# Multiple myeloma: Dealing with the risk of infection

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1. **What causes an infection in multiple myeloma?**

An infection is when a disease-causing organism enters the body and multiplies, causing illness. Usually, the **white blood cells** of the immune system will find and destroy these invaders, but this process is weakened in people living with multiple myeloma. Infections can be caused by bacteria, viruses, fungi, or parasites.

2. **Why are people living with myeloma more susceptible to infections?**

People living with myeloma are more likely to get infections because **myeloma weakens the immune system**. Myeloma cells multiply in the bone marrow, which is also where normal blood cells are made. Myeloma cells then limit the production of normal blood cells, meaning there are fewer normal blood cells, including white blood cells. White blood cells usually produce different types of proteins called **antibodies** to help fight infections. However, myeloma cells produce only a single type of abnormal antibody that cannot fight infections. As the number of white blood cells and the number and type of antibodies are reduced, disease-causing organisms cannot be destroyed by the body. This means that people living with myeloma are more likely to get infections.

Some of the treatments for multiple myeloma can also prevent the immune system from working properly. This is because they can reduce the number of a type of white blood cell called a **neutrophil**. When the number of neutrophils gets too low this is called '**neutropenia**' and it can increase the risk of infection. Neutropenia is closely monitored during treatment by the healthcare team.

3. **What are the signs and symptoms of infection?**

The signs and symptoms of an infection can vary depending on the type of organism causing the infection and where it is in the body. Common symptoms may include

- Fever/higher body temperature (higher than 38°C/100°F)
- Low body temperature (lower than 35.5°C/95.9°F)
- Shaking chills that may be followed by sweating
- An area of redness, tenderness, or swelling
- A rash on the skin
- Pus (a yellowish discharge) from an injury or other location
- A new cough or shortness of breath
- A sore throat
- Sores or white patches in the mouth
- Diarrhea or new abdominal pain
- Burning or pain when passing urine

4. **How is an infection treated?**

The way an infection is treated depends on which type of organism is causing it, where it is in the body, and how severe it is. If an infection is suspected, your healthcare team will carry out examinations and tests to find out what is causing the infection. Common treatments include antivirals, antifungals, and antibiotics, and the treatment that gets prescribed depends on which organism caused the infection.

5. **How to minimize infection risk**

Here are some simple ways you can reduce the chance of getting an infection:

- Be aware of general cleanliness. Wash your hands regularly with water and soap, especially when preparing food, before eating, after using the bathroom, after touching pets, after gardening, and after visiting public places
- Regularly disinfect kitchen/toilet areas or frequently touched places in the home
- Avoid contact with contaminated materials such as pet litter or rubbish
- Avoid damaging the skin barrier; for example, use an electric shaver instead of a razor. If the skin barrier does get damaged, treat wounds quickly, apply antiseptic, and keep the area covered
- Consider avoiding gardening or wear thick gloves to prevent getting cuts/scrapes
- Avoid sharing utensils and clothing/towels
- Avoid contact with too many people or the public by keeping your distance and wearing a face mask

Extra precautions need to be taken to reduce the risk of infection while undergoing a stem cell transplant. This is because the immune system is severely weakened during this time and will not be as able to fight off infections. People with multiple myeloma often stay in the hospital during this time and extra precautions that may need to be taken at this stage include taking daily showers, daily bedding changes, dietary restrictions, limits on visitors, and avoiding vaccines that use a ‘live virus’.

6. **The importance of prophylactic treatment during therapy for multiple myeloma**

A **prophylactic** treatment is one that is given to prevent something from occurring before there are any symptoms. Myeloma patients are often given prophylactic treatments such as antibiotics, antivirals, and antifungals to prevent infections during treatment and after a stem cell transplant.

Vaccinations are important for patients with myeloma because they can help to reduce the risk of certain infections. The immune system is weakened in myeloma, so it is important to boost it with vaccinations before the start of treatment, after completion of chemotherapy, and after a stem cell transplant. Due to the poor immune response after stem cell transplantation, all childhood vaccinations need to be repeated. Vaccinations needed during myeloma treatment include those for influenza, hepatitis, measles, mumps, rubella, diphtheria, pertussis, tetanus, and polio.

7. **How to manage anxiety about infections**

Anxiety due to the fear of infection can be a common emotion for patients with myeloma. Some people find that their anxiety can be reduced by trying relaxation techniques, such as yoga, meditation, deep breathing, prayer, or hypnosis. Counseling or therapy can also help. It is important to discuss options for the treatment of anxiety with your healthcare team because more moderate to severe cases of anxiety may require medical treatment.

*Any symptoms of infection should be discussed with and managed by your healthcare team.*