes in mammograms and does many mammograms a day.
- Try to go to the same facility every time so that your mammograms can easily be compared from year to year.
- If you're going to a facility for the first time, bring a list of the places and dates of

- mammograms, biopsies, or other breast treatments you've had before.
- If you've had mammograms at another facility, try to get those records to bring with you to the new facility (or have them sent there) so the old pictures can be compared to the new ones.
 - Schedule your mammogram when your breasts are not tender or swollen to help reduce discomfort and get good pictures. Try to avoid the week just before your period.
 - On the day of the exam, don't wear deodorant or antiperspirant. Some of these contain substances that can show up on the x-ray as white spots. If you're not going home afterwards, you may want to take your deodorant with you to put on after your exam.
 - You might find it easier to wear a skirt or pants, so that you'll only need to remove your top and bra for the mammogram.
 - Discuss any new findings or problems in your breasts with your health care provider before getting the mammogram.

Don't be afraid of mammograms! Remember that only 2 to 4 screening mammograms in 1,000 lead to a diagnosis of breast cancer.

Tips for getting a mammogram

These tips can help you have a good quality mammogram:

- Always describe any breast changes or problems you're having to the technologist doing the mammogram. Also describe any medical history that could affect your breast cancer risk—such as surgery, hormone use, breast cancer in your family, or if you've had breast cancer before.
- Before getting any type of imaging test, tell the technologist if you're breastfeeding or if you think you might be pregnant.

What to expect when getting a screening mammogram

- You'll have to undress above the waist to get a mammogram. The facility will give you a wrap to wear.
- A technologist will position your breasts for the mammogram. You and the technologist are the only ones in the room during the mammogram.
- To get a high-quality picture, your breast must be flattened. The technologist places your breast on the machine's plate. The plastic upper plate is lowered to compress

- your breast for a few seconds while the technologist takes a picture.
- The whole procedure takes about 20 minutes. The actual breast compression only lasts a few seconds.
 - You might feel some discomfort when your breasts are compressed, and for some women it can be painful. Tell the technologist if it hurts.
 - Two views of each breast are taken for a screening mammogram. But for some women, such as those with breast implants or large breasts, more pictures may be needed.

What to expect when getting a diagnostic mammogram

- More pictures are taken during a diagnostic mammogram with a focus on the area that looked different on the screening mammogram.
- During a diagnostic mammogram, the images are checked by the radiologist while you're there so that more pictures can be taken if needed to look more closely at any area of concern.
- In some cases, special images known as spot views or magnification views are used to make a small area of concern easier to see.

How will I get my mammogram results?

If you don't hear from your health care provider within 10 days, do not assume that your mammogram was normal; call your provider or the facility where the mammogram was done.

A full report of the results of your mammogram will be sent to your health care provider. Mammography clinics also must mail women an easy-to-understand summary of their mammogram results within 30 days—or “as quickly as possible” if the results suggest cancer is present. This means you could get the results before your provider calls you. If you want the full written mammogram report as well as the summary, you'll need to ask for it. We can help you learn more about how to understand your mammogram report.

What Does the Doctor Look for on a Mammogram?

The doctor reading your mammogram will be looking for different types of breast

changes, such as small white spots called calcifications, lumps or tumors called masses, and other suspicious areas that could be signs of cancer.

A radiologist will look at your mammogram. Radiologists are doctors who diagnose diseases and injuries using imaging tests such as x-rays and CT scans. When possible, the doctor reading your mammogram will compare it to your old mammograms. This helps find small changes that could be signs of cancer.

Having your old mammograms available for the radiologist is very important. They can help show that a mass or calcification has not changed for many years. This would mean that it's likely not cancer and a biopsy isn't needed.

Here are some of the changes the doctor will look for:

Calcifications

Calcifications are tiny mineral deposits within the breast tissue. They look like small white spots on a mammogram. They may or may not be caused by cancer. There are 2 types of calcifications.

Macrocalcifications

Macrocalcifications are coarse, bigger calcium deposits that are most likely due to changes caused by aging of the breast arteries, old injuries, or inflammation. These deposits are related to non-cancerous conditions and don't need to be checked with a biopsy. Macrocalcifications are found in about half of women over age 50 and in 1 of 10 women under age 50.

Microcalcifications

Microcalcifications are tiny specks of calcium in the breast. Microcalcifications seen on a mammogram are of more concern than macrocalcifications, but they don't always mean that cancer is present. The shape and layout of microcalcifications help the radiologist judge how likely it is that the change is due to cancer. In most cases, microcalcifications don't need to be checked with a biopsy. But if they have a suspicious look and pattern, a biopsy will be recommended. (During a biopsy, the doctor removes a small piece of the suspicious area to be checked under a microscope. A biopsy is the only way to tell if cancer is really present.)

A mass

A mass is the same as a lump or a tumor. With or without calcifications, it's another important change seen on a mammogram. Masses are areas that look abnormal and they can be many things, including cysts (non-cancerous, fluid-filled sacs) and non-cancerous solid tumors (such as fibroadenomas), but they may also be a sign of cancer.

Cysts are fluid-filled sacs. Simple cysts are not cancer and don't need to be checked with a biopsy. If a mass is not a simple cyst, it's of more concern and a biopsy might be needed to be sure it isn't cancer.

- A cyst and a tumor can feel the same. They can also look the same on a mammogram. The doctor must be sure it's a cyst to know it's not cancer. To be sure that a mass is really a cyst, a breast ultrasound is often done because it is a better tool to see fluid-filled sacs. Another option is to use a thin needle to remove (aspirate) fluid from the area.
- If a mass is not a simple cyst (that is, if it's at least partly solid), more [imaging tests](#) may be needed to decide if it might be cancer. Some masses can be watched with regular mammograms or ultrasound to see if they change, but others may need to be checked with a biopsy. The size, shape, and margins (edges) of the mass may help the radiologist decide how likely it is to be cancer.

Breast density

Your mammogram report will also contain an assessment of breast density. Breast density is based on how fibrous and glandular tissues are distributed in your breast, vs. how much of your breast is made up fatty tissue.

Dense breasts are not abnormal, but they are linked to a higher risk of breast cancer. We know that dense breast tissue can make it harder to find cancers on a mammogram. Still experts don't agree what other tests, if any, should be done along with mammograms in women with dense breasts who aren't in a high breast cancer risk group (based on gene mutations, breast cancer in the family, or other factors).

Getting Called Back After a Mammogram

Getting called back after a screening mammogram is fairly common and doesn't mean you have cancer. In fact, less than 10% of women called back for more tests are found

to have breast cancer. Often, it just means more pictures or an [ultrasound](#) needs to be done to get a closer look at an area of concern. Getting called back is more common after a first mammogram (or when there's no previous mammogram to look at) and after mammograms done in women who haven't gone through menopause.

What else could it be?

You could be called back after your mammogram because:

- The pictures weren't clear or missed some of your breast tissue and need to be retaken.
- You have [dense breast tissue](#) or a [cyst](#).
- The radiologist might have seen [calcifications](#) or a mass.
- Sometimes an area just looks different from other parts of the breast.

Sometimes when more pictures are taken of the area or mass, or the area is compressed more, it no longer looks suspicious. In fact, most repeat mammograms do not find cancer.

What will happen at the follow-up appointment?

- You're likely to have another mammogram called a *diagnostic mammogram*. (Your previous mammogram was called a *screening mammogram*.) A diagnostic mammogram is done just like a screening mammogram, but for a different reason. More pictures are taken during a diagnostic mammogram so that any areas of concern can be carefully studied. A radiologist is on hand to advise the technician (the person who operates the mammogram machine) to be sure they have all the images that are needed.
- You may also have an ultrasound test that uses sound waves to make a computer image of the tissues inside your breast at the area of concern.
- Some women may need a [breast MRI](#). For a breast MRI, you'll lie face down inside a narrow tube for up to an hour while the machine creates more detailed images of the breast tissues. MRI is painless, but can be uncomfortable for people who don't like small, tight spaces.

You can expect to learn the results of your tests during the visit. You are likely to be told 1 of 3 things:

- The suspicious area turned out to be nothing to worry about and you can return to

having yearly mammograms.

- The area is probably nothing to worry about, but you should have your next mammogram sooner than 1 year – usually in 4 to 6 months – to watch it closely and make sure it doesn't change over time.
- The changed area could be cancer and a biopsy is needed to know for sure.

You'll also get a letter with a summary of the findings that will tell you if you need more tests and/or when you should schedule your next mammogram.

What if I need a biopsy?

Even if you need a breast biopsy, it still doesn't mean you have cancer. Most biopsy results are not cancer, but a biopsy is the only way to find out. During a biopsy, a small piece of tissue is removed and checked under a microscope.

There are several [different types of biopsies](#)– some use a needle and some use a cut in the skin. The type you have depends on things like how suspicious the tumor looks, how big it is, where it is in the breast, how many tumors there are, other medical problems you might have, and your personal preferences.

How can I stay calm while waiting?

Waiting for appointments and the results of tests can be frightening. Many women have strong emotions including disbelief, anxiety, fear, anger, and sadness during this time. Here are some things to remember:

- It's normal to have these feelings.
- Most breast changes are not cancer and are not life-threatening.
- Talking with a loved one or a counselor about your feelings may help.
- Talking with other women who have been through a breast biopsy may help.
- The American Cancer Society is available at 1-800-227-2345 around the clock to answer your questions and provide support.

What if it's cancer?

If you do have cancer and you're referred to a breast specialist, use these tips to make your appointment as useful as possible:

- Make a [list of questions](#) to ask. Download a list from the American Cancer Society or call us at 1-800-227-2345.
- Take a family member or friend with you. They can serve as an extra pair of ears, take notes, help you remember things later, and give you support.
- Ask if you can record the conversations.
- Take notes. If someone uses a word you don't know, ask them to spell it and explain it.
- Ask the doctors or nurses to explain anything you don't understand.

Understanding Your Mammogram Report

The radiologist who reviews your mammogram will categorize your results using a number system of 0 through 6. You should talk to your doctor about the category your results are put into and what you need to do next.

What is a BI-RADS score?

Doctors use a standard system to describe mammogram findings and results. This system (called the *Breast Imaging Reporting and Data System* or BI-RADS) sorts the results into categories numbered 0 through 6.

By sorting the results into these categories, doctors all over the country can describe what they find on a mammogram using the same words and terms. This makes accurately communicating about these test results and following up after the tests much easier.

What do the BI-RADS scores mean?

Category	Definition	What it means
0	Additional imaging evaluation and/or comparison to prior mammograms is needed.	This means the radiologist may have seen a possible abnormality, but it was not clear and you will need more tests, such as the use of spot compression (applying compression to a smaller area when doing the mammogram), magnified views, special mammogram views, or ultrasound. This may also suggest that your doctor should compare your new mammogram with older ones to see if there have been changes in the

		area over time.
1	Negative	There's no significant abnormality to report. Your breasts look the same (they are symmetrical) with no masses (lumps), distorted structures, or suspicious calcifications. In this case, <i>negative</i> means nothing bad was found.
2	Benign (non-cancerous) finding	This is also a negative mammogram result (there's no sign of cancer), but the reporting doctor chooses to describe a finding known to be benign, such as benign calcifications, lymph nodes in the breast, or calcified fibroadenomas. This ensures that others who look at the mammogram will not misinterpret the benign finding as suspicious. This finding is recorded in your mammogram report to help when comparing to future mammograms.
3	Probably benign finding – Follow-up in a short time frame is suggested	<p>The findings in this category have a very high chance (greater than 98%) of being benign (not cancer). The findings are not expected to change over time. But since it's not proven benign, it's helpful to see if the area in question does change over time.</p> <p>You will likely need follow-up with repeat imaging in 6 months and regularly after that until the finding is known to be stable (usually at least 2 years). This approach helps avoid unnecessary biopsies, but if the area does change over time, it still allows for early diagnosis.</p>
4	Suspicious abnormality – Biopsy should be considered	<p>Findings do not definitely look like cancer but could be cancer. The radiologist is concerned enough to recommend a biopsy. The findings in this category can have a wide range of suspicion levels. For this reason, some, but not all, doctors divide this category further:</p> <p>4A: Finding with a low suspicion of being cancer 4B: Finding with an intermediate suspicion of being cancer 4C: Finding of moderate concern of being cancer, but not as high as Category 5</p>
5	Highly suggestive of malignancy – Appropriate action should be taken	The findings look like cancer and have a high chance (at least 95%) of being cancer. Biopsy is very strongly recommended.
6	Known biopsy-proven	This category is only used for findings on a

	malignancy – Appropriate action should be taken	mammogram that have already been shown to be cancer by a previous biopsy. Mammograms may be used in this way to see how well the cancer is responding to treatment.
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X-ray assessment is incomplete

Category 0: Additional imaging evaluation and/or comparison to prior mammograms is needed.

This means a possible abnormality may not be clearly seen or defined and you will need more tests, such as the use of spot compression (applying compression to a smaller area when doing the mammogram), magnified views, special mammogram views, or ultrasound.

This may also suggest that the mammogram should be compared with older ones to see if there have been changes in the area over time.

X-ray assessment is complete

Category 1: Negative

There's no significant abnormality to report. The breasts look the same (they are symmetrical) with no masses (lumps), distorted structures, or suspicious calcifications. In this case, *negative* means nothing bad was found.

Category 2: Benign (non-cancerous) finding

This is also a negative mammogram result (there's no sign of cancer), but the reporting doctor chooses to describe a finding known to be benign, such as benign calcifications, lymph nodes in the breast, or calcified fibroadenomas. This ensures that others who look at the mammogram will not misinterpret the benign finding as suspicious. This finding is recorded in the mammogram report to help when comparing to future mammograms.

Category 3: Probably benign finding – Follow-up in a short

time frame is suggested

The findings in this category have a very high chance (greater than 98%) of being benign (not cancer). The findings are not expected to change over time. But since it's not proven benign, it's helpful to see if the area in question does change over time.

Follow-up with repeat imaging is usually done in 6 months and regularly after that until the finding is known to be stable (usually at least 2 years). This approach helps avoid unnecessary biopsies, but if the area does change over time, it still allows for early diagnosis.

Category 4: Suspicious abnormality – Biopsy should be considered

Findings do not definitely look like cancer but could be cancer. The radiologist is concerned enough to recommend a biopsy. The findings in this category can have a wide range of suspicion levels. For this reason, some, but not all, doctors divide this category further:

4A: Finding with a low suspicion of being cancer

4B: Finding with an intermediate suspicion of being cancer

4C: Finding of moderate concern of being cancer, but not as high as Category 5

Category 5: Highly suggestive of malignancy – Appropriate action should be taken

The findings look like cancer and have a high chance (at least 95%) of being cancer. Biopsy is very strongly recommended.

Category 6: Known biopsy-proven malignancy – Appropriate action should be taken

This category is only used for findings on a mammogram that have already been shown to be cancer by a previous biopsy. Mammograms may be used in this way to see how well the cancer is responding to treatment.

BI-RADS reporting breast density

Your mammogram report will also include an assessment of your breast density. BI-RADS classifies breast density into 4 groups:

The breasts are almost entirely fatty

The breasts contain little fibrous and glandular tissue, which means the mammogram would likely detect anything abnormal.

There are scattered areas of fibroglandular density

There are a few areas of fibrous and glandular tissue in the breast.

The breasts are heterogeneously dense, which may obscure small masses

The breast has more areas of fibrous and glandular tissue that are found throughout the breast. This can make it hard to see small masses.

The breasts are extremely dense, which lowers the sensitivity of mammography

The breast has a lot of fibrous and glandular tissue. This may make it harder to find a cancer that may be present, as it can blend in with normal breast tissue.

In some states, women whose mammograms show heterogeneously dense or extremely dense breasts must be told that they have “dense breasts” in the summary of the mammogram report that is sent to patients (sometimes called the *lay summary*).

The language used is mandated by law, and may say something like:

“Your mammogram shows that your breast tissue is dense. Dense breast tissue is common and is not abnormal. However, dense breast tissue can make it harder to evaluate the results of your mammogram and may also be associated with an increased risk of breast cancer. This information about the

results of your mammogram is given to you so you will be informed when you talk with your doctor. Together, you can decide which screening options are right for you. A report of your results was sent to your primary physician.”

Breast Density and Your Mammogram Report

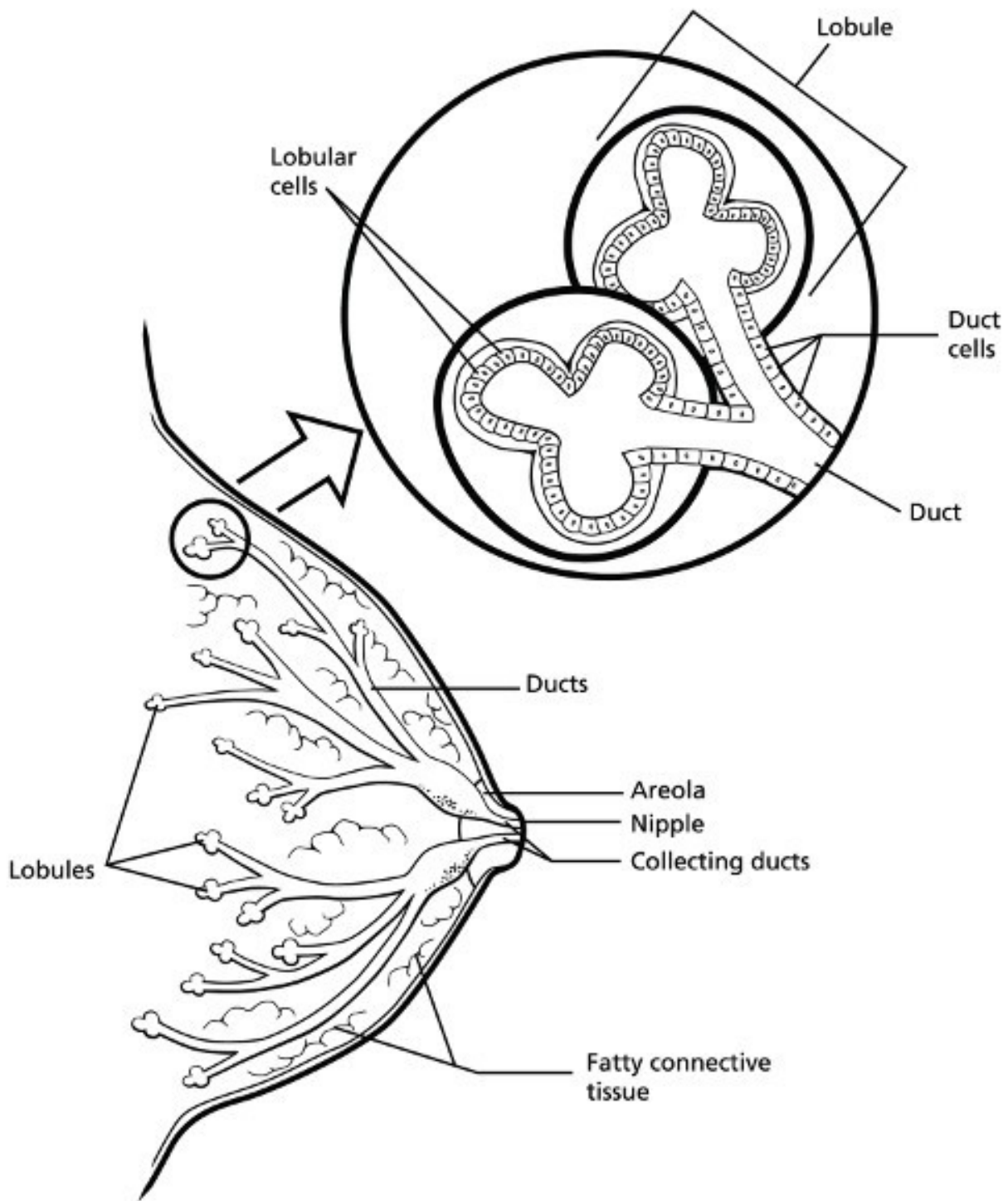
Regular mammograms are the best way to find breast cancer early. But if your mammogram report said that you have dense breast tissue, you may be wondering what that means.

What is dense breast tissue?

Breasts are made up of lobules, ducts, and fatty and fibrous connective tissue.

- Lobules produce milk and are often called “glandular tissue.”
- Ducts are the tiny tubes that carry milk from the lobules to the nipple.
- Fibrous tissue and fat give breasts their size and shape and hold the other tissues in place.

Your breasts will be seen as dense if you have a lot of fibrous or glandular tissue and not much fat in the breasts. Some women have more dense breast tissue than others. For most women, breasts become less dense with age. But in some women, there’s little change. **Breast density is very common, and is not abnormal.**

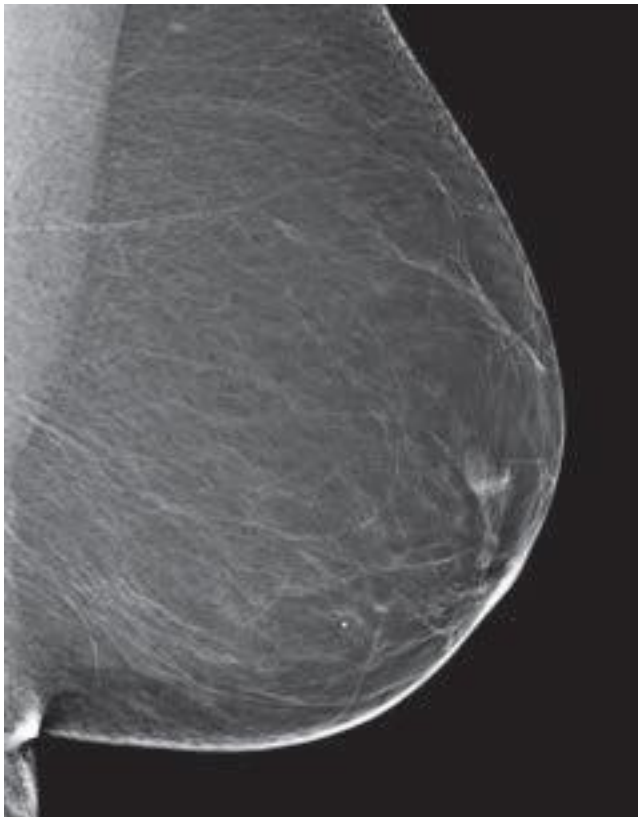


How do I know if I have dense breasts?

Breast density is seen only on mammograms. Some women think that because their breasts are firm, they are dense. But breast density isn't based on how your breasts feel. It's not related to breast size or firmness.

Radiologists are the doctors who "read" x-rays like mammograms. They check your mammogram for abnormal areas, and also look at breast density. There are 4 categories of breast density. They go from almost all fatty tissue to extremely dense tissue with very little fat. The radiologist decides which of the 4 categories best describes how dense your breasts are.

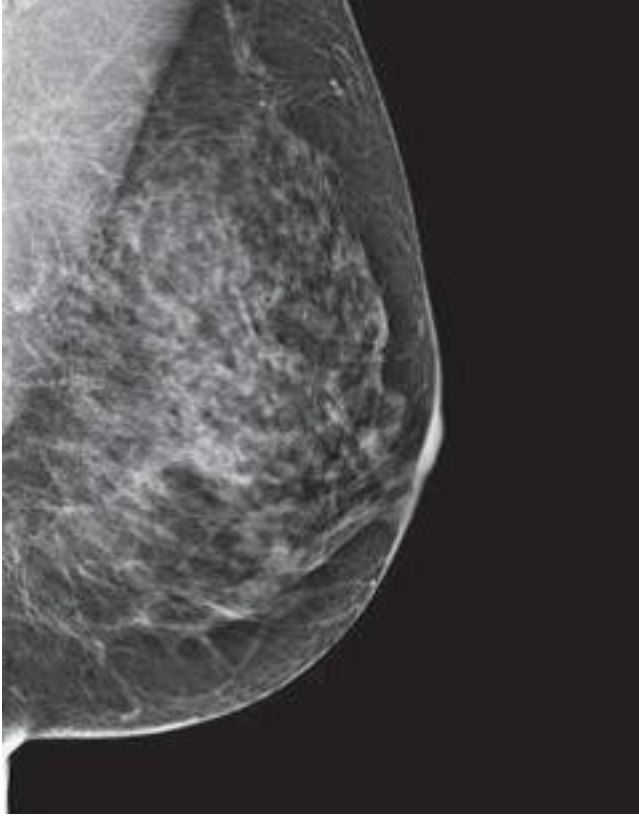
Breast density categories



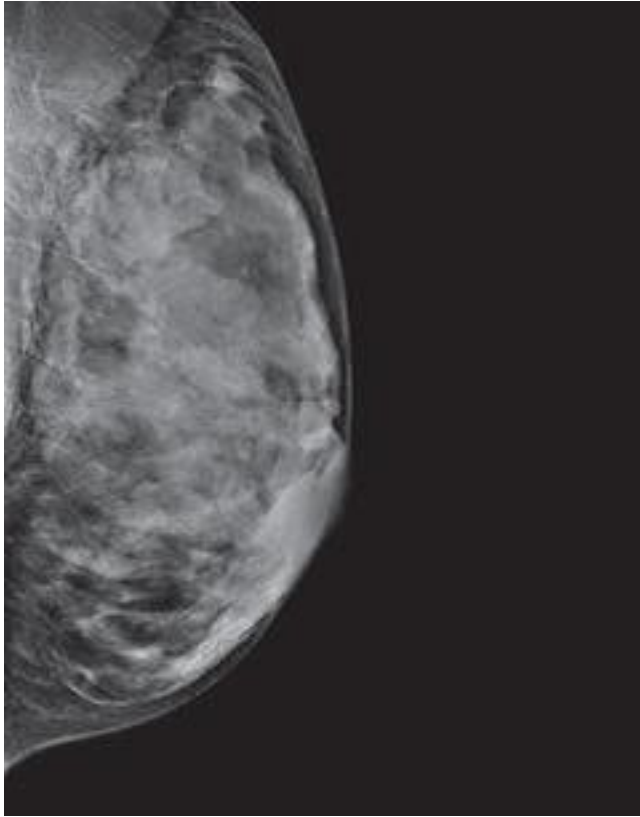
Breasts are almost all fatty tissue.



There are scattered areas of dense glandular and fibrous tissue.



More of the breast is made of dense glandular and fibrous tissue. This can make it hard to see small tumors in or around the dense tissue.



Breasts are extremely dense, which makes it hard to see tumors in the tissue.

Some mammogram reports sent to women mention breast density. Your health care provider can also tell you if your mammogram shows that you have “dense breasts.”

Why is breast density important?

Women who have dense breast tissue have a slightly higher risk of breast cancer compared to women with less dense breast tissue. It’s unclear at this time why dense breast tissue is linked to breast cancer risk.

We do know that dense breast tissue makes it harder for radiologists to see cancer. On mammograms, dense breast tissue looks white. Breast masses or tumors also look white, so the dense tissue can hide tumors. In contrast, fatty tissue looks almost black. On a black background it’s easier to see a tumor that looks white. So, mammograms can be less accurate in women with dense breasts.

If I have dense breasts, do I still need a mammogram?

Yes. Most breast cancers can be seen on a mammogram even in women who have dense breast tissue. So, it's still important to get regular mammograms. Mammograms can help save women's lives.

Even if you have a normal mammogram report, you should know how your breasts normally look and feel. Anytime there's a change, you should report it to a health care provider right away.

Should I have any other tests if I have dense breast tissue?

At this time, experts do not agree what other tests, if any, should be done in addition to mammograms in women with dense breasts.

Studies have shown that breast ultrasound and magnetic resonance imaging (MRI) can help find some breast cancers that can't be seen on mammograms. But MRI and ultrasound both show more findings that are not cancer. This can lead to more tests and unnecessary biopsies. And the cost of ultrasound and MRI may not be covered by insurance.

Talk to your health care provider about whether you should have other tests.

What should I do if I have dense breast tissue?

If your mammogram report says that you have dense breast tissue, talk with your provider about what this means for you. Be sure that your doctor or nurse knows your medical history and whether there's anything in your history that increases your risk for getting breast cancer.

Any woman who's already in a high-risk group (based on gene mutations, a strong family history of breast cancer, or other factors) should have an MRI along with her yearly mammogram. For more information on breast cancer risk factors and whether you're in a higher-risk group for breast cancer, please call your American Cancer Society at 1-800-227-2345.

For cancer information, day-to-day help, and emotional support, visit the American Cancer Society website at www.cancer.org or call us at 1-800-227-2345. We're here when you need us – 24 hours a day, 7 days a week.

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Limitations of Mammograms

Mammograms are the best breast cancer screening tests we have at this time. But mammography has limitations. A false-negative mammogram looks normal even though breast cancer is present. A false-positive mammogram looks abnormal but there's no cancer in the breast.

The value of a screening mammogram depends on a woman's overall health status. Finding breast cancer early may not help her live longer if she has other kinds of serious or life-threatening health problems, such as congestive heart failure (CHF), end-stage renal disease, or chronic obstructive pulmonary (lung) disease (COPD). [The American Cancer Society screening guidelines](#) emphasize that women with serious health problems or short life expectancies should discuss with their doctors whether they should continue having mammograms. Our guidelines also stress that age alone should not be the reason to stop having regular mammograms.

It's important to know that even though mammograms can show breast cancers that are too small to be felt, treating a small tumor does not always mean it can be cured. A fast-growing or aggressive cancer might have already spread.

False-negative results

A false-negative mammogram looks normal even though breast cancer is present. Overall, screening mammograms do not find about 1 in 5 breast cancers.

- Women with dense breasts have more false-negative results.
- Breasts often become less dense as women age, so false negatives are more common in younger women.

False-positive results

A false-positive mammogram looks abnormal but no cancer is actually present. Abnormal mammograms require extra testing (diagnostic mammograms, ultrasound, and sometimes MRI or even biopsy) to find out if the change is cancer.

- False-positive results are more common in women who are younger, have [dense breasts](#), have had [breast biopsies](#), have breast cancer in the family, or are taking estrogen.
- About half of the women getting annual mammograms over a 10-year period will have a false-positive finding. The odds of a false-positive finding are highest for the first mammogram.
- Women who have past mammograms available for comparison reduce their odds of a false-positive finding by about 50%.
- False-positive mammograms can cause anxiety. The extra tests needed to be sure cancer isn't there cost time and money and maybe even physical discomfort.

Over-diagnosis and over-treatment

Screening mammograms can find invasive breast cancer and [ductal carcinoma in situ](#) (DCIS, cancer cells in the lining of breast ducts) that need to be treated. But it's possible that some of the invasive cancers and DCIS found would not grow or spread. (Finding and treating cancers that would never cause problems is called over-diagnosis.) This means that some cancers are not life-threatening, and never would have been found or treated if the woman had not gotten a mammogram. The problem is that doctors can't tell these cancers from those that will grow and spread.

Over-diagnosis leads to some women getting treatment that's not really needed. We don't know which women fall into this group when the cancer is found because we can't tell which cancers will be life-threatening and which won't ever cause problems. Treating women with cancers that would never cause problems would be considered over-treatment.

Because doctors often can't be sure which cancers and cases of DCIS will become life-threatening, all cases are treated. It exposes these women to the adverse effects of cancer treatment that's really not needed.

Still, over-diagnosis is not that common. There's a wide range of estimates of the percentage of breast cancers that might be over-diagnosed by mammography, but the most credible estimates range from 0% to 10%.

Having a Mammogram After You've Had Breast Cancer Surgery

There are many different kinds of [breast cancer surgery](#), and the type of surgery you have had will determine whether you need to get mammograms in the future. If you have had [breast-conserving surgery](#), you need to continue to get mammograms. If you have had a mastectomy, you may not need a mammogram.

Regardless of what breast cancer surgery you have had, you will still need to get mammograms of the unaffected breast. This is very important, because women who have had one breast cancer are at higher risk of developing a new cancer in the other breast.

While the American Cancer Society does not have specific recommendations or guidelines for mammograms or other breast imaging in women who have been treated for breast cancer, there is information available about what these women will likely need to do.

Mammograms after breast-conserving surgery

Most experts recommend that women who have had breast-conserving surgery or BCS (sometimes called a partial mastectomy or lumpectomy) get a mammogram of the treated breast 6 months after radiation treatment ends. Radiation and surgery both cause changes in the skin and breast tissues that will show up on the mammogram, making it harder to read. The changes usually show up best about 6 months after the radiation ends, and the mammogram done at this time serves as a new baseline for the affected breast. Future mammograms will be compared with this one, to help the doctor check on healing and look for signs that the cancer has come back (recurred).

Depending on the results, the next mammogram for that breast may be 6 to 12 months later. Follow-up mammograms of the treated breast should be done at least yearly after that, but some doctors may recommend that you have mammograms more often. Routine mammograms will still need to be done on the opposite (untreated) breast.

Mammograms after mastectomy

Women who have had a [mastectomy](#) (including *simple mastectomy*, *modified radical mastectomy*, and *radical mastectomy*) to treat breast cancer need no further routine

screening mammograms on the affected side. If both breasts are removed, they don't need mammograms at all. There isn't enough tissue remaining after these kinds of mastectomies to do a mammogram. Cancer can come back in the skin or chest wall on that side, but it can be found on a physical exam.

It's possible for women with reconstructed breasts to get mammograms, but experts agree that women who have breast reconstruction after a simple, modified radical mastectomy, or radical mastectomy don't need routine mammograms. Still, if an area of concern is found during a physical exam on a woman who has had breast reconstruction, a diagnostic mammogram may be done. Ultrasound or MRI may also be used to look at the area closely.

Women who have had a ***subcutaneous mastectomy***, also called skin-sparing mastectomy, still need follow-up mammograms. In this surgery, the woman keeps her nipple and the tissue just under the skin. Often, an implant is put under the skin. This surgery leaves behind enough breast tissue to require yearly screening mammograms in these women.

Any woman who's not sure what type of mastectomy she has had or whether she needs to get mammograms should ask her doctor.

Mammograms for Women with Breast Implants

If you have breast implants, you should still get regular screening mammograms. However, if you have implants, you need to tell the technologist before starting the mammogram and you should also be aware that it may be hard for the doctor to see certain parts of your breast.

The x-rays used in mammograms cannot go through silicone or saline implants well enough to show the breast tissue under them. This means that the part of the breast tissue covered by the implant won't be seen on the mammogram.

Very rarely, mammograms can rupture an implant. It's important to tell the technologist you have implants before your mammogram is started. In fact, it's best to mention this when you make the appointment to have your mammogram done. This way you can find out if the facility has experience doing mammograms in women with breast implants.

So the doctor can see as much breast tissue as possible, women with implants have 4 extra pictures done (2 on each breast), as well as the 4 standard pictures taken during a screening mammogram. In these extra pictures, called *implant displacement* (ID) views, the implant is pushed back against the chest wall and the breast is pulled forward over it. This allows better imaging of the front part of each breast.

Implant displacement views are more difficult to do and can be uncomfortable in women who have had hard scar tissue form around the implants (called *contractures*). They're easier in women whose implants are placed underneath (behind) the chest muscles.

Breast Ultrasound

Breast ultrasound is often used to examine a breast change that's seen on a mammogram.

Why is breast ultrasound used?

Ultrasound is useful for looking at some breast changes, such as those that can be felt but not seen on a mammogram or changes in women with dense breast tissue. It also can be used to look at a change that may have been seen on a mammogram. Ultrasound can be used to tell the difference between fluid-filled cysts and solid masses. (If a lump is really a cyst, it's not cancer.)

Ultrasound can be used to help guide a biopsy needle into an area of change so cells can be taken out and tested for cancer. It can also be used to look for and guide a biopsy needle into swollen lymph nodes under the arm.

Ultrasound is widely available, easy to have done, and costs less than a lot of other options.

How is it done?

Breast ultrasound uses sound waves to make a computer picture of the inside of the breast.

A gel is put on the skin of the breast and an instrument called a transducer is moved across the skin to show the underlying tissue structure. The transducer sends out sound waves and picks up the echoes as they bounce off body tissues. The echoes are made

into a black and white image on a computer screen. This test is painless and does not use radiation.

As with any breast imaging, breast ultrasound depends on the level of skill and experience of the doctor interpreting the images. When a handheld transducer is used, ultrasound is also dependent on the skill and experience of the person doing the scan.

Automated ultrasound is an option that uses a much larger transducer to take hundreds of images that cover nearly the entire breast. When automated ultrasound is used, a second handheld ultrasound is often needed to get more pictures of suspicious areas.

- [References](#)

Bruening W, Uhl S, Fontanarosa J, Reston J, Treadwell J, Schoelles K. Noninvasive Diagnostic Tests for Breast Abnormalities: Update of a 2006 Review [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2012 Feb. Available from <http://www.ncbi.nlm.nih.gov/books/NBK84530/>

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Breast MRI Scans

A breast MRI is mainly used for women who have been diagnosed with breast cancer, to help measure the size of the cancer, look for other tumors in the breast, and to check for tumors in the opposite breast. For certain women at high risk for breast cancer, a screening MRI is recommended along with a yearly mammogram. MRI is not recommended as a screening tool by itself because it can miss some cancers that a mammogram would find.

Although MRI can find some cancers not seen on a mammogram, it's also more likely to find something that turns out not to be cancer (called a false positive). False-positive findings have to be checked out to know that cancer isn't present. This means more tests and/or biopsies. This is why MRI is not recommended as a screening test for women at average risk of breast cancer, because it would mean unneeded biopsies and other tests for many of these women.

What you need to know about getting a breast MRI

Just as mammograms are done using x-ray machines specially designed for the breasts, breast MRI also requires special equipment. This MRI machine is called an *MRI with dedicated breast coils*. Not all hospitals and imaging centers have dedicated breast MRI equipment. It's important to have your screening MRI at a facility with dedicated equipment that can do an MRI-guided breast biopsy. Otherwise, if a biopsy is needed, the MRI will need to be repeated at another facility.

MRI uses strong magnets instead of radiation to make very detailed, cross-sectional pictures of the body. An MRI scan takes pictures from many angles, as if someone were looking at a slice of your body from the front, from the side, or from above your head. MRI creates pictures of soft tissue parts of the body that are sometimes hard to see using other imaging tests.

Tips for getting ready for the test

Check with your insurance company before getting an MRI: Breast MRI costs a lot, and may need to be approved by your insurance company before the scan is done. Most private insurance plans that pay for mammogram screening also pay for MRI as a screening test if a woman can be shown to be at high risk. It might help to go to a center with a high-risk clinic, where the staff has experience getting approval for breast MRIs.

Follow all instructions: You don't usually need a special diet or preparation before an MRI, but follow any instructions you're given.

If you have trouble with enclosed spaces: If being in an enclosed space is a problem for you (you have claustrophobia), you might need to take medicine to help you relax while in the scanner. Talking with the technologist or a patient counselor, or getting a tour of the MRI machine before the test can help. You'll be in the exam room alone, but you can talk to the MR technologist, who can see and hear what's going on. In some cases, you may be able to have the test done with an *open MRI* machine that allows more space around your body.

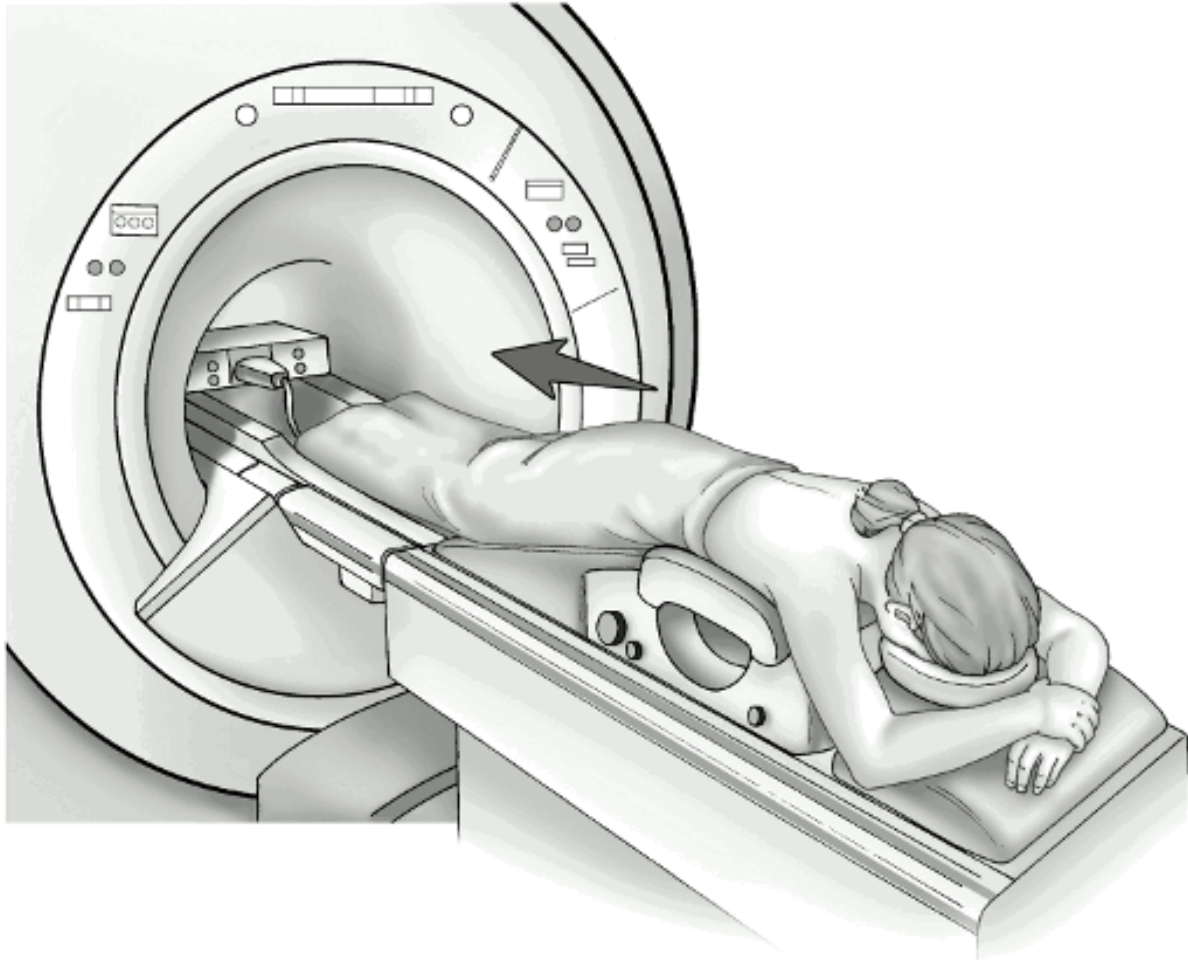
Remove metal objects: Before the test, you will be asked to undress and put on a gown or other clothes without zippers or metal. Be sure to remove any metal objects you can, like hair clips, jewelry, dental work, and body piercings.

If you have metal in your body: Before the scan, the technologist will ask you if you have any metal in your body. Some metallic objects will not cause problems, but others can.

If you have any of these types of medical implants, you should not even enter the MRI

scanning area unless told to do so by a radiologist or technologist who knows you have:

- An implanted defibrillator or pacemaker
- Clips used on a brain aneurysm
- A cochlear (ear) implant
- Metal coils inside blood vessels



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Breast MRI

What's it like to get a breast MRI?

MRI scans are usually done on an outpatient basis in a hospital or clinic. You'll lie face down on a narrow, flat table. Your breasts will hang down into an opening in the table so they can be scanned without being compressed. The technologist may use pillows to make you comfortable and help keep you from moving. The table then slides into a long, narrow cylinder.

The test is painless, but you have to lie still inside the narrow cylinder. You may be asked to hold your breath or keep very still during certain parts of the test. The machine may make loud, thumping, clicking, and whirring noises, much like the sound of a washing machine, as the magnet switches on and off. Some facilities give you earplugs or headphones with music to help block noise out during testing.

The most useful MRI exams for breast imaging use a contrast material that's injected into a vein in the arm before or during the exam. This helps to clearly show breast tissue details. The contrast material used for an MRI exam is called gadolinium. (It's not the same as the contrast dye used in CT scans.) Let the technologist know if you have any kind of allergies or have had problems with any contrast or dye used in imaging tests in the past.

It's important to stay very still while the images are being made, which only takes a few minutes at a time. Tell the technologist if you need to move or take a break.

Breast MRI scans can usually take between 45 and 60 minutes. After the test, you may be asked to wait while the pictures are checked to see if more are needed.

- [References](#)

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Experimental Breast Imaging

Some newer tests are being studied for breast imaging. These tests are in the earliest stages of research. It will take time to see if any are as good as or better than those used today.

Some newer tests are now being studied for breast imaging. These tests are in the earliest stages of research. It will take time to see if any of them are as good as or better than those we use today.

Optical imaging tests pass light into the breast and then measure the light that returns

or passes through the tissue. The technique does not use radiation and does not require breast compression. Studies going on now are looking at combining optical imaging with other tests like MRI or 3D mammography to help diagnose breast cancer.

Molecular breast imaging (MBI) is a newer nuclear medicine imaging test for the breast. It's being studied as a way to follow up breast problems (such as a lump or an abnormal mammogram). It's also being studied as a test that can be used along with mammograms for women with dense breasts.

Positron Emission Mammography (PEM) is a newly developed imaging exam of the breast. It uses sugar attached to a radioactive particle to detect cancer cells. The PEM scanner is approved by the Food and Drug Administration (FDA). Working much like a PET scan, a PEM scan may be better able to detect small clusters of cancer cells within the breast. Right now it's being studied in women with breast cancer or other breast problems to see if it can show which lumps are cancer.

Electrical impedance imaging (EIT) scans the breast for electrical conductivity. It's based on the idea that breast cancer cells conduct electricity differently from normal cells. The test passes a very small electrical current through the breast and then detects it on the skin of the breast. This is done using small electrodes that are taped to the skin. EIT does not use radiation or compress the breasts. This test is approved by the Food and Drug Administration (FDA) to help classify tumors found on mammograms. But at this time there hasn't had enough clinical testing to use it in breast cancer screening.

- [References](#)

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Weigert JM, Bertrand ML, Lanzkowsky L, Stern LH, Kieper DA. Results of a multicenter patient registry to determine the clinical impact of breast-specific gamma imaging, a molecular breast imaging technique. *AJR Am J Roentgenol*. 2012;198(1):W69-75.

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Breast Biopsy

When other tests show that you might have breast cancer, you will probably need to have a biopsy. Needing a breast biopsy doesn't necessarily mean you have cancer. Most biopsy results are not cancer, but a biopsy is the only way to find out. During a biopsy, a surgeon will remove cells from the suspicious area so they can be studied in the lab to see if cancer cells are present.

There are different kinds of breast biopsies. Some use a needle and some use an incision. Each has pros and cons. The type you have depends on things like how suspicious the tumor looks, how big it is, where it is in the breast, how many tumors there are, other medical problems you might have, and your personal preferences. Ask the doctor which type of biopsy you will have and what you can expect during and after the procedure.

If the doctor thinks you don't need a biopsy, but you still feel there's something wrong with your breast, follow your instincts. Don't be afraid to talk to the doctor about this or go to another doctor for a second opinion. A biopsy is the only sure way to diagnose breast cancer.

Regardless of what type of biopsy you have, a doctor will need to take a tissue sample and send it to a lab where a specialist, called a pathologist, will look at it. It typically will take a few days, maybe even more than a week, for you to find out the results. Once you get them, it's important to learn whether the results are final, or whether you need another biopsy. You may also decide that you want to get a second opinion.

Get a [comprehensive list of questions](#) to ask your doctor before getting a breast biopsy.

Fine needle aspiration biopsy

In a [fine needle aspiration \(FNA\) biopsy](#), a very thin, hollow needle attached to a syringe is used to withdraw (aspirate) a small amount of tissue from a suspicious area. The needle used for an FNA biopsy is thinner than the one used for blood tests.

Core needle biopsy

A [core biopsy](#) uses a larger needle to sample breast changes felt by the doctor or pinpointed by ultrasound or mammogram. Sometimes, the biopsy needle is guided by an MRI or CT scan. Another way to do a core biopsy is known as vacuum-assisted.

Surgical (open) biopsy

In rare cases, surgery is needed to remove all or part of the lump for testing. This is called a [surgical biopsy or an open biopsy](#). Most often, the surgeon removes the entire mass or abnormal area as well as a surrounding margin of normal- breast tissue.

There are 2 types of surgical biopsies:

- *Incisional biopsy* removes only part of the suspicious area, enough to make a diagnosis.
- *Excisional biopsy* removes the entire tumor or abnormal area, with or without trying to take out an edge of normal breast tissue (it depends on the reason for the excisional biopsy).

Lymph node biopsy

If the lymph nodes under the arm are enlarged, a doctor may need to check them for cancer spread. Most often, an enlarged lymph node is biopsied at the same time as the breast tumor.

Even if no lymph nodes are enlarged, the lymph nodes under the arm are usually checked for cancer spread when the breast tumor is removed at surgery. This is done with a [sentinel lymph node biopsy and/or an axillary lymph node dissection](#).

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Questions to Ask Before a Breast Biopsy

There are different types of breast biopsies. It is important to understand the type of biopsy you'll have and what you can expect during and after the biopsy.

Here are some questions you might want to ask before having a breast biopsy:

- What type of biopsy do you think I should have? Why?
- Will the size of my breast affect the way the biopsy is done?
- Where will you do the biopsy?
- What exactly will you do?

- How long will it take?
- Will I be awake or asleep during the biopsy?
- Will I need someone to help me get home afterward?
- If you can't feel the abnormal area in my breast,, how will you find it?
- If you are using a guided wire to help find the abnormal area, how will you make sure it's in the right place (with ultrasound or a mammogram)?
- Can you draw pictures showing me the size of the cut and the amount of the tissue you will remove?
- Will I have a hole there? Will it show afterward?
- Will my breast have a different shape or look different afterward?
- Will you put a clip or marker in my breast?
- Where will the scar be? What will it look like?
- Will I have bruising or changes in the color of my skin? If so, how long will it last?
- Will I be sore? If so, how long will it last?
- When can I take off the bandage?
- When can I take a shower?
- Will I have stitches? Will they dissolve or will I need to come back to the office and have them removed?
- When can I go back to work? How will I feel when I do?
- Will my activities be limited? Can I lift things? Care for my children?
- How soon will I know the biopsy results?
- Should I call you or will you call me with the results?
- Will you or someone else explain the biopsy results to me?

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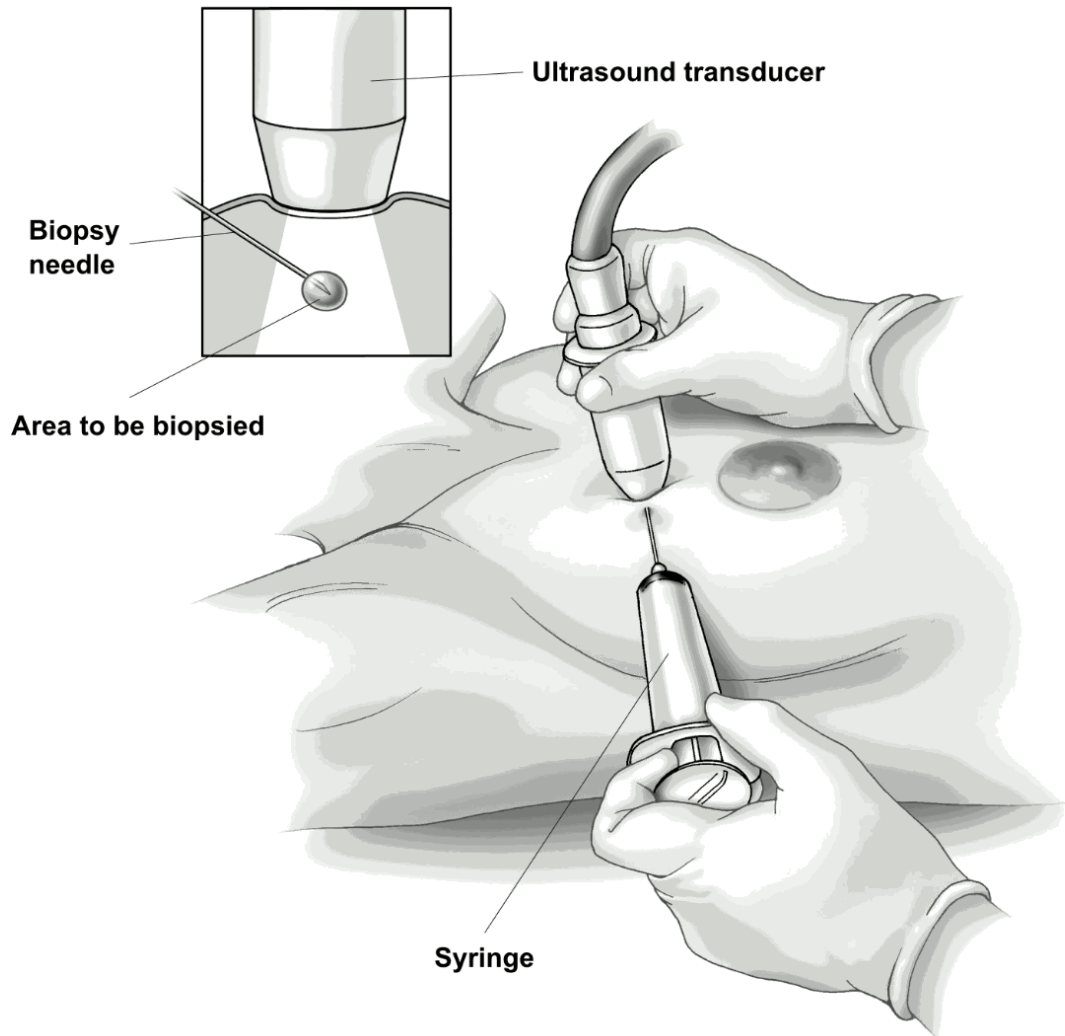
Fine Needle Aspiration Biopsy of the Breast

If other tests show you might have breast cancer, your doctor may refer you for a fine needle aspiration biopsy. During this procedure, a small amount of tissue is taken from the suspicious area, and checked for cancer cells.

What is an FNA breast biopsy?

In a fine needle aspiration (FNA) biopsy, the doctor uses a very thin, hollow needle attached to a syringe to withdraw (aspirate) a small amount of tissue from a suspicious area. The tissue is then checked under a microscope to see if there are cancer cells in it. The needle used for an FNA biopsy is thinner than the one used for blood tests.

If the area to be biopsied can be felt, the needle can be guided into it while the doctor is feeling it.



Fine needle aspiration using ultrasound

If the lump can't be felt easily, the doctor might watch the needle on an ultrasound

screen as it moves toward and into the mass. This is called an ultrasound-guided biopsy.

What should you expect if you have a FNA?

During an FNA

An FNA is an outpatient procedure most often done in the doctor's office. Your doctor may or may not use a numbing medicine (called a local anesthetic). But, the needle used for the biopsy is so thin that getting an anesthetic could hurt more than the biopsy itself.

The biopsy itself only takes about 15 seconds for each sample. The entire procedure from start to finish generally takes around 20 to 30 minutes if ultrasound is used.

You'll be laying on your back for the FNA. You will have to be still while it's done.

You may feel some pressure from the ultrasound wand and as the needle is put in. Once the needle's in the right place, the doctor will use the syringe to pull out a small amount of tissue and/or fluid. Then the needle is taken out and the area is covered with a sterile dressing or bandage.

After an FNA

Your doctor will tell you how to care for the biopsy site and what you can and can't do while it heals. All biopsies can cause bleeding and can lead to swelling. This can make it seem like the breast lump is larger after the biopsy. Most often, this is nothing to worry about and the bleeding, bruising, and swelling go away over time.

What does an FNA show?

A doctor called a pathologist will look at the biopsy tissue or fluid under a microscope to find out if there are cancer cells in it.

- If the fluid is clear, the lump is probably a cyst, and not cancer.
- Bloody or cloudy fluid can mean either a cyst that's not cancer or, very rarely, cancer.
- If the lump is solid, the doctor will pull out small pieces of tissue.

The main advantages of FNA are that the skin doesn't have to be cut, and in some

cases it's possible to make the diagnosis the same day.

An FNA biopsy is the easiest type of biopsy to have, but it can sometimes miss a cancer if the needle does not go into the cancer cells. Or there may not be enough cancer cells to do some of the other lab tests that are needed.

If the results of the FNA biopsy do not give a clear diagnosis, or your doctor still has concerns, you might need to have a second biopsy or a different type of biopsy.

- [References](#)

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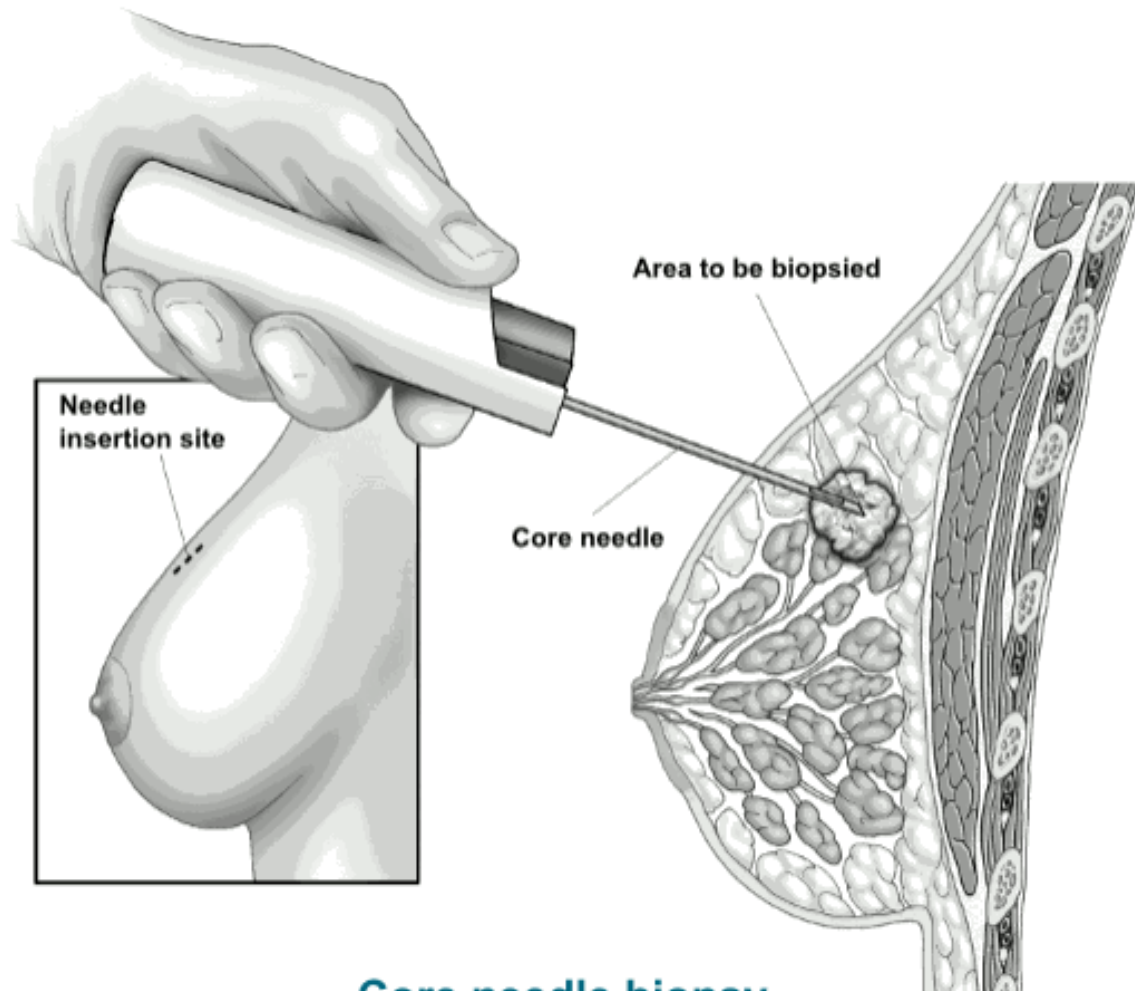
Core Needle Biopsy of the Breast

If other tests show you might have breast cancer, your doctor may refer you for a core needle biopsy. During this procedure, a doctor uses a wide, hollow needle to take out pieces of breast tissue from the area of concern that's felt by the doctor or pinpointed on an imaging test.

What is a core needle biopsy (CNB)?

In a core needle biopsy (CNB), the doctor uses a wide, hollow needle to take out pieces of breast tissue from a suspicious area the doctor has felt or has pinpointed on an imaging test. The needle may be attached to a spring-loaded tool called a biopsy gun that moves the needle in and out of the tissue quickly.

A small cylinder (core) of tissue (about 1/16- to 1/8-inch in diameter and about ½-inch long) is taken out in the needle. Several cores are often removed.



Core needle biopsy

The doctor doing the CNB may put the needle in place by feeling the lump. But usually the needle is put into the abnormal area using some type of imaging test to guide the needle into the right place. Some of the imaging tests a doctor may use include:

- Ultrasound
- MRI
- CT scan
- Mammogram

Special types of core needle biopsies

Stereotactic core needle biopsy

When a doctor uses digital mammogram pictures taken from different angles to pinpoint the biopsy site, it's called a stereotactic core needle biopsy. A computer analyzes the x-rays of the breast and shows exactly where the needle tip needs to go in the abnormal area. This type of CNB is often used to biopsy suspicious microcalcifications (tiny calcium deposits) or small tumors that can't be clearly seen on an ultrasound.

Vacuum-assisted core biopsy

This type of CNB is done with a vacuum-assisted device (VAD). A hollow probe is put through a small cut into the abnormal area of breast tissue. The doctor guides the probe into place using an imaging test. A cylinder of tissue is then suctioned into the probe, and a rotating knife inside the probe cuts the tissue sample from the rest of the breast. Several samples can be taken from the same cut. This method usually removes more tissue than core biopsies done with a regular needle.

What should you expect if you have a CNB?

During the CNB

A CNB is an outpatient procedure most often done in the doctor's office with local anesthesia (you're awake but your breast is numbed). The CNB procedure itself is very quick, though it may take more time if imaging tests are needed or one of the special types of CNB is used.

You may be sitting up for the biopsy, or, more commonly, you may lie face down on a special table with openings that your breasts fit into. You will have to be still while the biopsy is done.

For any type of CNB, a thin needle will be used to put in medicine to numb your skin. Then a small cut (about $\frac{1}{4}$ inch) will be made in the breast. The needle or probe is put into the breast tissue through this cut. You might feel pressure as the needle goes in. Again, imaging tests may be used to guide the needle to the right spot.

Sometimes a tiny marker is put into the area where the biopsy is done. This marker shows up on mammograms so the exact area can be located and watched closely in the future. You can't feel or see it.

Once the tissue is removed the needle or probe is taken out. No stitches are needed. The area is covered with a sterile dressing. Pressure may be applied for a short time to help limit bleeding.

After the CNB

You may be told to limit strenuous activity for a day or so, but should be able to go back to your usual activities after that.

A CNB can cause some bruising, but usually it doesn't leave scars inside or outside the breast. Your doctor will tell you how to care for the biopsy site and what you can and can't do while it heals. All biopsies can cause bleeding and can lead to swelling. This can make it seem like the breast lump is larger after the biopsy. Most often, this is nothing to worry about and the bleeding, bruising, and swelling go away over time.

What does a CNB show?

A doctor called a pathologist will look at the biopsy tissue and/or fluid under a microscope to find out if there are cancer cells in it. A CNB is likely to clearly show whether cancer is present, but it can still miss some cancers.

Ask your doctor when you can expect to get the results of your biopsy. If the results of the CNB do not give a clear diagnosis, or your doctor still has concerns, you might need to have a second biopsy or a different type of biopsy.

- [References](#)

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Surgical Breast Biopsy

If other tests show you might have breast cancer, your doctor may refer you for a surgical (open) breast biopsy. During this procedure, a doctor cuts out all or part of the lump so it can be looked at under a microscope and checked for cancer cells.

In most cases, breast cancer can be diagnosed by a needle biopsy. Rarely, surgery is needed to remove all or part of the lump so it can be checked to see if there are cancer cells in it. This may be called an open biopsy or a surgical biopsy.

What is a surgical biopsy?

There are 2 types of surgical biopsies:

- An **incisional biopsy** removes only part of the abnormal area to make a diagnosis.
- An **excisional biopsy** removes the entire tumor or abnormal area. An edge of normal breast tissue around the tumor may be taken, too, it depends on the reason for the excisional biopsy.

Wire localization to guide surgical biopsy

If the change in your breast can't be felt and/or is hard to find, a mammogram or an MRI may be used to place a wire in the suspicious area to guide the surgeon the right spot. This is called **wire localization** or **stereotactic wire localization**.

After your breast is numbed, a mammogram or MRI is used to guide a thin hollow needle to the abnormal area. Once the tip of the needle is in the right spot, a thin wire is put in through the center of the needle. A small hook at the end of the wire keeps it in place. The needle is then taken out. The surgeon uses the wire as a guide to the part of the breast to be removed.

What should you expect if you have a surgical biopsy

During a surgical biopsy

In rare cases, a surgical biopsy can be done in the doctor's office. But it's most often done in a hospital's outpatient department under local anesthesia with intravenous (IV) sedation. (This means you're awake, but your breast is numbed, and you're given medicine to make you drowsy). You may also have this type of biopsy done under general anesthesia (drugs are used to put you in a deep sleep and not feel pain).

The skin of the breast is cut to allow the doctor to remove the tissue. You often need stitches after a surgical biopsy, and the area is covered with a sterile dressing. Pressure may be applied for a short time to help limit bleeding.

After a surgical biopsy

Your doctor will tell you how to care for the biopsy site and what you can and can't do

while it heals. All biopsies can cause bleeding and can lead to swelling. This can make it seem like the breast is larger after the biopsy. Most often, this is nothing to worry about and the bleeding, bruising, and swelling go away over time.

A surgical biopsy may leave a scar. The more tissue removed, the more likely you'll notice a change in the shape of your breast.

What does a surgical biopsy show?

A doctor called a pathologist will look at the biopsy tissue under a microscope to find out if there are cancer cells in it.

Ask your doctor when you can expect to get the results of your biopsy. The next steps will depend on the biopsy results.

If there are no cancer cells in the tissue, your doctor will talk to you about when you need to have your next mammogram and any other follow-up visits.

If cancer is found, the doctor will talk to you about the kinds of tests needed to learn more about the cancer and how to best treat it. You may need to see other doctors, too.

- [References](#)

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Tests to Find Out if Breast Cancer Has Spread (CT, PET, Bone Scan, MRI)

If you have been diagnosed with breast cancer, you might need more tests if your doctor thinks the cancer may have spread based on your symptoms, the results of your physical exam, or the size of your tumor.

[Chest x-ray](#): This test may be done to see if the cancer has spread to your lungs.

Bone scan: This test can help show if the cancer has spread to your bones. It can show all of the bones of your body at the same time and can find small areas of cancer spread not seen on plain x-rays.

CT scan (computed tomography): A CT scan is a special type of x-ray. Pictures are taken from different angles and are combined by a computer to make detailed pictures of the organs. This test is most often used to look at the chest and/or belly (abdomen) to see if breast cancer has spread to other organs. It can also be used to guide a biopsy needle into an area of concern.

MRI (magnetic resonance imaging): This test takes pictures using radio waves and strong magnets instead of x-rays. This test can be helpful in looking at your brain and spinal cord. MRIs can be more uncomfortable than CT scans because they take longer and you need to lie in a narrow tube while the test is done.

Ultrasound: For an ultrasound, a wand that gives off sound waves is moved over the skin to take pictures of the inside of the body. A gel is often put on your skin first.

PET scan (positron emission tomography): This test uses a form of radioactive sugar. The sugar is put into a vein and travels throughout the body. Cancer cells absorb high amounts of this sugar. A special camera then takes pictures that show the areas where the sugar collected throughout the body.

Finding Breast Cancer During Pregnancy

Breast cancer during pregnancy is rare. But if you find a lump or notice any changes in your breasts that concern you, tell your doctor or nurse right away. There are a variety of tests a pregnant woman may have if breast cancer is suspected. There are options for treating breast cancer if you are pregnant.

If you are pregnant and breast cancer is found, it may be called *gestational breast cancer* or *pregnancy-associated breast cancer (PABC)*

How common is breast cancer during pregnancy?

Breast cancer is found in about 1 in every 3,000 pregnant women. Having breast cancer during pregnancy is very rare. But breast cancer is the most common type of cancer

found during pregnancy, while breastfeeding, or within the first year of delivery.

Breast cancers can be harder to find when you're pregnant

Hormone changes during pregnancy cause the breasts to change. They may become larger, lumpy, and/or tender. This can make it harder for you or your doctor to notice a lump caused by cancer until it gets quite large.

Another reason it may be hard to find breast cancers early during pregnancy is that many women put off breast cancer screening with mammograms until after the pregnancy. And because pregnancy and breastfeeding can make breast tissue denser, it can be harder to see an early cancer on a mammogram.

Because of these challenges, when a pregnant woman develops breast cancer, it's often diagnosed at a later stage than it would be if she were not pregnant. It's also more likely to have spread to the lymph nodes.

What to look for

If you find a lump or notice any changes in your breasts that concern you, don't ignore it. Tell your doctor or nurse right away. If your doctor doesn't want to check it out with a mammogram, ask about other kinds of imaging tests such as ultrasound or MRI. You may need to get a second opinion. Any suspicious breast changes should be checked out or even biopsied (see below) before assuming they are a normal response to pregnancy.

Are mammograms safe during pregnancy?

Mammograms can find most breast cancers that start when a woman is pregnant, and it's thought to be fairly safe to have a mammogram during pregnancy. The amount of radiation needed for a mammogram is small. And the radiation is focused on the breasts, so that most of it doesn't reach other parts of the body. For extra protection, a lead shield is placed over the lower part of the belly to help keep radiation from reaching the womb. Still, scientists can't be certain about the effects of even a very small dose of radiation on an unborn baby.

Even during pregnancy, early detection is an important part of breast health. Talk to

your doctor or nurse about the best time for your next mammogram.

Breast biopsy during pregnancy

A new lump or abnormal imaging test result may cause concern, but a *biopsy* is the only way to find out if a breast change is cancer. During a biopsy a small piece of tissue is taken from the area of concern. Breast biopsies are most often done using a needle. They're usually done as an outpatient procedure, even if you're pregnant. The doctor uses medicine to numb just the area of the breast involved in the biopsy. This causes little risk to the fetus.

If a needle biopsy doesn't give an answer, a surgical biopsy is the next step. This means taking out a piece of tissue through a small cut (incision) in the breast. Surgical biopsies are often done under general anesthesia (where drugs are used to put the patient into a deep sleep), which carries a small risk to the fetus.

Tests to stage the breast cancer

If breast cancer is found, you'll need other tests to find out if cancer cells have spread within the breast or to other parts of the body. This process is called [staging](#). Different staging tests may be needed, depending on your case.

Tests like ultrasound and magnetic resonance imaging (MRI) scans do not use radiation and are thought to be safe during pregnancy. But the contrast material (dye) sometimes used in MRI crosses the placenta, the organ that connects the mother to the fetus. This dye has been linked with fetal abnormalities in lab animals. For this reason, an **MRI with contrast dye is not recommended during pregnancy**. An MRI without contrast can be used if needed.

Chest x-rays are sometimes needed to help make treatment decisions. They use a small amount of radiation. They're thought to be safe to have when you're pregnant, as long as your belly is shielded.

Other tests, such as PET scans, bone scans, and computed tomography (CT) scans are more likely to expose the fetus to radiation. These tests are not often needed, especially if the cancer is thought to be just in the breast. If one of these tests is needed, doctors might be able to make adjustments to limit the amount of radiation exposure to the fetus. Treatments are available if a pregnant woman has breast cancer. Learn about treating breast cancer during pregnancy.

Can breast cancer spread to the baby?

In very few cases, the cancer has reached the placenta (the organ that connects the mother to the fetus). This could affect the amount of nutrition the fetus gets from the mother. But there are no reported cases of breast cancer being transferred from the mother to the fetus.

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