MDRO CONTAINMENT PLANNING WORKSHOP

April 2026

Nebraska Infection Control Network

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Introductions

- Moderator
- Subject Matter Experts (SMEs)
- Facilitators

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Workshop Activities

IDENTIFICATION AND CONTAINMENT PLANNING

AWARENESS OF RESOURCES

ENGAGING STAKEHOLDERS

3

Ground Rules

- Limit multitasking
- Stay open to new ideas
- Critique ideas, not people
- **Participate**
- Share your unique perspective

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MDRO Containment Strategy

- CDC Interim Guidance for a Public Health Response to **Contain** Novel or Targeted MDROs (3)
  - Updated in December 2022
  - Used as a general guidance for the initial response following the identification of a novel or targeted MDRO or resistance mechanisms
  - Recommendations are for MDROs that are in pre-endemic stages of spread, for which a public health response to identified cases in and important strategy
  - Recommendations are not inclusive of all the actions that might be required for control of an outbreak (e.g., sustained transmission within a facility or region)
  - Recommendations are placed into four different categories (Tier 1-4)

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Response Tiers (3)

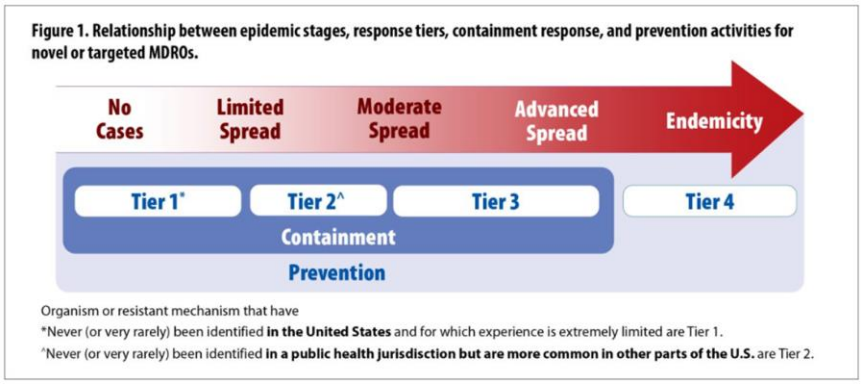

Figure 1. Relationship between epidemic stages, response tiers, containment response, and prevention activities for novel or targeted MDROs.

Organism or resistant mechanism that have

*Never (or very rarely) been identified **in the United States** and for which experience is extremely limited are Tier 1.

^Never (or very rarely) been identified **in a public health jurisdisction but are more common in other parts of the U.S.** are Tier 2.

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Multidrug-Resistant Organisms (MDRO) Tiers for Nebraska

Tier	Definition of Included Organisms and Mechanisms	Examples (not all inclusive) of organisms/mechanisms for Nebraska	Transmission-Based Precautions Recommendations
Tier 1	Never (or very rarely) been identified in the United States and for which experience is extremely limited	Novel Carbapenemases	Contact precautions until otherwise recommended by HAI/AR team
Tier 2	Primarily associated with healthcare settings and are not commonly identified in the region (i.e., not been previously identified in the region or have been limited to sporadic cases or small outbreaks), corresponding to "not detected" or "limited to moderate spread" epidemiologic stages. No current treatment options exist (pan not-susceptible) and potential to spread more widely.	Pan-resistant organisms* *Candida auris* Carbapenemase (e.g., KPC, NDM, OXA-48, VIM, IMP) producing organisms (CPO) • Enterobacterales • *Pseudomonas aeruginosa* • *Acinetobacter Baumannii*	Contact Precautions *Long-term Care Facilities (LTCF):* Enhanced barrier precautions (EBP) recommended for colonized resident(s)**
Tier 3	Include MDROs targeted by the facility or region for epidemiologic importance that have been identified frequently across a region, indicating advanced spread, but are not considered endemic	• Extended spectrum beta-lactamase (ESBL) producing organisms • Carbapenem-resistant *Enterobacterales* (CRE) • Carbapenem-Resistant *Pseudomonas aeruginosa* (CRPA)	Contact Precautions *Long-term Care Facilities (LTCF):* Enhanced barrier precautions (EBP) considered for colonized resident(s)**
Tier 4	Endemic in a region and have been targeted by public health for their clinical significance and potential to spread rapidly	• Methicillin-resistant Staphylococcus aureus (MRSA) • Vancomycin-Resistant Enterococci (VRE)	Contact precautions per facility risk assessment *Long-term Care Facilities (LTCF):* Enhanced barrier precautions (EBP) considered for colonized resident(s)**

* Colonization screening may not be indicated for this organism.
**Contact precautions for acute/active infections or uncontained drainage/secretions

Updated 5.15.2024 (Please note document is a living document, and may be updated at anytime)

https://dhhs.ne.gov/HAI%20Documents/Nebraska%20MDRO%20Tiers.pdf

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Case Study

You are the IP at a LTCF Facility. You become aware of a new culture report for a *current* resident, Mr. A.

Event/Culture date: Feb 25th

- Source: urine
- >100,000 *Escherichia coli*
- Probable carbapenemase producing strain.
  - The lab sends to isolate to NPHL for further testing.

Antibiotic	MDIL	MINT
Ampicillin	>=32	Resistant
Ampicillin/Sulbactam	>=32/16	Resistant
Cefazolin	>=64	Resistant
Cefepime	>=64	Resistant
Ceftriaxone	>=64	Resistant
Ciprofloxacin	>=4	Resistant
Ertapenem	>=8	Resistant
Gentamicin	>=16	Resistant
Levofloxacin	>=8	Resistant
Nitrofurantoin	64	Intermediate
Piperacillin/Tazobactam	>=128	Resistant
Tobramycin	>=16	Resistant
Trimethoprim/Sulfa	>=16/304	Resistant

CRE

>100,000 cfu/ml Escherichia coli
Confirmed carbapenem resistant strain by ETEST
Probable carbapenemase producing strain, referred for confirmation to Nebraska Public Health Laboratory
981180 Nebraska Medical Center, Omaha, Nebraska 68198

Possible CP-CRE

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CDC CRE and CP-CRE Definitions

Carbapenem-resistant Enterobacterales (CRE)

Previously known as Enterobacteriaceae

Enterobacterales: an order of bacteria commonly found in people's gastrointestinal tract that can cause infections both in healthcare and community settings (1)

Are gram-negative bacilli that are resistant to at least one of the carbapenem antibiotics (1)

- ertapenem
- meropenem
- doripenem
- Imipenem

Carbapenemase-Producing Carbapenem-resistant Enterobacterales (CP-CRE)

A subset of CRE which are primarily responsible for the rapid global spread of CRE, including in U.S. Healthcare Settings.

Enzymes that inactivate carbapenems or other beta-lactam antibiotics

Can share the genetic code for carbapenemases with other bacteria, rapidly spreading resistance. (5)

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How are CRE transmitted?

In healthcare settings:

- CRE are transmitted from person to person, often via the hands of healthcare personnel or through contaminated medical equipment (1)
- Sink drains and toilets are increasingly recognized as an environmental reservoir and CRE transmission source (1)

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Group Activity #1 (7 Minutes)

- **Review Resident Case History**
- **Questions**:
  - Your first goal is to prevent spread: **containment**
    - Does this lab need to be reported?
    - What are the immediate next steps after seeing this result?

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Activity #1 Answers:

- **Does this lab need to be reported?**
  - You should report the possible CP- CRE to your LHD and NE DHHS Epidemiologist and/or Infection Preventionists.
    - NE DHHS Title 173 NAC 1: Reporting and Control of Communicable Diseases (2)
    - Many labs automatically report CRE cases to DHHS via electronic lab reporting as described in 173 NAC 1-005.02C.

CRE

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Possible CP-CRE

>100,000 cfu/ml Escherichia coli
Confirmed carbapenem resistant strain by ETEST
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Activity #1 Answers:

- **What are your immediate next steps?**
  - While awaiting confirmation of a CP-CRE, the following can be implemented:
    - Implement targeted infection control measures
      - Isolation and Contact Precautions in acute care settings.
      - Enhanced Barrier Precautions or Isolation and Contact Precautions in nursing homes, depending on the situation.
    - Enforce policies for core infection control practices like hand hygiene, personal protective equipment and environmental cleaning.
    - Require staff to notify the receiving facility about CRE infection or colonization and other multidrug-resistant organisms when transferring a patient.
    - Prescribe and use antibiotics appropriately
    - Flag chart for CRE (6)

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March 4th update:

The HAI/AR team calls to notify you that NPHL detected an NDM gene.

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FINAL REPORTS
Final Report []
Verified Date/Time/Personnel: [redacted] 4:20 CDT
>100,000 cfu/ml Escherichia coli
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Confirmed CP-CRE

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Group Activity #2

After notification from the HAI/AR Team, you are instructed to:

- Conduct a healthcare investigation
- Conduct a contact investigation
- Results of the investigation will determine who will undergo colonization screening

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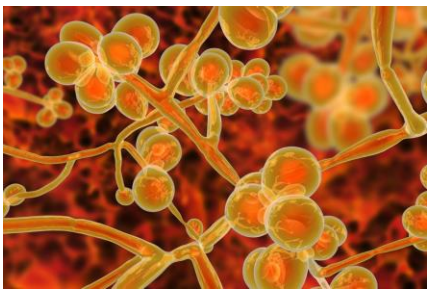
Colonization Screening Overview

- Colonization screening:
  - When an emerging MDRO is identified, colonization screening is recommended by CDC as an essential component of the public health response.
  - Colonization screening identifies unrecognized carriers so that infection control measures can be targeted to prevent the spread of antimicrobial resistance (3)



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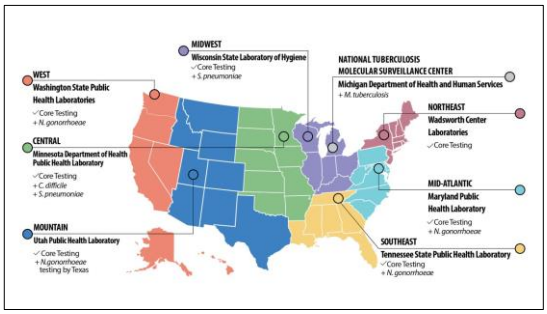
Colonization Screening

- Screening is typically performed through the CDC's ALRN lab
  - Facilities can also do the screening themselves if they have the correct type of testing
- Free of cost to patient and facility
- CP-CRE screening is done with a rectal swab



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Targeted Colonization Screening versus PPS

Point Prevalence Studies (PPS)

- In most situations, perform broader screening to comprehensively assess for transmission
- A PPS is a type of observational study that measures the presence of a specific characteristic (in this case, MDRO colonization or infection) within a population at a specific point in time.
- A specific population is selected for screening, such as all patients on a particular ward or all residents in a nursing home.

Targeted Screening

- Screen roommates and patients who shared a bathroom with the index patient.
- Screen the patient *currently* admitted to room(s) and bed spaces where the index patient stayed at least one night in healthcare facilities identified during the healthcare investigation
- If not doing a broad PPS:
  - Colonization screening may initially target contacts who are at higher risk due to overlap on the same ward as the index patient and presence of a risk factor for MDRO acquisition (e.g., bedbound, high levels of care, receipt of antimicrobials, or mechanical ventilation), and who are still admitted

20 MDRO Containment Strategy

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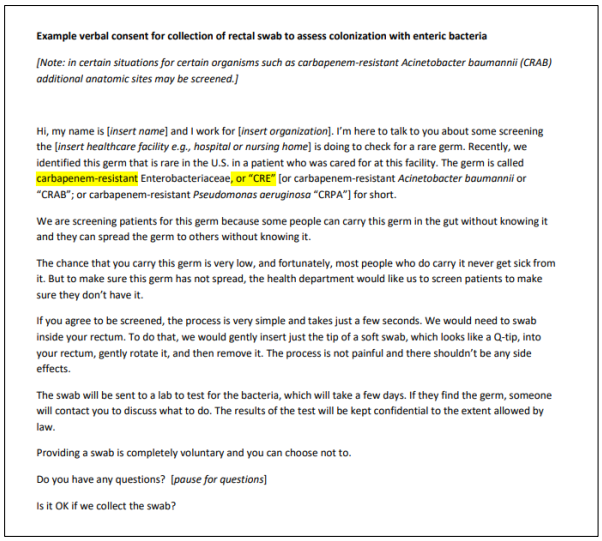
Additional Points for Colonization Screening

- Patient permission (or from the guardian) is required to collect specimen
- Screening results will be sent to the submitting HAI/AR Team and shared with facility
- Further screening may be necessary if transmission is detected



Example verbal consent for collection of rectal swab to assess colonization with enteric bacteria

[Note: in certain situations for certain organisms such as carbapenem-resistant Acinetobacter baumannii (CRAB) additional anatomic sites may be screened.]

Hi, my name is [*insert name*] and I work for [*insert organization*]. I'm here to talk to you about some screening the [*insert healthcare facility e.g., hospital or nursing home*] is doing to check for a rare germ. Recently, we identified this germ that is rare in the U.S. in a patient who was cared for at this facility. The germ is called carbapenem-resistant Enterobacteriaceae, or "CRE" [or carbapenem-resistant *Acinetobacter baumannii* or "CRAB"; or carbapenem-resistant *Pseudomonas aeruginosa* "CRPA"] for short.

We are screening patients for this germ because some people can carry this germ in the gut without knowing it and they can spread the germ to others without knowing it.

The chance that you carry this germ is very low, and fortunately, most people who do carry it never get sick from it. But to make sure this germ has not spread, the health department would like us to screen patients to make sure they don't have it.

If you agree to be screened, the process is very simple and takes just a few seconds. We would need to swab inside your rectum. To do that, we would gently insert just the tip of a soft swab, which looks like a Q-tip, into your rectum, gently rotate it, and then remove it. The process is not painful and there shouldn't be any side effects.

The swab will be sent to a lab to test for the bacteria, which will take a few days. If they find the germ, someone will contact you to discuss what to do. The results of the test will be kept confidential to the extent allowed by law.

Providing a swab is completely voluntary and you can choose not to.

Do you have any questions? [*pause for questions*]

Is it OK if we collect the swab?

Screening FAQs for Verbal Consent

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Group Activity #2 (12 minutes)

After notification from the HAI/AR Team, you are instructed to:

- Conduct a healthcare investigation
- Conduct a contact investigation
- Results will determine who will undergo colonization screening

- **Activity #2 Questions**:
  - How many residents should be included in colonization screening?

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Activity #2 Answers

How many residents are included in colonization screening?

- Total: **11**
  - 5 double occupancy rooms = **10** residents
  - 2 single rooms = **1** (Mr. B) *Mr. A is the index patient- no additional colonization screening necessary

- Contact investigation summary:
  - Neighborhood D: common shower/bathing room, wound cart, physical therapy room, and dining room
  - Mr. A incontinent of stool

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Group Activity #3 (7 minutes)

Colonization Screening Results:

- Out of the 11 residents screened, 2 additional positives were found.

Questions:

- What additional IPC activities should/will occur during this MDRO investigation?
- What practices may be contributing to the spread?

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Next Steps and Additional ICP Mitigation Strategies

- Additional rounds of colonization screening will need to be conducted
  - Typically recommended to complete colonization screening until there are 2 rounds of negative tests on affected unit(s)
  - Collect a round of colonization screening every 2 weeks
  - May need to expand testing to additional units/whole building
- Communication with administration, staff, and families
- Continuous communication with NE HAI/AR team for updates and further instructions, if needed
  - Communication with LHD- each is unique to communication/reporting
- Assessment of wound cart to include cleaning/disinfection practices
- Assessment of staff hand hygiene and PPE practices
  - With potential audit/feedback and education
- Assessment of cleaning and disinfection products and practices
  - With potential audit/feedback and education
- ICAP ICAR on-site visit

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https://dhhs.ne.gov/Pages/HAI-Contacts.aspx

Closing Comments

Remember to reach out for assistance!

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References

1 Clinicians: Information about CRE

2 NE DHHS Title 173 NAC 1: Reporting and Control of Communicable Diseases

3 CDC Interim Guidance for a Public Health Response to **Contain** Novel or Targeted MDROs

4 CDC Public Health Strategies to **Prevent the Spread** of Novel and Targeted MDROs

5 CRE- Carbapenem-Resistant Enterobacterales. An urgent public health threat

6 Carbapenem-resistant Enterobacterales (CRE) Infection Control

Revised
4/2026

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