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Screening with Breast Tomosynthesis (Sarah M Friedewald)

The study involved 13 sites, which included academic and non-academic centers, and specialist and nonspecialist radiologists. A total of 454,850 screening mammograms were interpreted by 139 radiologists, of which 281,187 were digital mammograms and 173,663 were digital mammography + tomosynthesis. The volume of examinations across institutions ranged from 4,801 to 53,181 for digital mammography only and from 2,613 to 34,119 for digital mammography + tomosynthesis.

An analysis of the data indicated that the model-adjusted rates per 1,000 screens were as follows: for recall rate, 107 with digital mammography vs 91 with digital mammography + tomosynthesis (an overall decrease in recall rate of 16 per 1,000 screens, relative decrease of 15%); for biopsies, 18.1 with digital mammography vs 19.3 with digital mammography + tomosynthesis; for cancer detection, 4.2 with digital mammography vs 5.4 with digital mammography + tomosynthesis (increase of 1.2, relative increase of 29%); and for invasive cancer detection, 2.9 with digital mammography vs 4.1 with digital mammography + tomosynthesis. Adding tomosynthesis increased the positive predictive value for recall from 4.3 percent to 6.4 percent and for biopsy from 24.2 percent to 29.2 percent. When tomosynthesis was added, the PPV for recall increased from 4.3% to 6.4% (relative increase of 49%).

The authors suggest, "The association with fewer unnecessary tests and biopsies, with a simultaneous increase in cancer detection rates, would support the potential benefits of tomosynthesis as a tool for screening. However, assessment for a benefit in clinical outcomes is needed."

Professor Friedewald will be speaking at the Hologic Symposium about the American experience. She will present data from the JAMA paper including:

- Increase in cancer detection
- Decrease in recall
- Showing statistical significance with large numbers
- Discussing the strengths and limitations of this study
- Reviewing areas needing more research

What lessons can be learned from the American experience?

Consistent results are observed regardless of the practice environment (i.e., academic institution, private practice, experienced radiologists, general radiologists) and therefore similar results would be expected going forward regardless of where tomosynthesis was implemented.

In the US, our recall rates are generally much higher than in Europe. Implementation of tomosynthesis enables US sites to decrease unnecessary recalls and therefore decrease patient anxiety and downstream costs. This also significantly increases our positive predictive values.

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