

Understanding infection

If you have blood cancer or a related blood condition, you could be at greater risk of infection. This fact sheet will help you understand infection and know what to do if you have an infection.

What is infection?

Infections are caused by tiny living things (organisms) such as bacteria, viruses and fungi. Some of these organisms can live inside your body without causing any problems, and can even be good for your health. But others can be harmful, and if your immune system isn't able to fight them off, you may become very unwell.

People with blood cancer are at greater risk of getting an infection because their immune system may not be working as normal. This can be owing to the cancer itself or as a result of treatment.

If an infection is left untreated it may end up causing serious health problems, and some infections can be life threatening. Getting treatment quickly is essential.

If your immune system is weak, you'll need to get immediate medical advice if you think you have an infection. Ask your healthcare team who to contact. Write their name and number here:

Name:

Phone no:

How does my body fight infection?

Your immune system is a network of cells, tissues and organs which protects your body against infection. Your white blood cells play an important role in this. The white blood cells which fight infections are called lymphocytes and neutrophils.

If you have low levels of white blood cells, your body will find it much harder to fight off infections. A low level of neutrophils is called neutropenia.

To find out more about how blood cells and the immune system work go to bloodwise.org.uk/what

Types of infection

- › **Bacteria** are the most common cause of infection for people with blood cancer and can cause fever and blood poisoning (septicaemia).
- › **Viruses** are tiny infectious particles that invade and multiply in living cells such as cells in the human body. Viruses can cause diseases like colds and flu.
- › **Fungal infections** such as thrush (candidiasis) are rarely serious, but can cause problems if your immune system isn't working properly. In this case, a fungal infection may need long-term treatment with anti-fungal drugs.

Who is at risk of infection?

Having blood cancer or a related blood condition can weaken your immune system and increase your risk of infection. Some blood cancer treatments can have the same effect, although this is usually only temporary.

- › **Chemotherapy** (cancer-killing drugs) can lower your white blood cell count which means your body can't fight off infections.
- › **Radiotherapy** (treatment with high energy rays, like X-rays) can lower your white blood cell count, if it's given to a large area such as the spine or hip area (pelvis). This can make you temporarily at higher risk of infection.
- › **Total body irradiation (TBI)** is radiotherapy given to the whole body, normally alongside high doses of chemotherapy. It's usually given before a stem cell transplant. TBI can affect all the cells produced in the bone marrow, including white blood cells. People having this treatment will therefore have a higher risk of infection.

- › **Stem cell or bone marrow transplants** are sometimes used to treat certain types of blood cancer. If you have a transplant, you'll have high doses of chemotherapy, sometimes along with total body irradiation (TBI). Both these treatments mean that you'll have a greater risk of infection.
- › **Immunotherapy treatment** (or biological therapy) uses the body's own immune system to attack cancer cells. Some immunotherapies weaken the immune system and increase the risk of infection. A known side effect of this type of treatment is developing flu-like symptoms, such as fever and chills. Your clinical nurse specialist (CNS) can give you further advice about your particular immunotherapy.
- › **Steroids** are drugs used during cancer treatment, often alongside chemotherapy. They don't lower your white blood cell count, but can affect your immune system and increase your risk of infection. They can also mask the symptoms of an infection such as a high temperature.
- › **Splenectomy** involves having your spleen removed. It's very rare, but some people with a blood cancer may need this operation. If this happens, your doctors may recommend long-term antibiotics, because the spleen has a role in fighting infection.
- › **Having an operation** (or any procedure that involves puncturing the skin or gums) can increase your risk of getting an infection, although precautions will be taken to reduce these risks. If you're having chemotherapy, speak to your healthcare team before having any operations or procedures, including dental work.

For more information on transplants, order or download our booklet

The seven steps: blood stem cell and bone marrow transplants from bloodwise.org.uk/information

After any treatment for blood cancer, you'll have important follow-up appointments with your healthcare team, who will keep a check on your health.

Symptoms of an infection

There are some signs of infection that you should watch out for. It's important to remember that not everyone will get all, or even any, of the symptoms listed – everyone is different.

Symptoms of infection can include:

- › fever (temperature higher than 38°C)
- › low temperature (less than 36°C)
- › shivering and sweating
- › feeling confused
- › sore throat and cough
- › rashes and swelling
- › frequent watery poos (diarrhoea)
- › a burning or stinging sensation when weeing
- › fluid with an unusual smell, colour or texture coming from your vagina (unusual vaginal discharge), or itching in that area
- › unusual stiffness of the neck
- › achy flu-like symptoms
- › generally not feeling well.

What is neutropenic sepsis?

Neutropenic sepsis is a serious condition that can be life-threatening. It is a medical emergency and must be treated quickly.

Neutropenic sepsis can happen when you have a low level of neutrophils (white blood cells) and an infection at the same time.

You are at most risk of neutropenic sepsis if:

- › you have a temperature above 38°C or below 36°C
- › you have had any type of anti-cancer treatment in the last four weeks (causing a low level of neutrophils).

Treatments for infection

- › **Bacterial infections** – If your healthcare team thinks you have a bacterial infection, they may give you antibiotics, a medicine that kills bacteria. Antibiotics can be given as pills, as a liquid, or, for more serious cases, through a vein (intravenously).
- › **Viral infections** – Anti-viral medicines are sometimes used to treat viruses. They can be given as tablets, as a liquid, as a cream or through a vein.

- › **Fungal infections** – Anti-fungal treatments may be given as tablets, as a liquid, as a cream or through a vein.

Supportive care

Supportive care means treatment that's given to reduce the side effects of cancer treatment and help with the symptoms of blood cancer. This might include growth factors (G-CSF), which may be given with chemotherapy to help your bone marrow make new white blood cells. You may also be given some anti-viral medications, or preventive (prophylactic) antibiotics to lower the risk of infection and fever.

How can I reduce my risk of infection?

Your healthcare team will tell you what to do to minimise your risk of getting an infection. They may also provide you with a treatment alert card or diary which explains this in more detail. If you do spot signs of an infection, you should contact your medical team or hospital straightaway.

It is important to follow the advice of your healthcare team. If they tell you to go to hospital, you should go at once – infections can be severe and can get worse quickly.

These are some ways you can reduce your chances of getting an infection:

- › Clean your hands frequently.
- › Clean cuts, scrapes and grazes with warm water, soap and an antiseptic.
- › Avoid changing the water in flower vases.
- › Avoid sharing food, cups, cutlery or personal items such as toothbrushes.
- › Make sure your food is stored and cooked properly.
- › Avoid handling any animal waste, such as litter trays or manure (it's generally safe to pet or stroke animals, as long as you wash your hands thoroughly afterwards).
- › Avoid people who have infections or who are sick.
- › Avoid crowded places like public transport, festivals and shopping centres.
- › Wear protective gloves when gardening and doing housework.
- › Take good care of your mouth (oral hygiene).
- › Shower or bath daily and using lotion to stop your skin from becoming dry and cracked.

If you have a low neutrophil count (you're neutropenic), you may need to change some of the foods you eat and take extra care about the way you store, prepare and cook your food.

For more information on how neutropenia can affect you, order or download our booklet, **Eating well with neutropenia** from bloodwise.org.uk/information

Preventing infection in the long term

There are also things you can do to reduce the risk of getting infections in the longer term.

- › **Vaccinations** – There are a number of vaccinations which can help protect you from infections and illnesses such as flu. If you've had chemotherapy (particularly combined with a drug called rituximab), then vaccinations might not work as well as usual, but may still offer some protection.

If you've had a stem cell transplant, you may need to repeat the vaccinations you had as a child, but you shouldn't have live vaccines such as MMR until your healthcare team says it's safe to do so. Depending on your particular circumstances, there may be certain vaccinations that you shouldn't have at all. For example, the shingles vaccine is not recommended for some people with blood cancer.

Your healthcare team will advise you on which vaccinations you should have and when. Contact your clinical nurse specialist (CNS) if you are unsure.

- › **Looking after yourself** – You should try to keep fit and well by eating a healthy diet and staying as active as possible.
- › **Going out** – Some people find they're ready to return to work and social activities straight after treatment for blood cancer. This will vary depending on your recovery and the type of treatment you have. You should always follow the advice of your healthcare team.

Telling friends and family that you're more at risk of getting an infection can be difficult. There may be times you'll have to avoid social situations and keep away from people when they're unwell. Show them this fact sheet to explain more about infections.

Finding out more

We offer patient information on many blood cancer types and topics, both online and in free printed booklets. They cover everything from symptoms and diagnosis through to treatment and living with your condition.

About Bloodwise

We're the UK's specialist blood cancer charity. We've been working to beat blood cancer since 1960. We fund world-class research; provide practical and emotional support to patients and their loved ones; and raise awareness of blood cancer.



For more information, go to **bloodwise.org.uk/info-support**



We also have an online community you may like to join **bloodwise.org.uk/community**



You can call our support line on **0808 2080 888** (Mon–Fri 10am–4pm). This is a freephone number.



See our website for more details of cancer information specialists and support groups. Go to **bloodwise.org.uk/living-with**

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Our fact sheets contain general information. Always listen to the advice of your specialist about your individual condition – because every person is different.

Disclaimer

We make every effort to make sure that the information in this fact sheet is accurate, but you shouldn't rely on it instead of a fully trained clinician. It's important to always listen to your specialist and seek advice if you have any concerns or questions about your health. Bloodwise can't accept any loss or damage resulting from any inaccuracy in this information, or from external information that we link to.

The information in this fact sheet is correct at the time it was printed (May 2018).

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