TEST

Breast cancer screening

Breast cancer screening uses breast imaging to look for cancer before symptoms appear.

WHAT IT MEASURES
Breast changes that may be signs of cancer

SAMPLE
None; breast images are taken

FASTING NEEDED?
No

HOW LONG IT TAKES
Usually 20 to 30 minutes

RESULTS IN
Usually several days; timing varies by imaging center

USED FOR
Screening people without breast symptoms

MAIN LIMITATION
Some cancers are missed, while harmless changes may look suspicious

Overview

Breast cancer screening looks for cancer before symptoms appear. The main test is a mammogram, which uses low-dose X-rays to make breast images.

Digital breast tomosynthesis, or 3D mammography, takes images from several angles. Standard digital, or 2D, mammography takes fewer views.

People at higher risk may also have breast magnetic resonance imaging, or MRI. MRI uses a magnetic field and usually an injected contrast medicine rather than X-rays. Ultrasound may be used after an unclear mammogram or in selected screening situations, but it does not usually replace mammography.

Screening is different from diagnostic testing. If you have a new lump, nipple discharge, skin dimpling, or another breast change, you may need diagnostic imaging rather than routine screening.

Why the test is ordered

Screening aims to find breast cancer when it is smaller and may be easier to treat. Regular mammography reduces the chance of dying from breast cancer, although it does not detect every cancer.

Screening can also find harmless changes, leading to additional images, ultrasound, MRI, or a biopsy.

Recommendations may be based on age or personal risk. Risk factors include family history, inherited gene changes, previous chest radiation, breast density, and certain breast biopsy results.

Who should have the test

Starting ages and screening intervals differ among countries and medical organizations. In the United States, the US Preventive Services Task Force recommends mammography every two years from ages 40 through 74 for people at average risk who were assigned female at birth. Some organizations recommend annual screening.

Evidence about routine screening after age 75 is less certain. Decisions may consider your health, preferences, previous results, and whether you would want further tests or treatment.

You may need an individual plan if you have:

Higher-risk plans may include MRI as well as mammography, often starting earlier. MRI usually supplements rather than replaces mammography.

Screening for transgender and nonbinary people depends on breast tissue, age, hormones, surgery history, and personal risk. After a mastectomy, new chest or underarm changes still need assessment even if routine mammograms are no longer used.

- A strong family history of breast or ovarian cancer
- A harmful inherited gene change, such as BRCA1 or BRCA2
- Previous high-dose chest radiation at a young age
- Certain previous breast biopsy results
- A personal history of breast cancer
- Very dense breasts with other risk factors

How to prepare

No fasting is needed. Eat, drink, and take your usual medicines unless instructed otherwise.

Wear a two-piece outfit. Some centers ask you not to use deodorant, powder, lotion, or cream on your breasts or underarms because particles may appear on an image.

Tell the center if you:

Bring previous mammograms or arrange to have them transferred. Comparison can prevent unnecessary follow-up.

If compression is usually painful, scheduling after the most tender part of your menstrual cycle may help. Do not delay an important assessment because of cycle timing.

- Are pregnant or may be pregnant
- Are breastfeeding
- Have breast implants
- Have had breast surgery, radiation, or a biopsy
- Have mobility needs or difficulty standing
- Are having MRI and have kidney disease or implanted metal devices

What happens during the test

For a mammogram, you undress from the waist up and stand in front of the machine. A technologist places one breast at a time between two plates.

The plates compress the breast for several seconds. Compression spreads the tissue, improves image detail, and keeps the X-ray dose low. It may be uncomfortable, but the pressure is brief. Tell the technologist if you have significant pain or need a pause.

Usually, at least two views are taken of each breast. Extra views may be needed for implants, positioning difficulties, or blurred images.

For MRI, you lie face down with your breasts in openings in the table. Most breast screening MRI examinations use contrast medicine injected into a vein.

Understanding your results

Reports commonly use the Breast Imaging Reporting and Data System, or BI-RADS:

A recall does not mean you have cancer. It means the images were incomplete or showed an area needing closer examination.

Your report may describe breast density. Dense breasts have more glandular and supporting

tissue, which can make cancer harder to see. Density is also one factor associated with breast cancer risk.

- BI-RADS 0: More images or previous mammograms are needed
- BI-RADS 1: No abnormality was seen
- BI-RADS 2: A non-cancerous finding was seen
- BI-RADS 3: A probably non-cancerous finding needs planned follow-up
- BI-RADS 4 or 5: A suspicious finding needs further assessment, often biopsy

What affects the results

Dense tissue can hide cancer because both may appear white on a mammogram. Implants can block some tissue, although special views improve visibility.

Movement, incomplete compression, skin folds, or difficult positioning can obscure an area. Surgery, radiation, injury, or infection may leave changes that resemble suspicious tissue.

Pregnancy and breastfeeding increase breast density. Hormonal medicines may change density or normal MRI enhancement.

Recent vaccination can temporarily enlarge underarm lymph nodes. Tell the center when and in which arm you were vaccinated. Vaccination is not usually a reason to miss screening.

Missing previous images can increase the chance of recall. For MRI, menstrual cycle timing may affect normal enhancement. Kidney function influences whether MRI contrast is suitable but does not alter mammogram results.

Accuracy and limitations

Mammography finds many cancers before they can be felt, but it misses some. Cancer may be hidden by dense tissue, fall outside the imaged area, or develop between screenings.

A suspicious result may not be cancer. Follow-up imaging often provides an answer, but some people need a biopsy.

Screening may find cancers that would never have caused illness during a person's lifetime, called overdiagnosis. It is usually impossible to know which individual cancer would remain harmless, so treatment may still be recommended.

MRI can find some cancers missed by mammography, particularly in high-risk people, but it also produces more false alarms. Ultrasound may assess a specific area or supplement

screening in selected cases, but it does not detect every cancer.

No normal result guarantees that cancer is absent. A new breast change needs assessment even after a recent normal mammogram.

Risks and complications

Mammography uses a low radiation dose. The possible harm from each examination is small, while recommended screening can provide meaningful benefit.

Compression may cause brief discomfort or tenderness. Significant injury is uncommon.

Follow-up may cause worry and involve more radiation, contrast injections, or biopsy. MRI contrast can rarely cause an allergic reaction. Severe kidney disease may affect whether contrast is used.

What happens next

After a normal result, return at the interval recommended by your screening program or healthcare professional. Keep the report and note when your next screening is due.

If recalled, you may need diagnostic mammography, ultrasound, MRI, or biopsy. Arrange follow-up promptly, although a recall is not usually an emergency.

Do not wait for routine screening if you develop a new lump, bloody nipple discharge, nipple pulling inward, skin dimpling, or a persistent one-sided change. Arrange a clinical assessment.

Seek urgent same-day care for a rapidly worsening red, hot, swollen breast, especially with fever or feeling unwell. Call emergency services for severe breathing difficulty or another serious reaction during or after injected contrast.

Common questions

Can I drink coffee before a mammogram?

Yes. Coffee does not affect the images. Avoiding caffeine is optional if it makes your breasts tender.

Does the time of day matter?

Usually not. If your breasts become tender during your menstrual cycle, another time of the month may be more comfortable.

Can I exercise before the appointment?

Yes. Exercise does not affect a mammogram. Follow the center's instructions about deodorant, lotion, or powder.

Can I have a mammogram with breast implants?

Yes. Tell the center when booking because extra views and an experienced technologist may be needed. Mammography does not fully assess suspected implant problems.

Can I have screening while breastfeeding?

Sometimes. Breastfeeding makes tissue denser. Feeding or pumping immediately beforehand may reduce fullness and improve comfort.

What if my mammogram is normal but I can feel a lump?

Arrange a clinical assessment. A normal screening result does not explain a new lump, and you may need diagnostic mammography, ultrasound, or another test.

Sources

- US Preventive Services Task Force. Breast Cancer: Screening-Final Recommendation Statement, 2024
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- American College of Radiology. ACR Appropriateness Criteria: Female Breast Cancer Screening
- Radiological Society of North America and American College of Radiology. Mammography