****

**Position Statement on the use of Tomosynthesis within
BreastScreen Australia Services**

**Breast tomosynthesis (3D mammography)** is a new digital mammography technology that is in the early stages of testing and clinical evaluation for its possible benefits in screening and assessment. Currently, BreastScreen Australia uses two-view digital mammography as the primary test to screen women for breast cancer.

**Tomosynthesis uses** a modified digital mammography unit to create 3D images[[1]](#endnote-2). A number of low-dose images (usually 11-25) of a compressed breast are taken from different angles and then digitally reconstructed to create a 3D image[[2]](#endnote-3). The radiation dose with tomosynthesis may be higher compared to two-view mammography, however the evidence remains unclear. [[3]](#endnote-4), [[4]](#endnote-5)

**Preliminary study results suggest** that tomosynthesis has the potential to decrease the number of women who are recalled for further tests (reduce recall rates) and possibly increase the detection of breast cancer (improve sensitivity). A number of small studies have shown favourable results when comparing tomosynthesis to digital mammography. [[5]](#endnote-6),[[6]](#endnote-7),[[7]](#endnote-8),[[8]](#endnote-9),[[9]](#endnote-10),[[10]](#endnote-11) [[11]](#endnote-12)

**BreastScreen Australia** is a population based screening program for well women, and robust evidence is required before tomosynthesis could be used as a routine screening tool. This is because the relative harms and benefits to well women of radiation dose, and the cost, efficiency and effectiveness of using this technology are as yet unclear. The results of further clinical trials are needed before the technology could be recommended for population screening.

**At this time,** two-view mammography continues to be the most effective population primary screening test for breast cancer.[[12]](#endnote-13) New technologies for breast cancer screening must meet the Australian criteria for population screening as outlined in the Population Based Screening Framework. [[13]](#endnote-14),[[14]](#endnote-15)

**There is evidence** that tomosynthesis can be of benefit in an assessment setting.[[15]](#endnote-16) [[16]](#endnote-17) [[17]](#endnote-18) There is less supporting evidence for the benefit of tomosynthesis as the screening test for population screening of well women. It is therefore important to wait for results from international and Australian clinical trials, before tomosynthesis is considered for routine screening use within BreastScreen Australia. 4,[[18]](#endnote-19),[[19]](#endnote-20)

**The Standing Committee on Screening** recommends that, based on current evidence, the use of tomosynthesis as a screening technology in BreastScreen Australia be confined to clinical trial settings. **Two-view mammography remains the most effective screening test at this time**. Tomosynthesis can be of benefit in an assessment setting.

1. Department of Health and Ageing. Horizon Scanning Technology. Prioritising Summary: Breast tomosynthesis – a breast cancer screening tool. Update 2009, Commonwealth of Australia, 2009. [↑](#endnote-ref-2)
2. Tingberg A & Zachrisson S. Digital mammography and tomosynthesis for breast cancer diagnosis. Expert Opinion. Med Diagn 2011: 5 (6)) [↑](#endnote-ref-3)
3. Dance DR, Strudley CJ, Young KC, et al. Comparison of breast doses for digital tomosynthesis estimated from patient exposures and using PMMA breast phantoms. In: Maidment AD, Bakic PR, Gavenonis S (eds) *Proceedings of the 11th international conference on breast imaging (IWDM 2012).* Berlin: Springer; 2012, 316‑321. [↑](#endnote-ref-4)
4. Skaane P, Bandos A & Gullien R. Comparison of Digital Mammography Alone and Digital Mammography Plus Tomosynthesis in a Population-based Screening Program. Radiology: Published online before print & January 2013. [↑](#endnote-ref-5)
5. Gur D, Adams GS & Chough DM et al. Digital breast tomosynthesis: observer performance study. AM J Roentgenol 2011: 196: 737-741. [↑](#endnote-ref-6)
6. Teertstra HJ, Loo CE, van den Bosch MA et al. Breast tomosynthesis in clinical practice: initial results. Eur Radiol 2010: 20: 16-24. [↑](#endnote-ref-7)
7. Gennaro G, Toledano A, di Maggio C et al. Digital breast tomosynthesis versus digital mammography: a clinical performance study. Eur Radiol 2009. [↑](#endnote-ref-8)
8. Svane G, Azavedo E, Lindman K et al. Clinical Experience of photon counting breast tomosynthesis: a comparison with traditional mammography. Acta radiol 2011: 52 92): 134-42. [↑](#endnote-ref-9)
9. Spangler M, Zuley M & Sumkin J. Detection and Classifications of Calcifications on Digital Breast Tomosythesis and 2D Digital Mammography: A Comparison. Am J Roentgenol 2011: 196: 320-324. [↑](#endnote-ref-10)
10. Wallis MG, Moa E & Zanca F. Two-view and single-view tomosynthesis versus full-field digital mammography: high-resolution X-ray imaging observer study. Radiology 2012: 262 (3): 788-96. [↑](#endnote-ref-11)
11. Ciatto S, [Houssami](http://www.thelancet.com/search/results?fieldName=Authors&searchTerm=Nehmat+Houssami) N, [Bernardi](http://www.thelancet.com/search/results?fieldName=Authors&searchTerm=Daniela+Bernardi) D,[Caumo](http://www.thelancet.com/search/results?fieldName=Authors&searchTerm=Francesca+Caumo) F, [Pellegrini](http://www.thelancet.com/search/results?fieldName=Authors&searchTerm=Marco+Pellegrini) M, [Brunelli](http://www.thelancet.com/search/results?fieldName=Authors&searchTerm=Silvia+Brunelli) S, [Tuttobene](http://www.thelancet.com/search/results?fieldName=Authors&searchTerm=Paola+Tuttobene) P, [Bricolo](http://www.thelancet.com/search/results?fieldName=Authors&searchTerm=Paola+Bricolo) P, [Fantò](http://www.thelancet.com/search/results?fieldName=Authors&searchTerm=Carmine+Fant%C3%B2) C, [Valentini](http://www.thelancet.com/search/results?fieldName=Authors&searchTerm=Marvi+Valentini) M, [Montemezzi](http://www.thelancet.com/search/results?fieldName=Authors&searchTerm=Stefania+Montemezzi) S, [Macaskill](http://www.thelancet.com/search/results?fieldName=Authors&searchTerm=Petra+Macaskill) P. Integration of 3D digital mammography with tomosynthesis for population breast-cancer screening (STORM): A prospective comparison study. The Lancet Oncology 2013: 14 (7): 583-589. [↑](#endnote-ref-12)
12. Department of Health and Ageing, Evaluation of the BreastScreen Australia Program – Evaluation Final Report – June 2009. Commonwealth of Australia 2009. [↑](#endnote-ref-13)
13. Australian Population Health Development Principal Committee – Screening Subcommittee. Population Based Screening Framework. AHMAC 2008. [↑](#endnote-ref-14)
14. Department of Health and Ageing, Evaluation of the BreastScreen Australia Program – Evaluation Final Report – June 2009. Commonwealth of Australia 2009.

 Clincialtrials.gov – A service of the US National Institutes of Health. Study Record Detail: *Malmö Breast Tomosynthesis Screening Trial* http://clinicaltrials.gov/ct2/show/NCT01091545 - accessed 17 June 2013. [↑](#endnote-ref-15)
15. Public Health England, National Health Service Cancer Screening Programmes – Current position on use of tomosynthesis (DBT) in the NHS Breast Screening Programme. 30 December 2013. [↑](#endnote-ref-16)
16. Michel M, Iqbal A, Wasan RKet al. A comparison of the accuracy of film screen mammography, full-field digital mammography and digital breast tomosynthesis. Clinical Radiology, 2012, 67: 976-981. [↑](#endnote-ref-17)
17. Zulley ML, Bandos AL, ,Gannott MA, Sumkin JH, Kelly AE, Catullo VJ, Rathfon GY, Lu AH, Gur D. Digital Breast Tomosynthesis versus Supplemental Diagnostic Mammographic Views for evaluation of Noncalcified Breast Lesions. Radiology.2013 January ;266(1):89-95. [↑](#endnote-ref-18)
18. Gilbert F. J. TOMMY trial: A comparison of tomosynthesis with digital mammography in the UK NHS Breast Screening Programme. http://www.hta.ac.uk/2296 [↑](#endnote-ref-19)
19. Lockie D, Aitken Z & Nickson C. Evaluation of the role of digital breast tomosynthesis in BreastScreen assessment – the Maroondah trial (abstract only). [↑](#endnote-ref-20)