



Multi-Drug Resistant Organisms (MDROs)



Changi
General Hospital
SingHealth

Antibiotics are used to treat infections caused by bacteria. Some bacteria have developed resistance to many antibiotics, and these are called **multi-drug resistant organisms** (MDROs). These bacteria can be found on our skin, intestines and other body surfaces. Healthy individuals may carry these bacteria without becoming ill. However, these bacteria can cause infections in urine, blood or wounds, especially in those who are very ill or have weak immunity systems.

The common types of MDROs in Singapore include the following:

- ➔ Methicillin-resistant *Staphylococcus aureus* (MRSA)
- ➔ Carbapenemase-producing carbapenem-resistant Enterobacteriaceae (CP-CRE)
- ➔ Vancomycin-resistant enterococci (VRE)

What does it mean?

People with MDROs can fall into two categories:

1) Colonisation (carrier)

Colonisation means that there are MDROs present in or on your body, but are not causing illness or infection. You do not usually need treatment for such MDROs. Most people do not know that they are carriers, unless they undergo certain tests. You may have had the MDRO in your body for months or years before you had this test that found it.

2) Infection

Infection means that there are MDROs present in or on your body, and are causing illness or infection. Symptoms of infection (such as fever and/or pain) can vary, depending on the infected part of the body. Do consult your doctor for the best treatment method for your infection.



How do people get MDROs?

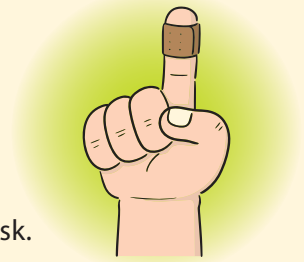
MDROs may be present in the human body or on contaminated surfaces in our surroundings. It can be passed on from one person to another through surface contact with patients, visitors or health care workers. People at risk of getting infected by MDROs include those who had previously been admitted into hospital, those who take multiple antibiotics, and those who reside for long periods in the hospital or long-term healthcare facilities (e.g., nursing homes).

Can I get rid of MDROs?

People who are infected with MDROs are likely to carry the MDRO for a long time. Your body may clear the MDROs as you recover, but this may not always be the case.

Who is at risk for MDRO infection?

Infections are most often seen in patients who have been hospitalised for a long time, and those who have severe illnesses or weak immune systems. Patients with wounds or tubes in their body (e.g., urinary catheters) are at a higher risk.



What should I do to reduce the risk of infection?

The most important thing you can do is to maintain good hand hygiene by washing your hands thoroughly with soap and water, especially after going to the toilet. You should avoid touching any medical devices (such as your urinary catheter or other medical tubes) if you have any, particularly at the point where it is inserted into the body or skin.

What happens in hospital if I have MDROs?

In accordance with the hospital's protocol, if you are colonised or infected with MDROs, your nurse will transfer you to an allocated room. It would be best to stay in your room. However, should you need to leave the room, do follow instructions given by your nurses. Doctors and nurses may wear gloves and gowns when caring for you. This is to reduce the risk of spreading the bacteria to the other patients.

What about my family and visitors?

There is no need for you to inform your visitors that you are a carrier or have an infection, as long as they practice good personal hygiene.

Precautions:

- ➔ Do not allow visitors to sit or lie on your bed.
- ➔ Visitors should wash their hands before and after visiting you.
- ➔ Visitors should not mix with other patients in the ward as this may cause the bacteria to spread to other patients.



What happens after I am discharged from the hospital?

After you are discharged, the MDRO may continue to be present for some time. You and your family should still maintain good personal hygiene, but are not required to take any additional special precautions at home.

The following good personal hygiene practices are important to note:

- ➔ Your family (or carer) should wash their hands with water and soap before and after caring for you. This is particularly important if they are caring for your wound, urinary catheters or feeding tube.
- ➔ Follow professional advice for the care of wound(s). Generally, wound(s) should be covered with appropriate dressing.
- ➔ Wash your own hands often and maintain high standards of personal hygiene. This is especially important after using the toilet.
- ➔ Maintain a high level of cleanliness, especially for commodes and shared bathrooms.



Clothing may be washed in the usual manner, along with the rest of the household laundry. Special cleaning of furniture or dishes at home is not required. You can continue your usual activities, such as shopping or visiting friends and relatives. You do not need to isolate yourself from others.



Appendix: Information on the common types of MDROs

Methicillin-resistant *Staphylococcus aureus* (MRSA)

Staphylococcus aureus is a bacterium commonly found on the skin and mucous membrane of healthy people e.g., nose. MRSA is a type of *Staphylococcus aureus* that is resistant to the antibiotic Methicillin, which limits antibiotic options for treating an infection. Patients colonised with MRSA do not require antibiotic treatment, but some patients may receive antiseptic baths or creams to reduce the number of bacteria present on their skin. MRSA may cause wound, skin or blood stream infections in some individuals.

Carbapenemase-producing carbapenem-resistant Enterobacteriaceae (CP-CRE)

Enterobacteriaceae are a group of bacteria commonly found in the human intestines, but also in the environment. CP-CRE are Enterobacteriaceae bacteria that have become resistant to a class of antibiotics called carbapenems. Patients colonised with CP-CRE do not require antibiotic treatment. Enterobacteriaceae can cause infections if they enter the bloodstream, bladder, or other areas of the body.

Vancomycin-resistant enterococci (VRE)

Enterococci are bacteria normally present in the human intestines, female genital tract and even the environment. VRE is a type of enterococcus bacterium that has become resistant to the antibiotic Vancomycin. Patients colonised with VRE do not require antibiotic treatment. VRE may sometimes cause urine or blood stream infection in some individuals.



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