Updated December 2019 (NCCN v1.2020)

**RAD50 Mutations**

_Cancer Risks and General Management Recommendations_

- There are currently no national consensus guidelines outlining specific clinical management recommendations for individuals who carry a RAD50 gene mutation. Additionally, exact lifetime cancer risks associated with RAD50 mutations are unknown at this time.
- Some studies have proposed an increased risk for breast cancer in females with a RAD50 mutation (lifetime risk of ~24-36%). However, others have found no increased risk for breast cancer. Additionally, some studies have proposed an increased ovarian cancer risk in individuals with a RAD50 mutation. However, the studies are small, and data remains limited. At this time, it is unknown if individuals with RAD50 gene mutations are at increased risk for other cancers.
- Current NCCN guidelines assert that there is insufficient evidence to make any recommendations for breast MRI, risk-reducing mastectomy (RRM), or risk-reducing salpingo-oophorectomy (RRSO) based on RAD50 mutation status alone. An individual’s personal and family history should be considered in developing an appropriate surveillance plan.

**Implications for Family Members/Reproductive Considerations**

- First-degree relatives (i.e., parents, siblings, and children) have a 50% chance to have the familial RAD50 mutation. Second-degree relatives (i.e., nieces/nephews, aunts/uncles, and grandparents) have a 25% chance to have the familial mutation.
- It has been proposed that individuals who inherit two pathogenic RAD50 mutations, one from each parent, are at risk for a rare genetic condition known as Nijmegen breakage syndrome-like disorder (NBSLD).
  - NBSLD is characterized by chromosomal instability, radiosensitivity, neurodevelopmental disease, and immunodeficiency.
  - RAD50 genetic testing for the partner of an individual with an RAD50 mutation may be appropriate to clarify the risk of having children with NBSLD.
- 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, including reproductive risks. Family members can visit www.FindAGeneticCounselor.com to find genetic services near them.

**References:**


