Lynch Syndrome

(Hereditary non-polyposis colorectal cancer)

Information for individuals and families

Ospidéal San Séamas
Seirbhís Dé agus A Phobail

ST. JAMES'S HOSPITAL

What is Lynch Syndrome?

Lynch syndrome is an inherited condition which causes people to have a higher risk of developing certain cancers. It is called 'Lynch' after the doctor who first described it. A syndrome is a collection of features; in this case a collection of cancers. Lynch syndrome is also sometimes called HNPCC which stands for Hereditary Non Polyposis Colorectal Cancer.

Hereditary:
Means it is passed down through families

Non-polyposisPolyposis:
Means lots of polyps (non-cancerous growths), often 100s or 1000s. Non-polyposis means that if polyps occur in the bowel, there are usually only a few.

Colorectal cancer:
Cancers affecting the digestive system including the small and large bowel, and the rectum

Men and women who have Lynch syndrome both have a higher risk of developing bowel cancer. Women also have a higher risk of developing womb cancer cancer of the womb and a slightly higher risk of ovarian cancer.

How do I know if the cancers in my family are due to Lynch Syndrome?

Colorectal cancer is one of the most common cancers in Ireland, affecting around 1 in 20 men and 1 in 33 women. Most bowel cancers occur due to chance or to environmental factors, and occur at older ages. Some cases of bowel cancer are due to genetic factors, and only a small percentage of bowel cancer is due to Lynch syndrome.

Your family may have Lynch syndrome if:

- Several family members have had colon cancer, usually 3 or more
- Several family members have had colon, womb or ovarian cancer
- You or a relative has had colon cancer at a young age (below 50)
- Tests on cancer tissue from someone in the family have suggested Lynch syndrome

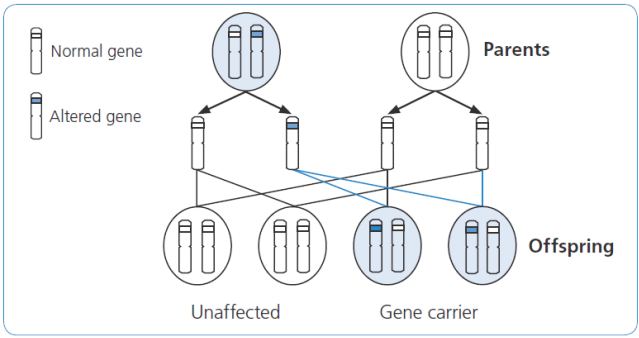
What causes Lynch Syndrome?

Lynch syndrome is associated with a group of genes called the mismatch repair genes, which include the genes: MLH1, MSH2, MSH6 and PMS2.

Genes are instructions which tell our bodies how to work. We each have approximately 20,000 genes. Most of our genes come in matching pairs. We inherit one copy of a gene from our mother, and one copy from our father. Each gene has a specific job in the body. The mismatch repair genes usually repair damage to our cells. By doing this, they protect us against developing cancer. In people with Lynch syndrome, one of the mismatch repair genes is altered, so it cannot do its job properly. This means the risk of developing certain cancers is higher.

How is Lynch Syndrome inherited?

If someone has Lynch syndrome, it means they have one working copy and one altered copy of a particular mismatch repair gene. Each time they have a child, there is a 1 in 2 (50%) chance that the child with inherit the working copy of the gene, or a 1 in 2 (50%) chance that the child with inherit the altered copy of the gene and have Lynch syndrome. This is called dominant inheritance which is shown in the following diagram.



Can I have a genetic test for Lynch Syndrome?

The genes involved in Lynch syndrome are each like a very long instruction. An alteration (similar to a spelling mistake) in an
y part of this instruction can cause Lynch syndrome. Each family with Lynch syndrome may have a different alteration. We can look in a blood sample from a relative who has had a Lynch syndrome-related cancer to try to find the alteration in your family.

We may suggest testing for Lynch syndrome if there have been 3 or more relatives with related cancers in your family, with one of them being under 50 when they had their cancer. If your family has fewer cancers than this or cancers at older ages, we may still suggest testing of a cancer tissue sample from you or another member of your family. Tissue tests can also give us information about a family if there are no relatives alive who have had cancer. The tissue testing looks for the presence of certain proteins, usually produced by the MMR genes, within the tumour sample. If the proteins are present, the cancers in your family are less likely to be due to Lynch syndrome. If the proteins are absent, we may suggest a genetic test for Lynch syndrome. There is another leaflet about cancer tissue studies. Please ask your genetic team if you wish to know more.

What do the genetic test results mean for me and my family?

If genetic testing does not find a gene alteration, it is less likely that Lynch syndrome is the cause of the cancers in the family. We will not be able to offer a genetic test to other relatives as we will not know what to look for. There are other genes which may be associated with an increased risk of bowel cancer in some families. Your genetics team may suggest testing for these based on the pattern of cancers in your family. However, we do not know about all bowel cancer genes yet so we might not be able to offer further genetic testing in every family.

Based on your family history you and your relatives may still need bowel checks as the risk of bowel cancer may still be higher. The frequency and starting age of bowel checks depends on your family history. We will discuss the best screening plan for your family with you.

What happens if you do find an alteration in my family?

If we do find an alteration, we can test other affected and unaffected family members to see if they have inherited it. We would need to talk to them about the advantages and disadvantages of testing. Any relatives considering testing can discuss this in more detail with their local genetics department. Some people worry that genetic testing can affect their ability to obtain life insurance. The Oireachtas passed an Act in 2005 to prevent such discrimination. Further information about this can be found at: http://www.insuranceireland.eu/.

If they have not inherited the altered gene, they do not need bowel checks (provided there is no family history of cancer in their other parents family). Their risk of bowel cancer will not be increased. They will not be able to pass the altered gene on to their children in the future.

If they have inherited the altered gene, it is important that they have bowel checks every 1-2 years, usually starting from the age of 25. This age recommendation may vary in certain families. Their children would have a 50% chance of inheriting the altered gene.

We do not usually test children for Lynch syndrome but they could have testing once they reach the age of 18. Many people think about testing as they approach the age of 25, when their bowel checks would typically begin.

It is a very personal decision as to whether to have a genetic test. Some people decide to have a genetic test so they can decide about their screening and to find out about the risk for their children. Some people decide not to have genetic testing. This is sometimes because they do not want to know if they carry the altered gene. Family members at risk of Lynch Syndrome who decide not to have testing should continue to have regular bowel checks every 2 years. They can seek further advice from their local genetics service or bowel screening team.

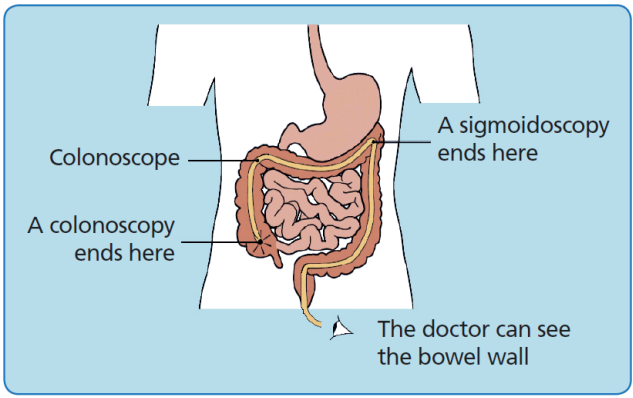
What bowel checks are advised for families with Lynch syndrome?

The risk of bowel cancer in Lynch syndrome is not usually increased until the age of 25. In most families, we begin bowel checks at this age. If a relative has had bowel cancer below the age of 30, we may begin screening in your family earlier. These bowel checks should be repeated every 1-2 years. The lifetime risk of bowel cancer for people with Lynch syndrome is up to 80%, depending on the gene involved. If you have regular bowel checks your risk will be much lower than this.

What do bowel checks involve?

A colonoscopy is the best way to check the bowel. To have a colonoscopy you must first empty your bowel by taking strong laxatives. A long flexible tube containing a tiny camera (about the thickness of your index finger) is passed through the anus into the bowel to look for polyps or abnormalities. You may be given mild sedation. There are two benefits of a colonoscopy. Firstly, it aims to detect cancers early when they are more treatable. Secondly, during the procedure, any polyps found can be easily removed. Polyps are small, non-cancerous growths in the bowel. It is normal for an adult to develop 1 or 2 polyps as they get older. Polyps do not usually cause problems but some polyps can develop into cancers if left for several years. By removing them, this reduces the chances of cancers forming.

How the bowel is examined by colonoscopy



Do family members need any other checks?

Women at risk of Lynch syndrome also have a 10-70% risk of cancer of the uterus (also known as the womb) and a 10-15% risk of ovarian cancer over their lifetime, depending on the gene involved. Screening for these typically begins around the age of 30-35. Screening of the uterus involves an ultrasound scan to measure the thickness of the lining of the womb and taking samples of the lining of the womb (pipelle). Ovarian screening is done by an ultrasound scan and a blood test (called CA125). This screening can be done as an outpatient procedure.

The screening for both uterine and ovarian cancer is less reliable than bowel screening. Some women choose to have a hysterectomy (removal of the womb) and oophorectomy (removal of the ovaries) rather than screening once they have completed their families. These operations reduce the risk of these cancers by approximately 90%. Your Cancer Genetics Team will be happy to discuss these options further with you and to refer you to a gynaecologist.

In some families with Lynch syndrome, there is a slightly increased risk of other cancers. This may include kidney cancer, stomach cancer or urinary tract cancer. If any relatives in your family have had these cancers please let us know so we can discuss whether any other screening is appropriate for you. If anyone else in the family develops any cancers or polyps please let us know so we can update our advice.

Explanation of unfamiliar words

Hereditary- Something which runs in families.
Polyp- A non-cancerous growth on the bowel wall. Most polyps are harmless but they can develop into cancers if left for several years.
Hysterectomy- Surgery to remove the uterus.
Large bowel- The end section of the intestine made up of the colon and rectum.
Gene- One of the instructions which control the working of the body.
Oophorectomy- Surgery to remove the ovaries.
Colonoscopy- A short tube with a light at the end is passed into the rectum and colon to look for polyps.

This leaflet is based, with permission, on a leaflet produced by:

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