

Mammography 3D Breast Tomosynthesis

3D Breast Tomosynthesis

2D digital mammography is currently the most common breast x-ray method used in Australia, however research shows it has some limitations. It can miss some cancers and produce false positives as structures can overlap and normal tissue may appear as abnormal, leading to further testing and unnecessary anxiety.^{4,5}

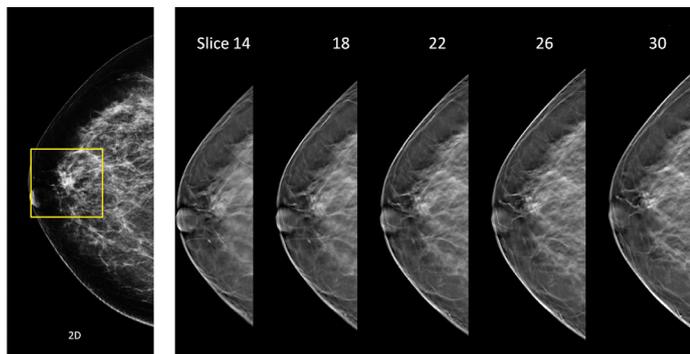
3D mammography (breast tomosynthesis) is a newer technology that helps to eliminate most detection challenges with 2D mammography.

Studies with 3D mammography show cancers and abnormalities are found earlier; significantly improving the detection rate compared with 2D mammography alone.^{1,6,7}

3D Mammogram: The Facts

Detects 41% more invasive breast cancers.^{1,6}

- **Reduces false-positives**, decreasing recall rates by 15-40%.^{1,6,7}
- May reduce the number of **unnecessary biopsies**.⁸
- Increases cancer detection in women with **dense breasts**.^{6,7,9,10}



In the digital image on the left, there is a potential lesion in the subareolar region of the breast. In the 3D images on the right, it is easy to see there is no lesion present. Radiologists can pick out individual structures on separate slices, to form the potential lesion seen on the 2D image.

How 3D Mammography Works

- Breast tomosynthesis is essentially a three dimensional (3D) mammogram which has been shown in clinical studies using Hologic systems to be superior to conventional 2D mammography alone.^{1,6-10}
- 3D mammography allows the breast tissue to be examined in thin 'layers', typically 1mm thick.
- During a 3D mammogram, the x-ray arm sweeps in a slight arc over the breast, taking a series of images at various angles in just seconds.
- The advanced technology converts the digital breast images into a stack of very thin layers or 'slices' to build a 3D image.
- Very low X-ray energy is used during the examination ensuring radiation exposure is within the recommended guidelines.¹³

What should my patient expect during the 3D mammography exam?

A 3D mammography exam is very similar to having a traditional 2D mammogram. Like a 2D mammogram, the technologist will position you, compress your breast, and take images from different angles.

During the 3D mammogram, the X-ray arm sweeps in an arc over the breast, taking multiple breast images in just seconds.

There's no additional compression required and it only takes a few seconds longer.

Medicare Rebate Guide

The Medicare guidelines and indications for 3D Tomosynthesis are identical to those of traditional 2D mammography. Your patient will qualify for a Medicare rebate if there is reason to suspect the presence of malignancy because of:

- (i) past occurrence of breast malignancy
- (ii) history of breast malignancy in members of the patient's family; or
- (iii) symptoms or indications of malignancy found on an examination of the patient by a medical practitioner suspicious for malignancy. Clinical indications may include:
 - Previous history of breast cancer
 - Family history of breast cancer
 - Symptoms or indications of malignancy found on an examination of the patient - eg
 - Breast thickening or dimpling
 - Nipple change or discharge
 - Focal tenderness (including a diagram on the referral)
 - Focal lump
 - Possible lesion
 - Any other suggestion/finding that could represent or question malignancy as long as the doctor highlights that this is making them concerned about underlying malignancy.

NOTE: BreastScreen NSW is provided for screening of asymptomatic patients. If your patient has symptoms, we recommend they have a diagnostic mammogram +/- Ultrasound if indicated and this qualifies for the medicare rebate.



*Compared with traditional 2D mammography alone.

References: **1.** Friedewald S, Rafferty E, Rose S, et al. (2014). Breast Cancer Screening Using Tomosynthesis in Combination with Digital Mammography. *Journal of the American Medical Association UAMA*, 311 (24), 2499-2507. **2.** The Royal Australian College of Radiologists® [insideradiology.com.au/pages/view.php?Lid=4S](http://insideradiology-insideradiology.com.au/pages/view.php?Lid=4S). Accessed May 2014. **3.** Cancer Australia cancer.gov.au/affected-cancer/cancer-types/breast-cancer/diagnosis/tests-breast-cancer/breastdiagnostic-services. Accessed May 2014. **4.** BreastScreen Victoria breastscreen.org.au/Breast-Screening/The-Facts. Accessed May 2014. **5.** Brodersen J, Siersma V. "Long-Term Psychosocial Consequences of False-Positive Screening Mammography." *The Annals of Family Medicine* 2013 Mar;11(2):106-15. **6.** Skaane P, Bandos A, Gullien R, et al. "Comparison of Digital Mammography Alone and Digital Mammography Plus Tomosynthesis in a Population-based Screening Program." *Radiology*. 2013 Apr; 267(1):47-56. Epub 2013 Jan 7. **7.** Rose S, Tidwell A, BuJnock L, et al. "Implementation of Breast Tomosynthesis in a Routine Screening Practice: An Observational Study." *American Journal of Roentgenology*. 2013 Jun; 200(6): 1401-1408. Epub 2013 May 22. **8.** Zuley M, Bandos A, Ganott M, et al. "Digital Breast Tomosynthesis versus Supplemental Diagnostic Mammographic Views for Evaluation of Noncalcified Breast Lesions." *Radiology*. 2013 Jan; 266(1):89-95. Epub 2012 Nov 9. **9.** Philpotts L, Raghu M, Durand M, et al. "Initial Experience With Digital Breast Tomosynthesis in Screening Mammography." (paper presented at the annual meeting of the American Roentgen Ray Society, Washington, D.C. May 3 2012). **10.** Ciatto S, Houssami N, Bernardi D, et al. "Integration of 3D Digital Mammography with Tomosynthesis for Population Breast-Cancer Screening (STORM): A Prospective Comparison Study" *The Lancet Oncology*. Epub 2013 Apr 25. **11.** Data on file with Hologic, Inc. **12.** Breast Cancer Risk Factors: a review of the evidence July 2009, National Breast and Ovarian Cancer Centre. **13.** Australian Radiation Protection and Nuclear Safety Agency arpana.gov.au/services/ndrl/ndrlFactsheet.cfm. Accessed May 2014.