



# BRCA Gene Mutations

**Reducing Your Cancer Risks** 





## Sri Shankara CANCER HOSPITAL & RESEARCH CENTRE

#### BRCA Gene Mutations: Reducing Your Cancer Risks

This resource is written for people who have a positive test result for a mutation in breast cancer gene 1 (BRCA1) or breast cancer gene 2 (BRCA2). It also is for people who are at risk of a BRCA1 or BRCA2 gene mutation because a family member has one of these mutations.

A mutation is an alteration, or change, in a gene. Having a BRCA mutation means you have a greater risk of breast, ovarian and some other kinds of cancer.

This resource can help you learn more about your cancer risks. The material talks about screening exams your doctor may suggest for you. It also outlines choices that may help to lower your cancer risk. It you have questions after you read this resource, talk with your doctor.

#### Cancer Risk and BRCA Mutations

BRCA gene mutations increase the risk of breast and ovarian cancer. They also are linked to cancers of the pancreas, prostate, fallopian tubes and peritoneum. The peritoneum is the tissue that lines the inside of the abdomen.

Please remember that a positive test result only gives you information about your **risk** of cancer. It **does not** mean you **will** get cancer.



#### **Estimated Life Time Cancer Risk**

Cancer type	General population risk	Risk if you have a BRCA gene mutation
Breast	12%	49-87%
Second Breast	Up to 20% at 20 years after first diagnosis	20-63%
Male breast	0.12%	1.2-7%
Ovarian or fallopian tube	1.4%	15-44%
Pancreatic	1.5%	3-5%
Prostate	16%	Estimated 20-40%

**Table 1.** How BRCA mutations may affect the lifetime risk of certain cancers compared to the life time risk of the general population. "Lifetime risk" refers to the risk of cancer over the course of a lifetime.

**Note:** These estimates are based on research to date. Future studies may find the risk is higher or lower than shown in Table 1. Further research also may show whether BRCA mutations increase the risk of other cancers, such as melanoma or cancer of the colon or stomach.

Estimating a person's cancer risk is a complex process. Your risks may differ from those in Table 1. Before you have any treatment aimed at lowering cancer risks, ask your doctor to help you assess your risk.

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If you have a BRCA gene mutation, several strategies may help to lower your cancer risk or find cancer at an earlier stage. Your doctor may suggest some extra screening exams. For some women, certain medicines may lower the risk of breast or ovarian cancers. To help prevent cancer, some women may have surgery to remove healthy breasts or to remove their ovaries and fallopian tubes. The sections that follow give you more detail about these strategies.

What you choose to do depends on many things. It depends on your age, medical history and past treatments or surgeries. It depends on whether you wish to have children naturally in the future. Your personal preferences also may affect your choices. Talk with your doctor to help you create a plan that is right for you.

#### Screening and Observation Guidelines

Your doctor may suggest that you begin cancer screenings at a younger age and have them more often than people in the general population. These tests do not prevent cancer. But they may help to find it early, when treatment is most successful.

The following materials outlines the usual screening guidelines for people who have a BRCA gene mutation. However, always follow the guidelines your provider gives you.

#### Breast Cancer in Women



If you are a woman with a BRCA mutation, your doctor may suggest that you:

- Examine your breasts starting at age 18.
- Have a clinical breast exam by a doctor every 6 to 12 months starting at age 25.
- Have a mammogram each year starting between ages 25 and 30.
- Have breast Magnetic Resonance Imaging (MRI) every year starting at age 25.

Sometimes breast ultrasound is used to check an area of concern found by a breast exam, mammogram or MRI.

A breast cancer found by mammogram or MRI before it can be felt by physical exam is more likely to be treated successfully than one that is large enough to be felt. Finding cancer early can greatly increase your chance of successful treatment.

#### Breast Cancer in Men

If you are a man with a BRCA mutation, talk with your doctor about any changes to your breast tissue or lumps that you find. Your doctor may suggest that you:

- You examine your breasts starting at age 35.
- Have a clinical breast exam by a doctor every 6 to 12 months starting at age 35.
- Have a base line mammogram at age 40, or possibly a mammogram every year.



#### Ovarian Cancer in Women

At the present time, screening tests have not been shown to find ovarian cancer in its early stages. Therefore, it is very important to talk with your doctor about the possible signs of ovarian cancer.

If you have a BRCA mutation, your doctor probably will suggest that you have your ovaries and fallopian tubes taken out. See "Prophylactic Salpingo-Oophorectomy" for more information about this surgery.

If you have not had your ovaries and fallopian tubes taken out yet, your doctor may suggest ovarian cancer screening every 6 months starting at age 30. Ovarian cancer screening may include regular pelvic exams.

Your provider also may talk with you about having a cancer antigen 125 (CA-125) blood test. CA-125 is a protein found on the surface of ovarian cancer cells. It is also found on some healthy tissue. Many women with ovarian cancer have high levels of this protein in their blood.

The CA-125 test is not accurate enough to check for ovarian cancer in all women. Many conditions that are not cancer can increase the CA-125 level. In addition, many women with early-stage ovarian cancer have normal CA-125 levels. Talk with your doctor about the risks and benefits of this test.

Another test your provider may suggest is a Transvaginal Ultrasound. Ultrasound uses sound waves to make pictures of the inside of your body. This lets your provider see pictures of your ovaries, uterus and other nearby structures.

### Prostate Cancer in Men



If you are a man with BRCA mutation, your doctor may suggest that you have a rectal exam and a Prostate Specific Antigen (PSA) blood test each year starting between ages 40 and 50.

#### Melanoma

Some studies suggest that BRCA2 mutations may increase the risk of melanoma. If you have this kind of gene mutation, check your skin regularly. Call your doctor if you find changes in the size, shape or colour of any moles or other skin changes. In addition, have a doctor do a skin exam each year.

#### Pancreatic Cancer

Right now there are no effective screening tests for pancreatic cancer. Some medical centres are studying new methods to screen for the disease. Talk with your doctor if you would like to know more about taking part in a research study.

#### Medicine

Taking medicine to lower your risk of cancer is called chemoprevention. Certain medicines may help lower your risk of breast and ovarian cancers.



Tamoxifen, Raloxifene and Aromatase inhibitors can greatly lower the risk of breast cancer among women in the general population. More research is needed to find out whether these and other medicines can safely reduce the risk of breast cancer in women with BRCA mutation.

Taking oral contraceptives lowers the risk of ovarian cancer in women who have BRCA mutation. More research is needed to show which kind and what dose works best and to find the best age to start and stop these medicines.

All medicines have potential side effects and complications. For example, Tamoxifen is linked to an increased risk of blood clots and uterine cancer. Oral contraceptives may slightly increase the risk of breast cancer and blood clots. Ask your doctor to help you weigh the benefits and risks of any medicine you may want to take.

#### What to Consider

Surgery to prevent cancer is an elective surgery. You do not have to have it. Each woman's situation is different.

Medical and personal reasons will affect your decision about surgery. Financial situation plays a role, too. Before you have any surgery, you may wish to find out whether your insurance company will pay for it.

Preventive surgery does not take away all your cancer risks. Cancer still might develop in any tissue that remains after surgery.



All surgery has possible side effects and complications. Before you have any surgery, talk with your surgeon about your choices. Be sure you understand the benefits and risks of all possible treatments so you can make the right choice for you.

#### Lifestyle Choices

It is always a good idea to make healthy choices about diet, exercise and other activities. However, these choices alone cannot take away the cancer risk that comes with a BRCA mutation.

Take these steps for good health:

- Do not smoke or use tobacco products. Tobacco use increases the risk of many kinds of cancer.
- If you choose to drink alcohol, do so in moderation. This means up to one drink a day for women and two drinks a day for men.
- Stay active. Aim for 30 minutes of physical activity on most days.
- Reach and stay at a healthy weight.
- Limit your time in direct sunlight. When you are outside, use sunscreen with a sun protection factor (SPF) of 30 or higher and UVA and UVB protection. Wear protective clothing, such as long sleeves and a hat with a wide brim. Do not use tanning beds.

#### Some Final Thoughts

It can be upsetting to learn you have a BRCA gene mutation. Consider talking to a counsellor about your thoughts and feelings. If you wish, talk with your family and close friends about your concerns. Ask your doctor about organizations, websites and other sources of information and support.



Many things will affect what you choose to do to help lower risk of breast, ovarian and other cancers. Take time to think about the benefits and risks of different screenings and prevention choices. Your doctor can give you more information to help you decide what is right for you.

If you have a BRCA gene mutation, let your family members know that they also may have a BRCA mutation. You may have inherited the mutation from either your father or your mother. Your siblings may carry the same mutation.

In addition, you could pass the mutation to your children. Every child (both sons and daughters) of a parent who has a BRCA mutation has 1 chance in 2, or a 50–50 chance, to inherit the same mutation. Both males and females can pass this mutation to their biological children.

#### More Information

If you have questions about this information, talk to your doctor.



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