

MRGN – MULTI-RESISTANT GRAM-NEGATIVE BACTERIA



Human pathogen information sheet – hygiene keeps you safe!

What are multi-resistant gram-negative bacteria?

The collective term multi-resistant gram-negative bacteria (MRGN bacteria) refers to a large group of various bacteria that differ in some characteristics but have one thing in common: They are resistant, i.e. non-susceptible, to common antibiotics. A distinction is made between bacteria that are non-susceptible to either four (4MRGN) or three (3MRGN) specific groups of antibiotics.

Depending on the group of bacteria, the pathogens are found in the gastrointestinal tract of animals and humans, or on the skin, less commonly in the nasopharynx, in the anal area or on raw foodstuffs. Resistant bacteria occur particularly often where lots of antibiotics are used, which is why they have been an increasing problem in the treatment of hospital patients over the last few years. MRGN bacteria now also colonise about five in 100 healthy persons in the general population. Healthy people who are colonised with MRGN bacteria are referred to as *MRGN carriers*. However, the pathogens pose no danger to these persons because a healthy immune system provides protection against infections. Treatment only becomes necessary if, for example, MRGN bacteria on the skin or in the intestines enter wounds or the bloodstream, causing an *MRGN infection*.

How are MRGN bacteria transmitted?

From human to human

The bacteria can be transmitted between humans by direct contact. The main route of transmission is unwashed hands.

Via objects or foodstuffs

The bacteria can survive on surfaces for a few days or weeks. Wet surfaces such as sinks, showers or toilets may also be colonised with MRGN bacteria. By touching contaminated raw foodstuffs, objects or clothing, the bacteria can be transmitted to the hands, from where they can spread further. The consumption of contaminated food may also result in the colonisation of the intestinal tract with MRGN bacteria.

From animals to humans

Transmission is also possible by contact with animals, in particular with poultry, pigs, cows and domestic animals.

What symptoms do the patients show?

An *MRGN infection* can cause various symptoms, depending on the location of the infection in the body. Possible symptoms include fever, wound infections and inflammations of the urinary or respiratory tract. Bloodstream infections, which involve the bacteria entering the bloodstream, are also feared. Infections with MRGN bacteria are more difficult to treat than infections with bacteria that exhibit no resistance to antibiotics. These infections often persist for a long time and may be associated with an increased mortality rate.

What is the incubation period and how long are you contagious?

MRGN carriers whose skin, mucous membranes or intestines are colonised have no symptoms and do not necessarily develop an infection. An infection can break out if pathogens find their way into internal organs of the body, for example as a result of medical interventions or a weakened immune system. The infection is contagious as long as MRGN bacteria can be detected.

Who is most at risk?

Healthy MRGN carriers and their contacts are usually not at risk of developing an infection. Persons with a weakened immune system, open wounds, skin or chronic diseases as well as persons who frequently undergo medical interventions are at particular risk of becoming infected with MRGN bacteria.



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What should I do if I get colonised?

- ▶ Persons who are colonised with MRGN bacteria but show no symptoms need not undergo treatment. “Intestinal cleansing” is not possible.
- ▶ Proper and consistent hand hygiene is the most important factor to prevent the bacteria from spreading.
- ▶ Especially after using the toilet and before preparing food, you should wash your hands thoroughly with water and soap.
- ▶ Before and after dressing wounds, hygienic hand disinfection is recommended. Colonised wounds should be covered with appropriate bandages that prevent leakage.
- ▶ General disinfection of objects and surfaces in the household is not necessary. Follow the specific directions of your attending doctor or local health authority.
- ▶ Wash your clothing and bed linen with a heavy-duty detergent at a minimum temperature of 60°C.
- ▶ Inform your attending doctors and medical facilities before any visits that you carry MRGN bacteria so that they can take corresponding safety precautions.

What should I do if I fall ill?

- ▶ Infections with MRGN bacteria are treated with specific antibiotics to which these pathogens are still susceptible. The length and dose of the antibiotic therapy is determined by the doctor.
- ▶ If colonisation or infection with MRGN bacteria occurs during a hospital stay, special hygiene measures are taken to protect other patients from becoming infected. Affected persons are isolated and receive medical care in line with the instructions given by the hygiene specialists. The hospital staff will wear protective clothing to avoid carrying the bacteria to other patients. Visitors must also observe special hygiene rules.

How can I protect myself?

- ▶ Most important: Always pay attention to careful hand hygiene. Wash your hands thoroughly with water and soap, especially after using the toilet and before preparing food.
- ▶ Disinfect your hands with the provided disinfectant before and after visits to the hospital.
- ▶ Wounds and skin injuries should be covered with clean bandages or plasters.
- ▶ Use only your own toiletries and sanitary products, such as towels, flannels or razors.

Where can I find out more?

Your local health authority can provide you with further advice and information. Networks for fighting multi-drug-resistant organisms (MDRO) have been established throughout Germany. You can obtain contact details from your local health authority. More (specialist) information is also available online from the Robert Koch Institute (www.rki.de/mrgn). For more information about how hygiene can prevent infections and about the proper use of antibiotics, please visit the website of the Federal Centre for Health Education (www.infektionsschutz.de).



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