

What you should know about *CHEK2* mutations

Individuals with *CHEK2* gene mutations have an increased risk for cancers of the breast, colon, prostate, and possibly thyroid and kidney. Exact lifetime cancer risks for individuals with mutations in this gene are currently not well understood, since *CHEK2* mutations seem to work in conjunction with other cancer susceptibility genes to modify risk. The *CHEK2* gene and its association with cancer risk were identified relatively recently, and there is limited information available to date regarding specific cancer risks with *CHEK2* mutations.

The risk for cancer associated with *CHEK2* mutations

- Women with *CHEK2* mutations have an increased risk of breast cancer (thought to be 20-25%, increased from the general population lifetime risk of 12%). This risk may be higher depending on family history. Men may have an elevated risk to develop breast cancer (above the general population risk of <1%).
- Both men and women are thought to have an increased risk for colorectal cancer (compared to the general population risk of ~5%), but the specific lifetime risk is not known at this time.
- The risk for prostate cancer in men with *CHEK2* mutations is thought to be as high as 27%.
- Individuals with *CHEK2* mutations may also be at increased risk for melanoma, thyroid cancer, and kidney cancer, although the exact lifetime risks for these cancers are not known at this time.

The risks to family members

Mutations in the *CHEK2* gene are inherited in an autosomal dominant fashion. This means that children, brothers, sisters, and parents of individuals with a *CHEK2* mutation have a 50% chance of having the mutation as well. Individuals with a *CHEK2* mutation may develop one cancer, more than one cancer, or none at all.

Managing the risk

There are currently no formal management guidelines specific to individuals with *CHEK2* mutations. However, the following surveillance has been suggested based on other guidelines for comparable increased risks.

Breast Cancer Risk:

- Breast self-awareness beginning at age 18 (for females and males)
- Clinical breast examinations every 6-12 months beginning at age 25
- Annual mammography and breast MRI beginning around age 30-35, or 5-10 years earlier than the youngest age at diagnosis of breast cancer in the family
- Prophylactic mastectomy or chemoprevention medication to reduce breast cancer risks are options

Colon Cancer Risk:

- Begin colonoscopy at age 40, or 10 years earlier than the youngest age at diagnosis of colon cancer in the family, and repeat every 3-5 years (or more frequently depending on findings and/or family history)

Prostate Cancer Risk:

- Consider beginning prostate cancer screening 5-10 years earlier than the youngest age at diagnosis of prostate cancer in the family

Other Cancer Risks: Surveillance management plans should be individualized for each patient based on additional family history of other types of cancer and the ages of diagnosis in close relatives.