

Chemotherapy

Chemotherapy is a type of drug treatment often used to treat lymphoma. You might have chemotherapy on its own, or with other treatments such as **radiotherapy** or a **targeted therapy**.

What is chemotherapy?

How is chemotherapy given?

Ambulatory chemotherapy

Risk of infection

Side effects

Frequently asked questions about chemotherapy

We have separate information about the topics in **bold font**. Please get in touch if you'd like to request copies or if you would like further information about any aspect of lymphoma. Phone 0808 808 5555 or email information@lymphoma-action.org.uk.

What is chemotherapy?

Chemotherapy means treatment with cytotoxic drugs. 'Cyto' means 'cell', and 'toxic' means 'poison'. Chemotherapy poisons the cancerous lymphoma cells. It is often used to treat lymphoma because most lymphoma cells are easily killed by it.

Lymphoma is a type of blood cancer. It develops when white blood cells called **lymphocytes** grow out of control. They can then build up in your **lymph nodes** and/or other organs. Most of our cells have a limited lifespan. They usually die naturally and new cells replace them. A lymphoma can develop when this process goes wrong.

Chemotherapy works in one or both of the following ways:

- stopping lymphoma cells from dividing so that they die off
- triggering lymphoma cells to die.

It usually involves having a number of treatments ('cycles'). After each cycle, you have a rest period. A whole course of treatment can take anywhere between a number of weeks to months.

The chemotherapy drugs work on cells that are in the **process of dividing** – they don't have much effect on cells that are not dividing. Chemotherapy can be given as a **combination regimen**, where more than one chemotherapy drug is given at once. Different drugs work on different phases of the cell cycle. Having them together helps to kill as many lymphoma cells as possible.

How is chemotherapy given?

You are most likely to have chemotherapy in one or more of the following ways:

- by mouth as a tablet (**oral chemotherapy**)
- through a tube or injection into a vein (**intravenous (IV) chemotherapy**)
- by an injection into the cerebrospinal fluid, which surrounds the brain and spinal cord (**intrathecally**).

Oral chemotherapy

You might have some or all of your chemotherapy by mouth (orally). It is good practice to wash your hands before and after taking the tablets. Unless you've been told to by a member of your medical team, do not crush or open the tablets or capsules.

It is important that other people do not touch your chemotherapy drugs as it could be unsafe for them to do so. If carers need to touch your tablets, they should wear gloves to do so.

Intravenous (IV) chemotherapy

Intravenous (IV) chemotherapy is injected into a vein. This is the most common way to have chemotherapy for lymphoma.

IV chemotherapy can be given:

- through a soft plastic tube called a **cannula**
- through a **central venous catheter** ('line').

IV chemotherapy for lymphoma is usually given through a cannula, a soft plastic tube with a needle inside it.

A nurse or doctor:

- puts the needle into a vein, usually on the back of your hand or in your lower arm
- removes the needle, leaving only the plastic tube in your vein
- puts a dressing on, to keep the cannula clean and in place.

Some IV drugs are given as a 'bolus' or a 'push' dose. This is where the chemotherapy is injected through the cannula over a short period of time, usually a few minutes.

Other drugs are given through a drip (intravenous infusion), a tube that runs into a cannula into a vein in your arm.

- The IV chemotherapy drugs are mixed with fluid in a bag.
- The fluid drips slowly from the bag into your vein over a set amount of time. This could be anywhere from 5 minutes to a number of hours, depending on the drug you have.
- The bag hangs from a metal drip stand so that it stays above your arm to allow the fluid to flow downwards. The stand usually has wheels so that you can walk around with the drip still connected to you.

Sometimes, the drip is controlled by an electric pump so that the chemotherapy drugs flow at the right speed into your vein. Occasionally, a problem can arise but, if this happens, the drip stops automatically. The drip doesn't start back up until the problem is corrected.

The team delivering the chemotherapy will check that IV chemotherapy is flowing through the vein correctly. However, **if you feel any pain or discomfort while you're having IV chemotherapy, or notice swelling in your arm, it's important that you tell a member of hospital staff.**

Occasionally, the drug goes into the tissues around the vein instead of into the vein itself. This is called 'extravasation' and can damage the tissues if it isn't stopped quickly. All nurses who give chemotherapy are trained in how to deal with this complication.

IV chemotherapy through a 'line' (central venous catheter)

You might have your IV chemotherapy through a 'central line' or 'line' (central venous catheter). A line is a tube that is put into one of your larger veins, guided by ultrasound. It runs from your chest to your heart.

A line can also be used to give you drugs and other fluids, and to take **blood samples** more easily. This can save the discomfort of repeated needle pricks.

Lines are put in during a small operation done under local or general anaesthetic. Once it's in place, a line isn't usually painful.

There are different types of line:

- **PICC line** (peripherally inserted central catheter), which goes in through a vein in your arm, above the bend of your elbow. It is held securely in place by a dressing.
- **Tunnelled central line**, which is usually positioned on your upper chest. Part of it runs in a 'tunnel' under your skin. You might also hear this type of line called a Hickman® line, a Groshong® line or apheresis line.
- **Totally implantable line**, a thin, soft tube that runs under the skin before going into a vein in your chest. It can be used to deliver long-term chemotherapy while lowering the risk of infection.

I had to change to a more intensive treatment so I had a PICC line inserted. Through this, I had 3 hours of drips each day, before returning a week later for a final 30 minute drip, with chemotherapy tablets in between and injections to promote bone marrow production. It was overwhelming, but I managed the treatment well.

Natalia, diagnosed with Hodgkin lymphoma

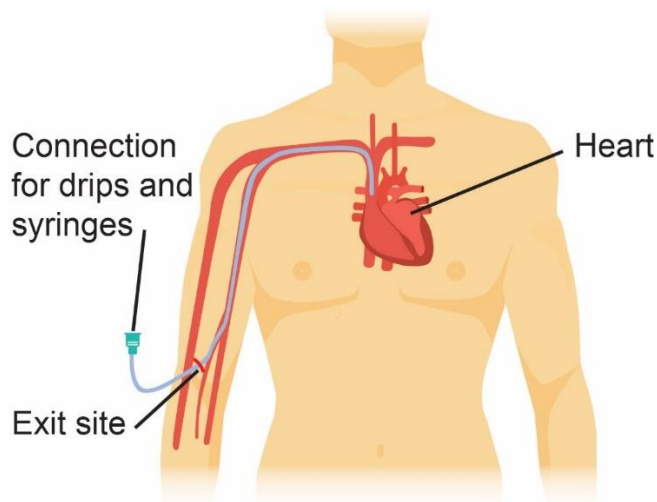


Figure: person with a PICC line inserted

Taking care of your line

Once it's fitted, your line is covered with a simple dressing to protect it. You will be given instructions on how to care for it once you go home, including on taking baths and showers while it is in.

Lines can sometimes become infected. Occasionally, a blood clot can develop around them. Contact your hospital immediately if you develop any symptoms of infection, including:

- redness or heat around the area (site) of the line
- a high temperature (above 38°C/99.5°F)
- swelling of the arm.

Intrathecal chemotherapy

Intrathecal chemotherapy is given into the cerebrospinal fluid – the fluid that surrounds the central nervous system (CNS; brain and spinal cord).

The CNS is surrounded by a blood–brain barrier. To protect it from harmful chemicals and infections, the barrier only lets certain substances reach the brain. Intrathecal chemotherapy is a way to bypass the blood–brain barrier and get drugs directly into the CNS.

You might have intrathecal chemotherapy if you have:

- Lymphoma in your **brain and spinal cord**; central nervous system (CNS).
- A type of **high-grade lymphoma** that can sometimes spread to the CNS (such as **Burkitt lymphoma**, **diffuse large B-cell lymphoma** with particular risk features) or **lymphoblastic lymphoma**. In these cases, you might have intrathecal chemotherapy to prevent the lymphoma from spreading there; this is called '**CNS prophylaxis**'.

Usually, you have intrathecal chemotherapy by a **lumbar puncture**. This is an injection into cerebrospinal fluid in the lower part of your back, which you have under a local anaesthetic.

Subcutaneous chemotherapy

A small number of chemotherapy drugs are given by injection into the layer of fat that lies just under your skin. Having chemotherapy in this way is known as subcutaneous chemotherapy.

Some other types of treatment can be given by subcutaneous injection, for example **maintenance rituximab**, **growth factors** and **immunoglobulin replacement therapy**.

A chemotherapy nurse injects the drug through a tiny needle into the skin on your tummy, upper arm or thigh. The injection is not usually painful but it might sting for a few moments. The time it takes to give the drug varies from seconds to minutes, depending on what drug you are having.

Ambulatory chemotherapy

Many hospitals now offer ambulatory chemotherapy. This means that you don't have to stay in hospital for your treatment. Instead, you have it in your home or in hospital accommodation, such as in an apartment, near to the hospital. Some people prefer to have chemotherapy in this way as they feel it gives them more independence, privacy and comfort than staying in hospital.

You have ambulatory chemotherapy by a pump-controlled **drip (infusion)**.

Whether ambulatory chemotherapy is an option for you depends on several factors. This includes the type of drug or drugs you are having and any other medical conditions you might have.

In addition, not all hospitals can offer ambulatory chemotherapy. They need to have certain resources to be able to do so, including a 24-hour advice line, staffed by specifically trained healthcare professionals. If your hospital offers this type of chemotherapy, they will have their own policies, which are likely to include a need to:

- stay within a certain distance or travel time from the hospital so that you can get to the hospital quickly if you need to
- have someone who could drive you to the hospital at any time of the day or night, if you need to go
- be contactable at any time, for example by mobile phone.

Your hospital must provide you with an out-of-hours telephone number so that you can contact them at any time of the day or night.

I was away from home for a long time, initially in ambulatory care, receiving high dose LEAM chemotherapy, and then in hospital once my neutrophils became very low and the side effects too bad. While I was in ambulatory care, we went out for walks and visited museums together as a family. It was quite surreal to be doing that with the chemotherapy attached to me.

Katherine, diagnosed with anaplastic large T-cell lymphoma

Risk of infection while having chemotherapy

While you are being treated with chemotherapy, you are at an increased risk of developing an infection and it can be harder than usual to get rid of it, particularly if you have **neutropenia** (a shortage of a type of white blood cell that helps to fight infection). You might need treatment with antibiotics to help get rid of the infection.

It is therefore important that you know:

- the **signs of infection** to look out for
- **who to contact if you think you might have an infection.**

While it's impossible for anyone to be completely clear of the risk of infection, there are things you can do to **help lower the risk**. Take steps to minimise your contact with germs and keep good personal hygiene. It's also advisable to protect your skin from scratches and cuts, for example, by wearing gloves when gardening. If you cut or graze yourself, wash your hands and then use tap water to **clean the wound**.

You should also follow **food safety guidance** for storing, preparing and cooking food. Check the **high food hygiene rating** if you are eating out.

What side effects might I have?

Although the aim is to kill lymphoma cells, many types of chemotherapy also temporarily affect healthy cells. This is why chemotherapy can cause **side effects**.

Side effects vary depending on:

- which chemotherapy drug you have
- the dose of the drug

- any other medical conditions you have.

They can also differ from person to person, even with the same treatment. Your medical team should advise you on whether they expect you to have side effects during or soon after your treatment. They should give you information about how to manage these.

Your medical team should also talk to you about any possible **late effects**. These are health problems that first appear months or years after treatment has finished. Not everyone gets late effects. The late effects you have depend on which chemotherapy drug you have, the strength of the dose and how long your treatment goes on for. Your doctor should talk to you about possible late effects before you begin treatment.

Frequently asked questions about chemotherapy

A highly skilled team of medical professionals plan and deliver your chemotherapy treatment. Your team should explain everything as you go through the process. Don't hesitate to ask questions or for information to be repeated if this would help you.

Below, we give brief answers to some frequently asked questions about chemotherapy.

Which chemotherapy drug or drugs will I have?

Most of the time, chemotherapy is given as a combination regimen, a treatment plan that includes more than one drug. We have separate information about **common chemotherapy regimens**.

The exact chemotherapy treatment your doctors recommend for you depends on a number of factors. These include the **type** of your lymphoma and, if applicable, its **stage** (a number that indicates which areas of your body are affected). Your medical team should discuss your treatment plan with you before you begin chemotherapy.

Will I have other treatments as well as chemotherapy?

As well as your chemotherapy drugs you might have other drugs as part of a chemotherapy regimen, for example:

- **steroids**, often as prednisolone tablets

- **targeted therapies** such as **antibody therapies** (for example **rituximab**); some of these are in tablet form. Others are given by injection, either into a vein (**intravenous injection**) or into a layer of fat under the skin **subcutaneous injection**.

Your team might also discuss **radiotherapy** treatment in addition to chemotherapy.

You might also have other treatments to help you with the side effects of chemotherapy, for example:

- G-CSF (granulocyte colony-stimulating factor), a '**growth factor**' given by subcutaneous injection. G-CSF helps you to make healthy new white blood cells. You might have this if you have a low number of neutrophils, a type of white blood cell.
- Anti-sickness medicines (**anti-emetics**) to stop you from feeling and being sick. There are quite a few different kinds of anti-emetics so tell your nurses or doctors if the one you have isn't working so that they can try another one.

Am I likely to feel unwell during chemotherapy?

Your medical team should discuss any possible side effects with you before you begin treatment. If you have a particular event you'd like to feel as well as possible for, they might be able to schedule your treatment around it.

Why is surgery unlikely to cure my lymphoma?

Surgery can only very rarely remove all the cancerous cells in lymphoma. Even for lymphomas that appear to be in one area only, surgery usually leaves some cells behind. That's why, chemotherapy and/or radiotherapy are the usual treatments for lymphoma.

How long do chemotherapy drugs stay in your body?

In most cases, drugs last a few hours to a few days in the body. It can, however, take longer for them to go completely out of your system.

The length of time a drug stays in your body depends on factors such as the **type of drug** you have and how your body processes it. It can also depend on how well organs such as your kidneys and liver are working.

Is it safe to drink alcohol?

Generally, it should be OK to have the occasional alcoholic drink between **chemotherapy cycles** when you feel well enough, but check with your hospital consultant whether it is safe for you. Alcohol can interact with some drugs and affect how well they work. Remember, too, that you might feel the effects of alcohol more quickly now than you did before you had treatment.

Is it OK to smoke?

Smoking means that you are more likely to get infections, especially in the lungs. Having treatment for lymphoma further increases this risk.

Some chemotherapy drugs, including bleomycin, increase the risk of pulmonary fibrosis (scarring in the lungs), which can lead to breathing problems. If you smoke, stopping can help to lower these risks. You can find **information and advice to help you quit smoking** on the NHS website.

Should I take exercise?

Physical activity can have a positive impact on physical and mental health. It could also shorten your recovery time after treatment.

Speak to your doctor about the type and intensity of exercise that's safe for you. You might be advised to avoid certain types of exercise at times. For example, you'll probably be advised to avoid contact sports like rugby if you have a low platelet count (**thrombocytopenia**), due to the risk of bruising and bleeding. You might also be advised against swimming for a while because of the increased risk of infection from public pools and changing rooms.

Will I lose my hair?

Some types of chemotherapy can cause slight thinning, partial loss, complete loss and changes in colour or texture of your hair. Any **effects on your hair** are usually temporary. Your medical team can give you an idea of what to expect. You might also be interested in finding out about **headwear options** if you are likely to lose some hair and would like to cover it.

Is it safe to have a massage?

Some people with lymphoma worry that having a **massage** could spread lymphoma throughout their body. There is no evidence that massages are at all harmful. Speak to your medical team for advice specific to your situation if you would like to have a massage.

Could acupuncture help me?

There is some evidence that **acupuncture** can help with **nausea and vomiting** as side effects of chemotherapy. It could also help to relieve pain. As with all **complementary therapies**, speak to a member of your medical team before you decide whether to have acupuncture. They might advise that you avoid it if you are at risk of low platelets (**thrombocytopenia**) or low neutrophils (**neutropenia**) as a side effect of chemotherapy. This is because it could increase your risk of bleeding or infection.

Should I follow a certain diet?

The general guidance is to eat a **healthy, balanced diet**. If you are having a more intensive **chemotherapy regimen**, your medical team might give you some additional advice on foods to avoid.

DiETING when you are having chemotherapy is not advised – far better to opt for a healthy and balanced diet, and do remember to have some treats from time-to-time!

Gill Stewart, Lymphoma Clinical Nurse Specialist

Can I carry on working?

You are likely to need to take some time out of work while you're having treatment for lymphoma and probably for a little while after finishing treatment. You might choose to carry on working through your treatment.

I carried on working. I do a lot of work on the phone and by email, which I can do anywhere. My nurse felt that this was good for me psychologically as it gave me something to think about.

Stephen, diagnosed with mantle cell lymphoma

Your employer must, by law, make any 'reasonable adjustments' that allow you to continue working during and after treatment (under the **Equality Act 2010**). Speak to your Human Resources (HR) department or your line-manager and ask how they can support you. You might also be interested in finding out about any sources of **financial support** available to you if your income is lowered.

Your keyworker (often your Clinical Nurse Specialist; CNS) might also be able to signpost you to further sources of advice and local support.

Can I spend time with friends and family?

Spending time with **friends and family** can help your **emotional wellbeing**. If you have **neutropenia**, avoid being around people who are unwell with infections, such as a cold, flu, diarrhoea or chickenpox.

Can I have a flu vaccination?

Ask your medical team whether they advise that you have the flu **vaccination**. The vaccine might not work effectively while you are having chemotherapy so it is often better to have the vaccine either before or after completing the course of chemotherapy. After finishing treatment with chemotherapy, it is sensible to have the flu vaccination each year.

Cancer Research UK has more information about **flu vaccines and cancer treatment**.

Can I have sex?

Generally, sex during treatment is considered to be safe. Check with your medical team about any precautions you should take, especially if you have low platelets (**thrombocytopenia**) as this heightens your risk of bruising and bleeding.

During chemotherapy treatment, it's important to note that:

- you should use a condom to avoid passing chemotherapy to your partner and to protect against infection.
- The 'pill' (oral contraceptive tablets) might be less effective so discuss contraception with your GP or clinical nurse specialist.

When can I get pregnant after my treatment?

If your chemotherapy could affect your **fertility**, your medical team should discuss this with you before you begin treatment. Different chemotherapy drugs can have different effects on your fertility.

It's generally not a good idea to begin a **pregnancy** while you are having chemotherapy or soon afterwards. Your medical team can give you advice specific to your individual situation. In general, women are advised to wait for two years after finishing treatment before trying for a baby. Men are usually advised against getting their partner pregnant during, and for at least six months after, finishing chemotherapy.

Can I breastfeed while I am having treatment?

Doctors usually recommend that you do not breastfeed your baby while you're having chemotherapy. This is because the drugs can get into your breast milk. Ask your medical team for advice specific to your situation about the safety and practicalities of breastfeeding.

Can I go on holiday when I am having chemotherapy?

Most doctors would not recommend **travelling abroad outside of the UK** during chemotherapy and for a few months afterwards.

Short breaks in the UK are usually fine so long as you feel well enough and can get to a hospital quickly if you need medical attention.

Discuss the safety of your travel plans with your medical team before you travel and make sure that you have suitable **travel insurance** in place before you go.

How will I be followed-up after treatment?

After finishing your treatment for lymphoma, you will have regular **follow-up appointments** at the hospital. These involve conversations and physical tests with a member of your medical team.

One of the tests you are likely to have in the first few months after chemotherapy is your **full blood count** (FBC). This measures the numbers and sizes of your blood cells and tells doctors how well your bone marrow (where blood cells are made) is working.

The aim of follow-up is to:

- check your **recovery from treatment**
- check for signs of the lymphoma coming back (**relapse**)
- manage any **late effects** of treatment.

How often you are followed-up depends on a number of factors. These include the **type of lymphoma** you had, how long it's been since you had treatment and whether you were treated as part of a **clinical trial**.

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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✓	Evidence-based
✓	Approved by experts
✓	Reviewed by users

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