

# Eating well with neutropenia



Blood  
cancer  
UK

## About this booklet

We have produced this booklet in collaboration with expert medical professionals and people affected by blood cancer. Thank you to Natasha Jones and the Haematology Subgroup of the British Dietetic Association Oncology Group for their support checking the content of this booklet. The information was also reviewed by Gemma Trout, Jo Tomlins, Joanna Injore and Angela Hall.

We're a community dedicated to beating blood cancer by funding research and supporting those affected. Since 1960, we've invested over £500 million in blood cancer research, transforming treatments and saving lives. To find out more about what we do, see page 51.

**bloodcancer.org.uk**

**0808 2080 888**

**(Mon, Tue, Thu, Fri, 10am–4pm, Wed, 10am–1pm)**

**support@bloodcancer.org.uk**

A list of references used in this booklet is available on request. Please email us at **information@bloodcancer.org.uk**

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We make every effort to make sure that the information in this booklet 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. Blood Cancer UK can't accept any loss or damage resulting from any inaccuracy in this information, or from external information that we link to.

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Blood Cancer UK, 39–40 Eagle Street, London WC1R 4TH  
**020 7504 2200** **hello@bloodcancer.org.uk** **bloodcancer.org.uk**

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# Introduction

If you have blood cancer or a related blood condition you may develop neutropenia. This means it will be harder for your body to fight infections.

Your healthcare team may suggest that you make some changes to your lifestyle to lower your risk of getting an infection. This can include changes to the way you store and prepare your food, and sometimes more specific changes to your diet (known as a 'neutropenic' or 'clean' diet).

There is limited evidence as to whether adopting a neutropenic diet helps to reduce your risk of infection, and doctors have mixed views about whether to recommend it. Because of this, you should only change your diet if your healthcare team advise it.



We also produce a diary which you can order online – see **page 48** for details. It's yours to use however you like – for practical information or to record your favourite recipes.



We've included information about a neutropenic diet on pages 21 – 29 of this booklet, so that you have something to refer to if your healthcare team think it's a good approach for you. The rest of the booklet will be relevant to anyone with neutropenia. We hope it will help you to take care of yourself and feel more in control.

# What is neutropenia?

If you have neutropenia you'll have a low number of white blood cells called neutrophils. When you have low levels of neutrophils in your blood, your immune system is weakened, making it harder for your body to fight infection. This means that you're at greater risk of food poisoning and illness. You might hear this called 'being neutropenic'.

## What causes neutropenia?

Neutropenia can be caused by a blood cancer or blood condition. It can also happen during or after treatment. Some of these treatments include:

- chemotherapy
- a bone marrow or stem cell transplant
- medications which suppress your immune system (such as steroids, ciclosporin and monoclonal antibodies – a type of biological therapy).

## **How might my lifestyle change if I have neutropenia?**

If you have neutropenia, you'll need to be careful about how you cook, prepare and store your food. You'll also need to make sure that you reduce contact with people who have infections, cold and flu symptoms and stomach bugs (viral gastroenteritis).

It's important that your friends and family understand how neutropenia affects you. You may need to explain neutropenia to them so they know how to best support you. These conversations may be difficult or awkward. You could ask your healthcare team to explain neutropenia to them or you could give them this booklet.

You should always discuss what changes are right for you with your doctor or healthcare team.

## **How long will I need to change my lifestyle for?**

Your healthcare team will be able to advise you on how long you'll need to make these changes for (this will be different for everyone).

## Does a neutropenic diet lower my risk?

There's some debate about whether you need to adapt or change your diet to prevent infection when you're neutropenic. Some doctors, dietitians and healthcare professionals believe that it's important to follow guidelines like the ones on pages 21 – 29 of this booklet to lower your risk of infection, while others give less strict advice and instead encourage patients to eat a varied diet. Before you make any changes to your diet, speak to your doctor, dietitian or key worker who will be able to advise you on the best approach for you.



For more information about how your blood and bone marrow work, go to [bloodcancer.org.uk/what-is-blood-cancer](https://www.bloodcancer.org.uk/what-is-blood-cancer)



**It's important to  
remember that  
eating well will support  
your recovery when  
you're unwell.**

# How do I know if I'm neutropenic?

A full blood count (FBC) will tell you if you have neutropenia.

A full blood count (FBC) is a blood test which measures the number of each type of cell in your blood: red cells, white cells and platelets. A small sample of blood will be taken and checked under a microscope in a laboratory (this is known as a blood film).

The test will also show the neutrophil levels in your blood – you might hear this being called a 'neutrophil count' or an 'absolute neutrophil count'. Neutrophils are a type of white blood cell which are important for fighting infection. A neutrophil count is measured by how many neutrophils you have per cubic millimetre of your blood.

There's no agreed definition of neutropenia, and normal blood ranges will vary between hospitals, but the most common neutropenic ranges are:

- **Severe neutropenia** – your neutrophil levels will be below  $0.5 \times 10^9 / \text{L}$  (500 neutrophils per cubic millimetre of blood).
- **Neutropenia** – your neutrophil levels will be below  $2.0 \times 10^9 / \text{L}$  (2,000 neutrophils per cubic millimetre of blood).
- **Not neutropenic** – your neutrophil levels will be within the range of  $2.0$  to  $7.5 \times 10^9 / \text{L}$  (2,000 to 7,500 neutrophils per cubic millimetre of blood).

Your doctor will probably talk about your neutrophil count more simply, for example, they'll probably say something like 'more than 2 is normal'. The '2' means that there are 2,000 neutrophils in every cubic millimetre of your blood.



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For more information about how your blood and bone marrow work, visit [bloodcancer.org.uk/what-is-blood-cancer](https://www.bloodcancer.org.uk/what-is-blood-cancer)

# Signs and symptoms

There are some signs and symptoms you might have if you're neutropenic – but everyone is different so not everyone will have the same symptoms.

Some common signs and symptoms include:

- Sickness (nausea) or extreme tiredness (fatigue).
- Recurring infections.
- A painful and ulcerated mouth (mucositis) which can affect the quantity, texture and variety of foods that you're able to eat.
- Loss of appetite which can lead to a lack of nutrients (malnourishment) and weight loss. There are lots of reasons why this may happen: feeling full more quickly, feeling worried, not feeling hungry or a combination of these things.

If your other blood counts are also low this may also affect how you feel. For example, if you have a low number of red blood cells (anaemic) you'll probably feel weak, tired and breathless.

Talk to your doctor or healthcare team if you experience any of these problems – there are things they can do to help.



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See **page 31–34** for helpful ways to increase your appetite.

# Living with neutropenia

When you have neutropenia you can get infections more easily from the bacteria in your food. If food is not stored or cooked properly it could cause food poisoning. It's impossible to completely remove all bacteria from your food, but there are some things you can do to lower your risk of getting an infection, such as changing the way you store and cook food.

## What is a healthy diet?

Eating a healthy diet is important to get the right amount of nutrients your body needs. Even if you're neutropenic, try to eat a variety of foods including:

- fruit and vegetables
- bread, pasta, rice, potatoes and other starches
- meat, fish, eggs, beans and other non-dairy proteins
- milk and dairy foods
- fatty and sugary foods.

## **Energy (calories)**

It's important to try to eat the right amount of food each day. Your body needs energy to keep you alive and stay strong. You can get energy from the calories you eat in food.

As a guide, an average man needs around 2,500kcal (10,500kJ) and an average woman needs 2,000kcal (8,400kJ) a day, to maintain a healthy body weight.

Everyone is different and may need different amounts of calories. If your energy intake becomes too low you'll start to lose weight, which might make you feel tired and weak.

## **Food safety**

If you have neutropenia, the following food safety and hygiene advice may help you to reduce the chances of getting an infection from your food.

## Shopping advice

- Don't buy food with damaged or broken packaging.
- Don't buy food from fridges or freezers that are overloaded, as the food might not be cold enough.
- Buy your chilled and frozen foods last on your shop and get them home as quickly as possible. If you're not able to get your shopping home immediately, use an insulated container or cool bag to keep food at the right temperature.
- Buy foods in small, individual packets. Avoid large packets: once they're opened they're hard to reseal safely, so there's more chance that bacteria could infect them.
- Always check 'use by' and 'best before' dates on packaging before you buy food.
- Try to buy pre-packed deli items and if you have severe neutropenia, you should avoid deli counter foods.
- Avoid shops where raw and cooked meats are stored in the same fridge or in a deli counter without a separating wall.

## Storing your food

- Keep your fridge between 0°C and 5°C. You can check the temperature with a fridge thermometer.
- Keep your freezer below -18°C. Make sure food is still frozen solid when you take it out of your freezer.
- Store your cooked food at the top of your fridge.
- Store raw or defrosting meat or fish at the bottom of your fridge in a covered container, so it doesn't leak or drip.
- Don't overload your fridge or freezer, as this will increase the temperature inside.
- Always store your eggs in the fridge.
- Always check and stick to the 'best before' or 'use by' dates on your food.
- Follow the manufacturer's instructions when you're using and storing food.

## **Keeping clean**

- Always wash your hands with soap and warm water before preparing food.
- Always wash your hands after going to the toilet or touching items with germs.
- Thoroughly dry your hands using a separate towel or kitchen paper – don't use a tea towel.
- Cover any cuts and grazes with a waterproof plaster.
- Keep pets away from work surfaces, food and dishes.
- Make sure any cloths, sponges and clothes are regularly cleaned, bleached, disinfected or changed.
- Disinfect your work surfaces regularly.
- Clean your tap spouts regularly.
- Clean the roof and inside of your microwave regularly.

## Preparing your food

- Change or wash your chopping boards and utensils between preparing raw and cooked items, to avoid contaminating (infecting) your food. Ideally you should have three boards, which you might like to colour code to make things easier: one for raw meat, one for cooked meat and one for other foods.
- Wash fruit and vegetables thoroughly before eating.
- Wash the tops of cans before opening them.
- Thaw meat and poultry in the fridge and not at room temperature, as bacteria grows quickly at room temperature.
- Pre-heat the oven to make sure food is cooked at the recommended temperature.
- Cook all food thoroughly and make sure it's piping hot all the way through before eating.
- Cook meat until all the juices run clear.
- Always follow the manufacturer's guidelines and do not reduce cooking times.

## **Reheating your food**

- Cover food and allow it to cool to room temperature before putting it in the fridge or freezer. Don't put hot food in your fridge, as this will increase the temperature of the food in the fridge, making all of the food less safe to eat.
- Reheated food should be eaten within 24 hours of preparing or defrosting it.
- Don't reheat food more than once.
- You can use microwaves to defrost food and to heat pre-prepared food – always follow the manufacturer's instructions.
- Eat rice as soon as it's cooked, and don't reheat cooked rice, as harmful bacteria can survive the heating process.
- Do not refreeze thawed food.

## Eating out

- Make sure food is piping hot when it arrives and that it's cooked all the way through.
- You should check restaurant hygiene ratings at **ratings.food.gov.uk**
- Choose freshly prepared food from good-quality restaurants. To minimise infection and avoid cross contamination, avoid salad bars, street vendors, market stalls, buffets, all-you-can-eat restaurants and ice-cream vans.
- Avoid foods which have been left out on display such as doner kebab meat.
- Talk to your healthcare team about eating out in restaurants or visiting crowded places.



For more information and stories about eating well when you're living with blood cancer, visit **[bloodcancer.org.uk/living-well](https://www.bloodcancer.org.uk/living-well)**

**You should discuss  
any changes to your  
diet with your doctor,  
dietitian or nurse  
before you make them.**

If you're worried, get in touch on **0808 2080 888**  
or email **[support@bloodcancer.org.uk](mailto:support@bloodcancer.org.uk)**

# Changes to your diet

Your healthcare team may suggest you make some changes to your diet in addition to the precautions described in the previous chapter. These dietary changes are collectively known as a 'neutropenic diet'.

It's difficult to know whether adopting a neutropenic diet could help to reduce your risk of infection. There are some studies that suggest avoiding certain foods might help, but this evidence is limited. Your doctor or dietitian will be able to advise you on whether it's a helpful approach for you.

If your healthcare team does recommend a neutropenic diet, the type of dietary advice you're given will depend on your neutrophil count.

If you are severely neutropenic (with neutrophil counts below  $0.5 \times 10^9$ / litre), you'll be advised to avoid more foods than someone with neutrophil counts below  $2.0 \times 10^9$ / litre.

The food that you might be advised to avoid is listed over the next few pages. These are the foods that are most likely to contain germs that could make you unwell. Wherever possible we've tried to suggest safer alternatives.

If you have any questions about this dietary advice, it's best to talk to your healthcare team.

## **Advice for people with neutrophil counts below $2.0 \times 10^9$ / litre (neutropenia)**

If your doctor uses different ranges for people with neutropenia, you should follow their advice on which group you fit into.

This diet can be similar to the advice that is given to other people with a weaker immune system.

The tables opposite and overleaf give examples of foods to avoid and foods you can have instead.

<b>Food group</b>	<b>Avoid</b>	<b>Alternative</b>
<p><b>Dairy products</b></p>	<p>All unpasteurised dairy products, such as milk sold on local farms</p> <p>Soft cheeses made with unpasteurised milk, such as feta and parmesan</p> <p>Homemade or deli paneer and labneh</p> <p>Mould-ripened cheeses such as camembert, brie and goat's cheese</p> <p>Blue veined cheeses such as Danish blue and Stilton</p> <p>Probiotic or 'bio' foods, drinks or supplements such as Yakult™, Actimel™ and ProViva™</p> <p>Yoghurt which is described on the label as 'bio' or 'probiotic'</p>	<p>Any pasteurised milk, soya milk, Jersey milk or UHT milk</p> <p>Cheeses made with pasteurised milk</p> <p>Processed cheese such as Dairylea™, Kraft™, Philadelphia™, and halloumi</p> <p>Pasteurised cheeses such as pasteurised parmesan, pasteurised mozzarella and pasteurised goat's cheese.</p> <p>Paneer made with pasteurised milk</p> <p>Vacuum-packed pasteurised and hard cheeses, such as cheddar and Edam</p> <p>Yoghurts labelled as being made with live bacteria; or plain, Greek and fruit yoghurts – as long as they are not described as 'bio' or 'probiotic'</p>

<b>Food group</b>	<b>Avoid</b>	<b>Alternative</b>
<b>Meat</b>	<p>Raw and undercooked meat, poultry or fish; such as meat which is still pink</p> <p>Smoked meats, such as salami</p> <p>Any type of unpasteurised pâté (meat or vegetable)</p>	<p>Well-cooked meat, poultry and fish</p> <p>Tinned meat and fish</p> <p>Vacuum-packed cold meats, such as turkey and ham stored below 3°C</p> <p>Pasteurised pâté and paste in tins or jars that do not need to be refrigerated</p>
<b>Fish and seafood</b>	<p>Smoked salmon, raw sushi, caviar, oysters or lightly cooked shellfish</p>	<p>Vacuum-cooked packed fish eaten straight from a new packet, including vacuum-packed smoked salmon</p> <p>Cooked salmon</p> <p>Well-cooked shellfish, such as in risotto, stir-fry or curry</p>

<b>Food group</b>	<b>Avoid</b>	<b>Alternative</b>
<b>Egg and egg products</b>	<p>Raw eggs or undercooked eggs such as homemade mayonnaise, homemade ice cream, mousse, egg-nog, meringue, hollandaise sauce and béarnaise sauce</p> <p>Any dressing containing raw eggs such as Caesar salad dressing</p>	<p>Hard boiled eggs</p> <p>Scrambled or fried eggs (but the whites and yolks of the eggs must be solid)</p> <p>Shop-bought mayonnaise and other products made with pasteurised egg</p>

## **Advice for people with neutrophil counts below $0.5 \times 10^9$ /litre (severe neutropenia)**

You're most at risk of catching an infection when your neutrophil count is below 0.5. This can happen during a stem cell transplant or while you're having chemotherapy. If you have a neutrophil count below 0.5 your healthcare team may recommend that you follow a stricter diet with a few more restrictions.

You should check with your hospital about their policy on food brought in by visitors as different hospitals have different rules about how to prevent infection.

The table opposite gives examples of foods that you could avoid, **as well as the ones listed on pages 23–25**. It also offers suggestions for foods you can have instead.

<b>Food group</b>	<b>Avoid</b>	<b>Alternative</b>
<b>Fish</b>	Any cold smoked fish, such as cold smoked salmon	Cooked dishes containing smoked salmon
<b>Fruit (including juice) and vegetables</b>	<p>Raw unpeeled fruit or vegetables including salad items, stuffed vine leaves, fattoush and tabbouleh</p> <p>Raw dried fruit or products containing this such as muesli, Bombay mix and confectionery</p> <p>Damaged or over-ripe fruit or veg</p> <p>Uncooked herbs, spices and pepper</p>	<p>Good quality fruit and vegetables that are well cooked or peeled</p> <p>Cooked dried fruit such as in fruit cake, flapjacks or cereal bars</p> <p>Tinned fruit</p> <p>Cooked herbs, spices and pepper</p> <p>Pasteurised smoothies</p> <p>UHT (ultra-high temperature processing) products</p>

<b>Food group</b>	<b>Avoid</b>	<b>Alternative</b>
<b>Dairy</b>	Ice-cream from ice-cream vans	Ice-cream from reputable sources, in individual portions, wrapped or in small pots
<b>Nuts and snacks</b>	<p>Fresh nuts</p> <p>Nuts in shells</p> <p>Unpasteurised, raw, or 'farm fresh' honey and honeycomb</p> <p>Deli-counter foods like olives, houmous, shawarma and baklava</p> <p>Large bulk packets of food</p> <p>Items from pick and mix and jars</p>	<p>Cooked nuts and roasted nuts</p> <p>Nuts in cans or peanut butter</p> <p>Pasteurised or heat-treated honey – try to use individual sachets or portions</p> <p>Individual snack-size portions of sweets</p>

<b>Food group</b>	<b>Avoid</b>	<b>Alternative</b>
<b>Water and juices</b>	<p>Non-drinking water</p> <p>Water from wells</p> <p>Unpasteurised or freshly squeezed fruit or vegetable juice, or smoothies</p> <p>Bottled still water, including still mineral or spring water</p> <p>Water from coolers, domestic water filters and water fountains</p> <p>Ice made away from home such as ice in restaurant drinks and slushed drinks such as Slush Puppies</p>	<p>Freshly running tap water</p> <p>Pasteurised smoothies</p> <p>Long-life fruit juices in cartons or jars</p> <p>Bottled carbonated water, including sparkling mineral or spring water, and soda water</p>

## Advice after a stem cell transplant

Although you may no longer be neutropenic after a stem cell transplant, your immune system still takes time to fully recover.

If you've had a stem cell transplant from a donor (an allogeneic transplant), you'll be taking drugs which suppress your immune system (immunosuppressant drugs), which can make you more at risk of infection. It's important to follow a few key tips to reduce your risk of infection at this time:

- Wash your hands frequently.
- Buy and store food safely.
- Store food in small individual packets if possible.
- When eating away from home choose good-quality restaurants and avoid takeaways and food sold from street vendors, market places, salad bars, buffets, all you can eat restaurants, delicatessens and ice-cream vans until you're



You might need to continue with some of the dietary restrictions on **pages 23–29** of this booklet after your stem cell transplant. Your healthcare team or dietitian can talk to you about this.

off immunosuppressant medications. You should always check food hygiene ratings. It's recommended to avoid eating away from home for around six weeks post-transplant.

## **Tips to improve your appetite**

If you're neutropenic it's important to try and maintain your weight by eating regularly and eating a varied diet.

This will help your body to rebuild damaged tissues, fight infection, cope with any side effects from your treatment, and make sure you are getting all the nutrients your body needs to recover and keep strong.

You can use some of these tips to help improve your appetite. Your treatment team and dietitian should also be able to give you some advice about how to improve your appetite.

Eat little and often – try having a small snack every two hours. Good snacks might include some of the following, but make sure they're suitable for the type of neutropenic diet you follow:

- biscuits, scones, cakes and muffins
- fruit (frozen and tinned)

- ready-made desserts, such as yoghurt, crème caramel, trifle and mousse
- sandwiches
- cheese and crackers, cheese straws and cubes
- crisps, roasted nuts and savoury biscuits
- small pieces of pizza, flans or sausage rolls
- fun-sized chocolate bars
- crumpets, croissants, toast and breakfast cereals.

Be positive about what you do eat – every extra mouthful helps.

- Try not to get out of the habit of eating. You need to eat to stimulate your appetite even if you might not feel like it.
- Your appetite may come and go, so it's important to make the most of the times when you do feel like eating.
- Don't worry if you're not eating 'normal' foods at 'normal' times – if you fancy cereal at midnight, enjoy it.
- Experiment with different foods. You may find that

you like things you do not usually eat.

- Some fresh air or a short walk before a meal may help to stimulate your appetite.
- Large portions can seem overwhelming; you can tempt your appetite by making your food look attractive such as using small portions on small plates, and adding garnishes such as lemon or parsley.
- Sometimes the smell of food will be appetising while at other times it might put you off. If this happens, try to keep away from the kitchen while food is being prepared, or eat cold foods, which often smell less.
- Drinking a small glass of wine, beer, sherry or your favourite drink half an hour before your meal may help to boost your appetite. Check with your doctor first.
- Try to relax and enjoy what you eat. Eat slowly and chew your food well, and try to rest before and after eating.
- Avoid drinking with meals as this may fill you up and spoil your appetite.
- Accept offers from friends and relatives to help with cooking and shopping.

- If you have a freezer, try to prepare food in advance when you feel like cooking, and store it for when you're not feeling well.
- Convenience foods are a useful standby and can be just as nourishing.
- Keep hydrated by drinking a range of drinks at regular intervals throughout the day.
- If you have severe mouth ulcers or mucositis and these are making eating difficult see your specialist nurse or a dietitian for advice. Options to add calories, such as supplements, high energy milkshakes, or adding cheese or cream to your food may help.
- Sipping water, sucking ice lollies or ice cubes can be helpful if you have a sore mouth (mucositis).
- If you have severe diarrhoea as a result of treatment certain foods may be difficult to digest. Seek advice from a specialist nurse or dietitian if this is proving difficult for you, before cutting anything out of your diet.



Read more about mucositis in our fact sheet **Sore mouth or gut (mucositis)**. See **page 48** for how to order.

- If you're staying in hospital for treatment and find hospital food unappetising, ask your family and friends to bring you in snacks. Always check if this is okay with your hospital unit.

## **Nutritional supplements**

Sometimes you might not be able to get all of the nutrients your body needs from food alone. If this happens to you, your dietitian or another healthcare professional might suggest that you take nutritional supplements alongside your normal diet.

These supplements are prescription drinks that can be stored unopened at room temperature. Once they're opened, you can keep them in the fridge for up to 24 hours or outside the fridge for up to four hours. Always check the manufacturer's guidelines.

## Common questions

### If my doctor recommends a neutropenic diet, how long will I need to follow the guidelines?

Your healthcare team will be able to advise you on how long you follow these guidelines for, as this will vary from person to person.

### Do I need to sterilise cutlery and crockery at home?

Wash all surfaces, cutlery and cooking utensils thoroughly with warm water and a detergent which kills bacteria. You don't need to use a steriliser to wash your cutlery.

### Can I attend social gatherings and eat buffets?

If you're severely neutropenic, barbecues, picnics and buffets are not recommended. This is because there's a high risk of bacteria spreading between foods.

### Can I just wash fruit and salad and then eat it?

If you have severe neutropenia it's advised to avoid all unpeeled fruits, vegetables and salad items, including all fresh garnishes. However, cooked vegetables and fruit will be safe to eat. It's also safe to buy and eat frozen and tinned vegetables or fruits.

## Can I drink alcohol while I'm neutropenic?

If you have severe neutropenia, you should avoid alcohol, as alcohol can affect your neutrophils' ability to fight infection. Otherwise, check with your doctor.

## Should I take vitamin or mineral supplements?

If you're able to eat a variety of foods you probably don't need to take vitamin or mineral supplements. However, if your appetite is poor then you may need a supplement to meet your daily requirements. It's important to remember that some vitamins and minerals can be harmful when taken in high doses and can react with some medications and cancer treatments. Ask your dietitian, doctor or pharmacist for advice before taking any supplements. infection. Otherwise, check with your doctor.

# Recognising infection

## What are the symptoms of an infection?

If you get an infection, you'll need antibiotics and may need to go to hospital. If you have any symptoms of infection, you should contact your medical team immediately, no matter how minor or vague they seem.

It's important to remember that not everyone will get all, or even any, of the symptoms listed – everyone is different.

Symptoms of an infection can include:

- fever (temperature higher than 38°C)
- low temperature (less than 36°C degrees)
- shivering and sweating
- feeling confused
- sore throat and cough
- redness and swelling around skin sores
- diarrhoea

- a burning or stinging sensation when passing urine
- unusual vaginal discharge or itching
- unusual stiffness of the neck.

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

Your healthcare team should tell you what you should do if you get an infection, or this could be explained on a chemotherapy alert card. If you do spot signs of an infection, you should contact your medical team or hospital straightaway. If they tell you to go to the hospital, you should go at once. Infections can be severe and take hold quickly if you're neutropenic.

## **What is neutropenic sepsis?**

You may see or hear the term 'neutropenic sepsis' (or febrile neutropenia). Sepsis is a whole-body reaction to an infection. Neutropenic sepsis is a serious condition, which can be life-threatening and should be treated urgently.

Your medical team will diagnose neutropenic sepsis if you have both of the following:

- a temperature above 38°C
- a neutrophil count that is below 0.5.

## **Are there any other ways I can avoid infection?**

Apart from thinking about what you eat there are other ways you can look after yourself and keep safe when you're neutropenic, such as:

- clean your hands frequently
- clean cuts, scrapes and grazes with warm water, soap and an antiseptic
- avoid fresh cut flowers and vases with old water in
- don't share food, drink cups, utensils or other personal items, such as toothbrushes
- it's generally safe to pet or stroke animals, as long as you wash your hands thoroughly afterwards – you should avoid handling any animal waste, such as litter trays or manure
- avoid people who are sick
- avoid crowded places like public transport, festivals and shopping centres
- speak to your healthcare team about whether it's ok for you to do gardening and housework – if you do, wear protective gloves.

- keep your mouth clean
- shower or bathe daily and use lotion to stop your skin from becoming dry and cracked.

## **Summary**

If you have a blood cancer or a related blood condition, or you've had treatment for blood cancer, you may be at risk of infection from bacteria or fungi in foods.

Neutropenia means that the neutrophils (white blood cells) in your blood are at a low level meaning that you're at risk of food poisoning and illness.

Your healthcare team may recommend you limit certain foods on a neutropenic diet.

The way you store and cook foods often has to be changed.

**Here are some quick and  
easy recipes to serve one.**

If you're worried, get in touch on **0808 2080 888**  
or email **[support@bloodcancer.org.uk](mailto:support@bloodcancer.org.uk)**

# Recipe ideas

These are simple recipes that won't take long to make. But if you're suffering from fatigue or not feeling well, ask someone else to cook for you. Don't be afraid to take up someone's offer of help.

You should check with your healthcare team or dietitian that these recipes are safe and appropriate for you.

## Savoury recipes

### Chicken curry

**Preparation** 15 minutes. **Cooking** 45 minutes.

#### Ingredients:

½ tbsp olive oil, 1 small onion, 1 clove of garlic, 1 tomato, ½ tbsp tomato purée, ¼ tsp each of chilli, coriander, cumin and turmeric powder, 125g chicken breast, ½ tbsp pasteurised natural yoghurt, 65g basmati rice, 80g cauliflower, ½ tbsp fresh coriander

- Heat the oil in a large, non-stick saucepan or frying pan, and fry the onion until soft.
- Add the garlic, tomato, tomato purée, chilli and spices. Cook for a few minutes. Then add two tablespoons of water and allow to reduce.
- Add the chicken and cook for 10–15 minutes on a medium heat. Then add in the yoghurt, stirring slowly. Season with black pepper and simmer for a further 5–10 minutes.
- Meanwhile, cook the rice following the packet instructions and boil or steam the cauliflower until tender.
- Garnish the curry with coriander, and serve with rice and cauliflower.

## Quick vegetable and soft cheese frittata

**Preparation** 10 minutes. **Cooking** 20 minutes

### **Ingredients:**

1tsp olive oil, 2 lightly beaten eggs, 4 roughly chopped semi-dried tomatoes, 25g pasteurised feta cheese, 50g mixed salad leaves

- Heat the oil in a small frying pan, add the eggs and cook, swirling the eggs with a fork as they set.
- When the eggs are still slightly runny in the middle, scatter over the tomatoes and feta cheese.
- Fold the omelette in half, and make sure the eggs are cooked through.
- Cook for 1 minute more before sliding onto a plate and serve with a mixed leaf salad.

## Tuna and vegetable spaghetti

**Preparation** 2 minutes. **Cooking** 15 minutes.

### **Ingredients:**

75g dry spaghetti, 100g frozen mixed vegetables, 130g white pasta sauce from a jar, 50g tinned tuna.

- Boil the spaghetti in a sauce pan for 10-12 minutes, adding the mixed vegetables for the last five minutes. Drain.

- Pour the white pasta sauce into the pan with drained tuna and heat for one minute.
- Return the spaghetti and vegetables to the pan and stir to heat through. Season to taste.

## Sweet recipes

### Banana cream

**Preparation** 10 minutes.

**Ingredients:**

70ml pasteurised whipping cream, 1 ripe banana,  
½ heaped tbsps sugar, ¼ juice of a lemon

- Whisk the cream until thick.
- Peel the banana and mash with the sugar and lemon juice.
- Add the mashed banana mixture to the cream and stir together.
- Chill before serving.

## Instant frozen yoghurt

**Preparation** 5 minutes.

### **Ingredients:**

50g frozen mixed berries, 75g full fat Greek yoghurt,  
1-2 tsp honey/golden syrup

Blend all the ingredients together in a food processor to make a smooth ice-cream texture and serve in a bowl.

## Banana, honey and hazelnut smoothie

**Preparation** 10 minutes.

### **Ingredients:**

1 banana peeled and sliced, 125ml pasteurised milk of choice, ½ tsp honey, grated nutmeg, 1tsp chopped, toasted hazelnuts

- Blend the banana with milk, honey and a little grated nutmeg until smooth.
- Pour into a large glass and top with the toasted, chopped hazelnuts to serve.

## Our health information

Find out more about blood cancer, its treatments and living with blood cancer. All our information is produced with expert medical professionals and people affected by blood cancer. It's available to anyone to download or order for free.

## Symptoms guide

A credit-card sized guide that folds out to explain the symptoms of blood cancer.

## Booklets

### Leukaemia

- Acute lymphoblastic leukaemia (ALL)
- Acute myeloid leukaemia (AML)
- Acute promyelocytic leukaemia (APL)
- Chronic lymphocytic leukaemia (CLL)
- Chronic myeloid leukaemia (CML)

### Lymphoma

- Hodgkin lymphoma (HL)
- High-grade non-Hodgkin lymphoma (NHL)
- Low-grade non-Hodgkin lymphoma (NHL)

### Other blood cancers

- Myeloma
- Myelodysplastic syndromes (MDS)
- Myeloproliferative neoplasms (MPN)

### Treatment and beyond

- Blood stem cell and bone marrow transplants: the seven steps
- Eating well with neutropenia
- Diary for anyone affected by blood cancer

## My information folder

An A5 folder to keep your information in.

## Fact sheets

### Conditions

- Burkitt lymphoma
- Monoclonal gammopathy of undetermined significance (MGUS)
- Waldenström macroglobulinaemia (WM)

### Treatments

- Blood transfusions
- Donating stem cells
- What is CAR-T therapy?
- Watch and wait – What you need to know
- Watch and wait – My blood counts
- Watch and wait – A quick guide for partners, carers, family and friends
- Watch and wait – A quick guide for employers
- Watch and wait – A toolkit for GPs and practice nurses

### Side effects

- Managing sickness and vomiting
- Sore mouth or gut (mucositis)
- Understanding infection

### Living with blood cancer

- If your employee or colleague has blood cancer
- My activity planner

## To order or download information

Visit **[bloodcancer.org.uk/information](https://www.bloodcancer.org.uk/information)**

Call **0808 2080 888** (Mon, Tue, Thu, Fri, 10am–4pm, Wed, 10am–1pm)

Email **[support@bloodcancer.org.uk](mailto:support@bloodcancer.org.uk)**

Or use the order form on **page 60**



**We're a  
community  
dedicated to  
beating blood  
cancer.**

# About us

We're the scientists who dedicate our careers to finding cures.

We're the nurses who find the right words in the darkest moments.

We're the campaigners and volunteers standing up for the people we love.

We're the bucket-collectors, race-runners and cake-bakers who make our research possible.

We're the friends, parents, children and grandparents affected by blood cancer.

Why?

Because we've invested over £500 million in life-saving research.

Because the finish line's in sight.

**Because it's time to beat blood cancer.**

## Because we give people the support they need

People with blood cancer and their family and friends have unique support needs.

We offer free and confidential support by phone or email, provide information about blood cancer and life after a diagnosis, and have an online forum where you can talk to others affected by blood cancer.

**bloodcancer.org.uk**

**0808 2080 888**

(Mon, Tue, Thu, Fri, 10am–4pm, Wed, 10am–1pm)

**support@bloodcancer.org.uk**

**forum.bloodcancer.org.uk**

## Because our research is saving lives

The money raised by our community has meant we've been able to invest £500 million in research, which has changed the outlook for people with blood cancer. Our research has led to better treatments that have dramatically increased survival rates. Right now, we're funding research projects across the UK that are finding out more about blood cancer and the best way to treat it.

Find out more: **bloodcancer.org.uk/research**



## Because we campaign for better treatment and care

We work to make sure people affected by blood cancer are at the heart of Government and NHS decision-making.

We're campaigning to end delays to diagnosis, improve access to the latest treatments and help people with blood cancer get the mental health support they need.

Find out more: [bloodcancer.org.uk/campaigns](https://www.bloodcancer.org.uk/campaigns)

# Because we'll beat it together

## Donate

A quick way to help. Every pound brings us one step closer to beating blood cancer:

**[bloodcancer.org.uk/donate](https://bloodcancer.org.uk/donate)**

## Fundraise

Sign up to one of our events, or do something you enjoy with family and friends – there are lots of ways to fundraise: **[bloodcancer.org.uk/fundraise](https://bloodcancer.org.uk/fundraise)**

## Join your local community group

Local community groups raise money and awareness in their local area. Volunteer for yours to meet new people and get involved in local activities:

**[bloodcancer.org.uk/local-community-groups](https://bloodcancer.org.uk/local-community-groups)**

## Volunteer

Give your time, meet new people and experience new things by volunteering with us. There are lots of ways you can help, from your own home or in your local community: **[bloodcancer.org.uk/volunteer](https://bloodcancer.org.uk/volunteer)**

## Get your organisation involved

From funding a project, to becoming a corporate partner, find out how your organisation can help us:

**[bloodcancer.org.uk/corporate-partnerships](https://bloodcancer.org.uk/corporate-partnerships)**

Or call us on **0808 169 5155**



**I love being part of the  
Blood Cancer UK family.  
Being involved has  
helped me and my family  
cope with my diagnosis.**

Anna, diagnosed with blood cancer aged 39









Go to **bloodcancer.org.uk/donate**, call us on **0808 169 5155** or complete and send this form to us freepost using the address: **FREEPOST PLUS RTSU-XAYE-XZYK, Blood Cancer UK, 111 George Street, Edinburgh, EH2 4JN**

Full Name .....

Address .....

Email ..... Phone .....



As a supporter, you're at the heart of everything we do. We'd love to keep you updated about our exciting work and the ways you can help, including campaigns and events that you might be interested in. We promise to respect your privacy and we will never sell or swap your details.

I'm happy for Blood Cancer UK to contact me by:  Email  Phone  SMS

Don't contact me by post:

You can change how we communicate with you at any time.

Contact us on **0808 169 5155** or email **hello@bloodcancer.org.uk**

I'd like to donate  £10  £25  £50  Other .....

I enclose a cheque/CAF voucher made payable to Blood Cancer UK

OR please debit my  Visa  Maestro  Mastercard  CAF card

Cardholder's name .....

Card number               (Maestro only)

Start date     Expiry date     Issue number

**Make your donation worth an extra 25p for every £1 at no extra cost to you!**

*giftaid it*

I'd like Blood Cancer UK to claim Gift Aid on this donation and any donations I make in the future or have made in the past 4 years.

\*By ticking this box I confirm that I'm a UK taxpayer and I understand that if I pay less Income Tax and/or Capital Gains Tax than the amount of Gift Aid claimed on all my donations in that tax year, it's my responsibility to pay any difference.

\*Today's date

If you stop paying tax, change your name or address, or if you have any further questions about Gift Aid, please contact our Supporter Relations Team on **0808 169 5155**.

\*Information required for Gift Aid declaration to be valid.

## Order information from Blood Cancer UK

All of our information is free to people affected by blood cancer, but if you would like to include a donation with your order, please fill in the donation form over the page.

You can order more information by:

- visiting **bloodcancer.org.uk/information**
- emailing **support@bloodcancer.org.uk**
- calling **0808 2080 888**
- or completing and sending this form to us freepost using the address: **FREEPOST PLUS RTSU-XAYE-XZYK, Blood Cancer UK, 111 George St, Edinburgh, EH2 4JN**

## Please send me some information

Full Name .....

Address .....

Email .....

Phone .....

Please tell us the publications you would like us to send you, free of charge (see page 48)

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## Keep in touch

We'd love to keep you updated about our exciting work and the ways you can help, including campaigns and events that you might be interested in. We promise to respect your privacy and we will never sell or swap your details.

I'm happy for Blood Cancer UK to contact me by:  Email  Phone  SMS

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You can change how we communicate with you at any time.

Contact us on **0808 169 5155** or email **hello@bloodcancer.org.uk**



# My details

My name and hospital number

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My NHS number

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My condition

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My contacts

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My consultant

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My key worker (usually CNS)

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Haematology ward

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Haematology clinic

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Out of hours

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Other contacts

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# Because we face it together

We're a community dedicated to beating blood cancer by funding research and supporting those affected.

Get in touch for:

- Free and confidential support by phone or email
- Information about blood cancer and life after diagnosis
- An online forum for people affected by blood cancer

**[bloodcancer.org.uk](http://bloodcancer.org.uk)**

**0808 2080 888**

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**[forum.bloodcancer.org.uk](http://forum.bloodcancer.org.uk)**

Your feedback on this booklet can help us improve – please send any comments to **[information@bloodcancer.org.uk](mailto:information@bloodcancer.org.uk)**



**Blood  
cancer  
UK**

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