

Antibody therapy for lymphoma (including rituximab)

This page tells you what antibody therapy is and how it is used to treat lymphoma.

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What are antibodies?

Antibodies are made by the body's **immune system** and are an important part of its defence against infection. All cells have different proteins on their surface, which are known as antigens. Antibodies bind (stick) to antigens on cells that don't belong in your body, for example on viruses or bacteria cells. If your immune system detects cells that don't belong in your body, it can produce lots of different antibodies. A particular antibody fits only with a particular antigen, like two parts of a jigsaw. When they are bound to an antigen, antibodies attract other cells of the immune system that help to destroy the cells that don't belong in your body.

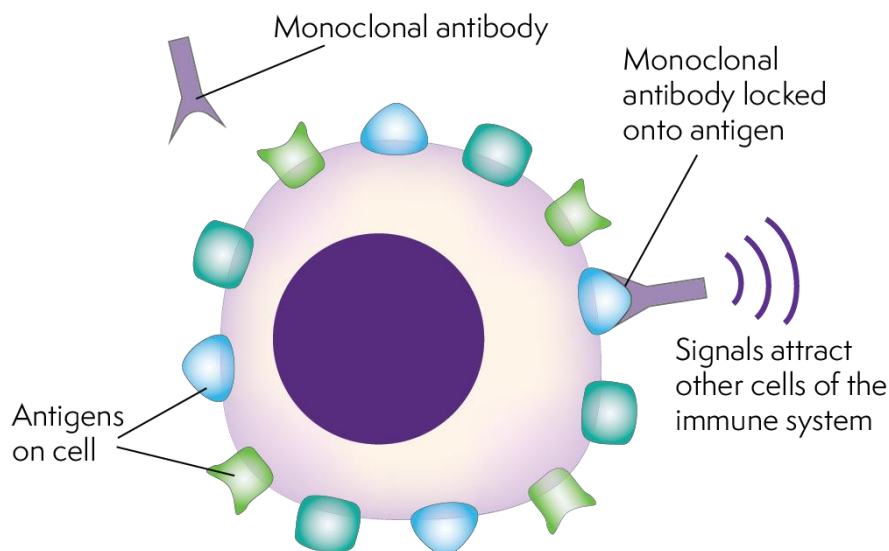


Figure: Monoclonal antibodies locking on to the antigens of a cell

You may hear the term ‘monoclonal antibodies’. ‘Monoclonal’ means that the antibodies are exactly the same, so they stick to exactly the same antigen.

What is antibody therapy?

Antibody therapy involves giving antibodies that have been specially made in a laboratory to target an antigen on a cancer cell. It is sometimes known as ‘immunotherapy’ because it helps the body’s immune system to recognise and respond to the cancer.

Antibody therapy is a type of **targeted therapy**. Targeted therapy aims to affect lymphoma cells more precisely than **chemotherapy** and **radiotherapy**, reducing the effects on normal cells. Damage to normal cells, such as cells in the **bone marrow** (the spongy tissue in the centre of some of the large bones of the body where blood cells are made), hair follicles and gut, causes many of the **side effects** of chemotherapy and radiotherapy.

How does antibody therapy work?

Antibody therapy can work in different ways.

Independently (on their own) – the antibodies work with the body’s immune system to kill cancer cells in the same way infections are destroyed. They can directly cause cancer cells to die or stimulate the immune system to kill them:

- Antibodies that bind to an antigen called CD20 on the surface of **B cells** attract immune system cells to destroy the B cells they are attached to. They also help the B cells destroy themselves. These drugs include **rituximab** and **newer anti-CD20 antibodies such** as ofatumumab and obinutuzumab. These types of antibodies are used in the treatment of B-cell lymphomas, which develop when B cells become abnormal.
- Antibodies that activate the immune system to destroy abnormal cells include drugs called **checkpoint inhibitors**, such as nivolumab and pembrolizumab.

With chemotherapy – the antibodies cause the cancer cells to be more sensitive to the chemotherapy, making the chemotherapy work better. Many antibodies are given alongside chemotherapy as part of a **regimen** (combination of drugs).

Delivering other therapies – the antibody takes the other therapy directly to the lymphoma cells, allowing strong treatments to be given with fewer effects on normal cells (**side effects**). These treatments include:

- antibody–drug conjugates: a strong chemotherapy drug is joined to an antibody, for example **brentuximab vedotin** (brand name Adcetris®) or **polatuzumab vedotin** (brand name Polivy®)
- antibody–toxin conjugates: a toxin (a naturally occurring poison) is joined to an antibody, for example the experimental drug denileukin diftitox (brand name Ontak®)
- **radioimmunotherapy**: a radioactive particle is joined to an antibody, for example 90Y-ibritumomab tiuxetan (Zevalin®).

Several antibody therapies are already being used to treat lymphoma, and many others are in **development**. Find out which antibody therapies and other targeted drugs are approved to treat your type of lymphoma on our regularly updated **targeted drugs** page.

Some antibody therapies are in clinical trials to test how safe and effective they are in treating certain types of lymphoma. Find out more about clinical trials at **Lymphoma TrialsLink**, and **search our database** to find a clinical trial that might be suitable for you.

References

The full list of references for this page is available on our website. Alternatively, email publications@lymphoma-action.org.uk or call 01296 619409 if you would like a copy.

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