

Digital Screening Mammography

What is digital mammography?

Conventional film screen mammography uses low energy x-rays that pass through a compressed breast during a mammographic examination. The exiting x-rays are absorbed by film (x-ray film) which is then developed into a mammographic image that can be held and looked at by the radiologist. This traditional process is analogous to personal photographic cameras and photographic film where light is focused on the film and developed to produce a negative which can be printed as a picture. With digital mammography, low energy x-rays pass through the breast exactly like conventional mammograms but are recorded by means of an electronic digital detector instead of the film. This electronic image can be displayed on a video monitor like a TV or printed onto film. Again, this is similar to digital cameras that produce a digital picture that can be displayed on a computer screen or printed on paper. The radiologist can manipulate the digital mammogram electronically to magnify an area, change contrast, or alter the brightness.

Most radiographic imaging is currently done by digital means including CT scans, ultrasound, MRI, nuclear scans, and the some standard radiographs such as bone or chest examinations. Mammography was the last area of radiologic imaging to use digital technology due to the unique needs of mammography. The high resolution and contrast needed to produce excellent quality mammographic imaging exceeds all other areas of digital imaging. For this reason, the technology to produce digital mammography is very complex, expensive, and time consuming to develop reliable systems. Patients undergoing digital mammographic examinations will see few differences during the examination itself. There is more equipment in the room which includes a small TV monitor which allows the mammographic technologist to view the mammogram in several seconds instead of developing films and waiting ten minutes to see an image. Breast compression, unfortunately, is still required to produce optimal images at the lowest possible radiation dose.

Digital mammography offers potential and practical advantages over film screen mammography by improving contrast and signal to noise ratios. These may allow better cancer detection. Near instantaneous image acquisition and the ability to transmit images electronically around the world are also significant advantages. One can have a mammogram at a remote site

with the images sent, displayed, and interpreted at a medical center. However, the most important scientific application is the potential to use advanced computer and electronic technologies to manipulate the image in order to better "see" certain breast tumors that are currently difficult to visualize on film screen mammography systems. These applications include direct computer-aided diagnosis (computer reading of mammograms), 3-D imaging, dual energy mammography, and the contrast-enhanced mammography. Most of these processes remain in the development stage.

How to Prepare for a Mammogram

* Do not schedule your mammogram during the week before your period, especially if you have a tendency to feel tenderness during this time. Generally, the week after your period is the best time to schedule a mammogram.

* Discuss any new findings or problems in your breasts with your doctor, as well as any prior surgeries, hormone use or family history of breast cancer.

* Take note of any symptoms you are feeling and describe them to the technologist.

* Obtain prior mammograms, if possible, for the radiologist to compare with the new images.

* Do not wear deodorant, talcum powder or lotion under your arms or on your breasts on the day of the exam. Often these products can appear on the mammogram and simulate calcium deposits.

* Before the exam, you will be asked to remove all jewelry and clothing from the waist up. You will be given a gown that opens in the front

* If you have breast implants, please let us know when you make your appointment so we can optimize your exam.

How to Perform a Breast Self-Exam

A self breast exam is an important tool in the early detection of breast cancer. Women should examine their breasts regularly, not only to check for abnormalities, but also to gain understanding of how their breasts should normally feel. When you are familiar with your breasts you will be more likely to detect a change in them.

Keep in mind that your breasts are complex organs that change consistently throughout the month with the levels of hormones in your body. Therefore, they may feel differently at different points in your menstrual cycle, and you should try to perform your self breast exams at the same time each month. That's why you need to examine your breasts at a time when they are not tender or filled with fluid. This time varies depending on the stage of your life. For menstruating women, the last day of your period is ideal and gives you a physical reminder each month to perform your exam. Women who are past menopause or who are pregnant should examine their breasts on the same day each month. If you take hormone replacement that cycles off the medicine for a few days, perform your exam the day you resume your medication. Breast feeding mothers should check each breast when the milk has been expressed.

Step 1: Lying Down

1. Lie down on your back and place a small pillow beneath your right shoulder.
2. Using the tips of the three middle fingers on your left hand, examine your right breast in circular motions.
3. Pressure should range from light to deep, and follow an up and down pattern.
4. Examine the areas above and around your breasts, in your armpit area and around your collarbone.
5. Repeat these steps on your left breast.

Step 2: In front of your mirror

While standing, check for visual changes in your breast such as skin puckering, changes in color or texture, bulges, changes in vein patterns or retraction of the skin or nipple. You should examine your breasts in the mirror in four different positions:

1. Arms at your side
2. Arms over your head
3. Your hands on your hips
4. Bent forward with your hands on your hips