

Oxford Regional Genetic Department

Lynch syndrome (HNPCC)

Information for
patients and families

A decorative graphic on the lower half of the page, consisting of a series of squares of varying shades of gray arranged in a staircase pattern, ascending from the bottom left towards the top right.

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 syndrome 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.

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| Hereditary | means it is passed down in families |
| Non Polyposis | Polyposis means lots of polyps (noncancerous growths). Non Polyposis means that if polyps occur in the bowel there are usually only a few. |
| Colorectal cancer | Cancers of the large bowel are most common. |

Men and women who have Lynch syndrome both have a higher risk of developing bowel cancer. Women also have a higher risk of 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?

Bowel cancer is quite common. 1 in 20 people will develop bowel cancer, mostly at older ages. Most bowel cancers occur due to chance or to environmental factors. Sometimes our genes also play a role. Only about 5% 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?

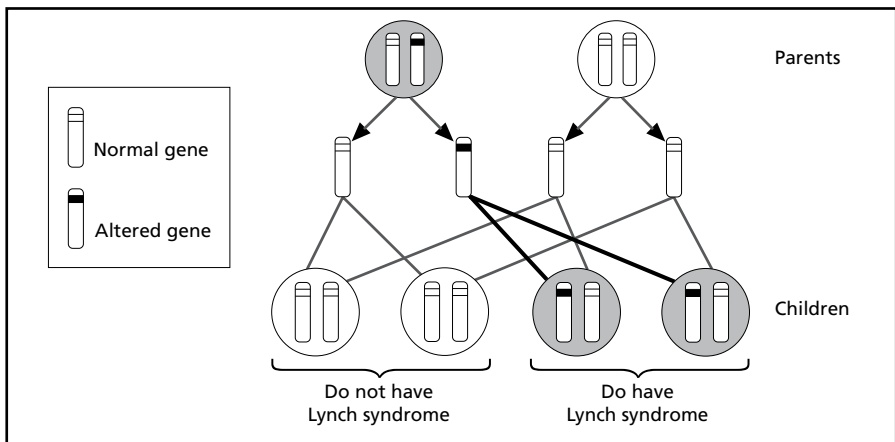
Lynch syndrome is caused by an alteration in a group of genes called mismatch repair genes. The genes are called MLH1, MSH2, MSH6 and PMS2.

Genes are instructions which tell our bodies how to work. We each have about 30,000 genes. All our genes come in pairs as we get one copy from our Mother and one from our Father. Each gene has a specific job.

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 that they have one working copy and one altered copy of the gene. Each time they have a child, there is a 50% chance that the child will inherit the working copy and a 50% chance that the child will inherit the altered copy. It is completely random which gene a child gets. This is shown in the diagram below.



Can I have a genetic test for Lynch syndrome?

The genes involved in Lynch syndrome are each like a very long instruction. A spelling mistake or alteration in any part of this instruction can cause Lynch syndrome. Each family with Lynch syndrome will 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 suggest looking at a cancer tissue sample first.

Tissue tests can also give us information about a family if there are no relatives alive who have had cancer. The tissue testing looks to see if the genes causing Lynch syndrome are working in the cancer. If they are working, the cancers in your family are unlikely to be due to Lynch syndrome. If they are not working, we may suggest a genetic test for Lynch syndrome. There is another leaflet about cancer tissue studies. Please ask your geneticist if you wish to know more.

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

If genetic testing does not show a gene alteration, it is less likely that Lynch syndrome is the cause of the cancers in the family. We won't be able to offer a genetic test to other relatives as we won't know what to look for. There are other genes involved in bowel cancer in families. Your geneticist may suggest testing for these. We don't know about all bowel cancer genes yet so we might not be able to find the cause of the cancers in your family.

You and your relatives may still need bowel checks as the risk of bowel cancer may still be higher because of your family history. 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.

As people who haven't had a genetic test get older, the risk of bowel cancer is likely to be similar to the population risk. Therefore, relatives over the age of 70 can consider stopping bowel checks. They should still take part in the national screening programmes.

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

If we do find an alteration, we can test other 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.

It is a very personal decision as to whether to have a genetic test. Some people opt to have a genetic test so they can decide about their screening and to find out about the risk for their children.

If they have not inherited the altered gene, they do not need bowel checks. 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 2 years, usually starting from the age of 25. 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 around the age of 25, when their bowel checks would begin.

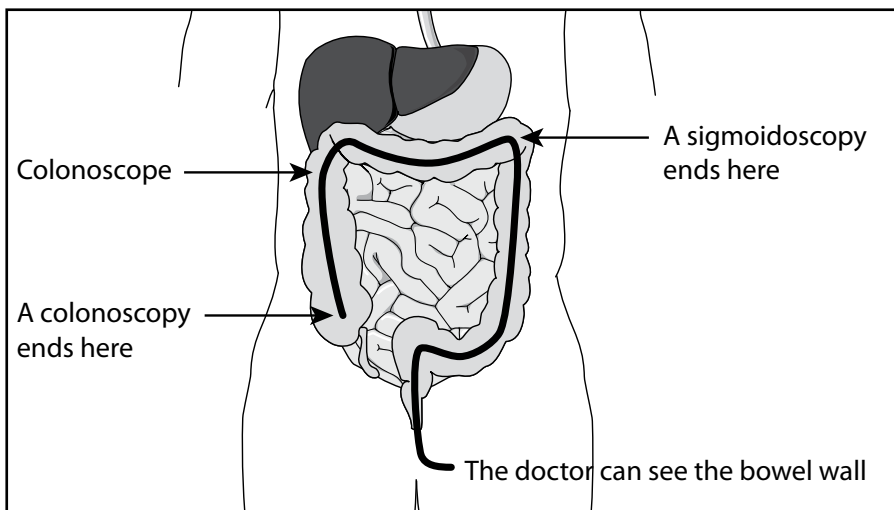
Some people decide not to have genetic testing. This is sometimes because they don't want to know if they carry the altered gene. Some people also worry about what genetic testing means for their life insurance. There is a separate leaflet on this which you can download from <http://www.abi.org.uk>. People who decide not to have testing should continue to have regular bowel checks every 2 years.

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 a bit earlier. These bowel checks should be repeated every 2 years. The lifetime risk of bowel cancer for people with Lynch syndrome is 50-80%. 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 the bowel by taking strong laxatives. A colonoscope is a long flexible tube with a tiny camera (about the thickness of your index finger). It is passed through the anus and along the bowel to look for polyps or abnormalities. You will be given mild sedation so it is not usually too uncomfortable. You can usually go home from hospital on the same day as your screening.



There are two benefits of the colonoscopies. Firstly, they are able to detect cancers early when they are more treatable. Secondly, during the procedure, any polyps found can be removed. Most polyps are harmless but some types can develop into cancers if left for several years. Therefore, removing them reduces the chances of cancers forming. If you have polyps found, you may have your next colonoscopy a bit sooner than usual.

Do we need any other checks?

Women at risk of Lynch syndrome also have a 30-60% risk of cancer of the uterus and a 10% risk of ovarian cancer over their lifetime. Screening for these can begin around the age of 30-35. Screening of the uterus involves an ultrasound scan to measure the thickness of the lining of the womb. It also involves 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 and oophorectomy rather than screening if they have completed their families. These operations remove the womb and ovaries and reduce the risk of these cancers by over 90%. There is a lot to think about around this. Your geneticist will be happy to discuss it 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 have had these cancers in your family please let us know so we can discuss whether any other screening is appropriate for you.

What symptoms should I look out for?

You should be aware of any persistent unexplained tiredness or any unusual bowel symptoms. These might include blood in your stools, passing mucus, unexpected weight loss or persistent change in bowel habits. Women should also be aware of any unusual bleeding or discharge from the womb. Womb cancer often has a very good outcome if caught early. You should see your GP for further advice if you have any of these symptoms. You should make your GP aware of the family history and may wish to take this leaflet with you.

If anyone else in the family develops any cancers or polyps please let us know so we can update our advice.

Is there a cure for Lynch syndrome?

There is lots of research looking at Lynch syndrome which may help us to develop different treatments in the future. There is no way of correcting or replacing the altered gene at the moment, but scientists are working on this.

If you would like to find out about advances in Lynch syndrome in the future please feel free to contact us.

Explanation of unfamiliar words

| | |
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| Hereditary | Something which runs in families. |
| Polyp | A non-cancerous growth on the bowel wall. Most polyps are harmless but can develop into cancers if left for several years. |
| Hysterectomy | Surgery to remove the uterus (womb). |
| Large bowel | The end of the intestine made up of the colon and rectum. |
| Gene | One of the instructions which control the working of the body. |
| Oophrectomy | 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. |

Who can we contact for further advice?

Every region has a genetics service who can be contacted for further advice. If your relatives wish to find out more, they could ask their GP to refer them to their local genetics service. We can share information with their doctors with your permission.

Further Information

<http://www.cancerresearchuk.org/>

<http://www.macmillan.org.uk/Home.aspx>

If you need more advice please contact:

Oxford Cancer Genetics Service

Department of Clinical Genetics
Churchill Hospital
Old Road
Headington
Oxford
OX3 7LE

Telephone: **01865 226 034**

Fax: **01865 223 572**

If you need an interpreter or need a document in another language, large print, Braille or audio version, please call **01865 221473** or email **PALSJR@ouh.nhs.uk**

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