

# Li-Fraumeni Syndrome (LFS) Fact Sheet for Medical Providers

- LFS is a hereditary cancer predisposition syndrome caused by inherited or de novo pathogenic variants (also called mutations) in one of the two *TP53* tumor suppressor gene copies, present in the patient from birth (i.e. germline variant).
- These pathogenic variants are identified by genetic testing.
- People with LFS only have one fully functional *TP53* gene to protect against accumulation of further cancer-causing genetic mutations.
- Risk for rare and common cancers is significantly elevated for both **children and adults** with LFS, leading to significant screening recommendations. Below: Approximate percentage of males and females with a first primary cancer by age (PMIDs: [21779515](#), [27496084](#)) and summary of recommended screening modalities by age.

	15 years	30 years	45 years	60 years
Males	15-25%	20-40%	40-60%	>70%
Females	5-15%	40-50%	75-90%	>90%

	Abdominal Ultrasound	Complete Physical +/- Bloodwork	Whole-body MRI	Brain MRI	Dermatology	Endoscopy/ Colonoscopy	Breast MRI (Females)	Mammogram (Females)
Age	Pediatric q3-4 mos	All ages; peds: q3-4 mos; adults: 6 mos	All ages annual	All ages annual	All ages annual	25+ years* q2-5 yrs	20-75 years annual	30-75 years 6 mos

- The **most common** cancers seen in LFS are premenopausal breast cancer, soft tissue sarcoma and osteosarcoma, brain cancer, and adrenocortical carcinoma (especially pediatric). Hematological cancers are also common.
- Not everyone with LFS will develop a cancer; others will develop multiple cancers.
- **Medical Providers caring for patients with LFS should...**
  - Maintain a high index of **suspicion of malignancy** during office visits.
  - Be familiar with LFS cancer **screening recommendations** and coordinate with other specialists as necessary to ensure the patient has access to appropriate screening.
  - Connect the patient with an **LFS clinic** or a **local provider** who is willing to coordinate recommended screening scans, including annual whole-body MRI or a suitable alternative if whole-body MRI is unavailable.
  - **Avoid ordering scans involving radiation** except when medically necessary.
  - **Be cognizant of psychological stresses** individuals with LFS may experience both chronically and acutely, particularly surrounding periods of screening or diagnosis, and consider referral to a **mental health** provider as necessary.
  - Suggest your patient **contact the LFS Association for support and resources.**

\* Earlier screening recommended for patients who have received whole body or abdominal radiation therapy

## MORE INFORMATION

### SUMMARY

GeneReviews: <https://www.ncbi.nlm.nih.gov/books/NBK1311/>

### QUESTIONS & SUPPORT

Your institution's cancer genetic counselor

A local cancer genetic counselor (<https://www.findageneticcounselor.org>)

Li-Fraumeni Syndrome Association (LFSA) Genetic Counseling Advisory Group and Medical & Scientific Advisory Board

<https://www.lfsassociation.org/genetic-counseling-advisory-group/>

<https://www.lfsassociation.org/lfsa-medical-scientific-advisory-board/>

### SCREENING GUIDELINES

**Adult:** NCCN Guidelines: [Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic](https://www.nccn.org/professionals/physician_gls/pdf/genetics_bop.pdf)

[https://www.nccn.org/professionals/physician\\_gls/pdf/genetics\\_bop.pdf](https://www.nccn.org/professionals/physician_gls/pdf/genetics_bop.pdf)

**Pediatric:** Kratz CP, Achatz MI, Brugières L, et al. Clin Cancer Res. 2017;23(11):e38-e45. doi:10.1158/1078-0432.CCR-17-0408. PMID: [28572266](https://pubmed.ncbi.nlm.nih.gov/28572266/)

**LFS Association Treatment & Preventative Screening Summary of AACR Recommendations:**

<https://www.lfsassociation.org/treatment-and-preventative-screening/>

**Whole Body MRI Publications:** PMIDs: [33151095](https://pubmed.ncbi.nlm.nih.gov/33151095/), [28572262](https://pubmed.ncbi.nlm.nih.gov/28572262/), [28772291](https://pubmed.ncbi.nlm.nih.gov/28772291/)

### LFS CLINICS

<https://www.lfsassociation.org/medical-resources/>; <https://www.lfsassociation.org/medical-resources/treatment-facilities/>

