# Breast Cancer: Hormone Therapy

## What is hormone therapy?

Hormones are chemicals in the body that help the body function. Some of them help control how normal, healthy cells grow. For some types of breast cancer, female hormones, such as estrogen and progesterone, can also cause breast cancer cells to grow. In these cases, hormone therapy is used to help prevent the growth, spread, and recurrence of breast cancer. Recurrence is when the cancer comes back after treatment. There are different kinds of hormone treatments used for breast cancer. Each type works a bit differently. They all have the same goal of stopping hormones from getting to the tumor.

## What is a hormone receptor test?

A hormone receptor test is done to measure the amount of certain proteins called hormone receptors in breast cancer tissue. Hormones, such as estrogen and progesterone, that naturally occur in the body can attach to these proteins. If the test is positive, it means that the hormone is likely helping the cancer cells to grow. In this case, hormone therapy may be given to block the way the hormone works. Or it may be given to help keep the hormone from attaching to the receptors on the cancer cells.

If the test is negative, the hormone does not affect the growth of the cancer cells, and other cancer treatments are given. Always discuss the results of the hormone receptor test with your healthcare team.

The goal of hormone treatment is to stop hormone receptor-positive cancer from getting the hormones it needs to grow. When cancer cells cannot get what they need to grow, they shrink and die. Because hormone treatment goes through your whole body, it’s called a systemic treatment.

## When might hormone therapy be used for breast cancer?

Hormone therapy is usually given in addition to another treatment. It’s given only if tests show that your cancer uses certain hormones to grow. When you get it depends on the stage of your cancer. Hormone therapy may be given:

- **As prevention.** It may be used to lower your chance of breast cancer if you have lobular carcinoma in situ (LCIS) or are otherwise at high risk of breast cancer. This may be the case even if you were treated successfully for breast cancer years before hormone therapy was available.
- **As neoadjuvant therapy.** This means it’s used before surgery, radiation, or chemotherapy. It's often used to help shrink the tumor.
- **As an adjuvant therapy.** This means it’s used after another type of treatment. It’s commonly used after surgery to help keep the cancer from coming back.
- **To slow down the spread of breast cancer.** Hormone therapy may be used to slow the spread of metastatic (stage IV) breast cancer and breast cancer that comes back after treatment (recurrent). In this case, it’s used to stop the cancer cells in other parts of the body from growing.

## How is hormone therapy given for breast cancer?

Hormone treatment may be given in 2 ways:

- **Medicine therapy.** This is hormone therapy done with special medicines. The medicine blocks or lowers the amount of hormones, so they can't cause the cancer to grow. Most of these medicines are pills. Sometimes they are given as a shot (injection). There are 3 main types of hormone treatment medicines. They are selective estrogen receptor modulators (SERMs), aromatase inhibitors (AIs), and selective estrogen receptor downregulators (SERDs). Each works a little differently. And each causes slightly different side effects.
- **Ovarian ablation.** This is a procedure used to stop the ovaries from making female hormones. The ovaries make most of the estrogen in a person’s body, until menopause. After menopause, estrogen is still made in the body's fat tissue. If you're still having menstrual periods, the ovaries are your main source of estrogen. Ablation can be done by surgically removing the ovaries or damaging the ovaries with radiation. This type of hormone therapy, stopping the ovaries from making hormones, is often done with medicines, too. Ovarian ablation keeps the cancer from getting the estrogen it needs to grow. This slows the growth of breast cancer.

You can read more about these methods below.

## Medicine therapy with selective estrogen receptor modulators (SERMs)

The SERMs class of medicines keeps hormones from binding to their receptors. They do this by mimicking the shape of the hormone and filling the space in the receptor. That leaves the cancer-promoting hormone with no place to bind to the cancer cells. SERMs do not stop estrogen from being made. They keep it from working on the cancer cells.

There are 3 common SERMs used for breast cancer, all taken as pills:

- Tamoxifen, the most commonly used SERM
- Toremifene, used less often for cancer that has spread in postmenopausal people
- Raloxifene, used only to help prevent breast cancer and approved for use only in postmenopausal people

## Medicine therapy with aromatase inhibitors

If you have not gone through menopause, your ovaries still make most of your estrogen. After menopause, your ovaries no longer make large amounts of estrogen. But cells in your muscles and fat still make some estrogen from male hormones called androgens.

Aromatase inhibitors interfere with the enzyme called aromatase. Its role is to convert androgens into estrogen. By affecting how much estrogen is made, aromatase inhibitors reduce estrogen in the body. This helps slow or stop the growth of breast tumors that are sensitive to estrogen. Sometimes it even shrinks them. Researchers have found that the medicines can't lower estrogen levels enough to affect tumor growth in younger people who have not gone through menopause. That's because younger people's ovaries still make high levels of estrogen. For this reason, these medicines are used only in people who have gone through menopause.

There are 3 aromatase inhibitors used for breast cancer, all taken as pills:

- Anastrozole
- Letrozole
- Exemestane

Many studies have compared aromatase inhibitors with tamoxifen as adjuvant hormone therapy in postmenopausal people. Using these medicines, either alone or after tamoxifen, has been shown to better reduce the risk for cancer recurrence than using only tamoxifen for 5 years.

## Medicine therapy with selective estrogen-receptor downregulators (SERDs)

These medicines attack the tumor's estrogen receptors. They block and damage the receptors so that they are unable to bind to estrogen. The only medicine of this type that is approved to be used for breast cancer is fulvestrant. You get it by a monthly injection into a muscle. Your healthcare provider may prescribe it for you if other hormone therapy medicines don't work.

## How ovarian ablation is done

If you have not gone through menopause, your ovaries are your main source of estrogen. Estrogen causes some breast cancers to grow, and treatment plans for these cancers may include stopping the ovaries from making estrogen. This is called ovarian ablation or ovarian suppression. Ovarian ablation is most often done to treat breast cancer that has spread to other parts of the body. It can be done in these ways:

- **Surgery.** The ovaries may be taken out by surgery. This surgery is called oophorectomy or ovariectomy. You will get general anesthesia before the surgery so that you'll be in a deep sleep and won't feel anything. The surgeon may do open surgery, which means you'll have a large cut (incision). Or you may be able to have laparoscopic surgery, which means smaller incisions are used. The side effects of surgery and your recovery time depend on which procedure you have done.
- **Radiation.** Another way to stop the ovaries from making estrogen is to use radiation to damage them.
- **Medicines.** Most often, medicines called luteinizing hormone-releasing hormone (LHRH) analogs, such as goserelin or leuprolide, are used to stop the signals the body sends to the ovaries to tell them to make estrogen.

These medicines can be used alone. More often, they're used with other hormone therapy medicines in people who have not been through menopause.

## Common side effects of hormone therapy

All forms of hormone therapy cause similar side effects that are like the symptoms of menopause. But the side effects are often worse than those caused by natural menopause. Both surgery and radiation cause premature menopause right away.

Hormone therapy may cause:

- Stopping of menstrual periods
- Loss of sex drive
- Hot flashes
- Night sweats
- Vaginal dryness

Less common side effects can vary depending on the type of hormone therapy used. These include:

- Mood swings
- Weight changes
- Joint stiffness and achiness
- Extreme tiredness
- Nausea
- Light vaginal bleeding (spotting)
- Headaches
- Skin rash
- Loss of bone mass, which puts you at risk for osteoporosis and bone fractures
- Increased cholesterol levels

## Other possible side effects

Talk with your healthcare provider about other serious but rare side effects. Taking tamoxifen also increases the risk of cancer of the lining of the uterus (endometrial cancer). If you are taking tamoxifen, get a pelvic exam each year to check for signs of cancer. Also tell your healthcare provider or nurse right away about any unusual vaginal discharge or vaginal bleeding. There is also a small risk of blood clots, heart attack, and stroke.

## Coping with side effects

Talk with your healthcare provider about what to expect from your type of hormone treatment. Some of the side effects can be prevented or treated. For example:

- Weight-bearing exercise and medicine called bisphosphonates can help decrease bone loss.
- Vaginal moisturizers and lubricants can help overall vaginal health and comfort during sex.
- Regular exercise can help prevent weight gain and muscle loss. It can also help prevent depression.
- Medicine and counseling can help treat depression.
- Wearing layers of clothing that you can easily shed can ease hot flashes. Take care not to overheat yourself and stay away from your hot flash triggers.

Talk with your healthcare team about any side effects you have.

## Working with your healthcare provider

It's important to know which medicines you're taking. Write your medicines down, and ask your healthcare team how they work and what side effects they might have.

Talk with your healthcare providers about what signs to look for and when to call them. Make sure you know what number to call with questions. Is there a different number for evenings and weekends?

It may be helpful to keep a diary of your side effects. Write down physical and emotional changes, and in the way you think. A written list will make it easier for you to remember your questions when you go to your appointments. It will also make it easier for you to work with your healthcare team to make a plan to manage your side effects.