

Why a Diagnosis of LFS Matters

While the diagnosis of LFS can seem overwhelming, it's important that individuals be aware of the condition so that they may better manage their healthcare and address lifestyle behaviors such as smoking to minimize their exposure to cancer-causing agents. Because patients with LFS often develop cancers early, regular check-ups and screenings for multiple cancers are extremely important – the sooner a cancer is diagnosed and appropriately treated, the better the chances of a successful outcome. Coordination with individual medical providers is also crucial to ensure that the LFS diagnosis is being considered in the treatment of other conditions, particularly in regard to the use of radiation therapy.



About the LiFE Consortium

The Li-Fraumeni Exploration (LiFE) Research Consortium is composed of dedicated physicians and scientists from around the world. They share a goal of helping to improve the lives of those living with LFS and are advancing our knowledge of this condition through collaborative research. Find a list of research and treatment centers most familiar with LFS under the Medical Resources tab at www.LFSAssociation.org.



Li-Fraumeni Exploration Consortium



Find Support at the LFSA

Li-Fraumeni Syndrome Association
P.O. Box 6458 Holliston, MA 01746
855-239-LFSA (5372)
LFSAssociation.org

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Legal Disclaimer

The information presented here is intended to provide general information for the LFS community. It is *not* intended to replace consultation with qualified medical professionals familiar with the conditions and considerations for any individual.



Awareness of LFS is Important
Empowering families and providers to make the best healthcare decisions.

Learn more about Li-Fraumeni syndrome (LFS).

What is Li-Fraumeni Syndrome and What Are the Risks?

Li-Fraumeni syndrome (LFS) is a rare genetic condition that greatly increases the risk of developing many types of cancers. **LFS affects both men and women and has been identified in families all over the world.** Cancers related to this condition may occur at any age, but a characteristic feature of LFS is a high risk for cancer occurring in childhood: in one study published in 2015, it was reported that **over 40% of children with LFS developed cancer by age 18.** Additionally, females have nearly a 100% chance of developing cancer in their lifetime due to their markedly increased risk of breast cancer.



Understanding What Causes LFS

LFS is caused by a mutation in the *TP53* tumor suppressor gene. When working properly, this gene controls abnormal cell growth, preventing cancers from forming. Humans have two copies of the *TP53* in each of their cells – for those with LFS, one of these two *TP53* genes does not function properly, or is missing altogether.

Most people with LFS inherited the mutation from a parent, but LFS can also result from a new mutation (de novo) without having affected parents or a family history of cancer. **Each child of a parent with LFS has a 50% chance of inheriting the disorder.** For this reason, individuals with LFS should discuss reproductive implications with their doctors and/or a genetic counselor.

Cancers Most Closely Associated (Core Cancers) With LFS Include:

- Soft tissue sarcoma (such as anaplastic rhabdomyosarcoma)
- Osteosarcoma
- Breast cancer (premenopausal)
- Brain and central nervous system (CNS) tumors (such as glioma, choroid plexus carcinoma, SHH subtype medulloblastoma, neuroblastoma)
- Adrenocortical carcinoma
- Acute leukemia

Other Cancers Seen in LFS, but Less Often Than the Core Cancers:

- Lung adenocarcinoma
- Melanoma
- Gastrointestinal tumors (such as colon, pancreas)
- Kidney
- Thyroid
- Gonadal germ cells (such as ovarian, testicular, and prostate)

The types of cancers and at which age they develop vary between LFS families. **Many individuals with LFS develop two or more primary cancers over their lifetimes.** Doctors and genetic counselors may be able to provide more specific cancer risk information to individuals after reviewing the details of the family history and the specifics in the alteration of their *TP53*. Though the risk of developing cancer is significantly increased, **it is important to know that not everybody with the mutation will develop cancer.**



If You Meet Any of the Following Criteria, Talk to Your Physician About LFS Screening:

- You have been diagnosed with a cancer from within the LFS spectrum of cancers listed in this brochure before age 46 AND have at least one first or second-degree relative with an LFS-related cancer before 56 years of age or with multiple cancers.
- You have been diagnosed with multiple cancers, two of which belong to the LFS spectrum of cancers listed in this brochure, with your first cancer before age 46.
- You are a woman diagnosed with breast cancer before age 31.
- You have a history of adrenocortical cancer, choroid plexus carcinoma, or embryonal anaplastic subtype rhabdomyosarcoma.

Genetic Counselors and Genetic Testing

Determining if a person or family has LFS begins with taking a family history. Individuals meeting any of the criteria listed in this brochure should be evaluated for LFS.

A referral will often be made to a genetic counselor, a health care professional who specializes in identifying genetic and hereditary conditions, like LFS. Genetic counselors can provide individuals and families with an opportunity to discuss the implications of genetic testing, and help incorporate a diagnosis into their healthcare and lives. Genetic testing involves analyzing a sample such as blood or saliva for alterations in the *TP53* gene. Ideally, the process of genetic testing should begin with a family member who has had cancer. If an alteration causing LFS is identified, then other relatives should consider genetic testing to determine who else may be at risk.

Individuals who are considering genetic testing may have concerns about how their genetic information may be obtained or used by employers or insurance companies. A genetic counselor can provide more information about the possibility of, and protections against, genetic discrimination.