Neutropenia and Fever

What this leaflet is about: what neutrophils are, why a low count makes infection serious, and how to prevent infection at home.

> Quick emergency advice
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> Neutropenic fever means a temperature of 38.5 degrees C or above when your neutrophil count is low. It is a medical emergency.
> Call the clinic or go to the emergency department immediately if your temperature is 38.5 degrees C or above. Do not wait to see whether it settles on its own.

What are neutrophils?

Neutrophils are the most numerous type of white blood cell. Their job is to find and destroy bacteria and fungi, and they are one of the body's most important defences against infection. They are roughly 45 to 75 percent of the white cells in your blood.

Neutropenia simply means that the number of neutrophils is lower than it should be. It happens very often during chemotherapy treatment, and it is also seen in some blood diseases, after some medicines, and in some autoimmune conditions. Many people have a neutropenia for a short time and then recover completely, with no lasting effect.

How is the neutrophil count worked out?

The absolute neutrophil count, which is usually shortened to ANC on a blood test form, is calculated as:

> **The formula**
> ANC = total white blood cell count x percentage of neutrophils

For example, if your white cell count is 4.0 and 60 percent of those white cells are neutrophils, the ANC is 2.4. It is the ANC, not the white cell count on its own, that tells us how well your ability to fight infection is working. Ask us for your ANC if you are not sure what your current count is.

How serious is a low count?

Absolute neutrophil count	What it means
Under 500 cells/uL	High risk. Infection is much more likely, and it can come on very quickly. Treat any fever as an emergency.
500 to 1,000 cells/uL	Moderate risk. Take care with food, hygiene and avoiding people who are unwell.
1,000 to 1,500 cells/uL	Slightly increased risk. Good hygiene and sensible precautions are worthwhile.

These are general guideposts, not rules for one individual person. Your own risk also depends on how long the count has been low, whether your spleen is working, and whether you have other conditions. Please ask us how your own count should be interpreted.

Neutropenic fever is an emergency

> Neutropenic fever is any temperature above 38.5 degrees C in a person whose neutrophils are low. Call the clinic on Tel: +60 3 4289 5000 or Tel: +60 3 4270 2500, or go to the emergency department, immediately. Do not take paracetamol first to bring the temperature down before deciding whether to seek help - the temperature reading is what we need to see.

When you have very few neutrophils, the body is not able to hold an infection in the usual way. A seemingly small infection can spread very quickly, and there may be few of the usual signs - the redness and swelling that normally show where an infection is may be much less obvious.

If you have neutropenic fever you will usually need to be admitted to hospital, where you can be given intravenous antibiotics through a drip into a vein, together with fluids and any other support you need. The antibiotics are often started straight away, before the result of any blood or urine culture comes back, because speed matters.

Keeping clean

Personal hygiene

- Wash your hands thoroughly and often, with soap, especially before eating, after using the toilet, after touching a pet and after coming in from outside. This single habit does more good than almost anything else on this list.
- Have a daily shower or bath, using mild, unperfumed soap.
- Clean the rectal area with water after every bowel movement, and dry well. Wash from the front to the back.
- Avoid constipation, because straining can damage the lining of the bowel. Drink plenty of fluids and eat plenty of fibre, unless you have been told otherwise.
- Use a soft toothbrush, and change it often - a new brush every 3 months, or sooner if the bristles become frayed.
- Clean your dentures every day, and remove them at night.
- Gargle with warm salt water or a mouthwash before and after meals and again before bed.
- Take extra care with any cuts, grazes and sore areas: wash them promptly, keep them covered, and tell us if one becomes red, hot or painful.

Protecting yourself from other people's infections

- Avoid crowds and busy places at peak times, such as shopping on a Saturday afternoon just before Christmas.
- Keep away from anyone with the flu, a rash or any infection, and keep away from small babies as far as is practical.
- Consider wearing a face mask in crowded or enclosed places, and in waiting rooms.
- Stay away from anyone who has recently been vaccinated with a live vaccine, such as the oral polio vaccine or the chickenpox vaccine, for about 6 weeks.
- No fresh flowers, cut flowers or potted plants in your room or household - soil and water in them can carry fungi and bacteria.

- Do not clean up pet droppings, and do not handle animal litter. Ask someone else to do it, and wash your hands thoroughly if you cannot avoid it.

Food and drink

General rules

- Eat fresh, well-cooked food. Avoid food that has been left out at room temperature for more than about two hours.
- Drink boiled water, or properly sealed bottled water.
- Wash fruit and vegetables under running water, and peel them where you can.
- Do not reheat food. If you want it hot, cook it fresh.
- Keep fridge and freezer clean, and keep raw meat covered at the bottom of the fridge so that it cannot drip onto other food.

Foods to avoid

- Raw or undercooked fish and meat, including steak, kebabs, carpaccio, sushi, oysters, raw shellfish and smoked fish.
- Raw eggs, and any dish such as homemade mayonnaise, mousse, prawn cocktail sauce or tiramisu that uses raw egg.
- Unpasteurised milk and yoghurt.
- Live or "bio" yoghurt, and probiotic drinks, which contain live bacteria.
- Soft-ripened and blue cheeses.
- Food bought from unhygienic stalls, and food that has been sitting out in the sun.
- Drinks straight from cans or bottles. Pour the drink into a clean glass, or drink through a clean straw.

The separate leaflet on the neutropenic diet in this series has a full list of foods to avoid and the safer choices to make instead.

When your count should recover

If your neutrophils are low because of a medicine such as chemotherapy, the count will usually recover over the following days or weeks once that course of treatment finishes. During the time it is low you should follow the advice in this leaflet. If your count is low because of something else, the cause needs to be found and, where possible, treated.

When to contact us

If you are worried about yourself, or about the person you are caring for, please get in touch. We would always much rather hear from you early than late. If you have read something in this leaflet that worries you, that is a good reason to telephone us, even if you feel well.

Visit us
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If you cannot reach us, or you are very unwell

Please go to the emergency department of KPJ Ampang Puteri Specialist Hospital, or call the emergency ambulance service. Do not wait for a routine appointment, and do not wait for a reply to an email.

Important medical disclaimer

This leaflet is written for patients and their families and carers. It is general patient education only. It is not a substitute for medical advice, and it is not a substitute for the diagnosis and treatment that your own haematologist, nurse, pharmacist or doctor will give you.

Nothing in this leaflet should be used to change, stop or start a medicine, a test or a treatment. If anything you read here is different from what your healthcare team has told you, follow your healthcare team and ask us about the difference.

Information about medicines names, strengths, test turnaround times and supportive care is current at the time this leaflet was prepared. It may be updated from time to time, and the version printed here may therefore not be the newest one. Please ask reception for the current copy.

If you think that you or someone you care for is seriously unwell, do not wait for an appointment and do not wait for this leaflet to be read. Contact the clinic, or go to the emergency department of KPJ Ampang Puteri Specialist Hospital, straight away.

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