Breast Cancer Mammographic Screening in Routine Practice: Multisite Study of Digital Breast Tomosynthesis and Digital Mammography Screenings

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Study Goal

 Evaluate key screening outcomes across various demographic and risk factor subgroups in large, diverse population of women in the US who received routine breast cancer screening with digital mammography (DM) or digital mammography plus digital breast tomosynthesis (DBT).

Study Population

- 1,100,447 women with no prior history of breast cancer were screened at 5 U.S. health systems between January 2014 and December 2020.
- 2,528,063 mammograms were analyzed (1,693,727 DBT exams, 834,336 DM exams).

Key Outcome Measures

• Recall, cancer detection, PPV1, PPV3, and biopsy rate by modality

Key Findings

This study validates the benefits of DBT over DM as demonstrated in previous smaller studies¹

DBT resulted in:

- Lower recall rate
- · Higher cancer detection rate
- Higher positive predictive value of recall (PPV1)

The results were adjusted by age, breast density, health system, and index year to account for potential differences in the population who received DM and DBT

- The screening performance improvement with DBT vs. DM remained statistically significant after these adjustments.
- Improvements with DBT vs. DM were observed across nearly every sub-population which was studied, including age, race/ ethnicity, breast density, breast cancer risk, and screening interval.
- DBT had a higher rate of biopsy versus DM, but the difference in PPV of biopsy was not statistically significant.

Conclusion

This study of more than 1 million women further validates the benefits of DBT over DM in terms of improved recall rate, cancer detection rate, and positive predictive value of recall (PPV1).

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1. Marinovich ML, Hunter KE, Macaskill P, Houssami N. Breast Cancer Screening Using Tomosynthesis or Mammography: A Meta-analysis of Cancer Detection and Recall. J Natl Cancer Inst. 2018 Sep 1;110(9):942-949. doi: 10.1093/jnci/djy121. PMID: 301075



82% of women



contributed multiple screening exams to the study.



Breast density

8.7% Almost entirely fatty (A) 47.7% Scattered fibroglandular (B) 37.6% Heterogeneously dense (C) 6.0% Extremely dense (D)

Screening Performance Metrics





