

## Fact Sheet for Health Care Personnel

# Multidrug-Resistant Organisms (MDROs)

## What are MDROs?

MDROs are organisms that are resistant to multiple antibiotics. Of particular concern are carbapenem-resistant MDROs because infections from these organisms are hard to treat and associated with high mortality rates.<sup>1</sup> The Centers for Disease Control and Prevention classified the following organisms as current threats in the United States based on the clinical and economic impact, incidence, transmissibility, availability of effective antibiotics, and barriers to prevention.<sup>2</sup>

### Carbapenem-Resistant Enterobacterales



13,100 resistant infections\*



1,100 deaths\*



Urgent threat

### Carbapenem-Resistant *Acinetobacter*



8,500 resistant infections\*



700 deaths\*



Urgent threat

### Multidrug-Resistant *Pseudomonas aeruginosa*



32,600 resistant infections\*



2,700 deaths\*



Serious threat

\*Estimated number of case patients with infections or deaths in 2017

## What are carbapenemases?

Carbapenemases are enzymes that enhance resistance to almost all  $\beta$ -lactam antibiotics, including carbapenems. Carbapenemase-producing MDROs contain mobile resistance elements that facilitate transmission of resistance to other organisms.<sup>3</sup> The following carbapenemases have been reported in the United States:

- *Klebsiella pneumoniae* carbapenemase (KPC)
- New Delhi metallo- $\beta$ -lactamase (NDM)
- Verona integron-encoded metallo- $\beta$ -lactamase (VIM)
- Oxacillinase-48-type carbapenemases (OXA-48)
- Imipenemase (IMP) metallo- $\beta$ -lactamase

## How are MDROs transmitted?

- Person-to-person — hand carriage from health care personnel
- Contact with body fluids — drainage from wound, urine, stool, saliva, blood
- Contaminated medical equipment and environment — bed rails, bedside tables, IV poles, catheters

## How can MDRO transmission be prevented?

- Perform hand hygiene and wear appropriate personal protective equipment.
- Ensure effective cleaning and disinfection of the healthcare environment, patient rooms and medical equipment.
- Assess patient room placement and healthcare personnel workflow to minimize cross-contamination, such as cohorting patients with the same MDRO in shared rooms, or rounding to patients with MDROs last.
- Work with the Infection Preventionist to address any concerns.

If you have additional questions, please contact the New Jersey Department of Health HAI/AR Unit at: [DOH.CDS.HAIAR.EPI@doh.nj.gov](mailto:DOH.CDS.HAIAR.EPI@doh.nj.gov).

Adapted from Florida Department of Health



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1. Patel G., et al. Outcomes of Carbapenem-Resistant *Klebsiella pneumoniae* Infection and the Impact of Antimicrobial and Adjunctive Therapies. *Infect Cont Hosp Ep*, 2008. 29(12):1099-1106.  
2. CDC. Antibiotic Resistance Threats in the United States, 2019. Atlanta, GA: U.S. Department of Health and Human Services, CDC; 2019.  
3. Gupta N., et al. Carbapenem-Resistant Enterobacteriaceae: Epidemiology and Prevention. *Clinical Infectious Diseases*, 2011. 53(1):60-67.