

What You Need to Know About *Your Mammogram*



Diagnostic & Preventative Imaging Center



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Introduction

Mammograms are important tools in the early discovery of breast cancer. Women at average risk who are 40 and older are advised to obtain annual mammography screening.

This guide will share some information about your breast cancer risk and how mammograms are important to your preventive health care plan. It will also explain how mammograms work and what you need to do to prepare. Finally, it will give you some insight into what will happen if your mammogram indicates any areas of concern.

Why Have a Screening Mammogram?

Some women may be tempted to skip their screening mammograms, either to avoid the discomfort associated with breast compression or because they fear receiving bad news. A screening mammogram requires only seconds of compression time for each breast, however, and although this can involve discomfort, most women do not report that the procedure is painful.

In the event cancer is present, finding it early will greatly improve your chances of survival. Mammography has proven to be an effective method of finding cancer at earlier stages,¹ and women with tumors found through mammography screening tend to have better outcomes *even than women with similarly-sized tumors found in other ways.*² Breast cancers that are discovered through the presence of symptoms are generally larger and have more likely spread beyond the breast prior to detection than cancers found through screening mammography.

■ Early detection means better chances of survival and less invasive treatment.

The size and extent of cancer at the time of detection are among the most important factors in determining a breast cancer patient's prognosis and course of treatment.³

The National Breast Cancer Foundation reports that women diagnosed with stage 1 cancer see a 5-year survival rate of 98%.⁴ These are patients who have a tumor less than 2 cm in diameter and no evidence of cancer elsewhere.⁵



Susan G. Komen reports relative 5-year survival rates of 99% in women diagnosed with localized breast cancer, 84% in those with regionalized cancer (cancer that is contained within the organ in which it began), and 24% in women whose cancer cells have spread to other parts of the body.⁶



Those whose breast cancer is diagnosed early also tend to receive much less invasive and less debilitating treatments than later-stage patients. According to a study by the American Cancer Society, 30% of women diagnosed in 2008 with stage 1 or 2 breast cancer (women with smaller tumors and little to no migration of the cancer into the lymph nodes) underwent only breast-conserving surgery (BCS) and radiation therapy (RT), and 10% received BCS alone.

By comparison, among women diagnosed with stage 3 or 4 cancer (larger tumors, which usually have spread to the lymph nodes and other organs), 31% underwent mastectomy, RT, and chemotherapy; only 2% had BCS alone.

■ Major medical associations recommend annual screening.

The American Medical Association, the American College of Obstetricians and Gynecologists, the American College of Radiology, the American College of Family Physicians, and the National Cancer Institute advise **annual mammograms for women beginning at age 40.**

Breast Cancer Risk

Breast cancer is the most common cancer among women in the U.S.; **the average risk of a woman developing breast cancer in her lifetime is 1 in 8.**⁷ For some women with additional risk factors, including a family or personal history of breast cancer or previous radiation therapy to the chest, the odds are higher.⁸

Risk factors for breast cancer also include genetic predisposition (including a mutation of the BRCA1 or BRCA2 genes), body mass index (BMI), tobacco use history, personal medical history, alcohol intake, use of hormone replacement therapy, and other lifestyle factors.

Mammograms are just part of your overall preventive health care plan. Women at average risk for breast cancer are advised to get annual mammograms once they turn 40. If your risk is higher than average, discuss your options for taking additional steps to detect and prevent breast cancer with your health care provider. Your provider may recommend

- **Additional testing and screening (such as more frequent mammography, breast MRI, or genetic testing),**
- **Prophylactic prevention (such as preventative chemotherapy or mastectomy), or**
- **Lifestyle changes such as maintaining a healthy diet and exercise routine.**

*Did you know that exercising three or more hours per week can reduce your overall risk of breast cancer by 20-30%?*⁹



What Are the Risks of Mammograms?

When you get a mammogram, the machine uses X-rays to generate an image of your breast tissue. **The radiation exposure and associated risks are very low.**

■ Radiation

We are exposed to various forms of radiation every day. Solar radiation (sunlight) and radon, which occur in varying concentrations around the world, are the most common sources. Radiation dose is typically measured in millisieverts (mSv). The average natural annual dose of radiation from the environment in the U.S. is about 6.2 mSv.¹⁰

A modern 2-D mammogram exposes you to approximately .4 mSv of additional radiation;¹¹ the exposure from a low-dose 3-D C-View mammogram is very similar.¹² For comparison, round-trip coast-to-coast air travel results in approximately .03 mSv additional radiation as a result of increased exposure to cosmic radiation.

■ False Positives

If your radiologist determines that a mammogram shows areas of concern, you will be sent for further testing. Although nationwide, approximately 10% of women are called back after their screening mammograms,¹³ only 8-10% of those

women will need a biopsy, and 80% of those breast cancer biopsies will turn out to be benign.¹⁴ Although no cancer is present in the vast majority of women called back after a mammogram, the additional testing can be psychologically stressful, costly, and time consuming.

Like all medical procedures, follow-up tests have their own risks. For example, in a biopsy, a small sample of tissue is removed from the breast so it can be examined under a microscope for cancer. It's a very low-risk procedure. However, some women do experience bruising or swelling, infection or bleeding at the biopsy site, or altered breast appearance (depending on how much tissue is removed and how the breast heals).¹⁵



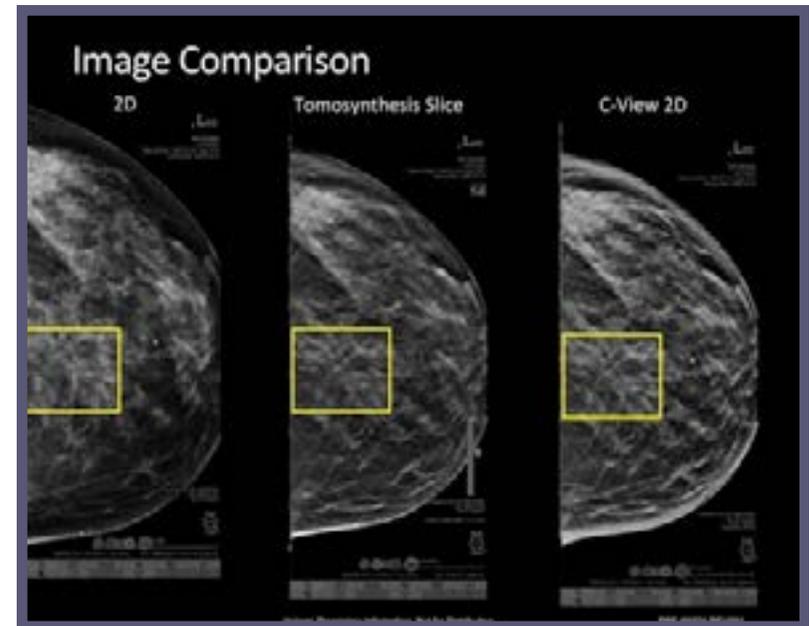
Should I Get a Low-Dose 3-D Mammogram?

■ What is low-dose 3-D mammography?

Standard mammography relies upon two-dimensional X-ray images of the breast to detect possible areas of concern. 3-D mammography, or tomosynthesis, is a process that incorporates many X-ray images taken from a range of angles to create a three-dimensional image of the breast that can be closely examined a millimeter at a time.¹⁶ C-View, or low-dose 3-D mammography, is the newest technology, which allows for quicker procedure times and lower radiation doses than previously possible.¹⁷

■ How is it different from traditional mammography?

The computer can translate 3-D tomosynthesis images into 2-D images that are clearer and more detailed than images from a traditional 2-D mammogram. This allows radiologists to view a much clearer picture of structures within the breast tissue. The appearance of linear structures, radiating lines, and bright spots, which can be indicative of particular breast conditions, is enhanced with tomosynthesis.¹⁸



■ What are the advantages of low-dose 3-D mammography?

3-D mammography allows for more accurate diagnosis of masses, distortions, and variations in density than standard mammograms, especially in women with dense or fibrous breasts – those having a higher percentage of fibrous or glandular tissue versus the percentage of fatty tissue.¹⁹ Research has linked higher breast density with higher breast cancer risk,²⁰ so increased vigilance in detection is even more vital in women with denser breasts.

Getting the clearest picture possible is especially important for women with dense breasts because both dense breast tissue and tumors appear white on traditional x-rays. As a result, cancerous abnormalities can be missed. Also, many benign conditions appear on mammograms; dense tissue can more frequently appear to be suspicious, resulting in many costly (and often stress-inducing) additional tests, such as biopsies to test the questionable tissue.

Using 3-D tomosynthesis, practitioners are able to make **20-40% fewer callbacks** for diagnostic procedures while detecting invasive cancers at an approximately 41% higher rate compared with digital mammography alone. The rate of false positives decreases by 15% with the addition of tomosynthesis.²¹

Low-dose 3-D mammograms are also both faster and safer. The procedure cuts the amount of time a patient must remain still with her breast compressed from 10 seconds to 4 seconds and delivers a radiation dose that is 45% lower than that required by traditional 3-D mammography technology.²²



How to Prepare for Your Mammogram

It is helpful for the radiologist to be able to compare the images obtained at your appointment to images from previous exams. Let us know when and where your last mammogram was performed, and if possible, we will contact that clinic and obtain previous images before you come in. Also let us know if you currently or have ever had breast implants, surgery, or other medical history relevant to your breast health.

Mammograms involve pressure on and manipulation of your breasts, so **try to schedule your mammogram for the point in your menstrual cycle when your breasts are least tender** (usually the week after your period).

<i>DAY-OF DON'Ts:</i>	<i>DAY-OF DOs:</i>
DON'T overdo caffeine – it can enhance breast tenderness.	DO dress in a two-piece outfit so you can keep your lower half covered during the procedure.
DON'T use deodorants or antiperspirants.	DO bring along any deodorant, lotions, etc. you would like to apply after your procedure. (We also provide aerosol deodorant for your convenience.)
DON'T apply powders, lotions, perfumes, or creams on your arms or breasts.	DO feel free to take an over-the-counter pain medication such as Advil (ibuprofen), Tylenol (acetaminophen), or aspirin if you experience pain following your procedure.

What to Expect

The technologist will position your breast in the machine, and a plastic plate will compress your breast tissue. This is to ensure that we get best possible image of your breast tissue.

You'll be asked to hold your breath for a very short time, which helps prevent blurring from the movement of your breathing.

Images will be taken of each breast compressed horizontally (top-to-bottom) and vertically (side-to-side). Each image should take only a few seconds.

Your technologist will look at the captured images to make sure they're the best quality possible.

More images may have to be taken to provide enough information for the radiologist, but the whole visit should take only about **30 minutes**.



Callbacks and Follow-Ups

Your referring provider will receive a written report within one business day, and you will receive a letter from us in about a week with your results.

If there is anything the doctor would like to examine more closely, we may schedule additional imaging. A technologist would contact you to schedule this at your convenience.

If a mass or abnormality is detected in your breast, several indicators can help the radiologist to determine its nature. Remember that the vast majority of potentially suspicious things that show up on a mammogram are actually benign. **Only 0.2%-0.4% of follow-up procedures result in cancer diagnoses.**²³

If you are called back, your radiologist will use additional diagnostic imaging, which can include additional mammogram views, to look more closely at the area of concern. Cancer requires a higher blood supply than non-cancerous growths, so ultrasound or MRI may also be used to determine blood supply to the suspicious area.

After these additional images are taken, if your radiologist believes the findings are benign, a six-month follow-up mammogram may be recommended as an extra precaution.

If there is a suspicious finding, your radiologist may recommend a biopsy to determine whether cancer is present. **Every type of breast biopsy that Iowa Radiology offers, including X-ray guided (stereotactic), ultrasound, and MRI, is minimally invasive, non-scarring, non-surgical, and performed in an outpatient setting.**



FAQ

■ Does it hurt?

No, the procedure should not hurt. You may feel some discomfort when your breast is compressed. Our skilled technicians will help make the procedure as quick and comfortable as possible.

If you experience tenderness afterward, it's okay to take an over-the-counter pain medication such as Advil (ibuprofen), Tylenol (acetaminophen), or aspirin.

■ Can I ask for a female technologist?

Absolutely! We are happy to match you with a female technologist.

■ Should I still do monthly self-exams?

Yes! We will give you a helpful instruction card to guide you through your self-exams, which should be done at least monthly. Combining self-exams with regular mammograms increases your chances of early detection of any abnormalities.



FAQ

■ How long does it take?

A screening mammogram, start to finish, takes between **15 and 30 minutes**. Breast compression should last only a few seconds at a time.

■ What about the risks?

The low risks of mammography should be weighed against the great benefits of early detection of breast cancer, including an improved survival rate and a less aggressive course of treatment.



*Our focus is your
good health!*

 **Contact Iowa
Radiology**

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