Effective Health Care Program

Reducing the Risk of Breast Cancer With Medicine

A Guide for Women

DEPARTMENT OF HEALTH & HUMAN SERVICES • USA

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Agency for Healthcare Research and Quality

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Fast Facts

- Most women will never get breast cancer.
- A woman's risk of breast cancer increases with age.
- Two different medicines can lower the risk of some kinds of breast cancer.
- Both medicines have side effects and sometimes cause serious problems.

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What does this guide cover?

This guide can help you talk with your doctor or nurse about medicine to reduce the risk of breast cancer. It talks about two different medicines. It gives information about benefits, side effects, and cost.

This guide is based on a government-funded review of research reports about using medicine to lower the risk of breast cancer.

What is not covered in this guide?

This guide does not cover other ways to lower your risk of breast cancer. It does not discuss having surgery to lower the risk of breast cancer. It also does not cover reducing the risk of breast cancer in men because these medicines have not been studied in men.

This guide does not talk about screening for breast cancer. It also does not cover treatments for women who already have breast cancer.

Risk of Breast Cancer

Most women will never get breast cancer. A woman's risk of breast cancer depends on her age and other risk factors. Most women who get breast cancer have no risk factors other than growing older. And many women who have risk factors other than age never get breast cancer.

The chart below shows how many women (out of 100) will get breast cancer over the next 10 years. The risk of developing breast cancer increases with age. By finding your current age, you will see the risk of someone in your age group.

Number of Women Who Get Breast Cancer Over 10 Years

Age	Estimated risk
30 to 39	Less than 1 in 100
40 to 49	About 1 in 100
50 to 59	About 2 in 100
60 to 69	About 3 in 100
70 to 79	About 4 in 100

Estimated risk for women in the United States. This information comes from Surveillance, Epidemiology and End Results (SEER) Cancer Statistics Review, 1975-2005, National Cancer Institute.

Breast Cancer Risk Factors

Age

Getting older raises the risk of breast cancer.

Family history

Having a mother, sister, or daughter who had breast cancer raises the risk.

Breast biopsy history

Having an abnormal finding on a past breast biopsy raises the risk of breast cancer.

Menstrual history

Having your first period at an early age (before age 12) raises the risk. Going through menopause late (after age 55) raises the risk.

Reproductive history

Having your first child later in life raises the risk of breast cancer. Never having children also raises the risk.

Menopause hormone therapy

Taking hormones for menopause (estrogen alone or estrogen plus progestin) raises the risk.

Obesity

Being obese (very overweight) raises the risk of breast cancer.

Alcohol use

Having more than one or two drinks a day raises the risk.

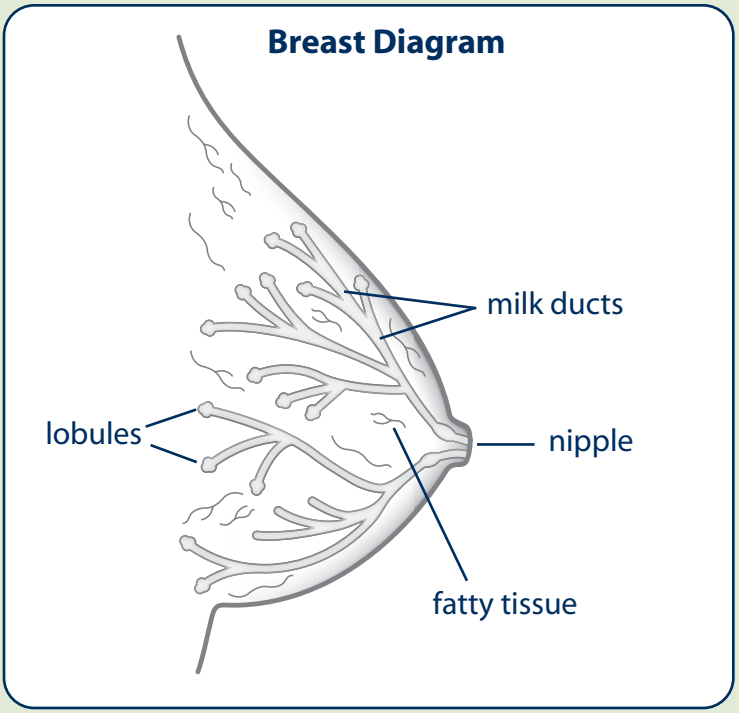
Other risk factors

It is rare, but some women are born with a gene that puts them at high risk for breast cancer. Having radiation treatment at a young age also raises the risk.

Learning About Breast Cancer

Breast cancer is a malignant (muh-LIG-nent) tumor that starts with cells in the breast. Malignant means that the cells are cancerous and may spread to other tissue in the breast. Sometimes the cancer cells spread outside the breast to other parts of the body. This means they metastasize (meh-TASS-ta-size).

Ducts in the breast carry milk to the nipple. Most breast cancers start in the cells that make up the milk ducts. Some breast cancers start in the lobules (glands where breast milk is made).



A breast biopsy is the only way to tell if breast cells are abnormal or cancerous. For a breast biopsy, a doctor removes a small piece of breast tissue. The tissue is looked at under a microscope to check for changes. If the cells are abnormal or cancerous, a biopsy may tell if they are still in one place or if they have started to spread.

Non-invasive breast cancer

A non-invasive breast cancer is a growth of abnormal cells found in the breast. The cells have not spread to other tissue in the breast or other parts of the body.

- LCIS (lobular carcinoma in situ)—With LCIS, abnormal cells grow inside the lobules. "In situ" means "in place." The abnormal cells have stayed in one place. LCIS rarely becomes invasive cancer. But women with LCIS are at higher risk for invasive breast cancer.
- DCIS (ductal carcinoma in situ)—With DCIS, abnormal cells grow inside the milk ducts. It is called "in situ" because the abnormal cells have stayed in one place. DCIS is the most common non-invasive breast cancer. There is a chance that DCIS might become invasive cancer later on.

Invasive breast cancer

With invasive breast cancer, the abnormal cells have spread beyond the place where they started. Invasive breast cancer can start in the milk ducts or the lobules. But "invasive" means that the cancerous cells have spread to other breast tissue.

About the Medicines

Two different medicines can reduce the risk of breast cancer for women who have never had breast cancer before.

- Raloxifene (ra-LOX-ih-feen). It is only approved for use after menopause.
- Tamoxifen (ta-MOX-ih-fen). It is approved for use before and after menopause.

To reduce the risk of breast cancer, tamoxifen or raloxifene must be taken once every day for up to 5 years.

How they work

Estrogen is a natural hormone found in the body. Some breast cancers use estrogen to grow. There is a place on some breast cancer cells, called a receptor, where estrogen can attach. This type of breast cancer is called estrogen-receptor positive cancer.

Tamoxifen and raloxifene work by blocking estrogen. They attach to the receptor, so estrogen can't. Without estrogen, this type of breast cancer cell can't multiply and grow.

Some breast cancers do not have estrogen receptors. This type of breast cancer is called estrogen-receptor negative cancer. It is not as common, but it is harder to treat.

- Raloxifene and tamoxifen reduce the risk of breast cancers that have estrogen receptors.
- They do not reduce the risk of breast cancers without estrogen receptors.

Possible Benefits

For women who have never had breast cancer, both tamoxifen and raloxifene reduce invasive breast cancer risk by about 50 percent.

For example, this chart shows the overall risk for women in the United States age 50 to 59. Their risk of getting invasive breast cancer in the next 10 years is about 2 in 100. This means that out of every 100 women, about 2 will get breast cancer. If all 100 of these women take medicine to reduce the risk of breast cancer, about half as many (1 woman) will get breast cancer.

= the number of women who will get invasive breast cancer without taking medicine (2 out of 100).

= the number of women who will get invasive breast cancer when all the women take medicine (1 out of 100).

Raloxifene does not lower the risk of non-invasive breast cancers (LCIS and DCIS). Research can't tell us yet about tamoxifen and non-invasive breast cancers.

Possible Problems

Both tamoxifen and raloxifene have common side effects. They both can cause hot flashes. Tamoxifen can cause vaginal symptoms, like itching, dryness, or discharge. Raloxifene can cause leg cramps.

Some women who have taken tamoxifen or raloxifene have had a stroke. Research studies have found that the number of strokes in women taking these medicines is about the same as in women not taking these medicines. Talk with your doctor or nurse about your risk for stroke.

Other serious and life-threatening side effects can also happen.

- **Blood clots in the lungs and legs**. Tamoxifen and raloxifene raise the risk of blood clots. Blood clots happen more often with tamoxifen than raloxifene.
- **Endometrial cancer (cancer of the uterus lining)**. Tamoxifen raises the risk of endometrial cancer. Raloxifene does not.

For every 100 women who take tamoxifen or raloxifene for 5 years, the medicine will cause a blood clot or endometrial cancer in about 1 woman.

Taking raloxifene or tamoxifen reduces a woman's risk of some kinds of breast cancer. Some women who take these medicines will still get breast cancer.

Taking the medicines does not reduce the risk of dying from breast cancer. It also does not mean a woman will live longer. It is not clear why this is the case. Maybe the medicines reduce the kinds of breast cancers that are easiest to treat.

Thinking About the Decision

Most women will never get breast cancer. But some women are at higher risk than others. Talk with your doctor or nurse about your risk of breast cancer.

Tamoxifen and raloxifene can lower the risk of getting some kinds of breast cancer. These medicines also can raise the risk of serious problems. Talk with your doctor or nurse about your risk for serious problems from these medicines.

Think about these questions.

- **Do I have a high or a low risk for breast cancer? Do I have a high or low risk for serious problems from the medicine?**

  The risk of side effects should not be higher than the benefit of the medicine.

- **Can I stick with it?**

  These medicines need to be taken every day for up to 5 years. They often can cause hot flashes.

- **Does the cost of the medicines affect my decision?**

  The cost of the medicines may be important to you. They need to be taken for a long time, and the cost can add up. Check to see if your insurance covers using these medicines to lower breast cancer risk. The chart on page 10 gives you an idea of the cost.

Price of Raloxifene and Tamoxifen

Drug Name	Brand Name	Dose[1]	How Often, How Long	How It Is Taken	Price Per Month[2]	
					Generic	*Brand*
Raloxifene	Evista®	60 mg	Once a day[3]	Pill	NA	$115
Tamoxifen	Nolvadex®	20 mg	Once a day for 5 years	Pill	$115	$245

[1]Doses are for reducing the risk of breast cancer.
[2]Average Wholesale Price from *Red Book*, 2009.
[3]We do not know yet how long raloxifene should be taken for breast cancer prevention.
NA = not available as generic.

Questions for Your Doctor or Nurse

- What is my risk for breast cancer? Is my risk higher or lower than other women my age?

- What if I don't want to start medicine at the age I am now? Can I decide to start later?

- Is my risk for blood clots higher than usual?

- Is one of these medicines a better choice for me? Why?

- What help is there for side effects, like hot flashes?

- Can I do anything else to lower my risk for breast cancer?

For More Information

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To learn more about breast cancer, visit the MedlinePlus Web site: www.nlm.nih.gov/medlineplus/breastcancer.html.

For more information about breast cancer prevention, visit the National Cancer Institute Web site: www.cancer.gov/cancertopics/pdq/prevention/breast/patient.

Source

The information in this guide comes from a detailed review of 123 research reports. The review is called *Comparative Effectiveness of Medications To Reduce the Risk of Primary Breast Cancer in Women* (2009) and was written by the Oregon Evidence-based Practice Center.

The Agency for Healthcare Research and Quality (AHRQ) created the Eisenberg Center at Oregon Health & Science University to make research helpful for consumers. This guide was written by Erin Davis, B.A., Martha Schechtel, R.N., Bruin Rugge, M.D., and David Hickam, M.D., of the Eisenberg Center. Women at high risk for breast cancer helped the Eisenberg Center develop this guide.

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