



Non-cancerous Breast Conditions

Non-cancerous breast conditions are breast changes that are not cancer. They are very common and can be found in most women. In fact, most breast changes that are sampled (biopsied) and looked at under the microscope turn out to be *benign* (be-**nine**). Benign is another word for non-cancerous.

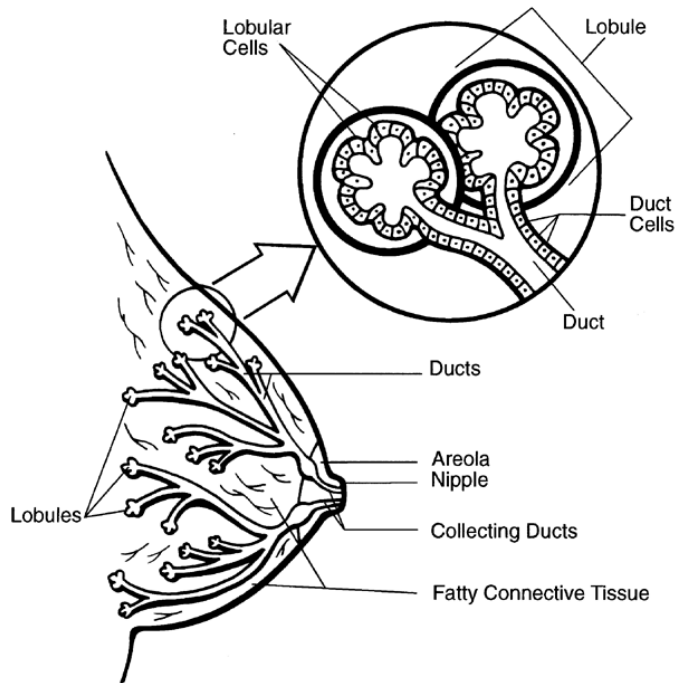
Unlike breast cancers, benign breast conditions are not life-threatening. But sometimes they can cause symptoms that bother you. And certain benign conditions are linked with a higher risk of developing breast cancer in the future. We will cover this in more detail later.

What is normal breast tissue and what does it do?

The breast makes milk for breast-feeding. It has 2 main types of tissues: glandular tissues and supporting (stromal) tissues.

The *glandular* part of the breast includes the *lobules* and *ducts* (shown in the picture below). In women who are breast-feeding, the cells of the lobules make milk. The milk then moves through the ducts – tiny tubes that carry milk to the nipple. Each breast has several ducts that come out to the nipple.

The *support* tissue of the breast includes fatty tissue and fibrous connective tissue that give the breast its size and shape.



Any of these parts of the breast can undergo changes that cause symptoms. These breast changes can be either benign (non-cancerous) breast conditions or breast cancers.

Here we will review some of the signs and symptoms of benign breast conditions and how they are found and diagnosed. We will also review the more common benign breast conditions, such as fibrocystic changes, benign breast tumors, and breast inflammation.

If you would like to know more about breast cancer, please call us or visit our Web site to get our document called *Breast Cancer*.

Finding benign breast conditions

Signs and symptoms of breast changes

Changes in the breasts may be caused either by benign conditions or cancer. The most common symptoms are likely to be caused by benign conditions. Still, it is important to let your doctor know about any changes you notice. Many symptoms of benign conditions are the same as those seen in breast cancer. It is hard to tell the difference between benign and cancerous conditions based on symptoms alone. Your doctor can do other tests to tell the difference between the two.

Some benign breast conditions may not cause any symptoms and may be found during a mammogram or a breast biopsy.

Lumps

A benign breast condition often causes a lump. It may or may not feel tender. A woman may find it while showering or during other daily activities, or when checking her breasts or under her arms during a breast self-exam. In some cases her doctor or nurse may find it during a breast exam.

The younger a woman is, the more likely it is that a single breast lump will be benign:

- In women under 30, the most common cause is a benign solid tumor called a fibroadenoma.
- In women in their 30s and 40s, benign conditions (such as fibroadenoma, fibrocystic changes, or atypical hyperplasia) are the most likely causes.
- Cysts (non-cancerous, fluid-filled sacs) and non-invasive cancers (such as ductal carcinoma in situ, or DCIS) are more common in older women.

Most of these breast changes are described in more detail in the section, "Types of non-cancerous breast conditions."

In any of these age groups there is a chance that a single lump may be breast cancer, although it is more likely in older women than in younger ones. **No matter what age the woman is, lumps and other changes must be checked to be sure they are not breast cancer.**

Having many lumps in both breasts is most often caused by fibrocystic changes.

Breast lumps, like other symptoms, have to be considered along with other symptoms a woman may be having. For example, a new, tender lump that comes up at the same time as skin redness and a fever may be a sign of a breast infection. Still, any new lump or other change should be checked by a doctor or nurse.

Skin thickening and/or redness

Redness or thickening of an area of skin on the breast can also have different causes. For example, inflammation of the breast, known as *mastitis*, is common in women who are breast-feeding and is usually caused by an infection. But it's important to have a doctor or nurse check any new redness or thickening because at least one type of breast cancer (*inflammatory breast cancer*) can look a lot like an infection. Sometimes even doctors have trouble telling the difference. Since this kind of breast cancer grows quickly, you need to get back to the doctor right away with any breast infection that doesn't get better within a few days of being treated. (For more information, see our document, *Inflammatory Breast Cancer*.)

Pain

Some women have breast pain or discomfort that is related to their menstrual cycle. This type of cyclic pain is most common in the week or so before a menstrual period. It often

goes away once menstruation begins. Many women with fibrocystic changes have cyclic breast pain. This is thought to be caused by changes in hormone levels.

Some benign breast conditions, such as breast inflammation (mastitis) may cause a more sudden pain in one spot. In these cases the pain is not related to the menstrual cycle. Rarely, breast cancer lumps can be painful, too.

Nipple discharge

A discharge (other than milk) from the nipple may be alarming, but in most cases it is caused by a benign condition. As with breast lumps, the younger a woman is, the more likely it is that the condition is benign. (See the section, "Nipple discharge exam (nipple smear).")

In benign conditions, a non-milky discharge is usually clear, yellow, or green. If the discharge contains blood that you can see or that is found in lab tests, the cause is still not likely to be cancer, but it is cause for concern and more testing.

If the discharge is coming from more than one breast duct or from both breasts it is usually because of a benign condition such as fibrocystic changes or duct ectasia (described later).

If the discharge (bloody or non-bloody) is from a single duct, it can be caused by a benign condition like intraductal papilloma or duct ectasia. But it can also be caused by a cancer, so you should see a doctor right away.

A milky discharge from both breasts (other than while pregnant or breast-feeding) sometimes can happen in response to the menstrual cycle. It can also be caused by an imbalance of hormones made by the pituitary or thyroid gland, or even caused by certain drugs.

Again, while benign conditions are much more common than breast cancer, it is important to let your health care team know about any changes in your breast so they can be checked out right away.

American Cancer Society recommendations for early breast cancer detection

By being alert to any breast changes and having exams and tests according to American Cancer Society guidelines for early detection, breast cancer can be found at the earliest possible stage, when it is most treatable. In addition, these exams and tests sometimes find certain benign breast conditions.

- Women age 40 and older should have a screening mammogram every year and should continue to do so for as long as they are in good health.
- Women in their 20s and 30s should have a clinical breast examination (CBE) by a health professional as part of a regular health exam, at least every 3 years. Starting at age 40, women should have a breast exam by a health professional every year.

- Breast self-examination (BSE) is an option for women starting in their 20s. Women should be told about the benefits and limitations of BSE. Women should know how their breasts normally look and feel and should report any breast changes to their health professional right away.
- Women at high risk (greater than 20% lifetime risk) for breast cancer should get a magnetic resonance imaging (MRI) scan of the breast and a mammogram every year. Women at moderately increased risk (15% to 20% lifetime risk) should talk with their doctors about the benefits and limitations of adding MRI screening to their yearly mammogram. Yearly MRI screening is not recommended for women whose lifetime risk of breast cancer is less than 15%.

For more detailed information on the American Cancer Society guidelines for early detection of breast cancer, please see our document, *Breast Cancer: Early Detection*.

Diagnosing benign breast changes

If your symptoms or mammogram results suggest that you may have breast cancer or benign breast disease, your doctor will take some more steps to find out what it is. It is important to know exactly what the problem is so that the best treatment can be chosen.

Medical history and physical exam

The first steps are health questions (medical history) and a physical exam. Answering questions about your and your family's past health will give your doctor information about your risk factors for breast cancer and benign breast conditions. The doctor will also ask about any symptoms you are having, including how long you have had them.

Next, the doctor will do a thorough breast exam to find any lumps and to feel their texture, size, and relationship to the skin and chest muscles. Any changes in the nipples or the skin of the breasts will be noted. The lymph nodes under the armpit and above the collarbones may be felt because swelling or firmness of these lymph nodes might be a sign of spread of breast cancer. (Lymph nodes are small, bean-shaped collections of immune system cells to which breast cancers often spread first.)

Along with asking questions about your health and doing a physical exam, imaging tests and a breast biopsy may be done.

Imaging tests for breast disease

Several types of imaging tests that may be used to look for or help evaluate breast diseases are described briefly here. For more detailed information about these and other imaging tests, please see our document, *Mammograms and Other Breast Imaging Procedures*.

Mammograms

A mammogram is an x-ray of the breast. Mammograms are mostly used for screening. Screening mammograms are used to look for breast cancer in women who have no breast symptoms.

Mammograms can also be used to look at a woman's breast if she has breast symptoms or an abnormal screening mammogram. When used in this way, they are called *diagnostic mammograms*. They can be used to find out more about a breast lump (mass), nipple discharge, or an area found on a screening mammogram that doesn't look normal. In some cases, special images known as *cone views with magnification* are used to "zoom in" on a small area of altered breast tissue to make it easier to evaluate.

Some imaging centers may offer digital mammography (also known as full-field digital mammography or FFDM). Whereas standard mammograms are recorded on large sheets of photographic film, digital mammograms are recorded as files on a computer. After the exam, the doctor can look at the pictures on a computer screen and adjust the image size, brightness, or contrast to see certain areas more clearly. Not all centers offer this, but it is becoming more widely available with time.

What the doctor looks for on your mammogram: The doctor reading the mammogram will look for several types of changes.

Calcifications are tiny mineral deposits within the breast tissue. They look like small white spots on the films. They may or may not be caused by cancer. There are 2 types of calcifications:

- **Macrocalcifications** are coarse (larger) calcium deposits that are most likely changes in the breasts caused by aging of the breast arteries, old injuries, or inflammation. These deposits are related to non-cancerous conditions and do not require a biopsy. Macrocalcifications are found in about half of women over 50, and 1 in 10 women under 50.
- **Microcalcifications** are tiny specks of calcium in the breast. They may be alone or in clusters. Microcalcifications seen on a mammogram are of more concern, but still do not usually mean that cancer is present. The shape and layout of microcalcifications help the doctor judge how likely it is that cancer is present. If the microcalcifications look suspicious, a biopsy will be needed.

Masses, which may or may not have calcifications, are another important change seen on mammograms. Masses can be many things, including cysts (non-cancerous, fluid-filled sacs) and non-cancerous solid tumors (such as fibroadenomas), but they could also be cancer. Masses that are not cysts usually need to be biopsied.

- A cyst and a solid tumor can feel the same on physical exam. They can also look the same on a mammogram. To confirm that a lump (mass) is really a cyst, a breast ultrasound is often done. The doctor may also remove (aspirate) the fluid from the cyst with a thin, hollow needle to have it checked for cancer cells.

- If a mass has any solid parts (that is, if it is not a simple cyst), you may need more imaging tests. Some masses can be watched over time with mammograms, while others may need a biopsy. The size, shape, and margins (edges) of the mass can help the doctor figure out whether cancer may be present.

Having your older mammograms available to the doctor is very important. They can help to show that if a mass or calcification has stayed the same for many years. This would mean that it is likely a benign condition and a biopsy is not needed.

Mammograms have limitations: Diagnostic mammograms can be used to find out more about a breast lump (mass), nipple discharge, or an area found on a screening mammogram that doesn't look normal. But a mammogram by itself cannot prove that an abnormal area is cancer. A diagnostic mammogram may show:

- That the abnormal area is not worrisome at all. In these cases the woman can usually return to having routine yearly screening mammograms.
- That the abnormal area is very likely to be benign (not cancer). In these cases, it is common to ask the woman to come back sooner than usual for her next mammogram, usually in 4 to 6 months.
- That the abnormal area is more suspicious, and a biopsy (removal of a small piece of the area) is needed to tell if it is cancer.

Even if the mammogram does not show a tumor, if you or your doctor can feel a lump, then usually a biopsy will be needed to make sure it isn't cancer. One exception would be if a breast ultrasound shows that the lump is a cyst (a fluid-filled sac).

Mammograms are not perfect at finding breast cancer. They do not work as well in younger women, usually because their breasts are dense, which can hide a tumor. This may also be true for pregnant women and women who are breast-feeding. Since most breast cancers occur in older women, this is usually not a major concern. But this can be a problem for young women who are at high risk for breast cancer because they are likely to develop breast cancer at a younger age.

If you have a breast lump, you should have it checked by your doctor and consider having it biopsied even if your mammogram is normal. A biopsy is the only way to know for sure if a breast change is cancer.

Breast ultrasound

Ultrasound (US), also known as *sonography*, uses sound waves to look inside the body. A handheld instrument placed on the skin sends the sound waves through the breast. Echoes from the sound waves are picked up and translated by a computer into a black and white image on a computer screen. This test is painless and does not expose you to radiation.

Ultrasound is useful for evaluating some breast masses that are found on a mammogram or on a physical exam. It has become a valuable tool because it is widely available, non-invasive, and costs less than other options. This test helps distinguish between cysts

(fluid-filled sacs) and solid masses and sometimes can help tell the difference between benign and cancerous tumors. Still, ultrasound cannot be used instead of mammograms for breast cancer screening.

Breast US may also be used to help doctors guide a biopsy needle into some breast lesions.

Magnetic resonance imaging (MRI) of the breast

MRI scans use radio waves and strong magnets instead of x-rays. The energy from the radio waves is absorbed and then released in a pattern formed by the type of tissue and by certain diseases. A computer translates the pattern of radio waves given off by the tissues into a very detailed image of parts of the body. A contrast material called *gadolinium* is often used so the doctor can see details better.

Patients have to lie inside a narrow tube for this test. This is confining and can upset people with claustrophobia (a fear of enclosed spaces). The machine also makes loud buzzing and clicking noises that some people find disturbing. Some places provide headphones to block out the noise.

MRI machines are quite common, but they need to be specially made or adapted in order to look at the breast. That means that not every center with an MRI machine can do a breast MRI.

Breast MRI can be used along with mammography for screening some women who have a high risk of getting breast cancer. It can also be used to better look at suspicious areas seen on a mammogram, especially if ultrasound is not helpful. MRI can also be used to guide biopsies so that the doctor can be sure to get tissue from the area of concern.

Ductogram

This test, also called a *galactogram*, is sometimes helpful in finding the cause of bloody nipple discharge. In this test a very thin plastic tube is placed into the opening of the duct at the nipple that the discharge is coming from. A small amount of contrast medium ("dye") is injected, which outlines the shape of the duct on an x-ray image. The x-ray can usually show if there is a tumor inside the duct.

Nipple discharge exam (nipple smear)

If you are having fluid that comes from your nipple and stains sheets or underwear, some of the fluid may be collected and looked at under a microscope to see if any cancer cells are in it.

Most nipple discharges or secretions are not cancer. In most cases, if the fluid looks clear, green, or milky, cancer is very unlikely. If the discharge is red or red-brown, suggesting that it contains blood, it might be caused by cancer. But it is more likely caused by an injury, infection, or benign tumor.

Even when no cancer cells are found in a nipple discharge, it is not possible to say for certain that a breast cancer is not there. If there is a suspicious mass, a biopsy is needed, even if the nipple discharge does not contain cancer cells.

Biopsy

During a biopsy the doctor removes a sample of the abnormal area to be looked at under a microscope. A biopsy may be done when mammograms, other imaging tests, or the physical exam finds a breast change that may be cancer. A biopsy is the only way to tell if cancer is really present.

There are several types of biopsies, and each type has its own pros and cons. The choice of which to use depends on your situation. Some of the factors your doctor will take into account include:

- How suspicious the lesion looks
- How large it is
- Where it is in the breast
- How many lesions there are
- Other medical problems you may have
- Your personal preferences

If you need a biopsy, you might want to talk about the different biopsy types with your doctor.

Fine needle aspiration (FNA) biopsy

In FNA biopsy, the doctor uses a very thin, hollow needle attached to a syringe to withdraw (aspirate) a small amount of fluid or tissue from a suspicious area. The biopsy sample is then looked at under a microscope. The needle used for FNA is thinner than the ones used for blood tests.

If the area to be biopsied can be felt, the needle can be guided into the area of the breast change as the doctor is feeling it.

If the lump can't be felt easily, the doctor might use ultrasound to watch the needle on a screen as it moves toward and into the mass.

A local anesthetic (numbing medicine) may or may not be used. Because such a thin needle is used for the biopsy, the shot to numb the breast may hurt more than the biopsy itself.

Once the needle is in place, either fluid or tissue from the mass is drawn out. Clear fluid means that the lump is most likely a benign cyst. Bloody or cloudy fluid can mean either a benign cyst or, very rarely, a cancer. If the lump is solid, small pieces of tissue are

drawn out. A doctor will look at the biopsy tissue or fluid under a microscope to see if it contains cancer cells.

An FNA biopsy is easier to have done than other types of biopsy, but it can sometimes miss a cancer if the needle is not put into the right spot. And even if cancer cells are found, it is usually not possible to know if the cancer is invasive (the kind that can spread). In some cases of cancer, there may not be enough cells to do some of the other lab tests that are routinely done. If the FNA biopsy does not provide a clear diagnosis or if more information is needed, a second biopsy or a different type of biopsy may need to be done.

Core needle biopsy

A core needle biopsy is much like an FNA biopsy, but it uses a slightly larger, hollow needle to withdraw small cylinders (or cores) of tissue from the abnormal area in the breast. The procedure is most often done with local anesthesia (you are awake but your breast is numbed) in the doctor's office or clinic.

The needle is put into the abnormal area several times to get the samples, or cores, which are about 1/16 inch to 1/8 inch in width and about half an inch long. The doctor doing the biopsy usually guides the needle into the abnormal area while using the fingers to feel the lump. If the abnormal area is too small to be felt, the doctor may use ultrasound or mammograms to guide the needle to the target area. (When mammograms taken from different angles are used to pinpoint the biopsy site, this is known as a *stereotactic core needle biopsy*.) In some centers, the biopsy can be guided by an MRI scan.

The core needle biopsy is more complex and takes longer than an FNA biopsy, but it is also more likely to give a definite result because more tissue is taken to be studied. This type of biopsy can cause some bruising, but it usually does not leave scars.

Vacuum-assisted biopsies: Vacuum-assisted biopsies can be done with systems such as the *Mammotome*[®] or *ATEC*[®] (Automated Tissue Excision and Collection). For these procedures the breast skin is numbed and a small cut (about ¼ inch) is made. A hollow probe is put into the cut and into the abnormal area of breast tissue. The probe can be guided into place using x-rays or ultrasound (or MRI in the case of the ATEC system). A cylinder of tissue is then sucked in through a hole in the side of the probe, and a rotating knife within the probe cuts the tissue sample from the rest of the breast. Many samples can be taken from the same cut in the skin. Vacuum-assisted biopsies are done as an outpatient procedure. No stitches are needed, and there is little scarring. This method usually removes more tissue than core needle biopsies.

Surgical (open) biopsy

Doctors usually prefer to do needle biopsies to determine if a suspicious area is breast cancer, but sometimes surgery is needed to take out all or part of the lump to be looked at under a microscope. This is called a surgical biopsy or an open biopsy. Usually this is an *excisional biopsy*, where the surgeon removes the entire mass or abnormal area, as well as a surrounding margin or edge of normal-looking tissue. If the mass is too large to be

removed easily, an *incisional biopsy* may be done, where only part of the mass is removed (although a core needle or FNA biopsy is more likely to be done instead).

In rare cases, this type of biopsy can be done in the doctor's office, but it is more often done in the hospital outpatient department. Depending on the extent of the biopsy, you may be given a local anesthetic to numb your breast and possibly a sedative to make you drowsy. Or the biopsy can be done under general anesthesia, where you are asleep.

The surgeon may use a procedure called *stereotactic wire localization* if there is a small lump that is hard to find by touch or if an area looks suspicious on the mammogram but cannot be felt. First the area is numbed with local anesthetic. Then a thin, hollow needle is put into the breast and x-ray views are used to guide the needle to the suspicious area. Once the needle tip is in the right spot, a thin wire is put through the center of the needle. A small hook at the end of the wire keeps it in place. The hollow needle is then removed, and the surgeon uses the wire as a guide to the abnormal tissue that is to be taken out.

The surgical specimen is sent to the lab to be looked at under a microscope. If the tissue does not show cancer, no further treatment is needed.

This type of biopsy is more involved than an FNA biopsy or a core needle biopsy, often requires several stitches, and may leave a scar. Core needle biopsy is usually enough to be sure what the abnormal area is. But sometimes an open biopsy may be needed depending on where the abnormality is, or if the core biopsy doesn't get enough tissue to be sure.

Biopsy accuracy

The accuracy rates for FNA, core needle, and surgical biopsy are much the same. Less data is available on the newer vacuum-assisted core biopsy techniques. The accuracy of each method depends to a great degree on the doctor's experience with that method. This is especially true with methods that remove smaller amounts of tissue, like the FNA and core needle biopsy. A very precise needle placement is needed so that these methods can give accurate results.

Types of non-cancerous breast conditions

This is a review of some of the more common breast conditions that are not cancer and are not life-threatening. They are often called benign breast conditions. Still, they can cause symptoms, and some are linked with a higher risk of later developing breast cancer.

Fibrocystic changes

Fibrocystic changes include a range of changes within the breast in both the glandular (lobules and ducts) and stromal tissues. In the past, this was called "fibrocystic disease." Because this condition affects at least half of all women at some point, it is better defined as a change rather than a disease. You may hear fibrocystic changes called FCCs for short.

Fibrocystic changes are most common in women of childbearing age, but they can affect women of any age. FCCs are the most common benign condition of the breast. They may be found in different parts of the breast and in both breasts at the same time.

Types of fibrocystic changes

Many different changes can be found when fibrocystic breast tissue is looked at under the microscope. Most of these changes reflect the way the woman's breast tissue has responded to monthly hormone changes and have little other importance.

As the term fibrocystic suggests, the 2 main features of this tissue are fibrosis and cysts.

Fibrosis: Fibrosis refers to a large amount of fibrous tissue, the same material that ligaments and scar tissues are made of. Areas of fibrosis feel rubbery, firm, or hard to the touch. Fibrosis does not increase your breast cancer risk and does not need any special treatment.

Cysts: Cysts are fluid-filled, round or oval shaped sacs within the breasts. They are most often found in women in their 40s, but they can be seen at any age. A clinical breast exam often cannot tell the difference between a cyst and a solid mass, so an ultrasound or fine needle aspiration (FNA) biopsy is needed to be sure.

Cysts start out with a build-up of fluid inside breast glands. Microcysts (microscopic cysts) are too small to feel and are found only when tissue is looked at under the microscope. If fluid continues to build up, macrocysts (large cysts) are formed. These can be easily felt and may reach 1 or 2 inches across. As they grow, the breast tissue around the cyst may stretch and be painful.

A round, movable lump, especially one that is tender to the touch, suggests a cyst. Cysts often get bigger and become painful and more noticeable just before the menstrual period. This is due to the effect of monthly hormone changes.

FNA biopsy can confirm the diagnosis of a cyst and, at the same time, drain the cyst fluid. Removing the fluid may reduce pressure and pain for some time, but it is not necessary to remove the fluid unless it is causing discomfort. If removed, the fluid may come back later. Having 1 or more cysts does not increase your risk of later developing breast cancer.

Diagnosing fibrocystic changes

In most cases, symptoms of fibrocystic changes include breast pain and tender lumps or thickened areas in the breasts. These symptoms may change as the woman moves through different stages of the menstrual cycle. Sometimes, one of the lumps may feel firmer or have other features that lead to a concern about cancer. When this happens, a needle biopsy or a surgical biopsy may be needed to make sure that cancer is not present.

Treating symptoms of fibrocystic change

Most women with fibrocystic changes and no bothersome symptoms do not need treatment, but closer follow-up may be advised. Women with mild discomfort may get relief from supportive bras or over-the-counter pain relievers.

For a very small number of women with painful cysts, draining the fluid with a needle can help relieve symptoms.

Some women report that their breast symptoms improve if they avoid caffeine and other stimulants (called *methylxanthines*) found in coffee, tea, chocolate, and many soft drinks. Studies have not found those stimulants to have a significant impact on symptoms, but many women feel that avoiding these foods and drinks for a couple of months is worth trying.

Because breast swelling toward the end of the menstrual cycle is painful for some women, some doctors recommend that women reduce salt in their diets or take diuretics (drugs to remove salt and fluid from the body). But studies have not found diuretics to be better than pills that do not have any medicine in them (placebos).

Many vitamin supplements have been suggested, but so far none are proven to be of any use, and some may have dangerous side effects if taken in large doses.

Some doctors recommend hormones, such as oral contraceptives (birth control pills), tamoxifen, or androgens. But these are usually used only in women with severe symptoms because they can have serious side effects.

Hyperplasia

Hyperplasia (also known as *epithelial hyperplasia* or *proliferative breast disease*) is an overgrowth of the cells that line either the ducts or the lobules. When hyperplasia is in the duct, it is called *ductal hyperplasia* or *duct epithelial hyperplasia*. When it affects the lobule, it is referred to as *lobular hyperplasia*.

Atypical hyperplasia (or hyperplasia with atypia) is a term used to describe cells that are slightly distorted in how they are arranged.

Hyperplasia is usually diagnosed with a core needle biopsy or surgical biopsy. Based on how the cells look under the microscope, hyperplasia may be grouped as:

- Mild hyperplasia: This does not increase the risk for breast cancer
- Hyperplasia of the usual type (without atypia), also known as usual hyperplasia: The risk of breast cancer is about 1½ to 2 times that of a woman with no breast abnormalities.
- Atypical hyperplasia (either atypical ductal hyperplasia [ADH] or atypical lobular hyperplasia [ALH]): The risk of breast cancer is about 4 to 5 times higher than that of a woman with no breast abnormalities.

A diagnosis of hyperplasia, especially atypical hyperplasia, usually means you will need to see your doctor more often. This may mean more frequent breast exams and a special effort to get yearly mammograms, because some types of hyperplasia are linked to a higher risk of breast cancer in the future. Ask your doctor whether your risk is high enough that you need breast MRI scans along with your screening mammograms.

Adenosis

In adenosis, the breast lobules are enlarged, and they contain more glands than usual. Adenosis is often found in biopsies of women with fibrocystic changes. There are many names for this condition, including *aggregate adenosis*, *tumoral adenosis*, or *adenosis tumor*. Even though some of these terms contain the term "tumor," this condition is benign and is not a cancer.

Sclerosing adenosis is a special type of adenosis in which the enlarged lobules are distorted by scar-like fibrous tissue.

If many enlarged lobules are close to one another, they may be large enough to be felt. When this is the case, it may be hard for the doctor to tell these lumps from a breast cancer by doing only a breast exam. Calcifications (mineral deposits) may form in adenosis, in sclerosing adenosis, and in cancers. These can be confusing on mammograms.

Because adenosis can often be confused with cancer based on breast exams or mammograms, a biopsy is usually needed to tell them apart. Fine needle aspiration (FNA) biopsy of these lumps can usually show if they are benign. A core needle biopsy can usually identify the mass as adenosis, but sometimes a surgical biopsy is needed to be sure it is not cancer.

Some studies have found that women with sclerosing adenosis have a greater risk of developing breast cancer — about 1½ to 2 times the risk of women with no breast changes.

Fibroadenomas

Fibroadenomas are benign tumors made up of both glandular breast tissue and stromal (connective) tissue. They are most common in young women in their 20s and 30s, but they may be found at any age. The use of birth control pills before age 20 is linked to the risk of fibroadenomas.

Some fibroadenomas are too small to be felt and can be seen only under the microscope, but some are several inches across. They tend to be round and have borders that are distinct from the surrounding breast tissue. They often feel like a marble within the breast. You can move them under the skin and they are usually firm and not tender. Some women have only one fibroadenoma, but others may have many.

Fibroadenomas can be diagnosed by fine needle aspiration (FNA) or core needle biopsy. Most fibroadenomas are *simple fibroadenomas*. They look the same all over when seen

under a microscope. They do not increase breast cancer risk. But some fibroadenomas contain other components (macrocyts, sclerosing adenosis, calcifications, or apocrine changes). Women with these *complex fibroadenomas* have a slightly increased risk of breast cancer (about 1½ to 2 times the risk of women with no breast changes).

Many doctors recommend removing fibroadenomas, especially if they keep growing or if they change the shape of the breast. Sometimes (especially in middle-aged or elderly women) these tumors stop growing or even shrink on their own, without any treatment. In this case, as long as the doctors are certain the masses are really fibroadenomas and not breast cancer, they may be left in place and watched to be sure they don't grow. This approach is useful for women with many fibroadenomas that are not growing. In such cases, removing them all might mean removing a lot of nearby normal breast tissue, causing scarring that would change the shape and texture of the breast. This could also make future physical exams and mammograms harder to interpret.

It is important for women who have fibroadenomas that have not been removed to have breast exams regularly to make sure they are not growing.

Sometimes one or more new fibroadenomas grow after one is removed. This means that another fibroadenoma has formed – it does not mean that the old one has come back.

Phyllodes tumors

Phyllodes (also spelled phylloides) tumors are rare breast tumors that, like fibroadenomas, contain 2 types of breast tissue – stromal (connective) tissue and glandular (lobule and duct) tissue. They are most common in women in their 30s and 40s (slightly older than for fibroadenomas), but they may be found at any age.

The tumors are usually felt as a painless lump, but some may be painful. They may grow quickly and stretch the skin. They are often hard to tell from fibroadenomas on imaging tests, or even with fine needle or core needle biopsies.

When seen under a microscope, the main difference between phyllodes tumors and fibroadenomas is that phyllodes tumors have an overgrowth of connective tissue. The cells that make up the connective tissue part can look abnormal under the microscope. Depending on how the cells look, phyllodes tumors may be classified as *benign* (non-cancerous), *malignant* (cancerous), or *borderline* (looking more abnormal than benign tumors, but not quite malignant). These types of tumors can behave differently.

Phyllodes tumors are usually benign but in rare cases may be cancerous. Less than 5% of these tumors spread to other areas, such as the lungs, or come back (recur) in distant areas after treatment. In the past, both benign and malignant phyllodes tumors were referred to as *cystosarcoma phyllodes*.

Phyllodes tumors (even benign ones) can sometimes come back in the same place if they are removed without taking some of the normal tissue around them. For this reason, they are treated by removing the mass and a 1 to 2 cm (about 1/2 to 3/4 inch) area of normal breast tissue from around the tumor.

Malignant phyllodes tumors are treated by removing them along with a wider margin of normal tissue, or by mastectomy (removing the entire breast) if needed. Malignant phyllodes tumors do not respond to hormone therapy and are less likely than most breast cancers to respond to chemotherapy or radiation therapy. Phyllodes tumors that have spread to distant areas are often treated more like sarcomas (soft-tissue cancers) than breast cancers.

Because these tumors can recur, close follow-up with frequent breast exams and imaging tests are usually recommended after treatment.

Intraductal papillomas

Intraductal papillomas are benign tumors that grow within the breast ducts. They are wart-like growths of gland tissue along with fibrous tissue and blood vessels (called *fibrovascular* tissue).

Solitary papillomas or *solitary intraductal papillomas* are single tumors that often grow in the large milk ducts near the nipple. They are a common cause of clear or bloody nipple discharge, especially when it comes from only one breast. They may be felt as a small lump behind or next to the nipple. They do not raise breast cancer risk unless they contain other changes, such as atypical hyperplasia (see the "Hyperplasia" section).

Papillomas may also be found in small ducts in areas of the breast further from the nipple. In this case there are often several growths (*multiple papillomas*). These tumors are less likely to cause nipple discharge. Unlike single papillomas, multiple papillomas are linked to an increased risk of breast cancer.

Papillomatosis is a type of hyperplasia in which there are very small areas of cell growth within the ducts, but they are not as focused as they are with papillomas. This condition is also linked to a slightly increased risk of breast cancer.

Ductograms are sometimes helpful in finding papillomas. If the papilloma is large enough to be felt, a needle biopsy can be done.

The usual treatment is to remove the papilloma and a part of the duct it is found in. This is usually done through an incision (cut) at the edge of the areola (the darker colored area around the nipple).

Granular cell tumors

Granular cell tumors are tumors that start in primitive (early) nerve cells. They are rarely found in the breast. Most are found in the skin or the mouth, but they are uncommon even in those places. They are almost always benign.

A granular cell tumor of the breast can most often be felt as a firm lump that you can move, but some may be attached to the skin or chest wall. They are usually about ½ to 1 inch across and are most often found on the upper, inner part of the breast. Granular cell tumors are sometimes thought to be cancer when they are found on a clinical breast exam because they are firm, especially if they are fixed in place. They may also look like

cancer on a mammogram. A fine needle or core needle biopsy can tell them apart from cancers.

This tumor is usually cured by removing it along with a small margin of normal breast tissue around it. Granular cell tumors are not linked to a higher risk of having breast cancer later in life.

Fat necrosis and oil cysts

Fat necrosis happens when an area of the fatty breast tissue is damaged, usually as a result of injury to the breast. It can also happen after surgery or radiation therapy. As the body repairs the damaged tissue, it is replaced by firm scar tissue.

Because most breast cancers are also firm, areas of fat necrosis with scarring can be hard to tell from cancers by a breast exam. It may also be hard to tell the difference on a mammogram. A needle biopsy, or sometimes an excisional biopsy, may be needed to learn if cancer is present.

Fat necrosis is more common in women with very large breasts. It does not increase a woman's risk of developing breast cancer.

Some fat cells may respond differently to injury. Instead of forming scar tissue, the fat cells die and release their contents. This forms a sac-like collection of greasy fluid called an *oil cyst*. Oil cysts can be diagnosed by fine needle aspiration. This can also serve as treatment, but it is not usually needed unless the cyst is bothersome.

Mastitis

Mastitis is inflammation of the breast. It is most often caused by a breast infection that affects women who are breast-feeding, but it can happen in any woman. A break in the skin or an opening in the nipple can allow bacteria to enter the breast duct, where they can grow. The body's white blood cells release substances to fight the infection. This causes swelling and increased blood flow. The area may become painful, red, and warm to the touch. Other symptoms can include fever and a headache.

Mastitis is treated with antibiotics. In some cases, a breast abscess (a collection of pus) may form. Abscesses are treated by draining the pus, either by surgery or by using a needle (often guided by ultrasound), and then giving antibiotics.

Having mastitis does not raise a woman's risk of developing breast cancer. But an uncommon type of cancer known as *inflammatory breast cancer* has symptoms that are a lot like mastitis and can be mistaken for an infection. If you are diagnosed with mastitis but antibiotic treatment does not help, a biopsy of the skin may be needed to be sure it is not cancer. Inflammatory breast cancer can spread quickly, so do not put off going back to the doctor if you still have symptoms after antibiotic treatment.

Duct ectasia

Duct ectasia is also known as *mammary duct ectasia*. It is a common condition that tends to affect women in their 40s and 50s. It occurs when a breast duct widens and its walls thicken, which can cause it to become blocked and lead to fluid build-up.

Duct ectasia may cause a sticky green or black discharge, which is often thick. The nipple and nearby breast tissue may be tender and red. The nipple may be pulled inward. Sometimes scar tissue around the abnormal duct causes a hard lump that may be confused with cancer.

This condition sometimes improves without treatment, or with warm compresses and antibiotics. If the symptoms do not go away, the abnormal duct can be removed through an incision (cut) at the edge of the areola (the darker colored area around the nipple).

Duct ectasia does not increase breast cancer risk.

Other benign breast conditions

Some other types of less common, benign tumors and conditions can also be found in the breast.

Radial scars

Radial scars, also called *complex sclerosing lesions*, are often found when a breast biopsy is done for some other purpose. They may distort the normal breast tissue. Radial scars are not really scars, but are called such because they look like scars when seen under a microscope.

Radial scars do not usually cause symptoms, but they are important for 2 reasons. First, if they are large enough, they may look like cancer on a mammogram, or even on a biopsy. Second, they are linked to a slight increase in the woman's risk of developing breast cancer.

Women who have them may be advised to see the doctor more often than usual. Many doctors recommend removing radial scars.

Other benign lumps or tumors

Lipomas are benign fatty tumors that can appear almost anywhere in the body, including the breast. They are usually not tender.

Other benign lumps or tumors that are sometimes found in the breast include *hamartomas*, *hemangiomas*, *hematomas*, and *neurofibromas*.

None of these conditions raises breast cancer risk.

How benign breast conditions affect breast cancer risk

As noted earlier, some types of benign breast conditions are linked to higher breast cancer risk, while others are not. Doctors often divide benign breast conditions into 3 general groups, based on whether the cells are multiplying (proliferative) and whether there are abnormal cells or patterns of cells (atypia):

- *Non-proliferative lesions* do not seem to affect cancer risk
- *Proliferative lesions without atypia* slightly increase cancer risk
- *Proliferative lesions with atypia* raise the risk of cancer

Non-proliferative lesions

These conditions are not linked with the overgrowth of breast tissue. They do not seem to affect breast cancer risk, or if they do, the effect is very small. They include:

- Fibrosis
- Cysts
- Mild hyperplasia
- Adenosis (non-sclerosing)
- Simple fibroadenoma
- Phyllodes tumor (benign)
- A single (solitary) papilloma
- Granular cell tumor
- Fat necrosis
- Mastitis
- Duct ectasia
- Benign lumps or tumors (lipoma, hamartoma, hemangioma, hematoma, neurofibroma)

Proliferative lesions without atypia

These conditions are linked with the growth of cells in the ducts or lobules of the breast tissue. They seem to raise a woman's risk of breast cancer slightly (1½ to 2 times the usual risk):

- Usual ductal hyperplasia (without atypia)
- Complex fibroadenoma
- Sclerosing adenosis
- Multiple papillomas or papillomatosis
- Radial scar

Proliferative lesions with atypia

These conditions are linked with the excess growth of cells in the ducts or lobules of the breast tissue, and the cells no longer look normal. They can raise breast cancer risk about 4 to 5 times higher than normal:

- Atypical ductal hyperplasia
- Atypical lobular hyperplasia

For women at increased breast cancer risk

Women with some of the breast conditions listed above may be at increased risk for breast cancer. But it is important to keep in mind what this increase in risk really means.

For example, according to one study, about 5 of 100 women living in the Midwest (a mainly white population) who *do not* have any benign breast conditions would be expected to develop breast cancer within the next 15 years. Among women with a benign condition that increases risk 1½ to 2 times, this would mean that about 7 to 10 out of 100 might be expected to develop breast cancer in the next 15 years. Among women with atypical hyperplasia (ductal or lobular), whose risk is 4 to 5 times normal, about 20 to 25 women out of 100 would be expected to develop breast cancer within 15 years.

It's also very important to keep in mind that there are many other factors that can affect a woman's risk. Her age, race/ethnicity, body weight, family history, her personal menstrual and pregnancy history, and other factors all affect her risk. (For more information, please see "What are the risk factors for breast cancer?") These factors must be taken into account when trying to determine a woman's actual risk of breast cancer.

If you are at higher than average risk for breast cancer, talk with your doctor about whether you should have breast MRI along with your screening mammograms and whether you should start screening at an earlier age. You may also want to discuss steps you could take that might lower your risk of breast cancer, such as taking certain medicines.

Additional resources

More information from your American Cancer Society

We have some related information that may also be helpful to you. These materials may be ordered from our toll-free number, 1-800-227-2345.

Breast Cancer (also available in Spanish)

Breast Cancer: Early Detection (also available in Spanish)

Breast Cancer in Men

Inflammatory Breast Cancer

Mammograms and Other Breast Imaging Procedures

Medicines to Reduce Breast Cancer Risk

Talking With Your Doctor (also available in Spanish)

No matter who you are, we can help. Contact us anytime, day or night, for cancer-related information and support. Call us at **1-800-227-2345** or visit www.cancer.org.

References

Bleicher RJ. Management of the palpable breast mass. In: Harris JR, Lippman ME, Morrow M, Osborne CK, eds. *Diseases of the Breast*. 4th ed. Philadelphia, Pa: Lippincott Williams & Wilkins; 2010:32-41.

Calhoun KE, Lawton TJ, Kim JN, Lehman CD, Anderson BO. Phyllodes tumors. In: Harris JR, Lippman ME, Morrow M, Osborne CK, eds. *Diseases of the Breast*. 4th ed. Philadelphia, Pa: Lippincott Williams & Wilkins; 2010:781-792.

Guray M, Sahin AA. Benign breast diseases: Classification, diagnosis, and management. *Oncologist*. 2006;11;435-449.

Hartmann LC, Sellers TA, Frost MH, et al. Benign breast disease and the risk of breast cancer. *N Engl J Med*. 2005;353:229-237.

Lewis JT, Hartmann LC, Vierkant RA, et al. An analysis of breast cancer risk in women with single, multiple, and atypical papilloma. *Am J Surg Pathol*. 2006;30:665-672.

Santen RJ, Mansel R. Benign breast disorders. *N Engl J Med*. 2005;353:275-285.

Saslow D, Boetes C, Burke W, et al for the American Cancer Society Breast Cancer Advisory Group. American Cancer Society guidelines for breast screening with MRI as an adjunct to mammography. *CA Cancer J Clin*. 2007;57:75-89.

Schnitt SJ, Collins LC. Pathology of benign breast disorders. In: Harris JR, Lippman ME, Morrow M, Osborne CK, eds. *Diseases of the Breast*. 4th ed. Philadelphia, Pa: Lippincott Williams & Wilkins; 2010:69-85.

Scott BG, Silberfein EJ, Pham HQ, et al. Rate of malignancies in breast abscesses and argument for ultrasound drainage. *Am J Surg*. 2006;192:869-872.

Smith RA, Saslow D, Sawyer KA, et al. American Cancer Society guidelines for breast cancer screening: Update 2003. *CA Cancer J Clin*. 2003;53:141-169.

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