

3-D mammography: More breast cancers detected

21 October 2019



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A pilot trial of 3-D mammography—tomosynthesis—has shown that breast cancer detection, recall for assessment, and screen reading time were each higher than for standard mammography, but it is too soon to tell if more detection leads to better health outcomes for women, according to the authors of research published today in the *Medical Journal of Australia*.

Researchers led by Professor Nehmat Houssami, Professor of Public Health and National Breast Cancer Foundation Research Leadership Fellow at the University of Sydney, compared tomosynthesis (with synthesized 2-D-images) and standard [mammography screening of women](#) attending Maroondah BreastScreen, a BreastScreen Victoria service in the eastern suburbs of Melbourne. The participants were women at least 40 years of age who presented for routine breast screening between 18 August 2017 and 8 November 2018.

During the trial 5018 tomosynthesis and 5166 standard mammography screens were undertaken in 10,146 women; 508 women (5 percent of

screens) opted not to undergo tomosynthesis screening. With tomosynthesis, 49 cancers (40 invasive, 9 in situ) were detected; with standard mammography, 34 cancers (30 invasive, 4 in situ) were detected. The estimated difference was 3.2 more detections per 1000 screens with tomosynthesis; the difference was greater for repeat screens and for women aged 60 years or more. The recall rate was greater for tomosynthesis (4.2 percent) than standard mammography (3.0 percent). The median screen reading time for tomosynthesis was 67 seconds; for standard mammography, 16 seconds.

"We found that tomosynthesis screening was feasible to implement at BreastScreen Maroondah, with a low opt-out rate, and could increase the [breast cancer detection](#) rate," Houssami and colleagues wrote.

"However, it also had disadvantages, such as longer screen reading times, that need to be considered when making decisions about larger trials of tomosynthesis screening or screening policy.

"More frequent [cancer](#) detection by tomosynthesis screening than in standard 2-D mammography could indicate that it is more sensitive than standard mammography, but if it reflects increased detection of indolent malignancy it may not be associated with improved health outcomes," they wrote.

"The increased [radiation exposure](#) associated with tomosynthesis ... also needs careful consideration before adopting it for routine screening.

"The [imaging data](#) and information infrastructure (including image display and archiving) is another important aspect; careful planning enabled modifications that supported implementation of tomosynthesis in this pilot trial, but substantial changes would be needed to facilitate its use in a

high volume population screening program, and would be subject to a thorough health economics evaluation.

"Our trial provides findings that could be further examined in larger, multi-service comparisons of tomosynthesis with standard mammography for breast screening, including longer term endpoints (such as interval cancer rates) that were beyond the scope of our pilot study.

"The balance between the incremental benefit and harms of this new technology must be carefully assessed to ensure that BreastScreen provides the most effective form of screening to Australian women," Houssami and colleagues concluded.

More information: Nehmat Houssami et al. Pilot trial of digital breast tomosynthesis (3D mammography) for population-based screening in BreastScreen Victoria, *Medical Journal of Australia* (2019). [DOI: 10.5694/mja2.50320](https://doi.org/10.5694/mja2.50320)

Provided by Medical Journal of Australia (MJA)

APA citation: 3-D mammography: More breast cancers detected (2019, October 21) retrieved 3 May 2021 from <https://medicalxpress.com/news/2019-10-d-mammography-breast-cancers.html>

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