

# Transformation of lymphoma

Low-grade (slow-growing) lymphoma can sometimes transform (change) into a faster-growing type of lymphoma.

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# What is transformation?

Low-grade lymphomas are typically made up of small, slow-growing cells. Faster-growing (high-grade) cells can develop. As the proportion of larger, faster-growing lymphoma cells increases, the lymphoma begins to behave more like a faster-growing high-grade lymphoma. This process is known as 'transformation'.

Transformation is important because you need a different type of treatment if your lymphoma becomes faster growing.

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# Who could be affected by transformation?

Transformation can happen in any type of **low-grade lymphoma**. However, lymphoma does not transform in most people.

Transformation is most common in **follicular lymphoma**. Every year, this type of lymphoma transforms in around 2 or 3 in every 100 people.

Other types of low-grade lymphoma transform less frequently. Types of lymphoma that can transform include:

- **small lymphocytic lymphoma / chronic lymphocytic leukaemia** (this transformation is called Richter syndrome)
- marginal zone lymphomas (including **gastric MALT lymphoma**, **non-gastric MALT lymphoma**, **nodal marginal zone lymphoma** and **splenic marginal zone lymphoma**)
- **Waldenström's macroglobulinaemia** and other lymphoplasmacytic lymphomas
- a slow-growing type of Hodgkin lymphoma called '**nodular lymphocyte-predominant Hodgkin lymphoma (NLPHL)**'.

Some people have a mixture of high-grade and low-grade lymphoma when they are diagnosed. This can happen if you have a low-grade lymphoma that has already transformed into a high-grade lymphoma in one or more places. The high-grade lymphoma is sometimes diagnosed first as it is more likely to cause symptoms. Low-grade lymphoma might then be found in other tests done to **stage** the lymphoma.

Very occasionally, people who were diagnosed with a high-grade lymphoma, such as **diffuse large B-cell lymphoma (DLBCL)**, can relapse in the future with a low-grade lymphoma, even if this was not detected on any tests at the time of the initial diagnosis. It is not certain why this happens but tiny, undetectable levels of low-grade lymphoma may have been present at diagnosis, which later caused a relapse. The high-grade lymphoma may have been caused by transformation of low-grade lymphoma at a very early stage after it developed.

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# When does transformation happen?

Transformation can happen at any time after diagnosis. Occasionally, low-grade lymphoma has already transformed when it is diagnosed. Your medical team check for signs of transformation when you are diagnosed and at appointments during treatment and follow-up. Most people never experience transformation. Some research suggests that transformation might become less common 15 years after diagnosis.

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# Why does transformation happen?

**Lymphoma** can develop when mutations (genetic changes) cause lymphocytes to divide in an abnormal way or to stay alive when they shouldn't. More mutations can happen over time. They might cause abnormal lymphocytes to grow rapidly, like the cells in a high-grade lymphoma. This is why transformation generally becomes more likely as time goes on.

Most lymphomas never transform. There is no definite way of telling in advance which lymphomas are likely to transform into a faster-growing type. However, researchers are trying to detect changes in the cells to predict which cases of lymphoma are likely to transform.

Being in a particular age group or being a man or a woman does not make your lymphoma more likely to transform. Nothing you do (or have done) can make transformation more or less likely to happen.

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# Can treatment reduce the risk of transformation?

There is no clear evidence that any of the treatments for low-grade lymphomas (for example, chemotherapy drugs, antibodies or radiotherapy) increase or decrease the likelihood of a lymphoma transforming.

Some studies suggest that early treatment or good control of the lymphoma could reduce the risk of transformation. However, other studies show no difference in the risk of transformation for people who have not yet had treatment for their lymphoma (for example, those on ‘**watch and wait**’) and people who receive treatment soon after their diagnosis.

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## Symptoms

One of the aims of your check-ups, whether you are on ‘watch and wait’ or in follow-up after treatment, is to check for transformation. Your doctor looks for the following factors, which could be signs of transformation:

- a change in your **symptoms**, such as
  - a rapid increase in the size of your lymph nodes (glands)
  - rapid swelling of your liver or your **spleen** (an organ of your immune system)
  - weight loss, night sweats or fevers (these are known as ‘**B symptoms**’)
- increases in the levels of chemicals measured in **blood tests**, such as
  - lactate dehydrogenase (LDH)
  - calcium.

These factors could also be a sign that the lymphoma is getting worse or relapsing (coming back) and might need treatment. Tell your medical team if you develop any new symptoms. They can do tests to check whether your lymphoma has relapsed or transformed. Although the pattern of symptoms and the blood test results might suggest transformation, a **biopsy** is the only way of confirming whether low-grade lymphoma has transformed.

Transformation can happen in some areas of your lymphoma but not in others. Your doctor might suggest a **PET/CT scan** before your biopsy. This type of scan can be used to find the most active areas of lymphoma, which are the most likely sites of transformation. Biopsies can then be taken of the most active areas of lymphoma to see if there are any large, fast-growing cells.

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# Treatment

Transformed lymphoma is treated in the same way as a high-grade lymphoma.

Your treatment depends on several factors, including:

- what treatments you have already had for your low-grade lymphoma (if any)
- your response to any treatments you have already had
- your general health.

Possible treatments include:

- R-CHOP **chemotherapy**
- more intensive chemotherapy regimens, followed by an **autologous stem cell transplant** if the lymphoma responds well to chemotherapy
- an **allogeneic stem cell transplant** if you are fit enough and you need more than one course of chemotherapy to achieve a remission. Stem cell transplants are intensive forms of treatment and are not suitable for everyone.

If the transformed lymphoma is in just one place it might be treated with **radiotherapy** (usually given after a course of chemotherapy). This might depend on which part of your body is affected.

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## Outlook

Many people can be successfully treated and treatments for transformed lymphoma are improving all the time. However, your outlook varies greatly depending on your individual circumstances. Your medical team is best placed to advise you on your outlook. They can use the results of your tests and consider other individual factors, like your previous treatment and symptoms, to predict how likely you are to respond to a particular treatment.

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## References

These are some of the sources we used to prepare this information. The full list of sources is available on request. Please contact us by email at [publications@lymphoma-action.org.uk](mailto:publications@lymphoma-action.org.uk) or phone on **01296 619409** if you would like a copy.

- NICE. NICE guideline NG52. Non-Hodgkin's lymphoma: diagnosis and management. Available at: [bit.ly/2jQwgcl](https://bit.ly/2jQwgcl) (Accessed October 2017).
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- Jiménez C, et al. From Waldenström's macroglobulinemia to aggressive diffuse large B-cell lymphoma: a whole-exome analysis of abnormalities leading to transformation. *Blood Cancer J*. 2017; 7: e591.

## Further reading

- [Non-Hodgkin lymphoma](#)
- [Diffuse large B-cell lymphoma](#)
- [Watch and wait](#)
- [Chemotherapy](#)
- [Stem cell transplants](#)

- **Glossary**

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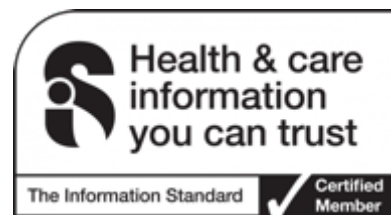
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