



## Dense Breasts

Breast density is a proportional measure of the glandular, connective and fatty tissues within a woman's breasts. It is most commonly determined using mammography, a diagnostic test that uses low dose x-rays. Having dense breasts is not an abnormal condition; in fact, about half of all women over 40 have dense breasts.



The exact relationship between breast density and breast cancer is still unknown, but having dense breasts may increase your risk of developing breast cancer. There is no clear evidence that reducing breast density will reduce your risk of breast cancer. Talk with your doctor about breast density and discuss what impact that may have on your breast cancer screening regimen.

## What are dense breasts?

Breast density is a measure of the proportion of glandular, connective and fatty tissue within a woman's breasts, which is most commonly determined through mammography.

The breast is made up of glandular, connective, and fatty tissues. Breasts are considered to be dense if they have a lot of glandular and connective tissue and not much fatty tissue. On a mammogram, fatty tissue appears dark (radio-lucent) and the glandular and connective tissues appear white (radio-opaque). Essentially, the "whiter" the breast appears on the mammogram, the denser the breast.

Glandular tissue includes lobules (which produce milk during lactation) and ducts that carry milk from the lobules to the nipple during breastfeeding. Connective tissue (also called fibrous tissue), supports and holds glandular tissue in place. Fatty tissue helps give breasts their size and shape.

It is unclear why some women have dense breasts and others do not. In general, younger women tend to have denser breasts, and some post-menopausal women may lose breast density as a result of hormonal changes experienced during menopause. However, this is not a hard and fast rule; some younger women may have fatty breasts while some elderly women have dense breasts. Much of what determines a woman's breast density is likely genetic. But diet, nutrition, weight gain or loss, and hormonal factors

also affect a woman's breast density.

Having dense breasts is not an abnormal condition; approximately half of all women over 40 years old have dense breasts.

The exact relationship between breast density and breast cancer is still under study with many unknowns. It is easier to detect an underlying cancer in women with fatty breasts and harder to detect an underlying cancer on a mammogram in women with dense breasts. This is because the dense normal tissue – which appears white on the mammogram – may hide an underlying cancer that also usually appears white on a mammogram. Also, having dense breasts may be associated with a small increased risk of developing breast cancer.

## How are dense breasts evaluated?

Mammography is used most commonly to determine whether a woman has dense breasts.

- **Mammography:** A diagnostic test that uses low dose x-rays to examine the breasts. This type of imaging involves exposing the breasts to a small amount of ionizing radiation to obtain pictures of the inside of the breasts. See the Safety page for more information about x-rays.

Radiologists who interpret mammograms subjectively determine the proportion of dense breast tissue (white on mammography) and non-dense fatty tissue (dark on mammography) using a visual scale and assign one of four levels of breast density:

- **Almost entirely fatty breast (also called least dense):** The breast is almost entirely composed of fatty tissue.
- **Scattered areas of fibroglandular density:** The majority of the breast is fatty tissue with some scattered areas of dense breast tissue.
- **Heterogeneously dense:** The majority of the breast is dense glandular and fibrous tissue with some areas of less dense fatty tissue.
- **Extremely dense:** The breast is almost all dense glandular and fibrous tissue.

The majority of women (8 out of 10) are classified in one of the two middle categories. Only a small fraction of women have either extremely dense breasts, or breasts that are almost entirely fat. There is very little difference between the scattered areas of fibroglandular density and heterogeneously dense categories and the classification is subjective.

For most purposes, women whose breasts are classified as heterogeneously dense or extremely dense are considered to have dense breasts. Some states have enacted breast density notification laws that require women to be informed when a mammogram indicates that she has dense breasts.

If your mammography report indicates that you have dense breasts, you should talk with your doctor about what this means for you and whether or not you should consider supplemental screening.

## Additional tests

On a mammogram, fatty tissue appears dark and transparent; glandular and connective tissue appears as

solid white areas. Because breast tumors also appear white on mammography, they can be hidden by or within dense breast tissue.

Other imaging tests may help find breast cancers that cannot be seen in dense breasts during a mammography exam. If you have dense breasts, you and your doctor may consider supplementing your annual mammogram with one or more of the following imaging tests to screen for breast cancer. However, most women with an average risk of breast cancer and dense breasts do not require any supplemental screening.

- Breast tomosynthesis, also called three-dimensional (3-D) mammography and digital breast tomosynthesis (DBT), is an advanced form of breast imaging being used by many healthcare providers to examine breasts. In breast tomosynthesis, multiple images of the breast are captured from different angles and reconstructed or “synthesized” into a three-dimensional image set.

Large population studies have shown that screening with breast tomosynthesis results in improved breast cancer detection rates and fewer call-backs in which women are called back for additional testing because of an abnormal finding. Early studies suggest that tomosynthesis may be beneficial in women with dense breasts. See the Mammography page for more information about breast tomosynthesis.

- Breast ultrasound uses sound waves to capture images of areas of the breast that may be difficult to see with mammography. It can also help to determine whether a breast lump is solid or fluid. Although breast ultrasound may help to find cancer in women with dense breasts, there are a large number of false positive exams, and breast ultrasound does not have the same evidence supporting its benefit in screening as does mammography. Most women with dense breasts and a low or average risk of breast cancer do not require supplemental screening with ultrasound.
- Breast MRI is performed using a powerful magnetic field, radio frequency pulses and a computer to produce detailed pictures of the inside of the breasts. MRI may detect some smaller cancers that cannot be found on ultrasound, mammogram, or tomosynthesis, and is particularly useful in women who are at high risk of breast cancer.

## How are dense breasts treated?

There are currently no recommendations for reducing breast density, and there is no clear evidence that reducing breast density will reduce breast cancer risk. Talk with your doctor about whether you have dense breasts and how that may impact your breast cancer screening regimen.

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