Screening Mammography

Consumer Information

Adjunct A/Prof Warwick Lee
BSc (Med), MBBS, DDU, FRANZCR
Ms Ann Revell, Prof Grant Russell, Dr Jenny Bramley

What is screening mammography?

Screening mammography is a low-dose X-ray examination of a woman's breasts used to detect breast cancer when that cancer is too small to be felt as a lump. Screening mammography is carried out on women who do not have any symptoms of breast disease. The aim of screening mammography is to reduce the death rate from breast cancer by detecting unsuspected breast cancers at an early stage.

Why would my doctor recommend a screening mammogram?

Your doctor would recommend a screening mammogram to detect breast cancer before it can be felt as a lump.

The aim is to detect breast cancer at its earliest stage. Early detection increases the likelihood of a cancer being successfully treated and often allows for greater treatment options. Screening mammography has been shown to decrease the death rate from breast cancer.

A screening mammogram with BreastScreen Australia is available free of charge to women aged over 40 years who have no symptoms of breast disease. The target age of the program is women aged 50–69 years, the age group in which screening mammography has been shown to have the greatest potential to reduce the death rate from breast cancer. In New Zealand, BreastScreen Aotearoa provides free mammograms for women aged between 45–69 years, again with no symptoms of breast disease. A screening mammogram with BreastScreen Australia or BreastScreen Aotearoa does not require a doctor's referral. Your doctor can refer you to your local private mammography facility for screening mammography.

If you do have new or changing breast symptoms, such as a new or changing lump, pain in the breast, a change in the nipple or discharge from the nipple, breast asymmetry (if the breast is lop-sided or uneven) or puckering (wrinkling or folding) of the skin of the breast, you should see your doctor as soon as possible and you will be referred for a diagnostic mammogram.

How do I prepare for screening mammography?

No preparation is required for screening mammography.

When you make your appointment, please let the radiology facility know if you have breast implants, so they can schedule a longer appointment. This is because it takes more time to obtain clear X-ray images or pictures when implants are present.

Do not wear any deodorant, perfume, lotion or talcum powder on the day of your appointment, because these substances might show up as shadows on your mammogram. Wear a two-piece outfit, so you only need to undress from the waist up.

What happens during screening mammography?

A mammogram image is obtained using a special X-ray machine, while the breast is compressed (pressed as flat as possible) between two plates. The compression, which lasts only a few seconds, is uncomfortable and you might find it painful. Compression gives a clearer image, which makes a cancer easier to see, and also reduces the amount of radiation required for the mammogram.

Are there any after effects of a screening mammography?

There are usually no after effects of screening mammography. You might have redness or bruising from the compression, but this only happens occasionally. Even if this occurs, the compression does not harm the breast. The majority of women will describe mammograms as being painful or uncomfortable. Some women will rate the pain as being severe, but few women will say that the pain would stop them from having a screening mammogram in the future.

How long does screening mammography take?

At BreastScreen facilities, a screening mammogram takes approximately 10–15 minutes to carry out, including the time for the radiographer to check that the X-rays are of satisfactory quality. Sometimes an X-ray needs to be repeated if the image is not clear enough. You do not have to wait for your mammogram to be reviewed by a radiologist (specialist doctor).

If your doctor referred you for a screening mammogram at a private radiology facility, your images will be reviewed by the radiologist at the time of the mammogram, and extra images might

be taken if needed. You might be at the private mammography facility for approximately 30 minutes.

What are the risks of screening mammography?

Screening mammography does not detect all breast cancers: Breast cancer screening in Australia has been shown to detect 70–80%[3] of cancers in women who participate in the BreastScreen screening program. You need to be aware that if you have a new or changing breast symptom; for example, a new or changing lump, a change in the nipple or discharge from the nipple, pain in the breast, skin puckering (wrinkled or folded skin) or breast asymmetry (if the breast is lop-sided or uneven), you should seek prompt medical attention.

Even if you have had a recent normal mammogram, you should still seek prompt medical attention with any of these symptoms, because not all cancers are detected by mammography.

Radiation exposure: The risk that the radiation from a mammogram might cause breast cancer is extremely low, especially with the use of low-dose mammography. Such risk is far outweighed by the benefit of early detection of breast cancer, significantly reducing the death rate from the disease.

The Health Protection Agency of the United Kingdom estimates the risk of an additional cancer in a lifetime from a single mammographic examination to be in the low-risk range: 1 in 100,000 to 1 in 10,000.[4]

This is the same as the risk of developing a cancer from 1 year's exposure to normal background radiation (see Radiation Risk of Medical Imaging for Adults and Children).

Additional investigations: If your mammogram shows anything unusual, you might require further tests, but these do not necessarily mean that you have breast cancer. Approximately 5% of women who have a screening mammogram need further tests to clarify unusual findings on the mammogram images. These additional tests are usually further mammograms and/or breast ultrasound. Some women might also need a needle biopsy to further clarify the finding. This is where a fine needle is inserted into the breast, and a small piece of tissue is removed and tested for any abnormality (see Breast Fine Needle Aspiration). In unusual cases, an operation (surgical biopsy) is required to confirm whether or not cancer is present.

You might experience discomfort and anxiety because of these extra tests, or if there are any medical complications. Please remember there is a significant lifesaving benefit in the early detection of breast cancer. Having further tests does not necessarily mean you have breast cancer.

Overdiagnosis: Sometimes cancer is diagnosed that would never result in symptoms during a person's lifetime or cause death. It is not possible to tell which cancers detected by screening mammography are life threatening and which are harmless, so some women might receive treatment for a cancer that did not need treatment.[6] The level of overdiagnosis is difficult to estimate because of the absence of reliable data,[7] but it has been estimated by an independent breast screening review from the United Kingdom, published in 2012,[7] that 19% of cancers diagnosed in women invited to screening are overdiagnosed cancers. The same study estimated that for 10,000 women invited to be screened from the age of 50 years to 70 years, 681 cancers will be diagnosed, of which 129 (19%) will be overdiagnosed and 43 deaths from breast cancer will be prevented.[7] The estimates of the balance between benefit and harm vary, and another estimate is that for every case of overdiagnosis, 2 to 2½ lives are saved by mammographic screening.[8]

What are the benefits of screening mammography?

Screening mammography has been shown to reduce the death rate from breast cancer,[1,2.5,7] although the precise level of benefit is difficult to estimate.[7] A case–control study of BreastScreen South Australia showed that participation in screening was associated with between 30–41% reduction in breast cancer mortality.[1] A case–control study of participation in BreastScreen Western Australia (WA) showed a 52% reduction in the mortality from breast cancer, which was associated with participation in the WA BreastScreen program.[2] An independent breast cancer screening review from the United Kingdom, published in 2012, has estimated that there is a 20% relative risk reduction in breast cancer mortality attributable to mammographic screening in the UK, with an absolute mortality benefit of one breast cancer death prevented for 250 women invited to mammographic screening.[7]

Screening mammography detects breast cancer at a smaller size and an earlier stage than is possible without screening.

Over 60% of invasive cancers (cancers that have spread into the surrounding tissue) found by BreastScreen Australia, are small cancers (less than 15 mm). [3]

Screening mammography also detects cancers in their very early stages, before they have spread into the surrounding breast tissue, called pre-invasive cancer or ductal carcinoma *in situ* (DCIS). Before the introduction of screening mammography, DCIS formed approximately 5% of all breast cancers. It now forms approximately 20% of all breast cancers. [9] This increased rate of detection of pre-invasive breast cancer is a direct result of mammographic screening.

Who does screening mammography?

In Australia, screening mammography is most often carried out by BreastScreen Australia. This is part of a National Screening program that aims to screen all women in Australia aged between 50 and 69 years. The program is free to ALL women aged over 40 years.

Screening mammography is carried out by specially trained technicians called radiographers, mammographers or medical imaging technologists.

Reporting of the mammograms is usually done by a BreastScreen radiologist, a specialist doctor with particular training in breast imaging. As screening mammography tries to detect very small cancers that are difficult to see, the images are examined by at least two doctors with expertise in reading mammograms to check them thoroughly. Screening mammography might also be carried out by radiologists outside of the BreastScreen Australia program.

In New Zealand, screening mammography is most often carried out by BreastScreen Aotearoa, and is targeted at women between the ages of 45 and 69 years. BreastScreen Aotearoa is conducted along similar lines to BreastScreen Australia.

Where is screening mammography done?

Screening mammography is provided free of charge by BreastScreen Australia centres throughout Australia. The nearest centre can be found by ringing 13 20 50.

BreastScreen Aotearoa provides screening mammography free of charge throughout New Zealand. The nearest centre can be located and an appointment made by ringing 0800 270 200.

Screening mammography can also be provided at private radiology practices.

When can I expect the results of my screening mammography?

If you have your mammogram at a BreastScreen Australia centre, you should receive your results by post within 2 weeks of having your screening mammogram.

If you are one of the approximately 5% of women who need additional tests, such as ultrasound or needle biopsy, this might require an additional visit to your BreastScreen Australia centre. When this happens, the results can take longer, but you should receive your results within 28 days of having your screening mammogram.

Further information about screening mammography?

Difference between screening mammograms and diagnostic mammograms

Screening mammography is designed for women who do not have any signs of a breast lump or any other symptoms of breast disease. If you have a breast lump or other new or changing breast symptom **you should see your local doctor immediately** to discuss and plan investigation of the lump or symptom. You might require special mammographic tests, such as diagnostic mammography, a breast ultrasound and/or a needle biopsy, to diagnose the possible presence of breast cancer. If you have any breast signs or symptoms, you need to have more detailed tests than the standard screening mammography.

Useful websites about screening mammography

BreastScreen Australia
http://www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/breastscreen-about [accessed May 2013].

Cancer Australia
http://canceraustralia.gov.au/clinical-best-practice/breast-cancer

[accessed May 2013]

NSW Breast Cancer Institute:
http://www.bci.org.au/ [accessed May 2013]

BreastScreen Aotearoa – National Screening Unit, New Zealand:
http://www.nsu.govt.nz/ [accessed May 2013]

References:

1. Roder D, Houssami N, Farshid G *et al.* Population screening and intensity of screening are associated with reduced breast cancer mortality: evidence of efficacy of mammography screening in Australia. *Breast Cancer Res Treat* 2008; **108**: 409–16.
2. Nickson C, Mason KE, English DR and Kavanagh AM. Mammographic screening and breast cancer mortality: A case-control study and meta-analysis. *Cancer Epidemiology Biomarkers Prevention* 2012; **21**: 1479–88.
3. BreastScreen Australia Monitoring Report 2008-2009. Available on-line at http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=10737420596 [accessed May 2013]
4. The Health Protection Agency of the United Kingdom available on-line at http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947388410 [accessed May 2013]
5. BreastScreen Evaluation. Evaluation final report, June 2009. Available on-line at http://www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/br-evaluation-report-cnt [accessed May 2013]
6. Cancer Australia, Position statement over diagnosis from mammography screening. Available on-line at http://canceraustralia.gov.au/about-us/position-statements/over-diagnosis-mammography-screening [accessed May 2013]
7. Marmot MG, Altman DG, Cameron DA, Dewar JA, Thompson SG, Wilcox M, The benefits and harms of breast cancer screening: an independent review, Lancet 2012; 380: 1778-86
8. Duffy S, Tabar L, Olsen A *et al.* Absolute numbers of lives saved and overdiagnosis in breast cancer screening, from a randomized trial and from the Breast Cancer Screening Programme in England. *J Med Screen* 2010; **17**: 25–30.
9. Morrow M and O'Sullivan M. The Dilemma of DCIS. *The Breast* 2007;**16**: S59–S62

Please note:

This information is of a general nature only and is not intended as a substitute for medical advice. It is designed to support, not replace, the relationship that exists between a patient and his/her doctor. It is recommended that any specific questions regarding your procedure be discussed with your family doctor or medical specialist

The InsideRadiology project is managed by the RANZCR® and funded by the Australian Commonwealth Department of Health and Ageing.

Publication Date: May 13th 2013

Originally Published in 2009