

Patient information from BMJ

Last published: Mar 18, 2019

Breast cancer: routine screening (mammography)

Breast cancer screening is usually done with a test called a mammogram. A mammogram is a type of x-ray. This leaflet looks at the recommendations on breast cancer screening from various guidelines.

What is breast cancer screening?

For women, getting regular mammograms at certain ages helps reduce the chance of dying from breast cancer. But it has some drawbacks.

Various healthcare organisations produce **guidelines** for physicians and patients about breast cancer screening. This leaflet looks at what these guidelines recommend about when to start, when to stop, and how often to have a mammogram.

This leaflet is for women who have an average risk of getting breast cancer. If you have a high risk (for example, if you have a family history of breast cancer or have tested positive for the BRCA1 or BRCA2 gene) then you will need to get special advice from your doctor.

Women at a higher risk may need to make a different plan or have other tests in addition to mammography, such as an MRI (magnetic resonance imaging) scan.

Who gets breast cancer?

Breast cancer is more likely to affect women as they get older. Things that make you more likely to get a particular illness are called 'risk factors'. But, as with any other illness, having risk factors for breast cancer doesn't mean you will definitely get breast cancer. And many people without any risk factors do get breast cancer. So these risk factors are only a guide.

Risk factors for breast cancer include:

- being female
- being older
- not having ever been pregnant

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- if you began having menstrual periods at an early age, or if you had the menopause later in life than is usual
- if the time between your first period and the first time you gave birth was a lot longer than is usual
- taking oestrogen plus progesterone (hormone replacement or HRT for short) after the menopause
- a family history of breast or ovarian cancer
- having certain genes
- having dense breasts
- being heavier
- smoking
- drinking alcohol
- having ever had radiotherapy to the chest.

How does routine mammography help?

For women at average risk of getting breast cancer it is estimated that having mammograms can reduce your chance of dying from breast cancer to about three quarters of the usual risk in middle age.

It's not known whether mammograms reduce your chance of needing treatment for later-stage breast cancers. But the hope is to catch breast cancer early, so that you can avoid this type of treatment.

Breast examination and self-examination

There's not enough evidence to say whether having a breast examination along with your mammogram helps reduce the chance of dying from breast cancer. So different guidelines recommend different things.

Teaching women to examine their own breasts regularly (breast self-examination or BSE) regularly is not generally recommended in guidelines for women with an average chance of breast cancer.

This is because it might show up problems when there is no cancer. Also, research has not shown for certain that doing regular breast self-examinations helps prevent dying from breast cancer.

But if you notice a change in your breasts you should see your doctor straight away. This is called 'breast self-awareness'. For example, you might notice pain, a lump, discharge from your nipples, or redness. It's important to follow up on this immediately.

What are the possible harms of mammography?

Mammograms help to find early breast cancers, but they do have some drawbacks:

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False-positive mammogram results

False-positives are when the mammogram finds an abnormality but there is no cancer.

This may mean that you get called back to have more x-rays, other tests such as ultrasound or MRI, or a biopsy (when a sample of cells or tissue is taken to look at under a microscope).

One estimate is that about half of women screened for 10 years will have a false-positive. False-positives are more likely to happen if you're younger (say, 40 instead of 50).

Anxiety or distress

Getting called back for further testing might cause you anxiety, even if your follow-up tests are normal.

Discomfort

You might find a mammogram uncomfortable. In order to do the mammogram your breasts will need to be pressed between two plates. But this doesn't stop most women from having or going back for a mammogram.

You might also have some pain if you need a biopsy.

Over-diagnosis and over-treatment

Some breast cancers found by mammograms would not have caused any problems in the woman's lifetime. It's hard to tell how often these are found by mammograms and then treated.

For example, mammograms sometimes find something called ductal carcinoma in situ (DCIS). This means that there are cancer cells in the lining of the breast ducts. There is a chance that these cells could develop into breast cancer. So, once it is found, DCIS is usually treated like breast cancer. This usually includes surgery.

One estimate from the US Preventive Services Task Force was that about 1 in 8 women who have mammography every 2 years from ages 50 to 75 will be over-diagnosed. For every woman who avoids dying from breast cancer through having mammograms, 2 or 3 women might be treated when they would not have needed it.

But we don't know for sure what the exact numbers for over-treatment are.

Screening can miss some cancers (false-negatives)

Breast cancer screening isn't foolproof. Some women get an all-clear result that is not accurate, because the mammogram has failed to spot a cancer. This happens for about 1 in 5 breast cancers.

Radiation exposure

It is estimated that mammograms might rarely cause some breast cancers. But screening finds many more cases of breast cancer than it might cause.

What do the guidelines recommend?

Different guidelines recommend different ages to start or stop having a mammogram. You should check what's recommended and available where you live. Here are some examples.

The **UK National Health Service (NHS)** recommends that you:

- start having screening at age 50
- have screening and routine breast examinations every 3 years
- stop having screening at age 70.

The **American College of Obstetricians & Gynecologists** recommends that you:

- discuss screening with your doctor at age 40 and start screening by age 50
- have screening every 1 or 2 years
- discuss with your doctor whether to continue screening after age 75
- have routine breast examinations every 1 to 3 years from age 25 to 39, then every year after age 40.

The **American Cancer Society** recommends that you:

- discuss screening with your doctor at age 40 and start screening by age 45
- have screening every year from age 40 to 54, then every 2 years, with an option for annual screening if you want it
- stop screening when you expect that you will live less than 10 more years
- do not have routine breast examinations.

The **US Preventive Services Task Force** advises that:

- you discuss screening with your doctor at age 40 and start screening by age 50
- you have screening every 2 years
- there isn't enough evidence to say whether you should carry on having screening after 75
- there isn't enough evidence about whether routine breast examinations are useful.

The **US National Comprehensive Cancer network** recommends that you:

- start having screening at age 40 and have screening every year
- stop screening when you expect that you will live less than 10 more years
- discuss routine breast examinations with your doctor every 1 to 3 years from age 25 to 39, then every year after age 40.

The **Swiss Medical Board** recommends that all decisions about screening and routine breast examinations should be made with each patient based on that person's individual circumstances and wishes.

What should I do about routine mammograms?

Screening with mammograms for women in the recommended age groups helps save lives.

But it may lead to extra tests and to treatment for some cancers that would not have caused any problems.

Screening with mammograms more often or at an earlier age (say, 40 instead of 50) finds more cancers. But this also means more recalls and biopsies for some women when there was no cancer.

One study predicted that, for every 1000 women screened between the ages of 50 and 74, having a mammogram every year would save 2 lives, but that there would be 82 extra biopsies and 6 women over-diagnosed with breast tumours.

Your own values and preferences are therefore important in deciding about mammography.

For example, if you worry about having breast cancer more than you worry about having extra tests, you might choose to start having mammography earlier. But if you worry about unnecessary tests more than about breast cancer, you might choose to have mammography later or less often.

You can talk with your doctor about your medical history and your concerns before you make a decision about mammography.

Bear in mind that, in some places, mammograms may only be offered at certain ages or only as often as recommended by the local guidelines.

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