

## Multidrug-resistant Organisms in Long-term Care Facilities

As multidrug-resistant organisms (MDRO) become more prevalent in healthcare facilities, we are often asked how to manage individuals residing in long-term facilities who have been identified with these organisms. Utilizing case studies, we will examine potential approaches to care. The goal of MDRO management is to: 1) identify the organism, and 2) contain the organism to prevent horizontal transmission. It is important to evaluate the risk that the individual with an MDRO provides to others within the facility. Here are some key terms to understand when evaluating the risk: infection – [the process of bacteria or viruses invading the body and causing illness], colonization – [microorganisms living on or in a host without causing disease]. In either case, there is risk of horizontal transmission to others and the potential for contamination of the surrounding environment.

### Case Study 1.

Mr. Richards is being transferred back from the hospital with a wound infection that was identified as multidrug-resistant *Acinetobacter baumannii*. He is on a 10 day course of antibiotics and is receiving dressing changes two times a day. When the infection preventionist (IP) examines the laboratory results for this culture, she/he finds that the isolate is carbapenem resistant as well.

### Question 1.

What is the significance of carbapenem resistance?

### Answer 1.

Carbapenem resistance indicates resistance to a very important class of broad-spectrum antibiotics; consequently, given the carbapenem- and other multidrug-resistance, this pathogen is highly resistant, very difficult to treat, and important to keep contained to prevent transmission to other residents.

### Question 2.

Since this is an active infection, being treated with a course of antibiotics, is it necessary to place this resident in contact precautions? If so, can he have a roommate?

### Answer 2.

This resident needs to be placed on contact precautions, using gowns and gloves for any contact with the resident or his environment, including during dressing changes. The environment can harbor these organisms and play a role in transmission. Equipment should be confined to his room as much as possible and, when not possible, should be disinfected between resident uses. Ideally, this patient would not have a roommate. If a roommate is unavoidable, you can attempt to place residents identified with the same organism together (i.e., cohort) or choose a resident that is healthy and not immunocompromised.

### Question 3.

Mr. Richards has finished his course of antibiotics and will continue with dressing changes one time a day until his wound is healed. Can he be removed from contact precautions at this time?

Answer 3.

No, the resident should remain in contact precautions. There is risk of transmission from the hands and clothes of healthcare workers and from contaminated shared equipment. Not only do you have a wound, but the resident is most likely colonized and would continue to pose a risk to others. Wound care supplies should be kept in this resident's room and never returned to the supply room or medication cart.

Case Study 2.

Mrs. Jones is an active and lively senior citizen who resides in Nursing Home A. She began to feel unwell with general fatigue and the physician ordered a urine screen with reflex to culture. The specimen was collected by clean catch. The results showed >100,000 colony forming units (CFU) of an *Escherichia coli* (*E. coli*) that is an ESBL producer (ESBL = extended spectrum beta lactamase). The resident has no urinary symptoms so the physician decides not to treat this laboratory result.

Question 1.

Since ESBL producing bacteria are considered MDROs, does this resident require contact precautions and if so, can she ever come out of her room?

Answer 1.

If this were an active infection and the resident was receiving treatment, contact precautions should be used. Contact precautions for an individual with colonization can be modified to 1) protect the rest of the population, and 2) have the resident maintain their active lifestyle. Modified contact precautions will accomplish both. The idea is to reduce the bioburden of the *E. coli* on the resident before they leave their room. Some strategies include: make sure the resident is clean and is wearing clean clothes, teach the resident to wash her hands often, and have the resident toilet in her own bathroom. There has to be a commitment of the environmental staff to disinfect common areas frequently to minimize environmental contamination and the potential for horizontal transmission. If staff are involved in personal care of the colonized patient, such as toileting, changing clothing, or changing bed linens, they should continue to wear gowns and gloves as they are coming into contact with the areas of heaviest bacteria bioburden or contamination.

Question 2.

Why didn't the physician treat this result?

Answer 2.

The lack of urinary symptoms would suggest asymptomatic bacteriuria. This means bacteria was found in the urine but is not causing active infection. Or, since this was a clean catch urine, the specimen may have been contaminated by bacteria from the patient's GI Tract. *E. coli* is normally found in the GI tract and the integrity of the specimen will impact upon culture results. The best method for collecting an aseptic urine specimen is a straight catheterization, although decisions regarding collection of laboratory specimens should be made by the resident's healthcare provider.

Such scenarios are very common in many long-term care facilities and the Healthcare-Associated Infection/Antibiotic Resistance (HAI/AR) Prevention Program receives these types of questions quite

frequently. If you would like more information or have additional questions, please contact the HAI/AR Prevention Program.

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References

<https://www.cdc.gov/longtermcare/prevention/>

<https://www.cdc.gov/hai/pdfs/containment/PPE-Nursing-Homes-H.pdf>