



MDRO Cohorting Guidance

Cohorting Guidance for Patients or Residents Infected or Colonized with Multidrug-Resistant Organisms

Multidrug-resistant organisms (MDROs) are bacteria or fungi resistant to multiple classes of antimicrobials. When there is more than one patient or resident colonized¹ or infected with MDROs in a facility, cohorting those with the same MDRO into dedicated units or areas of the facility is a strategy that is known to prevent transmission. MDROs targeted for cohorting include novel and targeted pathogens identified by the North Carolina Department of Health and Human Services' Division of Public Health (NCDPH), including *C. auris*, carbapenemases-producing organisms (CPO) and other emerging MDROs. NCDPH recommends obtaining carbapenemase testing for all carbapenem-resistant organisms (CRO or most often known for "CRE") to inform cohorting.

MDRO cohorts include patients or residents who are known to be infected or colonized with the same MDRO. Two types of MDRO cohorts can be implemented in a health care facility:

1. **A within-room cohort** is where patients or residents with the same MDRO or carbapenemases (e.g., KPC, NDM) are placed within one room, regardless of specimen source, infection or colonization status.
2. **A multi-room cohort** is a designated area of the facility that contains multiple rooms with the same MDRO or carbapenemases; e.g., multiple rooms with patients or residents with MDROs are placed together at the end of a hallway, unit or floor. These patients are often assigned to the same staff members for care.

A note for nursing homes: The purpose of this document is to provide overarching guidance for the placement of patients or residents with MDROs, regardless of the health care setting. The term "patient" will be used, meant to also encompass residents of long-term care facilities that are considered health care settings. In nursing homes only, Enhanced Barrier Precautions can be utilized for residents with MDROs (when Contact Precautions do not otherwise apply). For more information on Enhanced Barrier Precautions, please visit:

- CDC Frequently Asked Questions (FAQs) about Enhanced Barrier Precautions in Nursing Homes: <https://www.cdc.gov/long-term-care-facilities/hcp/prevent-mdro/faqs.html>
- NCDPH [Infection Prevention Education](#)

¹ MDRO colonization: presence of an MDRO on the body but is not causing symptoms or disease

Cohorting Recommendations by Organism

Organism	Common Types	Cohorting Recommendations
<i>C. auris</i>	n/a	Cohort patients with <i>C. auris</i> together with others that have <i>C. auris</i> whenever possible
Carbapenemase-producing organism (CPO)	Bacteria producing one or more carbapenemases, such as KPC, IMP, VIM, OXA, NDM, ² e.g., • KPC <i>E. coli</i> • NDM² <i>Acinetobacter baumannii</i> • VIM <i>Pseudomonas aeruginosa</i>	Prioritize cohorting by the same carbapenemases(s) and organism combination • KPC <i>E. coli</i> with KPC <i>E. coli</i> • NDM/KPC <i>Acinetobacter baumannii</i> with NDM/KPC <i>Acinetobacter baumannii</i> If not possible, cohort by carbapenemases(s) • KPC with KPC • NDM/OXA-23 with NDM/OXA-23
Carbapenem-resistant organism (CRO) (not tested for carbapenemases ³)	Carbapenem-resistant • Enterobacterales (CRE) • <i>Pseudomonas aeruginosa</i> (CRPA) • <i>Acinetobacter baumannii</i> (CRAB)	Cohort by organism combination • CRPA with CRPA • CRE/CRAB with CRE/CRAB

² KPC=Klebsiella pneumoniae carbapenemase; IMP=imipenemase; VIM=Verona integron-encoded metallo-βlactamase; OXA=oxacillinase; NDM=New Delhi metallo-β-lactamase

³ Routine room placement based on the healthcare facility's policy may be applied for patients with CROs that are known to be tested and negative for carbapenemases. Patients with a CRO that were not tested for carbapenemases should be cohorted based on CRO.

General Patient Cohorting Principles

1. Cohort patients colonized or infected with an MDRO for the duration of their admission. NCDPH does not recommend retesting for “clearance of isolation precautions.” Patients may remain colonized with MDROs for prolonged periods; shedding of these organisms may be intermittent and surveillance cultures may fail to detect their presence.
2. Consider other communicable disease statuses (e.g., COVID-19, *C. diff*) when cohorting patients.
3. When creating MDRO cohorts, prioritize cohorting patients with rare, highly resistant, or multiple carbapenemases or organisms.
 - a. This includes patients with *C. auris* or CPO with two or more carbapenemases.
4. Consider dedicating direct care health care personnel (e.g., nursing) to provide care for patients in an MDRO cohort during a specific shift.
 - a. This does not imply one-to-one staffing or primary nursing.
 - b. Health care personnel who cannot be dedicated to patients in an MDRO cohort (e.g., respiratory therapist, dialysis) should care for patients without an MDRO before those with an MDRO, whenever feasible.
5. Dedicate medical equipment (e.g. stethoscope, vital sign machine) to the patient or MDRO cohort.
 - a. For medical equipment that cannot be dedicated (e.g. physical therapy equipment), consider scheduling patients with an MDRO to receive their treatment at the end of the day.
 - b. Thoroughly clean and disinfect shared medical equipment after each use with an EPA-registered disinfectant effective against the pathogen of concern (e.g. [List P](#) for *C. auris*).
6. Avoid excessive reassignment of patient rooms as this can lead to additional transmission.
 - a. Wait for all pending tests or colonization screening results before moving patients into a cohort.
 - b. *C. auris*: The environment may be contaminated once the patient has occupied the room. Thorough cleaning and disinfection are needed to properly prepare the room for the next patient. Especially during large outbreaks, weigh the risk of patient movement within the facility.
7. Health care personnel should treat each bed space in a multi-occupancy room as a separate room.
 - a. Change personal protective equipment (PPE) and perform hand hygiene between each patient.
 - b. Provide a minimum of 3-6 feet separation with a privacy curtain between beds.
8. Create a multi-room cohort if there are multiple rooms with patients with an MDRO in the facility.
 - a. Locate the multi-room cohort in an area that is physically separated and as distant as possible from other rooms (e.g., at the end of the hallway).
9. Engage frontline staff in MDRO prevention strategies.
 - a. Share data from infection prevention audits and patient MDRO screenings.

Please contact the North Carolina Department of Health and Human Services’ Division of Public Health Infection Prevention team at infectionprevention@dhhs.nc.gov for additional guidance.

Frequently Asked Questions

How long do we keep patients with an MDRO on Transmission-Based Precautions?

Patients with an MDRO can remain colonized for months or even years; therefore, it is recommended to keep these patients on precautions for the duration of their admission.

What if a patient with an MDRO doesn't have a "match" (by carbapenemase, organism or gender) to room with?

If there is not another patient of the same gender, and carbapenemase/organism combination to cohort with, prioritize:

- Placing patients with the greatest number of carbapenemases/organism combinations (e.g. patient with VIM *P. aeruginosa*, NDM *E. coli*, and *C. auris*) in a private room.
- Cohorting with another patient who has the fewest risk factors for MDRO acquisition (i.e., indwelling devices, unhealed wounds, requiring total assistance for activities of daily living).
- Placing patients with the rarest, most highly resistant or greatest number of carbapenemase/organism combinations in the largest rooms to increase the distance from the next bed.

There are too many patients with different MDRO combinations to be able to cohort them all. What do we do?

Prioritize patients with rare, highly resistant, or multiple carbapenemases or organisms. This includes patients with *C. auris* or CPO with two or more carbapenemases.

We have a limited number of single-occupancy rooms. Who should we prioritize to place in those rooms?

Prioritize patients with rare, highly resistant, or multiple carbapenemases or organisms to be placed in private rooms. This includes patients with *C. auris* or CPO with two or more carbapenemases.

What if a patient has *C. auris* and a CPO?

Our infection prevention team is happy to talk through scenarios such as this one. Contact us at infectionprevention@dhhs.nc.gov.

What should we do if we have patients with the same carbapenemase but different organisms (e.g., NDM *A. baumannii* and NDM *E. coli*)?

If possible, cohort these patients separately; however, if not possible, they can be cohorted together because they have the same carbapenemase.

What if our facility can create cohorts by MDRO, but patients with different MDROs or without an MDRO still have to share a bathroom?

If patients with different MDRO status must share a bathroom, place disinfecting wipes in the room and bathroom for frequent environmental disinfection by staff.

Resources

Document adapted from our colleagues at the California Department of Public Health.

<https://www.cdph.ca.gov/Programs/CHCQ/HAI/CDPH%20Document%20Library/MDROCoorting.pdf>

CDC MDRO Management Guidelines:

<https://www.cdc.gov/infection-control/hcp/mdro-management/index.html>

CDC About Carbapenem-resistant Enterobacterales (CRE):

<https://www.cdc.gov/cre/about/index.html>

CDC Frequently Asked Questions (FAQs) about Enhanced Barrier Precautions in Nursing Homes:

<https://www.cdc.gov/long-term-care-facilities/hcp/prevent-mdro/faqs.html>