



Premenopausal women at moderate risk of breast cancer

Information for patients from the UK Cancer Genetics Group (UKCGG)

This leaflet is for women who have a moderate lifetime risk of breast cancer and wish to discuss the use of Tamoxifen to decrease their risk. Having a moderate risk means a lifetime chance of developing breast cancer which is above one in six (approximately 17%) but less than one in three (30%).

Breast cancer risk

Breast cancer risk means the chance of developing breast cancer in the future. Everyone has a chance of developing breast cancer, but this risk is increased if you have a family history of the disease. If you have an increased chance of developing breast cancer, there are a number of options available to you. This includes screening to detect cancer early using mammography. An additional option is to try to reduce the chance of developing breast cancer. One option for this is using tablets, called chemoprevention.

Chemoprevention and breast cancer risk

Guidelines produced by the National Institute for Health and Care Excellence (NICE) for familial breast cancer recommend that women at an increased lifetime chance of developing breast cancer because of a family history, should be offered medication to reduce their chance of developing breast cancer in the future. This medication needs to be taken for five years. For premenopausal women, the medication is called Tamoxifen.

What is Tamoxifen, and how does it work?

Tamoxifen is a drug which has been used to treat women with early and advanced stages of breast cancer for almost 40 years. There is evidence that it can also help to reduce the chance of breast cancer occurring. Four large studies have explored the use of Tamoxifen in women at increased risk of breast cancer and have shown that it reduces the chance of breast cancer occurring by about 40%. Tamoxifen has therefore been licensed for use as chemoprevention in women at moderate to high risk of breast cancer. However, the evidence for reduction in risk of developing breast cancer is stronger for women with a high lifetime risk of breast cancer (more than a one in three risk) than it is for women with a moderate risk.

Tamoxifen is a drug which blocks the action of oestrogen (it is sometimes called an anti-oestrogen drug). Oestrogen is a natural female hormone which is produced mainly by the ovaries in women before menopause. It is important for the functioning of the reproductive system. After menopause, the ovaries stop producing oestrogen, but low levels of the hormone continue to be produced in fat, liver, muscle, and breast tissue.

Many breast cancers rely on oestrogen to grow. These cancers are known as oestrogen-receptor positive (ER-positive) breast cancers. Tamoxifen blocks oestrogen from reaching the cancer cells. This means the cancer either grows more slowly or dies. Cancers not sensitive to oestrogen are called oestrogen-receptor negative (ER-negative), and Tamoxifen has no effect on these cancers.

Tamoxifen reduces the effects of oestrogen in most areas of the body, including the breast. However, in the uterus, Tamoxifen acts like an oestrogen and encourages the growth of the lining of the uterus. Tamoxifen is usually prescribed as a tablet you take once a day by mouth. For breast cancer risk reduction, studies suggest it needs to be taken for five years

Using Tamoxifen to reduce the chance of developing breast cancer

There have been a number of studies on the use of Tamoxifen to reduce the chance of developing breast cancer in women at increased lifetime risk. The IBIS-1 trial, which was carried out in the UK, involved women with a family history of breast cancer taking Tamoxifen or a placebo (inactive pill) for five years. The actual number of breast cancers they developed was then compared. At the five year point, the number of cancers had been reduced in women taking the Tamoxifen, but the complication (side-effect) rate was increased. At the 10 year point, the reduction in risk of breast cancer was 38%, and the benefit of Tamoxifen outweighed the complications. The side-effects went away after the tablet was stopped after five years.

The studies showed that if 1000 premenopausal women at moderate risk of breast cancer take Tamoxifen for five years, 62 will develop breast cancer. If the same 1000 women at moderate risk do not take Tamoxifen, 100 will develop breast cancer. A large number of women will not benefit from Tamoxifen.

Who is it for?

Tamoxifen can be used to reduce the chance of developing breast cancer in women with an increased lifetime risk, whether or not they have gone through menopause. The best age to start taking Tamoxifen is not known. It will vary between women depending on their level of risk. For most women the chance of developing breast cancer, and therefore the benefit of Tamoxifen, will be low before the age of 35. All the research studies of Tamoxifen started from 35 years of age, or older.

The benefit of taking any of these drugs when someone has a known pathogenic / likely pathogenic gene variant in a breast cancer predisposition gene is unknown. This is because not many women with a known gene variant were included in the studies.

The evidence suggests that it may be useful in women who carry variants in certain genes, such as BRCA2, as these women have an increased risk of oestrogen-positive breast cancers. However, it is not routinely recommended where there is a high risk of oestrogen-negative breast cancers, such as with BRCA1.

Who should not take Tamoxifen?

- Women planning to get pregnant; taking Tamoxifen will significantly reduce the chance of becoming pregnant. If a pregnancy does occur whilst on Tamoxifen, there may be harmful effects on the pregnancy. Tamoxifen should be stopped at least two months before trying to conceive.
- Women who are breast feeding.
- Women who have had cancer of the womb.
- Women taking HRT.
- Women who have a personal or family history of blood clots, for example deep vein thrombosis (DVT), should let their doctor know as Tamoxifen may not be suitable.
- Women who have had early surgical menopause from having their ovaries and Fallopian tubes removed (known as Bilateral Salpingo-Oophorectomy or BSO).

Side-effects

Tamoxifen, like many medications, may cause unwanted side-effects. Often, Tamoxifen causes symptoms similar to the menopause. These side-effects may be worse for some than for others, as each person's reaction to any medicine is different. Some people have very few side-effects, while others may experience more. If you have side-effects, you should discuss these with your GP. Very rarely, if the side-effects are severe, you may have to stop taking Tamoxifen. You may have some of the following side-effects, to varying degrees.

Common side-effects

- **Hot flushes and sweats.** These are a common side-effect of Tamoxifen. These symptoms may gradually lessen over the first few months, but some people continue to have them for as long as they take Tamoxifen. There are a number of ways to help reduce or control hot flushes and sweats. Some people find it helps to avoid or cut down on tea, coffee, nicotine, and alcohol.
- **Feeling sick (nausea).** Nausea may occur but can often be relieved by taking the tablets with food or milk, or at night. Nausea is quite common initially, it usually improves after a few weeks.
- Tamoxifen usually **reduces the pain and tenderness some women experience before and during periods.**
- **Gynaecological problems.** Women who have not yet had the menopause may notice that their monthly periods change. They may become irregular, lighter, or sometimes stop altogether. Some women also notice an increase in vaginal discharge and itching of the area around the vagina (the vulva). Periods may also become heavier. This can be associated with pain and may be the result of an increase in size of any pre-existing fibroids. Tamoxifen may cause painful enlargement of ovarian cysts.
- **Leg cramps.** Some people get leg cramps with Tamoxifen. Walking may stretch the muscle and help with this. Let your doctor know if leg cramps are a problem. **If your leg becomes red, hot, or swollen, tell your doctor immediately.**

Less common side-effects

- **Headaches.** Some people affected by migraines notice a change in the pattern of their headaches, often a reduction in frequency.

- **Blood clots (thrombosis).** The risk of blood clots doubles whilst a woman takes Tamoxifen, but the risk returns to normal once Tamoxifen is stopped. In one study nine out of 1000 women taking Tamoxifen for five years before the menopause had a blood clot compared to four out of 1000 women not taking Tamoxifen. **Whilst you are on the drug, if you have any pain, warmth, swelling, or tenderness in an arm or leg or any chest pain, you must tell your doctor straight away.** Women should stop Tamoxifen six weeks before any planned surgery to reduce the risk of blood clots.
- **Vision problems.** Blurred or reduced vision is very rare, but any changes in your eyesight should be reported to your doctor.
- **Voice changes.** This side-effect has been reported by some people. Professional singers may want to seek help and advice from their doctor.

Effects of other drugs on taking Tamoxifen

Research suggests some drugs – including the antidepressants Paroxetine (Seroxat®) and Fluoxetine (Prozac®) – cause Tamoxifen to be less effective. Tell your doctors about any other medicines you are taking so that they can check whether it is safe for you to use them alongside Tamoxifen.

Not all women at an increased lifetime chance of developing breast cancer will decide to take chemoprevention. The potential benefits and side-effects should be considered. It is not recommended to continue taking Tamoxifen for more than five years for women with no personal history of breast cancer.

What should I do next?

If you have previously had your risk of breast cancer assessed and you fall into the moderate risk category, and wish to consider taking Tamoxifen you should talk to your genetics team or breast clinic about this. If you have not had your risk of breast cancer assessed, you should ask your GP to refer you either to the local breast cancer family history clinic or your local genetics service. Decision aids to help women, along with a healthcare professional, make a more informed choice about which tablet, if any, is right for them are available on the National Institute for Health and Care Excellence (NICE) web site (<https://www.nice.org.uk/guidance/cg164/resources>).

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This leaflet has been produced with and for patients.

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