
Multidrug-Resistant Organisms (MDROs)

Some bacteria have become resistant to the common medicines (antibiotics) used to treat them. This means the antibiotics can no longer kill those germs. Bacteria that resist treatment with more than 1 type of antibiotic are called multidrug-resistant organisms (MDROs). MDROs mainly affect people in hospitals and long-term care facilities. But they have also become more widespread among healthy children and adults. A person may be a carrier of the bacteria. This means they do not have any symptoms from it. Or they may have an infection from the bacteria, meaning they do have symptoms.

- **Colonization.** When a person carries the MDRO bacteria but has no symptoms, it's called being colonized. This person can spread the MDRO to others. They can also develop symptoms at a later date if their immune system gets weak.
- **Infection.** When a person gets sick because of the bacteria, they're infected with the MDRO. This person can also spread the MDRO to others. If not treated correctly, MDRO infections can be very serious and even cause death.

What causes MDROs?

MDROs are mainly caused by the misuse of antibiotics. Misuse occurs when antibiotics:

- Are taken when they're not needed
- Aren't taken for the full time prescribed by the healthcare provider
- Are fed in large amounts to animals raised for food, such as chicken and cattle

At first, only a few bacteria may survive treatment with an antibiotic. But the more often antibiotics are used, the more likely it is that resistant bacteria will develop.

Who's at risk for MDROs?

Anyone can be colonized or infected by an MDRO. But some risk factors make this more likely. These include:

- Living with or having close contact with a person who's infected or colonized
- Sharing items with a person who's infected or colonized
- Having a serious illness or weakened immune system
- Recent hospital stay
- Living in a nursing home or long-term care facility
- Recent antibiotic treatment
- Having repeated medical procedures, such as hemodialysis
- Having a medical device, such as a tube placed in the bladder to drain urine (urinary catheter)
- Past MDRO colonization or infection

- Being older
- Injecting illegal drugs

How are MDROs spread?

- MDROs are often spread by direct person-to-person contact with someone who is either colonized or infected with the bacteria. Some MDROs can spread if someone has contact with objects that are contaminated with bacteria. The route of spread depends on the bacteria, and where it thrives in the human body. MDROs may spread by nasal secretions, skin, or by hands that were not correctly washed after using the toilet.
- In hospitals and long-term care facilities, MDROs are often spread on the hands of healthcare workers. The germs can also spread on objects, such as cart and door handles, and bed rails.
- Outside healthcare settings, MDRO infections often spread through skin-to-skin contact, shared towels, or sports equipment.

How are MDRO infections diagnosed?

MDRO infections are diagnosed by growing the bacteria in a lab. A sample is collected from the suspected area of infection. Depending on the infection, you may need a skin swab, a urine culture, a blood culture, or possibly a sputum culture for lung infections. The bacteria is identified and tested for resistance to antibiotics.

What types of infections can MDROs cause?

MDROs can cause infections in any part of the body, including:

- Skin
- Lungs
- Urinary tract
- Bloodstream
- Wounds

How are MDRO infections treated?

MDRO colonization doesn't often need treatment. But people are advised to prevent spreading MDRO to others. Depending on the type of MDRO a person has, they may have a process called decolonization. Your healthcare provider will let you know more about this treatment if needed.

MDRO infections can be hard to treat. This is because they don't respond to many common antibiotics. But some antibiotics remain effective against MDROs and are routinely prescribed. Your provider will test for the type of MDRO causing the illness and choose the best antibiotic.

Can MDRO infections be prevented?



Hospitals, nursing homes, or long-term care facilities help prevent MDRO infections by doing the following:

- **Handwashing.** This is the single most important way to prevent the spread of germs. Healthcare workers should wash their hands with soap and clean, running water before and after treating each person. Or they should use an alcohol-based hand cleaner before and after treating each person. They should also clean their hands after touching any surface that may be contaminated, and after taking off protective clothing.
- **Protective clothing.** Healthcare workers and visitors wear gloves, a gown, and sometimes a mask when they enter the room of a person with an MDRO. The clothing is removed before leaving the room.
- **Careful use of antibiotics.** Use antibiotics only when needed. Your provider will prescribe its use for the shortest time possible. Use the antibiotic as prescribed, even if your symptoms clear up before you have taken all of the medicine. This helps prevent the growth of more antibiotic-resistant bacteria.
- **Private rooms.** People with MDRO infections are placed in private rooms. This is to prevent the spread of infection.
- **Daily cleaning.** All patient care items, equipment, and room surfaces are cleaned and disinfected every day.
- **Monitoring.** Hospitals closely watch the spread of MDROs. They also educate all staff on the best ways to prevent it.

People in the hospital can help prevent MDRO infections by doing the following:

- Ask all hospital staff and visitors to wash their hands before touching you. Don't be afraid to speak up.
- Wash your own hands often with soap and clean, running water. Or use an alcohol-based hand gel.

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- Ask that stethoscopes and other tools be wiped with alcohol before they're used on you.

If you're taking care of someone with an MDRO infection:

- Wash your hands for at least 20 seconds with soap and clean, running water before and after any contact with the person.
- Wear gloves if you might touch body fluids. Throw away the gloves after wearing them. Then wash your hands well with soap and clean, running water.
- Wash the person's bed linens, towels, and clothing in hot water with detergent and liquid bleach.
- Clean the person's room often with a household disinfectant. Or make your own cleaner. Do this by adding 1/4 cup liquid bleach to 1 gallon of water.

Everyone can help prevent MDRO infections by doing the following:

- Wash your hands often with soap and clean, running water.
 - Clean the whole hand, under your nails, between your fingers, and up the wrists.
 - Wash for at least 15 to 20 seconds.
 - Rinse. Let the water run down your fingers, not up your wrist.
 - Dry your hands well. Use a paper towel to turn off the faucet and open the door.
- If soap and water aren't available, use an alcohol-based hand cleaner.
 - Squeeze about 1 tablespoon of cleaner into the palm of 1 hand.
 - Rub your hands together briskly. Clean the backs of your hands, the palms, between your fingers, and up the wrists.
 - Rub until the cleaner is gone and your hands are completely dry.
- Keep cuts and scrapes clean and covered until they heal.
- Don't have contact with another person's wounds or bandages.
- Don't share towels, razors, clothing, and sports equipment.