

# BASSER CENTER FOR BRCA

## BRCA1 AND BRCA2 IN MEN

Everyone has *BRCA1* and *BRCA2* genes. These genes help repair damage to the DNA within cells. However, some individuals inherit a mutation in one of their BRCA genes, which increases their risk for certain cancers, including breast (female and male), ovarian, pancreatic and prostate cancers, as well as melanoma. Those who test positive for a gene mutation have options available to manage and lower their cancer risks.

Men can carry *BRCA1* or *BRCA2* mutations, also known as pathogenic variants, and can be at increased risk for certain cancers. While cancer risks in male BRCA mutation carriers are not as dramatically elevated as those of female BRCA mutation carriers, cancer risk management and early detection are vital. It is important for both men and women to remember that a family history of breast, ovarian, prostate or pancreatic cancers on their father's side of the family may indicate a hereditary gene mutation. Many people mistakenly believe a family history of breast or ovarian cancer only matters on their mother's side of the family. **Men can inherit a BRCA gene mutation from their mother or father and can pass on their BRCA gene mutation to their male and female children.**

Medical management for men with *BRCA1/2* mutations changes at age 35–40. Ages at which screenings begin are dependent on family history and should be discussed with a physician.

- Starting at age 35, male BRCA mutation carriers should begin yearly clinical breast exams with a physician
- At age 40, prostate cancer screenings are recommended for *BRCA2* carriers and should be considered for *BRCA1* carriers
- Starting at age 50, pancreatic cancer screening may be considered for individuals with a *BRCA1/2* gene mutation
- Regarding risk of melanoma, men with a BRCA mutation should also ensure they have an annual full-body skin exam and employ sun protection practices.

Men with a known BRCA mutation may also wish to use genetic testing for reproductive reasons. The decision to use reproductive technologies to avoid passing on genetic traits is a deeply personal choice. For individuals that want to consider these technologies, preimplantation genetic testing (PGT) may be an option when in vitro fertilization (IVF) is used. PGT involves screening of embryos (fertilized eggs) for a specific gene mutation, such as a *BRCA1/2* mutation, before being transferred into the uterus. This can be an option for individuals who carry a hereditary condition and wish to significantly reduce the chance of passing it on to a child.



# INCREASED LIFETIME CANCER RISKS WITH BRCA MUTATION

	<b>BRCA1</b>	<b>BRCA2</b>
<b>BREAST CANCER</b> 	1-5% lifetime risk	5-10% lifetime risk
<b>PANCREATIC CANCER</b> 	2-3% lifetime risk	3-5% lifetime risk
<b>PROSTATE CANCER</b> 	may develop at a younger age	25% lifetime risk, more aggressive

*There is a slightly increased lifetime risk of melanoma, especially in BRCA2 mutation carriers.*

## Genetic Counseling and Testing

Men should consider genetic counseling and testing for *BRCA1* or *BRCA2* mutations if:

- They have been diagnosed with male breast cancer, high risk or metastatic prostate cancer, or pancreatic cancer
- There is a known history of a BRCA mutation in the family
- There is a known history of male breast cancer, prostate or pancreatic cancer in the family
- There is a history of early breast cancer (under age 50) and/or a history of ovarian cancer in close female relatives
- The family is of Ashkenazi Jewish ancestry (Central and Eastern European)

If you are considering genetic testing, it is important to consult with a genetic counselor or other healthcare provider. Find a genetic counselor in your area or via telehealth at [findageneticcounselor.nsgc.org](http://findageneticcounselor.nsgc.org). To help your healthcare provider assess your individual risk, family history should be collected from blood relatives on both your mother's and father's sides of the family. This includes your first-degree relatives (parents, siblings, children), second-degree relatives (half-siblings, grandparents, aunts, uncles, nieces, nephews), and third-degree relatives (cousins, great-grandparents, great-aunts, great-uncles). It is important to remember that men can inherit BRCA mutations from both their mother's and father's side of the family, so while collecting information about female breast and ovarian cancer may not seem related to male cancer risk, it is essential in the case of BRCA mutations.

## Cancer Screening and Medical Management

A personalized cancer risk management program can be developed for individuals known to be at increased cancer risk due to a mutation in *BRCA1* or *BRCA2*. You and your doctors will ultimately decide what plan makes the most sense for you. Cancer risk management for men generally includes enhanced screening to increase the chances of early detection, should cancer develop. Your oncologist or primary care physician can help determine your specific screening plan.

## How is breast cancer screening done for male BRCA carriers?

Starting at age 35, male BRCA carriers should begin self-breast exams and undergo clinical breast exams every 12 months with a physician or other healthcare provider. A mammogram may be recommended on an individual basis. Mammograms are done the same way in men as they are performed in women.

## Mammography Screening

A mammogram is a low-dose X-ray procedure that produces images of the inside of the breasts. Mammography can detect suspicious breast changes that are too small or too deep to be felt on breast examination.

A newer technology, called 3-dimensional (3D) mammography, or breast tomosynthesis, can be performed as part of mammography screening. Although some studies have suggested that breast tomosynthesis may find more breast cancers and have fewer false positives than standard mammography, it remains unclear whether this is a better approach. All men should discuss this screening option in more detail with their doctor.

## Prostate Screening

At age 40, prostate cancer screenings are recommended for *BRCA2* mutation carriers and should be considered for *BRCA1* mutation carriers. Prostate cancer screenings may include prostate-specific antigen (PSA) blood tests and digital rectal exams.

## Additional Screening

Melanoma screening plans can be impacted by your personal and family health history and should be guided by your dermatologist. Men with a BRCA mutation may be eligible for pancreatic cancer screening, and should speak to a physician to develop a personalized screening plan for those cancers. For information regarding clinical trials, please review: [basser.org/open-clinical-trials](http://basser.org/open-clinical-trials).