

Comparative effectiveness of combined digital mammography and tomosynthesis screening for women with dense breasts

Lee CI, Cevik M, Alagoz O, Sprague BL, Tosteson AN, Miglioretti DL, Kerlikowske K, Stout NK, Jarvik JG, Ramsey SD, Lehman CD
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Objective

To estimate whether combined biennial digital mammography and tomosynthesis screening can influence clinical and cost-effectiveness compared with biennial digital mammography screening alone, in dense breasted women.

Materials and Methods

An established, discrete-event breast cancer simulation model was used to estimate the comparative effectiveness of combined digital mammography and tomosynthesis screening for U.S women ages 50-74 years with dense breasts. European screening trial data (Oslo screening trial) was used to estimate base-case sensitivity and specificity for combined biennial screening. Hologic's Selenia[®] Dimensions[®] system was used in this trial. Implications on combined screening sensitivity and specificity, transient utility decrement of diagnostic work-up, and additional cost of tomosynthesis were determined by performing the sensitivity analyses.

Results

Compared with biennial digital mammography screening alone, combined biennial digital mammography and tomosynthesis screening in U.S. dense-breasted women aged 50-74 years is likely to:

- Reduce breast cancer death by one per 2000 women screened for 12 screening rounds
- Reduce false-positives by 405 per 1000 women screened for 12 screening rounds and increase the number of cancers detected
- Is cost effective even when there is no improvement in sensitivity and moderate improvement in specificity and when the additional cost of tomosynthesis is as much as \$87

Limitations of the Study

- The study used tomosynthesis data from the Oslo study, which may not be reflective of U.S. practice
- The study did not look at annual screening, which is the standard of care in the U.S.

Conclusion

The authors conclude that combined biennial digital mammography and tomosynthesis screening in U.S. dense breasted women aged 50-74 years is cost-effective, if priced appropriately, and if the improvement in specificity with the addition of tomosynthesis in routine clinical practice is similar to that reported here. In addition, the study suggests that adding tomosynthesis has the potential to decrease the number of unnecessary diagnostic work-ups and invasive procedures that result from false-positive screening findings which may balance the harm versus benefit debate around breast cancer screening.

Presented by Hologic Medical Education

hologic.com | info@hologic.com | +1.781.999.7300

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