

# Bloodwise

For anyone  
affected by  
blood cancer

[bloodwise.org.uk](http://bloodwise.org.uk)

## Eating well with neutropenia

A guide for people  
with blood cancer

**PATIENT  
INFORMATION**

A team of people helped produce this booklet. We'd like to thank Natasha Jones and the Haematology Subgroup of the British Dietetic Association Oncology Group for their help and support in developing the content and checking for clinical accuracy. The information was also reviewed by Gemma Trout, Jo Tomlins, Joanna Injore and Angela Hall.

Bloodwise staff revised the text to make it easy to read and a non-medical panel including people with blood cancer checked it for understanding.

The quotes in this booklet were contributed by people with blood cancer who have followed a neutropenic diet.

A list of references used in this booklet is available on request. Please email us at [information@bloodwise.org.uk](mailto:information@bloodwise.org.uk)

#### Disclaimer

We make every effort to make sure that the information in this booklet is accurate, but you should not rely on it instead of a fully trained clinician or dietitian. 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 booklet is correct at the time it was printed in January 2017. Date of next review January 2020. Bloodwise, 39-40 Eagle Street, London WC1R 4TH T: 020 7504 2200 E: [info@bloodwise.org.uk](mailto:info@bloodwise.org.uk) W: [bloodwise.org.uk](http://bloodwise.org.uk)

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This booklet is for people who have neutropenia, or for people who know someone with neutropenia. You'll probably have lots of questions; this booklet aims to answer as many of them as possible.

Our information is developed for and with people affected by blood cancer. It's written in line with national guidelines and created with healthcare professionals and specialist dietitians, so you know it's accurate and up-to-date.

This booklet is one of many that we make – you can find a list of our other booklets on page 45 or by visiting our website [bloodwise.org.uk](http://bloodwise.org.uk)

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

When you see the symbols below in the booklet, it's a sign that we think the websites and other organisations mentioned will also give you good information and support.



Our website



Another of our booklets



Another page of the booklet



Another website



Another organisation

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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 diet to try and lower your risk of getting an infection from your food. This is sometimes called a 'neutropenic' or 'clean' diet.

We hope this booklet will help you understand neutropenia and neutropenic diets, take care of yourself, and feel in control.

Every person is different, with a different medical history. So when you're deciding what's right for you, discuss your situation with your healthcare team or doctor as well as getting information from this booklet.




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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.

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## 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, and
- › medications which suppress your immune system (such as steroids, cyclosporine, 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?

Everyone is unique and if or how long they remain on a neutropenic diet varies. You can ask your doctor or healthcare team to refer you to a dietitian for specialist advice.

### 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 very important to follow guidelines like the ones in this booklet to lower your risk of infection. While others give less strict advice and instead encourage patients to eat a varied diet. If you're unsure about following these guidelines, speak to your doctor, dietitian or key worker who will be able to talk about what diet is right for you.



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

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

## 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, and
- › 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.



See [page 23](#) for helpful ways to increase your appetite.

## Living with neutropenia

When you have neutropenia you can get infections more easily from minor cuts or 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 your food.

### What is a healthy diet?

Eating a healthy diet is important to get the right amount of nutrients your body needs.

Even when you're neutropenic, you should 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, and
- › fatty and sugary foods.

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

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### 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 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.
- › 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.
- › 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.
- › Don't overload your fridge or freezer, as this will increase the temperature inside.
- › Keep your freezer below -18°C. Always make sure that food is still frozen solid when you take it out of your freezer.
- › Always store your eggs in the fridge.
- › Store your cooked food at the top of your fridge.
- › Always check and stick to the 'best before' or 'use by' dates on your food.
- › Store raw or defrosting meat or fish at the bottom of your fridge in a covered container, so it doesn't leak or drip.
- › 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.
- › 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.
- › You should check restaurant hygiene ratings at [ratings.food.gov.uk](https://ratings.food.gov.uk)
- › Talk to your doctor or healthcare team about eating out in restaurants or visiting crowded places.

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Your healthcare team  
may suggest you  
avoid some foods.

## Changes to your diet

You should discuss any changes to your diet with your doctor, dietitian or nurse before you make them. If you're neutropenic due to treatment, this may only be for a short time and you'll be able to return to a normal diet once your white blood cell counts have recovered.

The type of dietary advice you might be given will depend on your neutrophil count. The dietary advice in this booklet is divided into two sections – for people with neutropenia (with neutrophil counts of below  $2.0 \times 10^9$ / litre) and people with severe neutropenia (with neutrophil counts of below  $0.5 \times 10^9$ / litre). The hospital where you're being treated may have their own guidelines and you should discuss with your doctor or nurse which diet you should follow.

### What are these guidelines based on?

Over the next pages we recommend some foods to avoid. These are the foods that are most likely to contain germs (microorganisms) that could make you unwell. Wherever possible we've tried to suggest similar foods that are less likely to contain anything that could make you unwell.

## 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 table below gives examples of foods to avoid and foods you can have instead.

| FOOD GROUP       | AVOID   | ALTERNATIVES  |
|------------------|---|---|
| MEAT             | Raw and undercooked meat, poultry or fish; such as meat which is still pink | Well-cooked meat, poultry and fish.<br>Tinned meat and fish                                       |
|                  | Smoked meats, such as salami  | Vacuum-packed cold meats, such as turkey and ham stored below 3°C                                 |
|                  | Any type of unpasteurised pâté (meat or vegetable)                          | Pasteurised pâté and paste in tins or jars that do not need to be refrigerated                    |
| FISH AND SEAFOOD | Smoked salmon, raw sushi, caviar, oysters or lightly cooked shellfish       | Vacuum-cooked packed fish eaten straight from a new packet, including vacuum-packed smoked salmon |
|                  |   | Cooked salmon   |
|                  |   | Well-cooked shellfish, such as in risotto, stir-fry or curry                                      |

| FOOD GROUP           | AVOID  | ALTERNATIVES  |
|----------------------|--|---|
| DAIRY PRODUCTS       | All unpasteurised dairy products, such as milk sold on local farms   | Any pasteurised milk, soya milk, Jersey milk or UHT milk  |
|                      | Soft cheeses made with unpasteurised milk, such as feta and parmesan   | Cheeses made with pasteurised milk  |
|                      | Homemade or deli paneer and labneh   | Processed cheese such as Dairylea™, Kraft™, Philadelphia™, and halloumi   |
|                      | Mould-ripened cheeses such as camembert, brie and goat's cheese  | Pasteurised cheeses such as pasteurised parmesan, pasteurised mozzarella and pasteurised goat's cheese.   |
|                      | Blue veined cheeses such as Danish blue and Stilton  | Paneer made with pasteurised milk   |
|                      | Probiotic or 'bio' foods, drinks or supplements such as Yakult™, Actimel™ and ProViva™   | Vacuum-packed pasteurised and hard cheeses, such as cheddar and Edam  |
|                      | Yoghurt which is described on the label as 'bio' or 'probiotic'  | 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'. |
| EGG AND EGG PRODUCTS | Raw eggs or undercooked eggs such as homemade mayonnaise, homemade ice cream, mousse, egg-nog, meringue, hollandaise sauce and béarnaise sauce | Hard boiled eggs  |
|                      |  | Scrambled or fried eggs (but the whites and yolks of the eggs must be solid)  |
|                      | Any dressing containing raw eggs such as Caesar salad dressing   | Shop-bought mayonnaise and other products made with pasteurised egg   |

## 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.

Speak to your healthcare team if you would like more information on which foods you should avoid and why at this time. You should also 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 below gives examples of foods that you could avoid, as well as the ones listed on page 18. It also offers suggestions for foods you can have instead.

| FOOD GROUP                             | AVOID   | ALTERNATIVES  |
|--|---|---|
| FRUIT (INCLUDING JUICE) AND VEGETABLES | Raw unpeeled fruit or vegetables including salad items, stuffed vine leaves, fattoush and tabbouleh | Good quality fruit and vegetables that are well cooked or peeled              |
|  | Raw dried fruit or products containing this such as muesli, Bombay mix and confectionery            | Cooked dried fruit such as in fruit cake, flapjacks or cereal bars            |
|  | Damaged or over-ripe fruit or veg   | Tinned fruit  |
|  | Uncooked herbs, spices and pepper   | Cooked herbs, spices and pepper   |
|  | Slices of fruit in drinks   | Pasteurised smoothies<br><br>UHT (ultra-high temperature processing) products |

| FOOD GROUP       | AVOID   | ALTERNATIVES  |
|------------------|---|---|
| DAIRY            | Ice-cream from ice-cream vans   | Ice-cream from reputable sources, in individual portions, wrapped or in small pots    |
| FISH             | Any cold smoked fish, such as cold smoked salmon  | Cooked dishes containing smoked salmon  |
| NUTS AND SNACKS  | Fresh nuts  | Cooked nuts and roasted nuts  |
|                  | Nuts in shells  | Nuts in cans or peanut butter   |
|                  | Unpasteurised, raw, or 'farm fresh' honey and honeycomb   | Pasteurised or heat-treated honey – try to use individual sachets or portions         |
|                  | Deli-counter foods like olives, houmous, shawarma and baklava                                     |   |
|                  | Large bulk packets of food  | Individual snack-size portions of sweets  |
|                  | Items from pick and mix and jars  |   |
| WATER AND JUICES | Non-drinking water  | Freshly running tap water   |
|                  | Water from wells  | Pasteurised smoothies   |
|                  | Unpasteurised or freshly squeezed fruit or vegetable juice, or smoothies                          | Long-life fruit juices in cartons or jars   |
|                  | Bottled still water, including still mineral or spring water                                      | Bottled carbonated water, including sparkling mineral or spring water, and soda water |
|                  | Smoothies   |   |
|                  | Water from coolers, domestic water filters and water fountains                                    |   |
|                  | Ice made away from home such as ice in restaurant drinks and slushed drinks such as Slush Puppies |   |

## 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, and,
- › 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 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.

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You might need to continue with some of the dietary restrictions on **page 18** of this booklet after your stem cell transplant. Your healthcare team or dietitian can talk with you about this.

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## 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.

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*Food often tastes bland during and after treatment*

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- › 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.
- › 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.



Read more about mucositis in our fact sheet **Mucositis**. You can download it online at [bloodwise.org.uk/information](https://bloodwise.org.uk/information)

## Common questions

### How long will I need to follow a neutropenic diet?

Every person is different and will need to follow a diet which is safe for them for a different amount of time. Your healthcare team or dietitian will advise you on the best and safest diet for you.

You might want to continue following the guidelines given for a neutrophil count of below  $2.0 \times 10^9$ /litre even after your neutrophil count is back to a normal level. This is sometimes a good idea if you're taking long-term medications that suppress your immune system, for people who take longer to recover, or for people who feel unwell after treatment.

### 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.

## 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, and,
- › 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, and
- › 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, and
- › 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 on a neutropenic diet.



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Here are some quick  
and easy recipes to  
serve one.

## Recipe ideas

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

### Savoury recipes

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.

**Method:**

- › 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.

## 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

### Method:

- › 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.

## 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

### Method:

- › 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.

## Sweet recipes

### Banana cream

**Preparation** 10 minutes.

**Ingredients:**

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

**Method:**

- › 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

**Method:**

- › 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

**Method:**

- › 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.

## About us

We're Bloodwise, the UK's specialist blood cancer charity.

### We're here to make things clear

We send our patient information for free to anyone who needs it. Whether you have blood cancer yourself or care for someone with blood cancer, we have a range of booklets, fact sheets and online information to support you and help you make sense of it all.

### We're here to listen, support and connect

Our Support Line team are just a call or email away. Call us on **0808 2080 888** Mon–Fri 10am–4pm, email [support@bloodwise.org.uk](mailto:support@bloodwise.org.uk) or visit us at [bloodwise.org.uk](http://bloodwise.org.uk) to join our online community.

### We're here to beat blood cancer

We fund the research that gets results: research that tells us more about blood cancer and improves the lives of those with blood cancer. We've invested over £500 million in world-class research since 1960 – but we won't stop until every single person with blood cancer can live their life to the full.



Go to > [bloodwise.org.uk](http://bloodwise.org.uk) for more information

## Getting involved

Help us beat blood cancer.

We have lots of exciting opportunities for you to get involved and help us to beat blood cancer.

### Give a gift

Whether it's a regular or one off donation, every gift – big or small – will make a difference.

### Take on a challenge

Every stride, stroke and pedal gets us closer to beating blood cancer. Whatever the event, make every mile matter.

### Beat blood cancer locally

Join one of our regional branches and fundraising groups to discover how you can make a difference.

### Jump online

Every like, share, tweet and mention could mean someone finds out about our services and raises awareness of blood cancer.

[facebook.com/bloodwise.uk](https://facebook.com/bloodwise.uk)

[twitter.com/bloodwise\\_uk](https://twitter.com/bloodwise_uk)

### Partner with us

We're always looking for companies who share our vision and energy.

### Get in touch

Visit [bloodwise.org.uk/get-involved](http://bloodwise.org.uk/get-involved), call 0207 504 2200 or email [hello@bloodwise.org.uk](mailto:hello@bloodwise.org.uk)

## Your feedback

We're always looking for ways to improve the information we provide for people with blood cancer.

We welcome your feedback on this booklet and our other patient information. Any improvements you suggest mean we can make better information for other blood cancer patients and people close to them.

Email us at [information@bloodwise.org.uk](mailto:information@bloodwise.org.uk) with your feedback.

## More information

We offer patient information on many blood cancer types and topics, online and in free printed booklets.

They cover everything from symptoms and diagnosis through to treatment and living with your condition.



For our patient information, go to >  
[bloodwise.org.uk/information-and-support](http://bloodwise.org.uk/information-and-support)

## Information booklets

Booklets which are available free of charge:

### Reference

### Description

|                |   |
|----------------|---|
| BWALL          | <b>Leukaemia</b><br>Acute lymphoblastic leukaemia (ALL)   |
| BWAML          | Acute myeloid leukaemia (AML)   |
| BWAPL          | Acute promyelocytic leukaemia (APL)   |
| BWCLL          | Chronic lymphocytic leukaemia (CLL)   |
| BWCML          | Chronic myeloid leukaemia (CML)   |
| BWCHALL        | <b>Childhood leukaemia</b><br>Acute lymphoblastic leukaemia (ALL) in children and young adults up to 16 years |
| BWCHAML        | Acute myeloid leukaemia (AML) in children and young adult up to 16 years                                      |
| BWHL           | <b>Lymphoma</b><br>Hodgkin lymphoma (HL)  |
| BWNHLHIGHGRADE | High-grade non-Hodgkin lymphoma (NHL)   |
| BWNHLOWGRADE   | Low-grade non-Hodgkin lymphoma (NHL)  |
| BWMM           | <b>Other</b><br>Myeloma   |
| BWMDS          | Myelodysplastic syndromes (MDS)   |
| BWMPN          | Myeloproliferative neoplasms (MPN)  |
| BWCT           | <b>Treatment and beyond</b><br>Your guide to clinical trials  |
| BWSEVEN        | The seven steps: blood stem cell and bone marrow transplants  |
| BWDAPN         | Eating well with neutropenia  |
| BWMYDIARY      | Diary for anyone affected by blood cancer   |



# More information from Bloodwise

You can order more information by:

- › visiting **bloodwise.org.uk/information**
- › emailing **information@bloodwise.org.uk**
- › calling **020 7504 2200**
- › or completing and sending this form to us freepost using the address:  
**FREEPOST PLUS RTSU-XAYE-X2YK, Bloodwise, 111 George St, Edinburgh, EH2 4JN**

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.



## Please send me some information

Title ..... First name ..... Surname .....

Address .....

Postcode ..... Email ..... Phone .....

Please write the reference codes of the booklets that you would like to be sent to you (free of charge) in the spaces provided below:

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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 am happy for Bloodwise to contact me by:  Email  Phone  SMS

Please 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@bloodwise.org.uk**

# My details

This is a place to put important information about you, your condition and key contacts.

My name and hospital number \_\_\_\_\_

My NHS number \_\_\_\_\_

My condition \_\_\_\_\_

My contacts \_\_\_\_\_

My consultant \_\_\_\_\_

My key worker (usually CNS) \_\_\_\_\_

Haematology ward \_\_\_\_\_

Haematology clinic \_\_\_\_\_

Other contacts \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Bloodwise

The **blood cancer research** charity

39–40 Eagle Street, London WC1R 4TH

[bloodwise.org.uk](http://bloodwise.org.uk)

020 7504 2200 (Reception); 0808 2080 888 (Support Line)

Registered charity 216032 (England & Wales) SC037529 (Scotland)  
DAPN/0617.2



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