Integration of 3D digital mammography with tomosynthesis for population breast-cancer screening (STORM): a prospective comparison study.

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Objective
To evaluate the effect of the addition of tomosynthesis to conventional 2D mammography in population breast-cancer screening.

Materials and Methods
STORM is a prospective screening study that compares screening in two phases: 2D only versus integrated 2D and 3D mammography, thus yielding paired results. The study included asymptomatic women of age 48 years or older from population-based screening services in Trento and Verona (Italy), from August 2011 to June 2012. The exams were double read and interpreted sequentially. A positive screen at either reading phase was recalled.

Results
Based on 7294 screenings:

<table>
<thead>
<tr>
<th></th>
<th>Number of Cancers</th>
<th>Cancer Detection Rate</th>
<th>False Positive</th>
<th>False Positive Rate, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2D mammography</td>
<td>39</td>
<td>5.3 / 1000 screens</td>
<td>322</td>
<td>4.4%</td>
</tr>
<tr>
<td>2D plus 3D mammography</td>
<td>59</td>
<td>8.1/ 1000 screens</td>
<td>254</td>
<td>3.5%</td>
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</tbody>
</table>

Cancer detection increased 51% across all ages and breast densities for integrated 2D and 3D mammography compared to 2D mammography. The authors estimated that false positive recalls could have been reduced by 17% without decreasing the cancer detection rates.

Conclusion
Integrated 2D and 3D mammography improves breast-cancer detection and has the potential to reduce false positive recalls.