Lynch Syndrome

Hereditary Nonpolyposis Colorectal Cancer Syndrome

Lynch syndrome is a genetic condition that increases the risk of colorectal, endometrial (uterine) and other cancers. Genetic conditions can be passed down in families. Parents can pass Lynch syndrome to their children.

Lynch syndrome is caused by changes (mutations) in certain genes. Genes are the set of instructions that tell all of the cells in our bodies what to do. A gene change causes the gene to stop working normally. This causes the increased cancer risk. Cancers are also more likely to happen at younger ages.

About 5 out of every 100 people with colorectal or endometrial cancer have Lynch syndrome.

Lynch syndrome may also be called hereditary nonpolyposis colorectal cancer syndrome (HNPCC).

Cancer Risks

Colorectal and endometrial cancers are the most common cancers caused by Lynch syndrome.

People with Lynch syndrome:

- Have an increased chance of developing colorectal cancer in their lifetime
- Are more likely to develop colorectal cancer before age 50
- Have an increased risk of developing a second primary colorectal cancer. This means the second cancer occurs after the original primary cancer was diagnosed and treated.
- Have an increased chance of developing endometrial cancer in their lifetime. Endometrial cancer forms in the lining of the uterus.

Some people with Lynch syndrome develop sebaceous gland skin tumors. This condition is often called the Muir-Torre variant of Lynch syndrome.

Other cancers that may occur with Lynch syndrome include ovarian, stomach, urinary tract, hepatobiliary tract (part of the liver and bile ducts), small intestine, pancreas, and brain cancers.

The specific risks for cancers related to Lynch syndrome depend on which gene mutation occurs in a family.

Diagnosis

Diagnosing Lynch syndrome can help plan for additional cancer screenings and preventive care. You can reduce your cancer risk by following cancer screening and prevention guidelines. For a

person with Lynch syndrome who already has cancer, there is a risk that a new cancer may develop. Family history, tumor screening and genetic testing are used to diagnose Lynch syndrome.

Family History

You may be asked to gather information about your family history of cancer. Your genetic counselor records this information in a family tree (pedigree) to assess your family's risk. Based on your family history, your genetic counselor may recommend further tests.

Tumor Screening

Special tests may be used to examine a tumor for features that may be caused by Lynch syndrome. These screening tests are called microsatellite instability (MSI) assay and immunohistochemical (IHC) analysis. The tests may point to which gene is causing Lynch syndrome in a family. Based on the results of the tumor screening tests, your care team may recommend genetic testing.

Genetic Testing

Genetic testing is a blood or saliva test that looks for mutations in certain genes related to Lynch syndrome.

Lynch syndrome is caused by mutations in genes that normally work to prevent colon and endometrial cancer.

- There are 5 genes known to cause Lynch syndrome. Those genes are: *MLH1*, *MSH2*, *MSH6*, *PMS2* and *EPCAM* genes.
- Your specific risks for cancers related to Lynch syndrome depend on which gene mutation occurs in your family.

If a mutation is found, the Lynch syndrome diagnosis is confirmed. Other family members may benefit from genetic testing to learn whether or not they have Lynch syndrome.

Family Members

Lynch syndrome is a genetic condition, so family members are also at risk.

- Children, siblings and parents of a person with Lynch syndrome have a 1 in 2 chance of also having Lynch syndrome.
- Males and females have equal chance of having Lynch syndrome.
- Lynch syndrome does not skip generations.

The following features are common in families with Lynch syndrome:

- Three (3) or more of your closely related family members have colorectal, endometrial or other cancer related to Lynch syndrome. Closely related family members include parents, children, siblings, half-siblings, grandparents, aunts, uncles, nieces and nephews.
- Two (2) or more generations in a row have cancer.
- A family member is diagnosed before age 50 with colorectal, endometrial, or another Lynch syndrome related cancer.

These family features are often called the Amsterdam criteria. Not all families that meet the Amsterdam criteria have Lynch syndrome. Some families that have Lynch syndrome may not meet all the Amsterdam criteria.

If you are concerned about Lynch syndrome in your family, call Clinical Cancer Genetics at 713-745-7391 to schedule a consultation.

Screening and Prevention

Screening helps find cancer as early as possible when it may be easier to treat. There is no cure for Lynch syndrome. Because cancer is a major health risk related to Lynch syndrome, it is important to follow cancer prevention and early detection guidelines.

Management plans are tailored to each patient and family. A team of specialists will create a plan for you based on your personal and family history. General management guidelines for Lynch syndrome are described below.

Colorectal Cancer Screening

Regular screenings for colorectal cancer are very important. The screening test for colorectal cancer is a colonoscopy.

- The age you should start screening colonoscopies will depend on which gene mutation is found in your family. Your care team may recommend you start at age 20 to 25, age 30 to 35, or 10 years younger than the earliest age of colon cancer diagnosed in your family.
- A colonoscopy is recommended every 1 to 2 years. If precancerous polyps are found, they are removed during the colonoscopy so they will **not** develop into cancer.

For patients having colon cancer surgery, the surgeon may suggest removing the entire colon rather than part of the colon. This helps reduce the risk of developing a second primary colorectal cancer.

Symptoms of colorectal cancer include:

- Rectal bleeding
- Blood in the stool or toilet after a bowel movement
- Prolonged diarrhea or constipation
- A change in the size or shape of your stool
- Abdominal pain in your lower stomach
- A feeling of discomfort or urge to have a bowel movement when there is no need

Tell your doctor if you have any of the symptoms listed above.

Gynecologic Cancer Screening (Endometrial Cancer and Ovarian Cancer)

Regular screenings for gynecologic cancers are very important. For females with Lynch syndrome, the risk of endometrial cancer is the equal or higher than the risk of colorectal cancer.

Gynecologic cancers are hard to find by symptoms alone, especially for those who have not gone through menopause.

Starting at age 30 to 35, a yearly pelvic exam, endometrial biopsy and vaginal ultrasound is recommended.

Surgical removal of the uterus, ovaries and fallopian tubes is a preventive measure to decrease the risk of developing endometrial and ovarian cancer. Your doctor would recommend the timing of this surgery based on your genetic mutation, personal and family history.

Pap smears screen for cervix cancer and are recommended for all females. They **do not** find endometrial or ovarian cancers.

Symptoms of Endometrial Cancer
Tell your doctor right away if you have any abnormal vaginal bleeding. This includes bleeding between periods, heavy periods, prolonged periods or any post-menopausal vaginal bleeding.

Symptoms of Ovarian Cancer
There are no specific early warning signs for ovarian cancer. Tell your doctor if you have any signs of bloating, an increase or swelling in the abdominal area or change in bowel and bladder habits.

Screening Tests for Other Cancers

Depending on your family history and other factors, screening for other cancers may be considered.

- To check for polyps or cancers in the stomach and small intestine, an upper endoscopy (also called an EGD) may be considered every 2 to 3 years. This procedure may be done at the same time as a colonoscopy.
- To check for urinary tract cancers, your doctor may suggest you have a yearly urine test (urinalysis with cytology). This may be considered in certain people such as those with a family history.
- To check for pancreatic cancer, your doctor may recommend an endoscopic ultrasound or specialized imaging tests such as a contrast-enhanced MRI (magnetic resonance imaging) or MRCP (magnetic resonance cholangiopancreatography).

Resources

MD Anderson Cancer Center, Clinical Cancer Genetics Program
www.MDAnderson.org/Research/Departments-Labs-Institutes/Programs-Centers/Clinical-Cancer-Genetics.html
The Clinical Cancer Genetics Program offers hereditary cancer risk assessment and consultation services. Click on “Hereditary Cancer Syndromes” to learn more about Lynch syndrome.

Collaborative Group of the Americas on Inherited Gastrointestinal Cancer (CGA)
www.CGAIGC.com/
The CGA focuses on families with rare forms of GI cancers, including Lynch syndrome.

National Cancer Institute (NCI), Genetics of Colorectal Cancer
www.Cancer.gov/Types/Colorectal
800-4-CANCER (800-422-6237)

Cancer.Net
www.Cancer.net/
This website offers recommended cancer information from the American Society of Clinical Oncology. Click on "Types of Cancer" to find information on colorectal cancer and Lynch syndrome.

FORCE
www.FacingOurRisk.org
FORCE is an organization for patients and families with syndromes related to hereditary cancer. The community is to help people connect with others, seek support, and provide current information and resources.