

BASSER CENTER FOR BRCA

BRCA1 and *BRCA2* in the Ashkenazi Jewish Community

Everyone has *BRCA1* and *BRCA2* genes. These genes help repair damage to DNA within cells. However, some individuals inherit a mutation, or error, 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. There are options available to reduce and manage these cancer risks.

Women and men of Ashkenazi Jewish (Central or Eastern European) ancestry have a **1 in 40** chance of carrying a *BRCA1* or *BRCA2* gene mutation. This is about a ten times greater chance than that of the general population. Many Ashkenazi Jewish women and men are not aware that they have a BRCA gene mutation. A personal and/or family history of breast, ovarian, high-grade prostate or pancreatic cancers on your mother's or father's side of the family may be a sign of a hereditary gene mutation. Men and women can inherit a BRCA gene mutation from their mother or father.

Women who have a BRCA gene mutation have up to a 75% lifetime risk of developing breast cancer and up to a 50% lifetime risk of developing ovarian cancer. A personalized cancer risk management plan for women can include increased and earlier screenings (such as breast MRI and mammogram), consideration of risk-reducing surgeries, and chemoprevention. (taking a medication shown to lower the chance of developing cancer).

Men can also have *BRCA1* and *BRCA2* gene mutations and can be at increased risk for certain cancers. While cancer risks in male BRCA carriers are not as dramatically elevated as those of female BRCA carriers, cancer risk management and early detection are crucial. Medical management for men with a BRCA mutation may include clinical breast exams, mammograms and earlier prostate cancer screenings.

In patients already diagnosed with cancer, knowing about a BRCA mutation may provide the opportunity for novel therapies or clinical trials.

FREQUENTLY ASKED QUESTIONS ABOUT *BRCA1* AND *BRCA2*

Who should consider genetic risk evaluation?

Women and men of Ashkenazi Jewish ancestry at highest risk for carrying a BRCA mutation include those with:

- A diagnosis of breast cancer (male or female), ovarian cancer, or pancreatic cancer at any age
- A diagnosis of high grade prostate cancer with a family history of breast, ovarian, pancreatic, or high grade prostate cancer
- A family history of breast, ovarian, pancreatic, or high grade prostate cancer
- A known mutation in a cancer risk gene in a family member

There has been an increasing discussion about BRCA testing in all individuals of Ashkenazi Jewish descent.

How do I collect my family history before my visit to a genetics professional?

Collect a detailed family history of cancer from blood-relatives on both your mother's and father's side of the family. This includes your first degree (parents, siblings, children), second degree (half-siblings, grandparents, aunts, uncles) and third degree (cousins, great grandparents, great-aunts, great-uncles) relatives. It is important to know the types of cancer your relatives have had and the ages when they were diagnosed. It is important to know the types of cancer your relatives have had and the ages when they were diagnosed.

How common are *BRCA1* and *BRCA2* mutations?

Individuals of Ashkenazi Jewish descent have a 1 in 40 chance of having a *BRCA1* or *BRCA2* mutation. This is about a ten times greater probability than that of the general population.

Can women and men have *BRCA* mutations?

Both women and men can have *BRCA* mutations and pass them on to their male and female children.

What is the chance of passing on or inheriting a *BRCA* mutation?

If a mother or father has a mutation, there is a 50% chance of passing it on to each child. This means that some relatives may inherit the *BRCA* mutation in the family and some may not.

How much is *BRCA* testing and does insurance cover it?

The cost of *BRCA* genetic testing varies by the type of test done. Testing for the 3 most common *BRCA* mutations found in the Ashkenazi Jewish community costs several hundred dollars. These costs are often covered, either in part or in full, by insurance carriers when an individual meets certain testing criteria. Medicare typically covers genetic testing for individuals with a personal history of cancer. Medicaid coverage varies by state.

What if I do not have insurance or cannot afford my *BRCA* testing?

Some medical centers and testing labs have financial assistance programs to assist uninsured and underinsured individuals with the cost of their genetic testing.

Will a *BRCA* test result interfere with getting health insurance?

The Genetic Information Nondiscrimination Act (GINA) currently prevents employers and health insurance companies from discriminating against individuals based on their genetic information.

Are mutations in *BRCA1* and *BRCA2* the only ones that impact cancer risk?

Although mutations in the *BRCA* genes are important predictors of cancer risk, they are not the only gene mutations that can increase risk. A thorough risk assessment by a cancer genetics professional can help to determine if testing for other gene mutations is recommended.

Where can I get more information about *BRCA* and help finding a genetics specialist?

Visit basser.org or call the Basser Center for *BRCA* at Penn Medicine's Abramson Cancer Center at **215.662.2748**. The National Society of Genetic Counselors (nsgc.org) is also a helpful resource for finding genetics professionals in your area.

From the **Basser Center for *BRCA*** in collaboration with:

