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New Technology Helps Radiologists Detect Breast Cancer

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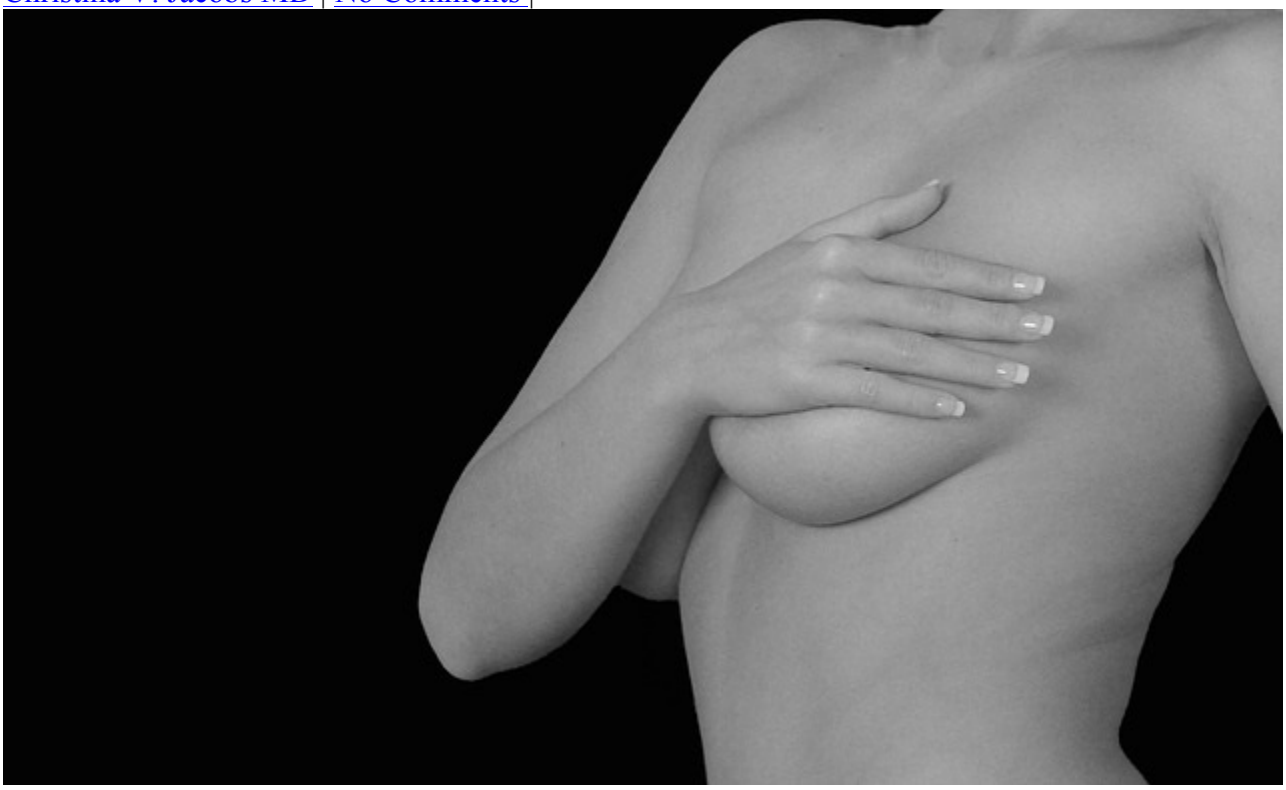

An estimated 40% of women have dense breast tissue that can mask the presence of cancerous tissue in 2D mammography. As breast density increases, mammography sensitivity decreases, highlighting the need for improved cancer screening, especially for women with dense breasts.

More than half of U.S. states currently require that women receive a dense breast notification (DBN) following mammography to help them understand their risk of developing breast cancer. These DBNs contain crucial information to help women make more informed decisions about their healthcare.

But despite the increasing prevalence of DBNs across the U.S., a recent study published in the *Journal of the American College of Radiology* suggests women may still require further education about the relationship between breast density and the risk of developing cancer. In a survey of more than 1,000 women ages 35 to 70 in Virginia, one of the states where DBNs are required by law, only 25% of respondents said they were aware of the relationship between breast density and cancer risk.

Another recent study published in the *Journal of the American Medical Association* suggests that DBNs in many states need significant improvement. The study authors note that the content of DBNs can vary widely from state to state, and in many cases, the language used in these communications was found to be overly complex and clinical. Others did not provide clear guidance on what steps are necessary for women who might benefit from additional screening.

To further complicate this issue, the requirements for who should receive DBNs also vary from state to state. Some states require that women be informed if additional screening might detect hidden breast cancer, while others only require women to be informed about their breast density, without giving patients any context about what their results mean.

While DBNs have the potential to help women better understand their breast density, it is still important that women talk to their doctors about their risk for developing breast cancer and whether additional screening may be warranted. DBNs are meant to initiate a dialogue between patient and doctor, not replace it.

An Automated, Standardized Approach

The way breast density is assessed is just as important as the manner in which results are communicated to patients. The American College of Radiology recommends the BI-RADS scale as a standardized system to categorize breast density. This scale divides breast density into four categories: A, B, C, and D.

"A" means the breasts are almost entirely fatty; "B" means there are scattered areas of fibroglandular density; "C" means the breasts are heterogeneously dense, which may obscure small masses; and "D" means the breasts are extremely dense, which can make it difficult to detect cancerous tissue. Women with BI-RADS scores C or D have dense breasts and may benefit from additional screening such as an MRI or ultrasound to help detect cancer.

Despite the use of the BI-RADS scale, a recent study published in the *Annals of Internal Medicine* found that breast density assessments often vary from one radiologist to another. This can result in inaccurate readings as well as delays in getting patients the additional testing and appropriate treatment they need. New breast density assessments that can produce more consistent results may help to address the issue of reader variability.

The Bronson Healthcare system in southwest Michigan is equipped with iCAD's iReveal automated breast density solution, which allows us to produce automated, rapid and reproducible assessments of breast density to more precisely identify patients who could benefit from additional screening. This technology automates the same analytical approach used by many

radiologists. It analyzes digital mammograms, calculates the patient's breast density, and determines the appropriate density category corresponding to BI-RADS standards.

Unfortunately, breast density results are likely to remain subjective and open to varied interpretation until more healthcare facilities adopt advanced technology to help produce consistent results.

New Technology for Breast Tomosynthesis

In recent years, more facilities around the globe have also adopted the use of 3D mammography, or digital breast tomosynthesis, to better detect breast cancer in women with dense and non-dense breasts. A recent study published in *JAMA* found adding tomosynthesis to standard digital mammography can result in fewer patient recalls and a more accurate cancer diagnosis. Despite its increased popularity, interpretation of tomosynthesis is challenging for many radiologists because it requires more time to interpret mammography results when compared to 2D mammography. Typical 2D digital mammography produces four images per exam, whereas 3D tomosynthesis produces hundreds of breast images.

Advanced software is on the horizon to help radiologists reading 3D mammography detect breast cancer more effectively and efficiently. This technology can also help to streamline the workflow associated with tomosynthesis and better help radiologists find potential mammographic abnormalities.

By using leading-edge technology and providing patients with a more accurate and consistent breast density assessment, we will have the insights and accurate readings we need to improve the quality and consistency of our DBNs, making them a better resource for patients. We can also increase the chances of detecting breast cancer earlier, when it might be more easily treated.

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