Updated December 2019 (NCCN v1.2020)

**RAD51D Mutations**

**Cancer Risks and General Management Recommendations**

<table>
<thead>
<tr>
<th>RAD51D Mutation Carrier Cancer Risks</th>
<th>General Population Lifetime Cancer Risks</th>
<th>Surveillance/Management Recommendations$^1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ovarian Cancer$^{2,3}$ 7-14%</td>
<td>1-2%</td>
<td>Surgery</td>
</tr>
</tbody>
</table>

- Consider risk-reducing salpingo-oophorectomy (RRSO) at age 45-50 years, or earlier based on ovarian cancer family history
  - Insufficient evidence exists to recommend an optimal age for RRSO
- Further pathological examination of the ovarian specimen on RRSO can yield greater detection of ovarian cancer, and should be considered in individuals with RAD51D mutations$^4$

**Surveillance**

- For women who have not elected RRSO, transvaginal ultrasound combined with serum CA-125 for ovarian cancer may be considered at their clinician’s discretion
- The benefit of ovarian cancer surveillance is uncertain at this time

Breast cancer: The lifetime risk to develop breast cancer in women with a RAD51D mutation is currently unknown. Some studies indicate the RAD51D gene may not be associated with breast cancer at all,$^5$ but other studies show that it could be a low penetrant gene for breast cancer.$^6$ Current NCCN guidelines (v1.2020) state that there is a potential increased risk for triple-negative breast cancer, however there is insufficient evidence to recommend modified breast cancer risk management based on RAD51D mutation status alone. An individual’s personal and family history should be considered in developing an appropriate surveillance plan.

Treatment: RAD51D mutation carriers may be sensitive to specific chemotherapy agents and thus may benefit from therapies suggested for BRCA1 and BRCA2 carriers, such as poly ADP ribose polymerase (PARP) inhibitors.

Other Cancer Risks: Preliminary evidence of an association between RAD51D mutations in prostate cancer has been proposed.$^7$ However, this association has not been completely established and more information is needed.

**Implications for Family Members/Reproductive Considerations**

- First-degree relatives (i.e., parents, siblings, and children) have a 50% chance to have the familial RAD51D mutation. Second-degree relatives (i.e., nieces/nephews, aunts/uncles, and grandparents) have a 25% chance to have the familial mutation.
- For carriers of a known mutation, assisted reproduction (with or without egg or sperm donation), pre-implantation genetic testing, and prenatal diagnosis options exist.
- All family members are encouraged to pursue genetic counseling to clarify their risks. Family members can visit www.FindAGeneticCounselor.com to find genetic services near them.

**References**


