

## Risk of infection

People with lymphoma are more likely to get infections than other people. This page explains what signs of infection to look out for and what steps you can take to reduce your risk of infection.

If you have an increased risk of infection because of a low neutrophil count (neutropenia), you may be interested in our separate information page about [neutropenia](#).

### On this page

#### [What is infection?](#)

#### [Risk of infection](#)

#### [Signs of infection](#)

#### [What to do if you suspect an infection](#)

#### [Preventing infections](#)

#### [Food safety](#)

## What is infection?

Infections are illnesses caused by tiny organisms that can only be seen with a microscope. These are known as 'microorganisms' or 'microbes', often called 'bugs' or 'germs'. The most common microbes are viruses, bacteria and fungi. If microbes get past the body's defences and multiply inside the body, they can make us ill. This is an infection.

Many infections are limited to specific parts of the body and cause symptoms in that part only. For example, colds affect the airways and cause a runny nose, gastroenteritis ('stomach bug') affects the digestive tract and causes sickness and diarrhoea, and boils affect the skin and cause a painful, red, lump. Some infections can affect the whole body, causing symptoms such as fever, tiredness, aches and pains.

## Risk of infection

If you have lymphoma, your risk of infection is higher than normal. There are a number of reasons for this.

### Lowered immunity

Lymphoma is a cancer that affects white blood cells called **lymphocytes**. Lymphoma stops lymphocytes from working properly as part of the **immune system**. **Neutropenia** (caused by lymphoma in the bone marrow or treatments such as **chemotherapy**) can also lower your immunity. If you have had a **splenectomy** (an operation to remove your spleen), your risk of certain infections is also higher because the spleen is involved in fighting infections.

### Having an intravenous line in place between treatments

Keeping a peripherally inserted central catheter (**PICC line**) or tunnelled **central line** fitted between treatments makes it easier to give you chemotherapy. The downside is that it can also give bacteria a route into your bloodstream, leading to infections.

Advice may vary between hospitals but in general, your medical team should dress and flush your line once a week to reduce the risk of infection.

### Malnutrition

If you are having **difficulties eating** and are not getting the nutrients your body needs, it can be harder for you to fight infections. If you are struggling to eat and drink, speak to a member of your medical team for advice. They may offer you nutritional supplements or refer you to a **dietitian**.

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## Signs of infection

Infections can develop in any part of the body and can be serious. If you are **neutropenic**, your body is less likely to be able to fight an infection on its own. You will need antibiotics and you may need to be admitted to hospital to treat the infection.

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**Contact your medical team immediately if you have any signs or symptoms of infection, including but not limited to:**

- fever (temperature above 38°C)
- hypothermia (temperature below 35°C)
- shivering
- chills and sweating
- feeling generally unwell, confused or disorientated
- earache, cough, sore throat or sore mouth
- blocked nose
- shortness of breath
- redness and swelling around skin sores, or injuries to intravenous lines
- diarrhoea or vomiting
- a burning or stinging sensation when weeing, or weeing more often than usual
- unusual vaginal discharge or itching
- unusual stiffness of the neck and discomfort around bright lights
- any new pain.

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**Contact your medical team immediately if you have any of the above symptoms, no matter how minor or vague they seem.**

Keep a thermometer handy so that you can easily check your temperature.

**Call your hospital team if your temperature goes above 38°C. If your temperature is above 37.5°C, recheck it in 1 hour.**

Remember that shivering can be a sign of infection even if you do not have a fever. This is more likely if you are taking steroids.

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## **What should I do if I suspect an infection?**

If you spot any **signs of infection**, do not wait to see if they get worse: **contact your medical team straightaway. If they advise you to go to the hospital, go at once. Infection can be severe and take hold quickly if you have neutropenia.**

You should have been given telephone numbers to call at any time (day or night), including weekends. Many chemotherapy units give out cards with details about the drugs you are taking to show your GP or district nurse if you need to. These cards should give advice on what to do if you become feverish or unwell when your neutrophil count is low. If you have not been given this information, ask for it.

It is always best to be checked over and have treatment early if it is needed. A delay can be life-threatening.

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## Preventing infections

You cannot prevent yourself from becoming neutropenic but **eating well** can help your **bone marrow** recover and make new **neutrophils** as quickly as possible. Remember that your neutrophil levels can stay low for a number of days after each dose of chemotherapy, sometimes right up until the next dose. There are simple ways (listed below) that can help manage your risk of infection.

### Minimise contact with germs

- Stay away from people with infections such as a cold, flu, diarrhoea, vomiting or chickenpox.
- Avoid places where the risk of infection is higher, such as cinemas, busy shops, public transport during rush-hour, swimming pools and jacuzzis.
- Take care when handling pets. Always wash your hands after touching them and try to avoid bites and scratches. Wear gloves when cleaning up after pets, or ask someone else to do it for you.
- Keep your household surfaces clean.
- Do not share food, cups, mugs or cutlery.
- Wear protective gloves when gardening.

### Keep good personal hygiene

- Wash your hands before meals and after using the toilet.
- Clean your bottom gently but thoroughly after each bowel movement, wiping from front to back.
- Take a warm bath or shower every day. If you have a **PICC** or **central line** in place, ask your medical team for advice on bathing and showering.

- Keep good dental hygiene. Use a soft toothbrush and an alcohol-free antiseptic/antibacterial mouthwash. Do not share toothbrushes or other personal items.
- Take wet wipes or hand sanitiser with you when you go out.

## **Protect your skin**

- Use lotion or oil to moisturise your skin if it becomes dry or cracked.
- Use an electric shaver instead of a razor.
- Take care in the kitchen to avoid nicks and cuts when using knives or scissors.
- Try to prevent cuts and tears of the cuticles of your nails.
- If you cut or graze yourself, wash your hands and then use tap water to clean the wound.
- Always wear shoes outdoors.
- Don't squeeze spots or scratch scabs.

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## **Food safety**

Having an increased risk of infection means you are more susceptible to illnesses caused by eating food that is contaminated by certain types of bacteria and fungi (microbes). Following basic food safety guidelines can help to lower this risk.

The food safety guidance below is based on the [advice of the government's Food Standards Agency](#).

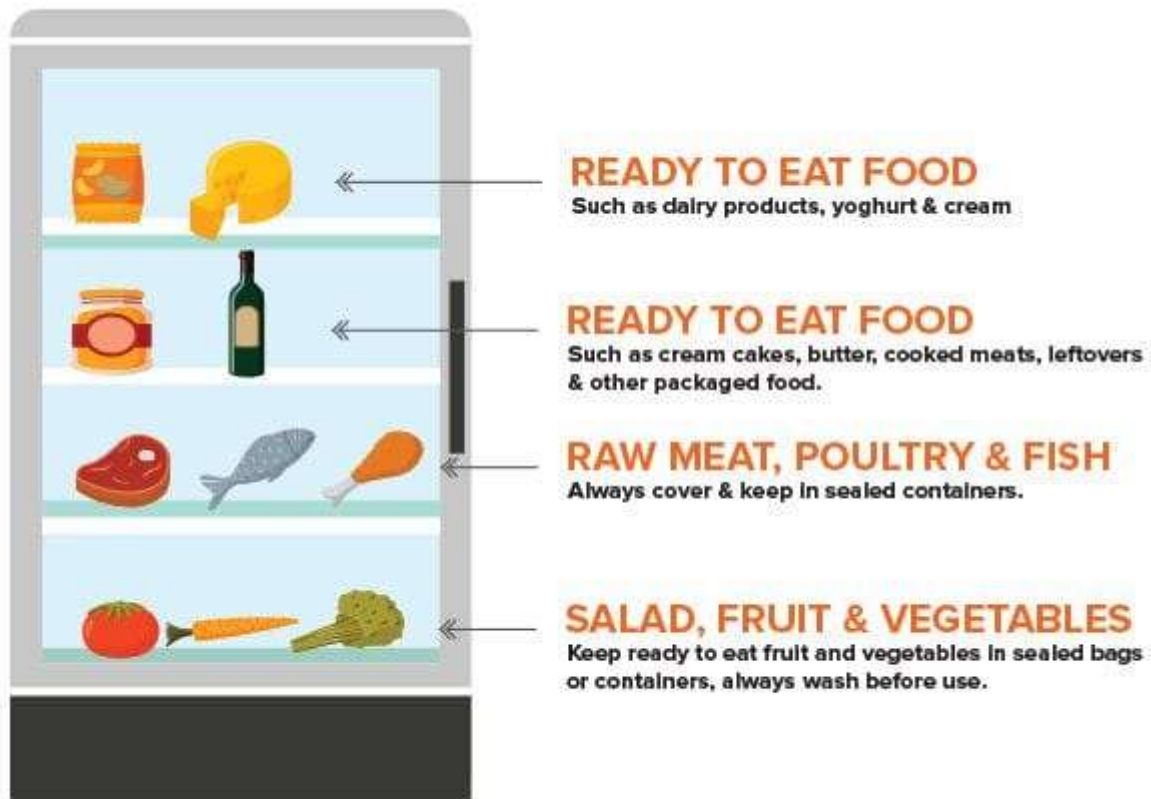
### **Buying food**

- Don't buy food after its 'use by' date.
- Pack raw food and ready-to-eat food separately.
- Pack cleaning products separately from food.

### **Storing food**

- Keep your fridge below 5°C.
- Store cooked dishes, salads, dairy products and any food with a 'use by' date in the fridge.
- Cover raw food, including meat, and keep it separate from ready-to-eat food. (Fruit and vegetables can be kept wrapped up and in drawers underneath the bottom shelf.)

- Store covered raw meat, poultry, fish and shellfish on the bottom shelf of your fridge.
- Leave chilled food in the fridge until you are ready to prepare it.
- Cool cooked food at room temperature and place it in the fridge within 1 to 2 hours.
- Don't overfill your fridge.



**Figure: The correct way to store food in a fridge** (please note that the diagram above was created for the purposes of a domestic fridge, with the bottom section being a vegetable drawer). With permission from High Speed Training.

### Preparing food

- Wash your hands before you prepare, cook or eat food and after touching raw food.
- Don't wash raw meat.
- Keep all utensils and dishes clean.
- Use different utensils, plates and chopping boards for raw and cooked foods, or wash them thoroughly between tasks.

- Wash or change dish cloths, tea towels, sponges and oven gloves regularly and dry them thoroughly.

## Cooking food

- Cook food at the right temperature for the right length of time.
- Make sure white meat and minced meats are steaming hot and cooked all the way through. Check that none of the meat is pink and that any juices run clear.
- Don't cook stuffing inside poultry – cook it separately.
- Don't eat or cook food after its 'use-by' date.

## Freezing food

- Keep your freezer below -18°C.
- Don't freeze food after its 'use by' date.
- Allow warm dishes to cool before putting them in the freezer.
- Defrost food fully, ideally in the fridge, before cooking it.
- Once food has been defrosted, eat it within 24 hours.
- Meals prepared from cooked frozen food can be frozen, but only reheat them once.

## Eating out

- Choose restaurants with a high **food hygiene rating**. Use the **Food Standards Agency search tool** to check the rating of restaurants and food shops near you.
- Choose freshly-cooked food and make sure it is hot all the way through.
- Avoid buffets, salad bars, pre-prepared food, street vendors and ice-cream vans.

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## References

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

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