Medications to lower the chance of breast cancer

INFORMATION FOR WOMEN

Clinical Oncology Society of Australia

This information is for women who have **NOT** had breast cancer, but have an increased chance of getting breast cancer. There are medications that, when taken daily for 3-5 years, lower the chance of a woman getting breast cancer. The most commonly prescribed is tamoxifen. Tamoxifen can be used regardless of whether a woman has been through menopause. Three other medications that also reduce the risk of breast cancer are raloxifene, anastrozole and exemestane, but these must only be used by women who have definitely been through menopause.

Who can benefit from using medications to reduce breast cancer risk?

Women who have a breast cancer risk that is at least 1.5 times greater than that of the general population may benefit. You can check your breast cancer risk with your doctor or by using the iPrevent online tool www.petermac.org/iprevent Some things that may increase breast cancer risk include having a family history of breast cancer, or an inherited fault in a breast cancer gene, or a previous abnormal breast biopsy (LCIS or atypical hyperplasia), or having had previous irradiation to the chest for treatment of a condition such as Hodgkins disease. In addition, some women have a combination of other factors that increase risk (such as use of combined hormone replacement therapy or the pill, being overweight after menopause, having fewer or no children, not breastfeeding, drinking alcohol, and not exercising regularly).

Breast cancer and estrogen receptors

Hormone receptors are proteins that are found in and on breast cells. A cancer is called **estrogen-receptor-positive** (ER-positive) if it has receptors for estrogen. A cancer is called estrogen-receptor-negative (ER-negative) if it does not have receptors for estrogen.

- Most breast cancers are ER-positive
- Medications can prevent some ER-positive breast cancers
- Medications do not prevent ER-negative breast cancers

How effective are these medications?

These medications lower the chance of getting ER-positive breast cancer by between about a half to a third. Apart from tamoxifen and raloxifene, these medications have not been compared in the same trial, so it is impossible to be sure of their comparative effectiveness (although raloxifene is less effective than tamoxifen). For a specific woman, the actual (or absolute) risk reduction varies depending on how high her chance of getting breast cancer is in the first place (her baseline risk of breast cancer). Baseline risk varies from one woman to another, and depends on factors such as age, medical history, and family history (see the blue box). You can work out your own breast cancer risk by using iPrevent www.petermac.org/iprevent.

Useful links

Information for women about RRM (on UpToDate)
https://www.uptodate.com/contents/medications-for-the-prevention-of-breast-cancer-beyond-the-basics

THINKING ABOUT CHANCES AND RISKS CAN BE DIFFICULT

Imagine 100 women have a baseline chance of breast cancer that is 20% (1 in 5) chance over the next 10 years.

- This 20% chance means that 20 of the 100 (or 1 in 5) women will get breast cancer at some time in the next 10 years
- Now consider a medication that halves the risk of breast cancer (lowers the relative risk by a half)
- This means that the medication lowers the breast cancer risk from 20% (1 in 5) to 10% (1 in 10).
    - In other words, the medication lowers the absolute risk by 10%

So now only 10 of the 100 women will get breast cancer in the next 10 years, instead of 20. An extra 10 in 100 (or 1 in 10) patients have avoided breast cancer by taking the medication.

Your doctor can estimate your baseline breast cancer risk, and also help you weigh up between the benefit of taking SERM, and the potential harm from the side effects of SERM.

Tamoxifen

Tamoxifen is suitable for pre- and post-menopausal women.

The usual starting dose is usually a 20 mg tablet once a day for 5 years (standard dose). This 20mg daily dose is government subsidised (funded onthe PBS) for women at increased risk of breast cancer.

A recent study has suggested a dose of 10mg every second day is a reasonable alternative for women who would like to take tamoxifen but who don't tolerate the 20mg dose (lower dose). Due to fewer clinical trials and shorter follow-up, there is some uncertainty about the exact extent of the benefits and side-effects of the lower dose compared with the standard dose. It is likely that the lower dose causes fewer hot flushes and night sweats. The benefit of taking the standard dose lasts at least 20 years. It is not yet known if the benefit of the lower dose lasts as long as 20 years, but it does last for at least 10 years. The 10mg tablets are not covered by PBS but can be self-funded at a low cost.

Benefits

Tamoxifen lowers the chance of ER-positive breast cancer.
The benefit of taking tamoxifen for 5 years lasts for many years after ceasing the medication.
In post-menopausal women tamoxifen lowers the chance of fractures.Tamoxifen reduces breast complaints such as tenderness.
Tamoxifen can reduce mammographic density and make a woman's mammograms easier to read.
Even though tamoxifen lowers the chance of getting breast cancer (and needing treatment), we do not know if using tamoxifen as a risk-reducing medication leads to a longer lifespan.

Common side effects of tamoxifen

Every woman's experience is different. Most tolerate tamoxifen well, but some have side effects that will make them reduce the dose of the medication or stop it altogether. You need to take

tamoxifen for about 6 weeks before you have a good sense of whether it will cause you side-effects.
The most common side effects are menopausal symptoms (e.g. hot flushes, night sweats, vaginal discharge). On average an extra 1 woman in every 10 who take tamoxifen will have worse hot flushes. These side effects appear to be less frequent with the lower, 5mg dose.
Some women notice that their periods change (become irregular, lighter, or stop altogether). Despite this, tamoxifen does not cause menopause and it is very important to use effective non-hormonal contraception.

Less common side effects of tamoxifen

Tamoxifen can increase bladder control problems and leg cramps.
Tamoxifen causes a small increase in the chance of blood clots; the medical names for these events include thromboembolic events, pulmonary embolism (PE) and deep venous thrombosis (DVT). On average the excess risk of these conditions due to tamoxifen is about 1 in 250 women over 5 years of use.
In post-menopausal women (but not pre-menopausal), tamoxifen causes a small increase in the chance of endometrial (uterus) cancer). On average the excess risk due to tamoxifen is about 1 in 250 post-menopausal women over 5 years of use.
If you are post-menopausal and taking tamoxifen, tell your doctor about any abnormal vaginal bleeding or spotting.
Tamoxifen also increases the risk of cataracts. On average the excess risk due to tamoxifen is about 1 in 250 post-menopausal women over 5 years of use.

Contraindications: who should not take tamoxifen

Not recommended if lifetime breast cancer risk is less than 1.5 times the population risk.
Not recommended for pre-menopausal women who do not intend to use adequate non-hormonal contraception.
Not recommended for women who have had blood clots (including DVT, PE or stroke).
Not recommended for women who take anticoagulants, hormone replacement therapy or the combined oral contraceptive (the Pill).
Not recommended for women who smoke.
Not recommended for women who are pregnant, breastfeeding or planning a pregnancy within the next 3 years.
Not recommended for women who have been diagnosed with uterine cancer.
Not recommended for women taking strong CYP2D6 inhibitors (eg some anti-depressants – consider changing the CYP2D6 inhibitor with your doctor's advice). Caution in women who take other medications that interact with tamoxifen.

Raloxifene

Raloxifene is suitable for post-menopausal women.
The dose for raloxifene is usually a 60 mg tablet once a day for 5 years.

Benefits

Raloxifene lowers the chance of ER-positive breast cancer.
Raloxifene is less effective than tamoxifen (eg if tamoxifen prevents 4 breast cancers in a group of women, raloxifene would only prevent 3).
Raloxifene lowers the chance of fractures.
Even though raloxifene lowers the chance of getting breast cancer (and needing treatment), we do not know if using raloxifene as risk-reducing medication leads to a longer lifespan.

Common side effects of raloxifene

Every woman's experience is different. Most tolerate raloxifene well, but some have side effects that will make them stop the medication. You need to take raloxifene for about 6 weeks before you have a good sense of whether it will cause you side-effects.
Overall raloxifene and tamoxifen result in similar quality of life, but women taking raloxifene report worse sexual function.
Raloxifene causes more muscle aches, painful sexual intercourse and weight gain compared with tamoxifen. On the other hand, hot flushes, leg cramps and bladder control issues are less common on raloxifene than tamoxifen.

Less common side effects of raloxifene

Raloxifene causes a small increase in the chance of blood clots; the medical names for these events include thromboembolic events, pulmonary embolism (PE) and deep venous thrombosis (DVT). The excess risk is less than with tamoxifen and is on average about 1 in 330 women over 5 years.
Raloxifene does NOT increase the chance of endometrial (uterus) cancer. Raloxifene causes fewer cataracts than tamoxifen.

Contraindications: who should not take raloxifene

Not recommended if lifetime breast cancer risk is less than 1.5 times the population risk.
Not recommended for pre-menopausal women.
Not recommended for women who have had blood clots (including DVT, PE or stroke).
Not recommended for women who take anticoagulants, hormone replacement therapy or the combined oral contraceptive (the Pill).
Not recommended for women who smoke.
Caution in women who take medications that interact with raloxifene.

Anastrozole

Anastrozole is suitable for post-menopausal women. The dose is usually a 1mg tablet once a day for 5 years.

Benefits

Anastrozole lowers the chance of ER-positive breast cancer.
The benefit of taking anastrozole for 5 years lasts for at least 10 years.
Even though anastrozole lowers the chance of getting breast cancer (and needing treatment), we do not know if using anastrozole as risk-reducing medication leads to a longer lifespan.

Common side effects of anastrozole

Every woman's experience is different. Most tolerate anastrozole well, but some have side effects that will make them stop the medication. You need to take anastrozole for about 6 weeks before you have a good sense of whether it will cause you side-effects.
The most common side effects are menopausal symptoms (e.g. hot flushes, night sweats, vaginal dryness). On average an extra 1 woman in every 12 who take anastrozole will have worse hot flushes and an extra 1 in 30 will have vaginal dryness on anastrozole.
Anastrozole increases dry eyes, with on average an extra 1 in 15 women experiencing this when on anastrozole.
Anastrozole can increase joint and muscle pain with on average an extra 1 in 15 women experiencing this on anastrozole.

Less common side effects of anastrozole

Anastrozole can cause carpal tunnel syndrome (which can cause numbness and pins and needles inthe hands). On average about 1 in 100 women on anastrozole experience this.
Anastrozole did not increase fractures in the one trial that has tested it for breast cancer prevention,but it does increase osteoporosis and fractures in other settings.

Contraindications: who should not take anastrozole

Not recommended if lifetime breast cancer risk is less than 1.5 times the population risk.
Not recommended for pre-menopausal women.
Not recommended for women who take hormone replacement therapy.
Not recommended for women with osteoporosis.
Caution in women who take medications that interact with anastrozole.

Exemestane

Exemestane is suitable for post-menopausal women. The dose is usually a 25mg tablet once a day for 5 years.

Benefits

Exemestane lowers the chance of ER-positive breast cancer.
Unlike anastrozole and tamoxifen, there is no information about whether the reduction in breast cancer risk continues after completing the 5-year course.
Even though exemestane lowers the chance of getting breast cancer (and needing treatment), we do not know if using anastrozole as risk-reducing medication leads to a longer lifespan.

Common side effects of exemestane

Every woman's experience is different. Most tolerate exemestane well, but some have side effects that will make them stop the medication. You need to take exemestane for about 6 weeks before you have a good sense of whether it will cause you side-effects.
The most common side effects are menopausal symptoms (e.g. hot flushes, night sweats, vaginal dryness). On average an extra 1 woman in every 12 who take exemestane will have worse hot flushes.
Exemestane increases diarrhoea and nausea with on average an extra 1 in 25 women experiencing these when on exemestane.
Exemestane can increase joint and muscle pain with on average an extra 1 in 30 women experiencing this on exemestane.

Less common side effects of exemestane

Exemestane did not increase fractures in the one trial that has tested it for breast cancer prevention, but it does increase osteoporosis and fractures in other settings.

Contraindications: who should not take exemestane

Not recommended if lifetime breast cancer risk is less than 1.5 times the population risk.
Not recommended for pre-menopausal women.
Not recommended for women who take hormone replacement therapy.
Not recommended for women with osteoporosis.
Caution in women who take medications that interact with exemestane.

Have I been through the menopause?

It is sometimes confusing for women to know if they have been through the menopause. If you are in any of the following 4 groups, you have probably gone through menopause and you could potentially use any of the 4 medications described above. If you don't fit any of the 4 groups below,you may not have gone through the menopause and tamoxifen is the only potentially appropriate options for you.

1) You are aged 60 or older and not having periods, or
2) You have had both your ovaries removed, or
3) You are younger than 60, still have your uterus (womb) and have not had a period for more than 12 months (and you don't have an alternative explanation for why your periods might have stopped – such as continuous contraceptive pill use, a Mirena IUD, pregnancy or breastfeeding), or
4) You are younger than 60 without a uterus (womb) and with an FSH hormone level (measuredon a blood test) in the post-menopausal range and assuming you have not been on hormonereplacement therapy for at least 8 weeks before the FSH test.