

What you should know about Li-Fraumeni syndrome

Li-Fraumeni syndrome (LFS) is a rare condition caused by mutations in the TP53 gene. Individuals with Li-Fraumeni syndrome have an increased risk to develop multiple cancers, especially sarcomas, brain cancer, breast cancer, and leukemia. A classic definition for LFS is a person with a sarcoma diagnosed before age 45 and a first-degree relative (brother, sister, mother, father, child) with any cancer before age 45 and a first- or second-degree relative (aunt, uncle, grandparent, niece, nephew) with any cancer before age 45 or a sarcoma at any age. A person may have LFS even if they don't meet this definition.

The risk for cancer associated with LFS

Individuals with LFS have an 85-90% chance of developing cancer in their lifetime. A person with LFS who has had cancer has an approximate 15% chance of developing a second cancer, a 4% chance of developing a third cancer; and a 2% chance of developing four cancers. The risk of developing cancer by the age of 40 is 50%.

The risks to family members

LFS is inherited as an autosomal dominant condition. This means that the children, brothers, sisters, and parents of a person with LFS have a 50% to have a mutation. A person who inherits a TP53 mutation may develop one cancer, more than one cancer, or no cancers in their lifetime.

Managing the Risk

Breast Cancer Risk:

- Clinical breast examinations every 6-12 months, beginning at age 20-25
- Annual mammograms and breast MRI, beginning at age 20-25 (or earlier based on family history)
- Mastectomy to prevent breast cancer is an option

Other Cancer Risk:

- Complete physical examination every 12 months including dermatologic and neurologic examinations
- Colonoscopy every 2-5 years, beginning at age 25
- Additional organ-targeted surveillance based on family history
- Consider participating in clinical trials investigating other methods of cancer surveillance
- Pediatricians should be informed about risks for childhood cancers

Individuals with LFS should pay greater attention to lingering symptoms and illnesses, particularly headaches, bone pain, or abdominal discomfort, and to schedule diagnostic tests promptly.

Individuals with LFS should also avoid or minimize exposure to radiation (including sun exposure, tanning beds, and radiation therapy), as radiation exposure may cause cancer in individuals with TP53 mutations.