

Other targeted drugs for lymphoma

This information is about some of the other targeted drugs approved for people with lymphoma.

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Types of targeted drugs

Some **targeted drugs** are in routine use for people with lymphoma in the UK. There are others that are **approved** for use in Europe but not yet **funded on the NHS** in the UK, or that are not yet used for many people with lymphoma. These drugs can still be used in the UK for certain people, but might need to be funded outside of the NHS. The sections below describe some of the other targeted drugs that are approved for use in Europe and how they work.

Different ways to target lymphoma cells are under investigation. This page is updated regularly to include new drugs approved for people with lymphoma.

Radioimmunotherapy

Radioimmunotherapy uses an **antibody** (immunotherapy) to deliver a small dose of radiation (radiotherapy) directly to lymphoma cells. Targeting radiotherapy to the lymphoma cells means it causes less harm to normal cells.

Ibritumomab tiuxetan (Zevalin®) is the only radioimmunotherapy treatment currently approved to treat lymphoma in Europe.

Ibritumomab tiuxetan

Ibritumomab tiuxetan is an antibody that targets the protein CD20, which is found on some lymphoma cells. Just before it is given, it is mixed with a radioactive particle called yttrium-90.

Who can have it?

Ibritumomab tiuxetan is **approved in Europe** for some people with **follicular lymphoma**.

It is approved to treat:

- People who have gone into remission (no evidence of follicular lymphoma) after their first course of chemo-immunotherapy (**chemotherapy** with antibody treatment). It aims to give a longer-lasting remission – this is called ‘consolidation’.
- People whose follicular lymphoma has relapsed (come back) after treatment containing **rituximab** or whose lymphoma is no longer responding to treatment containing rituximab (refractory).

However, it is not currently available on the NHS in the UK and has not been assessed by NICE for use in the UK.

How is it given?

Ibritumomab tiuxetan is only given at certain hospitals as it requires specially trained staff and specialist facilities. It is given intravenously (into a vein) over 10 minutes. You have a single dose of ibritumomab tiuxetan. A low dose of **rituximab** is given 7 to 9 days beforehand. A second dose of rituximab is given just before ibritumomab tiuxetan.

Cell signal blockers

Cells receive signals that keep them alive and make them divide. These signals are sent along different signalling pathways inside the body. Blocking either the signal or a key part of the pathway can make cells die or stop the lymphoma from growing. Certain signalling pathways are more important in

some types of lymphoma than in others. Scientists don't yet fully understand how all the various pathways are linked.

Some cell signal blockers are already in routine use for some types of lymphoma, such as **ibrutinib** and **idelalisib**.

There is one cell signal blocker approved for use for people with lymphoma but not funded on the NHS: **temsirolimus** (Torisel®).

There are many other cell signal blockers in development and in **clinical trials** for people with lymphoma.

Temsirolimus (Torisel®)

Temsirolimus targets a pathway known as 'mammalian target of rapamycin' (mTOR), which helps lymphoma cells to divide. Blocking this pathway can stop lymphoma cells spreading.

Who can have it?

Temsirolimus is approved in Europe for people with **mantle cell lymphoma** whose lymphoma has relapsed (come back) or is refractory (didn't respond well) to other treatments.

It is not funded on the NHS in the UK.

How is it given?

Temsirolimus is given intravenously (into a vein) over about 30 to 60 minutes once a week. Treatment usually continues until the lymphoma stops responding unless you are not tolerating the treatment (you have severe side effects).

Proteasome inhibitors

There are lots of different proteins in cells which help to control normal processes, including how cells divide (make new cells). Proteasomes break down proteins in cells and this keeps a balance of proteins in the cell. This is a normal process but also occurs in abnormal cells to keep them alive, for example lymphoma cells. Proteasome inhibitors block the work of proteasomes. This seems to be particularly harmful to certain types of lymphoma cells, which are then no longer able to work properly and die.

The only proteasome inhibitor currently approved to treat people with lymphoma in Europe is bortezomib.

Bortezomib (Bortezomib Accord or Velcade®)

Bortezomib blocks the work of proteasomes.

Who can have it?

Bortezomib is approved in Europe to treat people with mantle cell lymphoma who cannot have a **stem cell transplant**. It is given with chemo-immunotherapy (rituximab, cyclophosphamide, doxorubicin and prednisone, known as R-CHP) as a first-line treatment for people who have not yet had treatment. It is funded on the NHS in the UK for this use.

How is it given?

Bortezomib is given intravenously (into the vein) or subcutaneously (by injection just under the skin). It is usually given twice a week for 2 weeks followed by a 10 day rest period in each 3-week cycle. A total of 6 to 8 cycles are usually given for people with mantle cell lymphoma that has not been treated previously.

Immunomodulators

Immunomodulators are believed to work by changing how the immune system works. They can do this in different ways, for example, by:

- restoring some of the signals between **immune system** cells and lymphoma cells
- blocking some of the signals within lymphoma cells.

The only immunomodulator currently approved to treat people with lymphoma in Europe is lenalidomide.

Lenalidomide (Revlimid®)

Lenalidomide is an immunomodulatory drug. It affects the activity of the immune system in several different ways, both in helping the immune system to attack the lymphoma cells and in preventing the lymphoma from growing.

Who can have it?

Lenalidomide is approved in Europe for people with relapsed or refractory mantle cell lymphoma, but this is not currently funded on the NHS.

In combination with rituximab, lenalidomide is licensed for people with relapsed or refractory follicular lymphoma. It is approved on the NHS throughout the UK for this use.

How is it given?

Lenalidomide is taken as tablets once a day for 21 days, followed by 7 days without treatment in each 28-day cycle. You usually have up to 12 cycles of treatment unless your lymphoma stops responding or you are not tolerating the treatment (you have severe side effects).

References

The full list of references is available on request. Please email publications@lymphoma-action.org.uk or call 01296 619409 if you would like a copy.

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