



ROGEL CANCER CENTER
MICHIGAN MEDICINE

Tamoxifen (Nolvadex[®])

Hormonal Therapy

Information for Patients and Families

Tamoxifen (Nolvadex[®]) is an oral medication that your doctor has prescribed for the treatment of your hormone-receptor-positive breast cancer.

What is hormone-receptor-positive breast cancer?

Many breast cancers need estrogen and/or progesterone (female hormones), to grow and spread. When breast cancer is found, the cancer is tested for two proteins, called hormone receptors. These receptors are: estrogen (ER) and progesterone (PgR). If a cancer is found to have these proteins, this means that cancer growth can be stimulated with these hormones. If a cancer is found to have these receptors, hormone or endocrine therapy is recommended as part of your treatment plan.

How is this medication taken?

- Take **tamoxifen** at the same time each day.
- **Tamoxifen** may be taken with or without food.
- Do not break or chew tablets. Sallow whole with a glass of water.
- If you miss a dose of **tamoxifen**, take your next dose at the usual scheduled time. Do not make up doses during the day.
- Contact your cancer clinic if you are unable to take **tamoxifen** as prescribed, including if you are unable to swallow the tablet.

Why use tamoxifen?

Tamoxifen has been used by millions of women who are diagnosed with hormone-receptor-positive breast cancer. Tamoxifen can:

- Reduce the risk of breast cancer coming back in the breast or other organs by 40%-50%.
- Reduce the risk of a new cancer developing in the other breast by 50%.
- Can slow or stop the growth of early or advanced (metastatic) breast cancer.
- Can work against the original breast cancer and also any cells that might have spread from the breast to other organs in the body, such as bone, liver, or lung.
- Can slow or stop the growth of cancer cells that are in the body.
- Lower breast cancer risk in women who have a higher than average risk of disease, but have not been diagnosed.

Tamoxifen can offer other health benefits that aren't linked to cancer treatment. Because tamoxifen acts like an estrogen in other tissues such as bone, liver, and uterus (your womb), it can:

- Help prevent or treat bone loss (osteopenia/osteoporosis).
- Lower cholesterol levels.

What are the risks for taking tamoxifen?

Tamoxifen acts differently in different parts of your body. It acts like an anti-estrogen in breast tissue and against breast cancer. Tamoxifen also acts like an anti-estrogen in the brain, and that is why you may have hot flashes. Hot flashes occur most often during menopause. Menopause is when a woman's natural estrogen levels are dropping, and they are also a common side effect of tamoxifen.

- Tamoxifen increases growth of clotting proteins in the liver, just like estrogen. So, women who take tamoxifen have a slightly higher risk of getting a blood clot in the leg (called deep vein thrombosis), which can be very serious if it travels to the lung (called pulmonary embolus). It may also slightly increase the risk of having a stroke.
- Tamoxifen stimulates the lining of the uterus, just like estrogen does. This can cause abnormal vaginal bleeding. So, Tamoxifen slightly increases the risk of developing a cancer of the uterus. This effect is seen almost only in postmenopausal women who take tamoxifen, but it can happen in younger women as well.

Are there any drugs or foods I should avoid with tamoxifen therapy?

There are many drug and herbal interactions with **tamoxifen**. Please contact your cancer clinic if you are taking or interested in taking any new over-the-counter medication, vitamin, or herbal product or if a doctor other than your oncologist has prescribed any new medication for you. You should avoid grapefruit juice. Some examples of medications/herbal products that may interact include: clarithromycin, fluconazole, verapamil, and some medicines for mood like St. John's Wort.

What side effects can occur with this regimen?

This information does not cover all possible side effects, but highlights the side effects seen most frequently, especially when these medications were given in combination. You know what is “normal” for your body best—if you are experiencing a change in one of your symptoms not listed here, please contact your clinic with questions.

Fertility Concerns

Cancer treatment may affect your fertility. You should discuss any concerns with your physician **before** beginning treatment.

Side Effect	More Information	
<p>Fertility and Birth Defects</p> <p>Birth defects, miscarriage, prevent fertilized eggs from attaching to the wall of the uterus have been reported with tamoxifen.</p>	<ul style="list-style-type: none"> • If you are still having menstrual periods or have been told you are pre-menopausal by your doctor, you must use birth control. • Do Not use oral (hormonal) contraceptives (birth control pills). Examples of non-estrogen birth control are: condoms, diaphragm, or copper IUD. Vasectomy and tubal ligation are also options to prevent pregnancy. 	
Side Effects	What Can I Do?	When to Call the Clinic
<p>Blood clots</p> <p>Tamoxifen increases the risk of blood clots in post-menopausal women from 1.2% to 2.3% over 5 years. The risk is much less in pre-menopausal women.</p>	<ul style="list-style-type: none"> • Women with a history of serious blood clots should not take tamoxifen. 	<ul style="list-style-type: none"> • Pain, redness or swelling in the leg or arm. • Sudden shortness of breath with chest pain.
<p>Increased risk of uterine cancer</p> <p>The risk of uterine cancer for women taking tamoxifen is about three times higher than the average woman's risk.</p> <p>Even on tamoxifen, the risk of getting uterine cancer is less than 1 in 100. Again, this risk is much less in pre-menopausal women.</p>		<ul style="list-style-type: none"> • Abnormal vaginal bleeding or pelvic pain.
<p>Hot flashes</p>	<ul style="list-style-type: none"> • Dress in layers for managing hot flashes. 	<ul style="list-style-type: none"> • Hot flashes that disrupt daily activities. • Sleep interruptions.

Side Effect	More Information	
	<ul style="list-style-type: none"> • Discuss your concerns with the clinic team. 	<p>Medications are available to treat this side effect by reducing the number of hot flashes per day. We often suggest venlafaxine (Effexor®), citalopram (Celexa®), gabapentin (Neurontin®), or clonidine (Catapres®). Talk to your cancer doctor about this.</p> <p>Note: Soy-based foods and supplements, often called phytoestrogens, have been suggested as a substitute for estrogen to treat hot flashes. It is unknown if these products are safe for women who are at risk for, or are survivors of, breast cancer.</p>
<p>Vaginal dryness and pain during sex</p>	<ul style="list-style-type: none"> • Use products such as Astroglide® or KY Jelly® for sex. These are water-soluble vaginal lubricants that do not have estrogen. Talk to your doctor if you have questions or would like more information. • Replens® is a vaginal moisturizer that can be used daily or as needed for maintenance of vaginal moisture. 	<ul style="list-style-type: none"> • Do not hesitate to discuss emotional and sexual effects with your provider. • Concerns about mood and sex drive.
<p>Aches or pains in your joints and bones, and muscles cramps</p>	<ul style="list-style-type: none"> • For pain associated with bones joints, and muscles use either aspirin, non-steroidal 	<ul style="list-style-type: none"> • Unable to perform normal daily activities.

Side Effect	More Information	
	<p>anti-inflammatory drugs (like ibuprofen, Motrin®, Advil®, etc.) or acetaminophen (Tylenol®, etc.).</p> <ul style="list-style-type: none"> • Drinking more fluids can help with muscle cramps. • Adding daily exercise can help lower joint and muscle pain. 	
<p>Eye Problems</p> <p>Tamoxifen may cause thickening of the lens of the eye and other eye problems.</p>	<ul style="list-style-type: none"> • Have your eyes checked once a year. • If you have a history of cataracts, make sure to mention it to your doctor. 	
<p>Depression</p> <p>Symptoms may include:</p> <ul style="list-style-type: none"> • Problems focusing, remembering facts, and making decisions. • Decreased energy. • Feelings of guilt, worthlessness, helplessness or pessimism. • Insomnia, early-morning wakefulness, or too much sleeping. • Anger, restlessness. Loss of interest in activities or hobbies once 	<ul style="list-style-type: none"> • If you have been treated for depression or have a strong family history of depression, tamoxifen may be more likely to cause or worsen your depression. 	<ul style="list-style-type: none"> • Talk to your health care provider if you are feeling depressed. The Cancer Center has services to help you with your depression. • Thoughts of suicide, suicide attempts. • Aches or pains, headaches, cramps, or digestive problems that do not go away with treatment. • Sad, anxious, or "empty" feelings that don't go away.

Side Effect	More Information	
pleasing, including sex. • Overeating or appetite loss.		

Disclaimer: This document contains information and/or instructional materials developed by Michigan Medicine for the typical patient with your condition. It may include links to online content that was not created by Michigan Medicine and for which Michigan Medicine does not assume responsibility. It does not replace medical advice from your health care provider because your experience may differ from that of the typical patient. Talk to your health care provider if you have any questions about this document, your condition or your treatment plan.

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When and How to Call Your Doctor

For Medical Emergencies, call 911.

Monday through Friday 8:00 am to 5:00 pm Call 1 (734) 936-6000.

After 5:00pm, weekends and holidays, call the paging operator at (734) 936-6267.

Ask to speak to the doctor on call:

- Adult Hematology/Oncology

When should I call the doctor?

- Swelling and pain in one of your legs.
- Sudden chest pain or shortness of breath.
- Any abnormal vaginal bleeding or discharge.
- Pain or pressure in your pelvis.
- A fever of 100.5° Fahrenheit, or greater
- Bleeding or unusual bruising
- Burning and/or pain when urinating
- Constipation (no bowel movement in 2-3 days)
- Diarrhea (loose, watery stools) four or more watery stools in 24 hours
- Nausea, vomiting or if you cannot keep down any liquids
- Pain not controlled by your current medications
- Redness, pain, sores or a white coating in your mouth
- Shaking and chills
- Unusual cough, sore throat, lung congestion or shortness of breath
- Any symptom that concerns you or possible side effects linked to your medications, or as directed by your doctor.
- If you are having side effects that you are cannot manage.
- If you start taking a new medication, call the clinic to check for drug interactions.