TEST

Mammogram

A mammogram is a low-dose breast X-ray used to find or assess breast changes.

WHAT IT MEASURES
X-ray patterns and changes in breast tissue

SAMPLE
None, imaging

FASTING NEEDED?
No

HOW LONG IT TAKES
About 20 minutes

RESULTS IN
Usually within days; timing varies by imaging facility

USED FOR
Screening and evaluating breast symptoms

MAIN LIMITATION
Dense tissue can hide cancers and mimic abnormalities

Overview

A mammogram uses low-dose X-rays to make images of breast tissue. It can find some breast cancers before they cause symptoms and can help assess a lump or another breast change.

A screening mammogram is used when you have no breast symptoms. A diagnostic mammogram examines a symptom or follows up an unusual screening result. Diagnostic testing may include extra X-ray views and a breast ultrasound.

Many facilities use three-dimensional mammography, also called digital breast tomosynthesis. It creates images from several angles, allowing the radiologist-the doctor who reads imaging tests-to examine thin sections of breast tissue.

A mammogram can show an abnormal area, but it cannot usually confirm cancer by itself. Further imaging or a tissue sample called a biopsy may be needed.

Why the test is ordered

Screening mammograms aim to find breast cancer early, when treatment may be simpler.

They may show a mass, tiny calcium deposits called calcifications, or a change from an earlier image.

A diagnostic mammogram may be ordered for:

Mammography may also be used after breast cancer treatment to monitor remaining breast tissue.

- A new lump or thickened area
- Nipple discharge, especially if bloody or clear
- Nipple or skin changes
- A change in breast shape or size
- Persistent pain in one specific area
- An unusual screening mammogram
- Follow-up of a previously identified finding

Who should have the test

Screening recommendations differ among expert organizations. The US Preventive Services Task Force recommends mammography every two years for women aged 40 through 74 who have an average breast cancer risk. Other organizations recommend different starting ages or intervals.

Your personal schedule may be influenced by your age, health, breast density, previous breast findings, family history, and preferences. People with a higher risk-such as some people with an inherited gene change or strong family history-may be offered earlier screening or breast MRI as well as mammography.

People of any gender may need diagnostic breast imaging if they develop a concerning breast change. Screening advice for transgender people depends on which breast tissue is present, hormone exposure, age, and individual risk.

Do not wait for your next routine screening appointment if you notice a new breast change. Arrange a clinical assessment; the appropriate first test may depend on your age and symptoms.

How to prepare

You can eat, drink, and take your usual medicines unless the imaging center gives different

instructions.

Do not apply deodorant, antiperspirant, talcum powder, lotion, or cream to your breasts or underarms on the day of the test. Some products contain particles that can resemble calcifications on an image. Wearing a two-piece outfit makes it easier to undress from the waist up.

Bring details of earlier mammograms, especially if they were performed elsewhere. Comparing old and new images helps the radiologist identify stable findings and genuine changes.

Tell the imaging team if you:

If your breasts become tender before a menstrual period, scheduling at a less tender time may make compression more comfortable. Do not delay an important diagnostic examination solely for this reason.

- Might be pregnant or are breastfeeding
- Have breast implants
- Have had breast surgery, a biopsy, or cancer treatment
- Have mobility limitations or difficulty standing
- Have a lump, discharge, pain, or skin change

What happens during the test

You will remove clothing from your upper body and stand in front of the mammography machine. A technologist places one breast at a time on a flat plate. A second plate presses the breast firmly for several seconds while each image is taken.

Compression spreads the tissue so that details are easier to see and less radiation is needed. It may feel tight or uncomfortable, but it should not be unbearable. Tell the technologist if you are in significant pain.

A routine screening examination commonly takes two images of each breast and lasts about 20 minutes. A diagnostic mammogram may take longer because the team reviews images during the appointment and may need extra views or an ultrasound.

Breast implants require special positioning and additional images. The technologist uses techniques designed to show as much breast tissue as possible without placing unnecessary pressure on the implant.

Understanding your results

Reports often use the Breast Imaging Reporting and Data System, known as BI-RADS . It provides a standard assessment and recommends what should happen next.

Results may indicate:

Being called back does not mean you have cancer. Overlapping normal tissue, movement, calcifications, cysts, or an area seen from only one angle can all lead to additional imaging.

Your report may also describe breast density. Dense breasts contain more fibrous and glandular tissue and less fatty tissue. Dense tissue can make a cancer harder to see and is also associated with increased breast cancer risk.

Mammograms do not have a universal numerical reference range. Interpretation varies with age, sex, pregnancy or breastfeeding, hormone medicines, breast density, medical history, earlier images, and the clinical reason for testing.

- An incomplete study needing more images or earlier records
- No abnormal finding
- A clearly non-cancerous finding
- A finding suitable for short-interval follow-up
- A suspicious area for which biopsy should be considered
- A finding highly suggestive of cancer
- A cancer already confirmed by biopsy

What affects the results

Several factors can change how clearly breast tissue appears without anything being wrong with the imaging equipment.

Dense tissue may hide a mass because both appear white on a mammogram. Pregnancy, breastfeeding, age, menopause, body-weight changes, and hormone medicines can alter breast density or appearance.

Movement or incomplete positioning can blur images or leave some tissue out of view. Implants may block part of the breast, although special views help reduce this problem.

Previous surgery, radiation treatment, biopsy, injury, or infection can cause scarring or other changes that resemble an abnormality. A recent vaccination may temporarily enlarge lymph nodes near the armpit. Tell the imaging team when and in which arm you received it.

Deodorant, powders, and some skin products can create small white marks. Previous mammograms are especially valuable because a stable finding is often less concerning than a new or changing one.

Accuracy and limitations

Mammography finds many breast cancers, but it does not find all of them. The National Cancer Institute reports that screening mammograms miss about 20% of breast cancers present at the time of screening. Missed cancers are more likely when breasts are dense or when a cancer is small, fast-growing, or difficult to separate from normal tissue.

Mammography can also identify something that looks concerning but is not cancer. With repeated screening, false alarms become more likely. They can lead to extra imaging and sometimes a biopsy.

Some cancers found through screening would never have caused illness during the person's lifetime. This is called overdiagnosis . It is usually not possible to know with certainty which cancer would remain harmless.

Ultrasound can better assess some lumps or distinguish a fluid-filled cyst from a solid area. MRI may find cancers hidden on mammography in people at high risk, but it also produces more false alarms. Only a biopsy can establish what a suspicious area contains.

Risks and complications

A mammogram uses a small amount of radiation. For most people undergoing recommended screening or diagnostic imaging, the expected benefit is considered greater than the radiation risk.

Compression may cause brief pain or tenderness. Bruising is uncommon but may occur, particularly if you bruise easily or take medicines that affect bleeding.

Implant damage during mammography is rare. Tell the technologist about implants before positioning begins.

What happens next

If the result is normal, you will usually return to your planned screening schedule. Keep the report and note where the images were taken so they can be compared with future

mammograms.

If the study is incomplete or shows an unusual area, the imaging center may arrange diagnostic views, ultrasound, comparison with earlier images, short-interval follow-up, or biopsy. A callback is common and is not an emergency, but it should not be ignored.

Contact your healthcare service promptly if you develop a new lump, bloody nipple discharge, nipple pulling inward, skin dimpling, or a persistent change-even after a normal mammogram.

Breast redness, warmth, or rapidly worsening swelling accompanied by fever needs urgent assessment, particularly while breastfeeding. Mammogram results themselves rarely require emergency care.

Common questions

Can I drink coffee before a mammogram?

Yes. Fasting is not needed, so coffee and other drinks are allowed. If caffeine seems to make your breasts tender, avoiding it may improve comfort, but it does not make the images more accurate.

Does the time of day matter?

Not for accuracy. Choose a time when you are less likely to feel rushed or tender. If you menstruate, your breasts may be less sensitive during the week after your period starts.

Can I exercise beforehand?

Yes. Exercise does not usually affect the images. Shower afterward and avoid applying deodorant, powder, or lotion to your chest and underarms.

Will it hurt?

Compression commonly feels uncomfortable and lasts only several seconds per image. Tell the technologist if the pain is severe; positioning can sometimes be adjusted while still obtaining useful images.

Can I have a mammogram with breast implants?

Yes. Tell the facility when booking so it can allow time for implant-displacement views and assign an experienced technologist.

Can I have one while pregnant or breastfeeding?

Tell the imaging team before the examination. Mammography can be used during pregnancy when medically needed, but the choice of test is based on the symptom and clinical situation. During breastfeeding, feeding or pumping shortly beforehand may reduce fullness and

improve comfort.

Sources

- US Preventive Services Task Force. Breast Cancer: Screening-Final Recommendation Statement, 2024
- National Cancer Institute. Mammograms
- US Food and Drug Administration. Mammography
- Radiological Society of North America and American College of Radiology. Mammography
- American Cancer Society. Recommendations for the Early Detection of Breast Cancer
- Centers for Disease Control and Prevention. About Mammograms