True or false: Breast density increases breast cancer risk

Robin Seitzman, PhD, MPH

Which of the following statements about breast density is TRUE?

**CHOOSE ONE:**

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<tbody>
<tr>
<td>A</td>
<td>As breast density increases, the sensitivity of mammography decreases</td>
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<tr>
<td>B</td>
<td>As breast density increases, the risk of developing breast cancer increases</td>
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<tr>
<td>C</td>
<td>Breast density can be determined by the way a breast feels</td>
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<td>D</td>
<td>Answers A and B</td>
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<td>E</td>
<td>Answers A, B, and C</td>
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RESOURCES

For more information, visit medically sourced DenseBreast-info.org. Comprehensive resources include a free CME opportunity, Dense Breasts and Supplemental Screening.

Dr. Seitzman is Director of Education and Epidemiology Research, DenseBreast-info.org.

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Quiz developed in collaboration with DenseBreast-info.org
Answer
D. The risks associated with dense breast tissue are 2-fold: Dense tissue can mask cancer on a mammogram, and having dense breasts also increases the risk of developing breast cancer. As breast density increases, the sensitivity of mammography decreases, and the risk of developing breast cancer increases.

A woman’s breast density is usually determined by a radiologist’s visual evaluation of the mammogram. Breast density also can be measured quantitatively by computer software or estimated on computed tomography scan or magnetic resonance imaging. Breast density cannot be determined by the way a breast looks or feels.

Breast density and mammographic sensitivity
Cancers can be hidden or “masked” by dense tissue. On a mammogram, cancer is white. Normal dense tissue also appears white. If a cancer develops in an area of normal dense tissue, it can be harder or sometimes impossible to see it on the mammogram, like trying to see a snowman in a blizzard. As breast density increases, the ability to see cancer on mammography decreases (FIGURE 1).

Standard 2D mammography has been shown to miss about 40% of cancers present in women with extremely dense breasts and 25% of cancers present in women with heterogeneously dense breasts. A cancer still can be masked on tomosynthesis (3D mammography) if it occurs in an area of dense tissue (where breast cancers more commonly occur), and tomosynthesis does not improve cancer detection appreciably in women with extremely dense breasts. To find cancer in a woman with dense breasts, additional screening beyond mammography should be considered.

Breast density and breast cancer risk
Dense breast tissue not only reduces mammography effectiveness, it also is a risk factor for the development of breast cancer: the denser the breast, the higher the risk. A meta-analysis across many studies concluded that magnitude of risk increases with each increase in density category, and women with extremely dense breasts (category D) have a 4-fold greater risk of developing breast cancer than women with fatty breasts (category A), with upper limit of nearly 6-fold greater risk (FIGURE 2).

Most women do not have fatty breasts, however. More women have breasts with scattered fibroglandular density. Women with heterogeneously dense breasts (category C) have about a 1.5-fold greater risk of developing breast cancer than those with scattered fibroglandular density (category B), while women with extremely dense breasts (category D) have about a 2-fold greater risk.

There are probably several reasons that dense tissue increases breast cancer risk. One is that cancers arise microscopically in the glandular tissue. The more...
glandular tissue, the more susceptible tissue where cancer can develop. Glandular cells divide with hormonal stimulation throughout a woman’s lifetime, and each time a cell divides, “mistakes” can be made. An accumulation of mistakes can result in cancer. **The more glandular the tissue, the greater the breast cancer risk.** Women who have had breast reduction experience a reduced risk for breast cancer: thus, even a reduced absolute amount of glandular tissue reduces the risk for breast cancer. The second is that the local environment around the glands may produce certain growth hormones that stimulate cells to divide, and this is observed with fibrous breast tissue more than fatty breast tissue.

**References**