# *RAD51C* gene

## Associated Syndrome Name: *RAD51C*-associated cancer risk (Women only)

### *RAD51C* Summary Cancer Risk Table

| CANCER | GENETIC CANCER RISK |
|---|---|
| Breast | High Risk |
| Ovarian | High Risk |

### *RAD51C* gene Overview

*RAD51C*-associated cancer risk (Women only) [1, 2, 3, 4, 5]

- Women with *RAD51C* mutations have an increased risk for ovarian cancer.
- Women with *RAD51C* mutations also have an increased risk for breast cancer. Studies have shown that breast cancers in women with *RAD51C* mutations are more likely to be Triple Negative Breast Cancer (TNBC). This type of breast cancer lacks estrogen and progesterone receptors, and does not express Her2. It can be more aggressive than other types of breast cancer.
- At this time, there are no known cancer risks for men due to mutations in *RAD51C*.
- Although there are high cancer risks for patients with mutations in *RAD51C*, there are interventions that may be effective at reducing these risks. Guidelines from the National Comprehensive Cancer Network (NCCN) that may apply are listed below. Since information about the cancer risks associated with *RAD51C* mutations is relatively new, and there is still some uncertainty about the best ways to reduce these risks, it may be appropriate to interpret these results in consultation with cancer genetics experts in this emerging area of knowledge.

### *RAD51C* gene Cancer Risk Table

| CANCER TYPE | AGE RANGE | CANCER RISK | RISK FOR GENERAL POPULATION |
|---|---|---|---|
| Ovarian | To age 50 [3, 6] | 0.9%, or higher if there is a history of ovarian cancer in close relatives | 0.2% |
| | To age 80 [3, 6] | 8%, or higher if there is a history of ovarian cancer in close relatives | 0.9% |
| Female Breast | To age 80 [1, 2, 3, 6, 7] | 20%, or higher if there is a history of breast cancer in close relatives | 10.8% |

### *RAD51C* Cancer Risk Management Table

The overview of medical management options provided is a summary of professional society guidelines. The most recent version of each guideline should be consulted for more detailed and up-to-date information before developing a treatment plan for a particular patient.

This overview is provided for informational purposes only and does not constitute a recommendation. While the medical society guidelines summarized herein provide important and useful information, medical management decisions for any particular patient should be made in consultation between that patient and his or her healthcare provider and may differ from society guidelines based on a complete understanding of the patient's personal medical history, surgeries and other treatments.

| CANCER TYPE | PROCEDURE | AGE TO BEGIN | FREQUENCY (UNLESS OTHERWISE INDICATED BY FINDINGS) |
|---|---|---|---|
| Ovarian | Bilateral salpingo-oophorectomy (BSO).[5] | 45 to 50 years, or earlier if there is a family history of ovarian cancer at a younger age | NA |

| CANCER TYPE | PROCEDURE | AGE TO BEGIN | FREQUENCY (UNLESS OTHERWISE INDICATED BY FINDINGS) |
|---|---|---|---|
| | Other than consideration of BSO, currently there are no specific medical management recommendations for ovarian cancer risk in mutation carriers. However, the increase in risk may warrant consideration of individualized ovarian cancer risk-reduction strategies using other currently available options, such as surveillance and the use of risk-reducing agents.[5] | Individualized | NA |
| Female Breast | Breast awareness - Women should be familiar with their breasts and promptly report changes to their healthcare provider. Periodic, consistent breast self-examination (BSE) may facilitate breast awareness.[5] | Individualized | NA |
| | Clinical encounter, including clinical breast exam, ongoing risk assessment and risk-reduction counseling[5] | 25 years, or 5 to 10 years younger than the earliest age of breast cancer diagnosis in the family | Every 6 to 12 months |
| | Mammogram and consideration of breast MRI with and without contrast[5] | 40 years | Annually |
| For Patients With A Cancer Diagnosis | For patients with a gene mutation and a diagnosis of cancer, targeted therapies may be available as a treatment option for certain tumor types (e.g., PARP-inhibitors).[8] | NA | NA |

## Information for Family Members

The following information for Family Members will appear as part of the MMT for a patient found to have a mutation in the RAD51C gene.

This patient's relatives are at risk for carrying the same mutation(s) and associated cancer risks as this patient. Cancer risks for females and males who have this/these mutation(s) are provided below.

Family members should talk to a healthcare provider about genetic testing. Close relatives such as parents, children, brothers and sisters have the highest chance of having the same mutation(s) as this patient. Other more distant relatives such as cousins, aunts, uncles, and grandparents also have a chance of carrying the same mutation(s). Testing of at-risk relatives can identify those family members with the same mutation(s) who may benefit from surveillance and early intervention.

In rare instances, an individual may inherit mutations in both copies of the *RAD51C* gene, which may lead to a form of Fanconi anemia (FANCO). This condition has been reported with physical abnormalities, short stature and abnormal chromosome breakage test results. The children of this patient are at risk of inheriting this condition only if the other biological parent is also a carrier of a *RAD51C* mutation. This is highly unlikely, due to the rarity of *RAD51C* mutations.[9, 10]

At this time, there are no known cancer risks for men due to mutations in *RAD51C*.

## References


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