

DCHHS HAI/MDRO Introduction

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Dallas County Health and Human Services
Healthy People Healthy Communities
Health and Social Equity



Goal of MDRO Investigations

People who go to healthcare facilities in Dallas County should not come out with new diseases they didn't go in with. We help prevent this.

We want to slow the spread of MDROs so science can catch up to create antimicrobials that will be effective against these organisms.



Goals

Facilities work together to protect patients.

Common Approach *(Not enough)*

- Patients can be transferred back and forth from facilities for treatment without all the communication and necessary infection control actions in place.

Independent Efforts *(Still not enough)*

- Some facilities work independently to enhance infection control but are not often alerted to antibiotic-resistant or *C. difficile* germs coming from other facilities or outbreaks in the area.
- Lack of shared information from other facilities means that necessary infection control actions are not always taken and germs are spread to other patients.

Coordinated Approach *(Needed)*

- Public health departments track and **alert** health care facilities to antibiotic-resistant or *C. difficile* germs coming from other facilities and outbreaks in the area.
- Facilities and public health authorities share information and implement shared infection control actions to stop spread of germs from facility to facility.



We're increasing our (DCHHS') capacity to handle all the cases happening around us.



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Introduction

- We work on organisms that warrant a response.
 - Reportable organisms
 - Tiered organisms

} Sometimes an organism is both. Not always though.
- Reportable Organisms-
 - Are on the DSHS reportable conditions list and must be reported to DCHHS.
 - CRE (E. coli and any Klebsiella species)
 - *C. auris*
 - VISA
 - VRSA

} We'll elaborate on these soon.



Introduction

- Tiered Organisms-
 - Have something unique about them that DSHS' Healthcare Safety Unit has decided requires additional steps be taken.
 - There is a chart explaining what falls into which tier and what actions need to be taken. A DCHHS HAI investigator will work with you.

Appendix K: Summary of Response Recommendations for MDRO Containment by Tier

Description of Activity	Tier 1 • Pan-nonsusceptible (CRAB, CRE, CRPA) • Pan-resistant (Candida auris, CRAB, CRE, CRPA) • Other novel organisms and resistance mechanisms	Tier 2 • Candida auris • CRAB (IMP, KPC, NDM, VIM, uncommon plasmid-mediated OXA) • CRE (IMP, NDM, OXA-48, VIM) • CRPA (IMP, KPC, NDM, OXA-48, VIM)	Tier 3 • CRE (KPC, mcr)
Healthcare Investigation¹			
Review the patient's healthcare exposures prior to and after the positive culture	Always	Always	Always
Contact Investigation¹			
Screening of healthcare roommates	Always	Always	Always
Broader screening of healthcare contacts ²	Always ³	Sometimes ⁴	Sometimes
Prospective lab surveillance ⁵	Always	Always	Always
Retrospective lab surveillance ⁶	Always	Always	Sometimes
Household Contact Screening	Sometimes	Rarely	Rarely
Environmental Sampling	Sometimes	Rarely	Rarely
Healthcare Personnel Screening	Sometimes	Rarely	Rarely
Evaluate potential spread to Healthcare Facilities that regularly share patients with the index healthcare facility ⁷	Sometimes	Sometimes	Rarely
Infection Control Measures			
Prompt notification of healthcare providers and patient and implementation of appropriate transmission-based precautions	Always	Always	Always
Clear communication of patient status with transferring facilities	Always	Always	Always
Onsite Infection Control Assessment with observations of practice, such as Epidemiology and Laboratory Capacity (ELC) Infection Control Assessment and Response (ICAR)	Always	Always	Sometimes

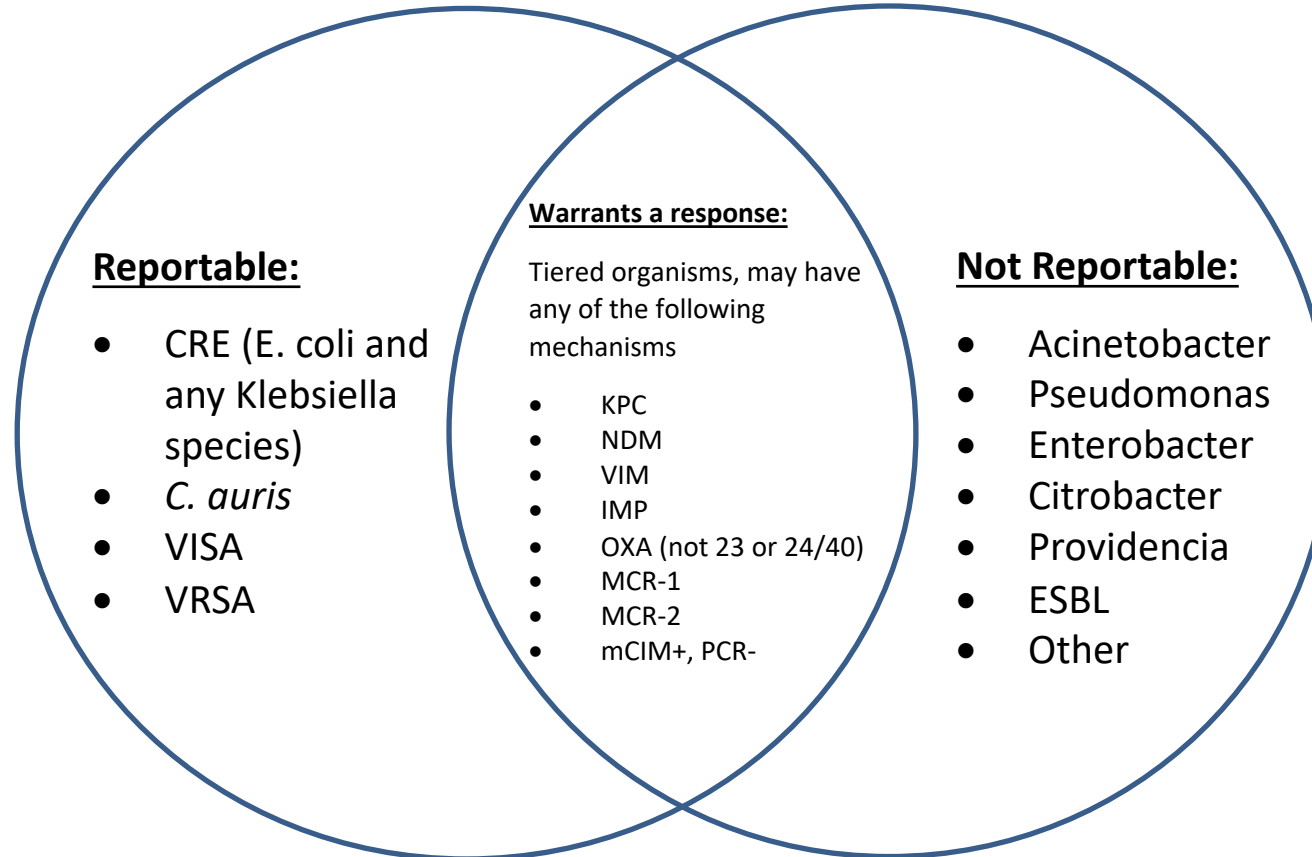


Introduction

- Tiered activities may include:
 - Infection Control Assessment and Response (ICAR)
 - tele-ICAR (teams call) or onsite ICAR
 - Screening (either individual people or point prevalence survey)
 - Purpose is to identify people who may be colonized
 - Performed by swabbing areas of the body commonly colonized



Introduction



Organism	Notifiable to Local Health Dept	Tiered Organism	Isolate Submission
CRE	Yes, but only <i>Klebsiella</i> species and <i>Escherichia coli</i>	CRE that produces a carbapenemase or is found to be pan non-susceptible or pan-resistant	Voluntary to the AR Lab Network
CRAB	No	CRAB that produces a carbapenemase or is found to be pan non-susceptible or pan-resistant	Voluntary to the AR Lab Network
CRPA	No	CRPA that produces a carbapenemase or is found to be pan non-susceptible or pan-resistant	Voluntary to the AR Lab Network
<i>C. auris</i>	Yes	All <i>C. auris</i>	Required by the Texas Administrative Code (TAC)



Carbapenem-Resistant Enterobacteriales (CRE)

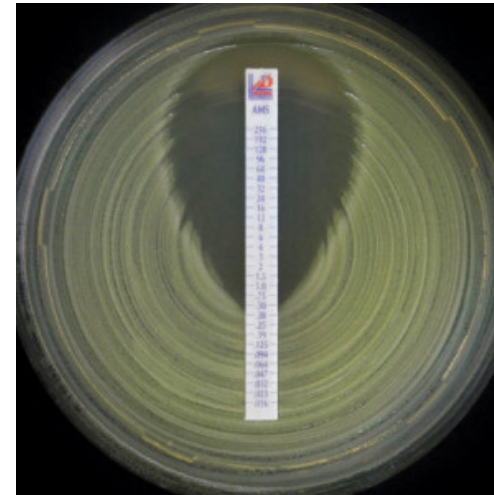


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CRE

- Always reportable, sometimes tiered
- Carbapenem: a class of antibiotics
 - Doripenem
 - Ertapenem
 - Imipenem
 - Meropenem (brand name: Merrem)
- Carbapenems are the last line of defense.
- Some enterobacteriales are naturally carbapenem resistant.



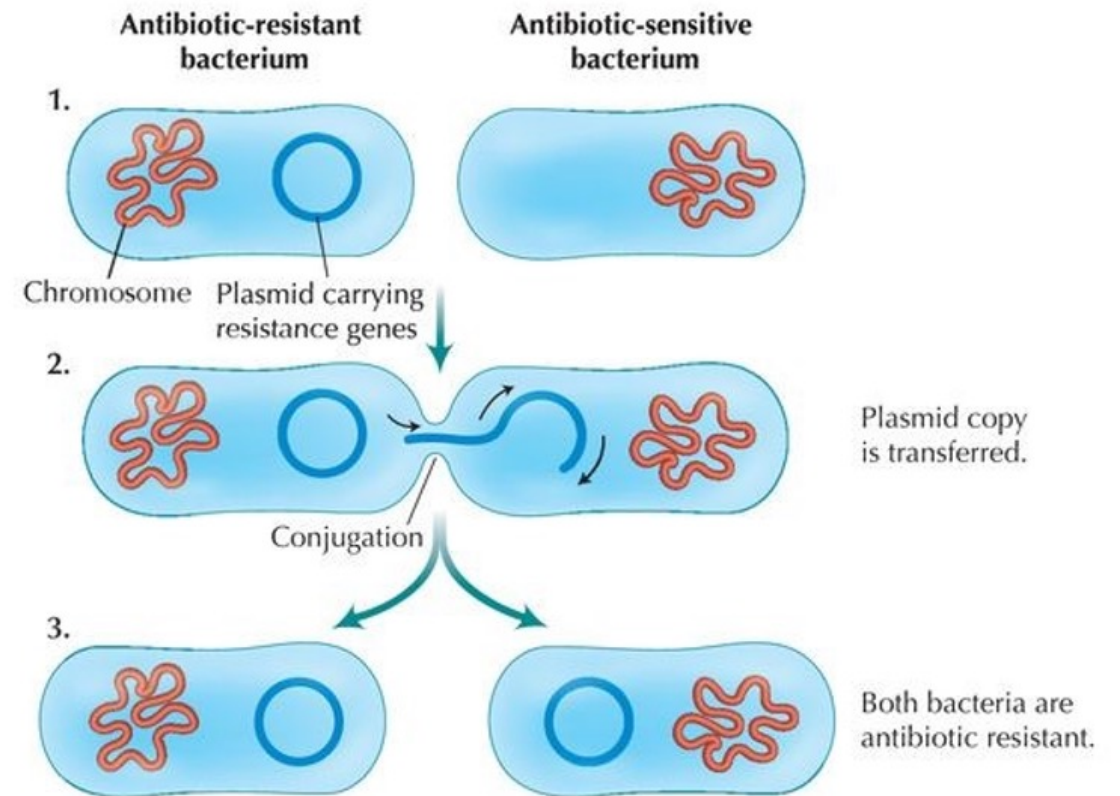
↑ ↑
Less resistant More resistant

Minimum Inhibitory Concentration (MIC)-
the lowest amount of antibiotics that
prevent visible growth of an organism



CRE

- However, some enterobacteriales **obtain their carbapenem resistance** by acquiring a carbapenemase producing mechanism.
- Carbapenemase: enzymes that break down the beta lactam ring in a beta lactam antibiotic. (Carbapenems are beta lactam antibiotics).



CRE

- The CREs that have carbapenemase producing mechanisms are considered “CP-CRE”.
- The CREs that are just naturally resistant to a carbapenem are considered “non-CP-CRE” or “NCP-CRE”.
- Both types are still CREs and are still reportable.
- Carbapenemase production makes it more likely to be a tiered CRE.
 - The mechanisms on the next slide are the ones that are considered tiered.



CRE

- Carbapenemase producing mechanisms include (but are not limited to):
 - Class A: KPC – Klebsiella pneumoniae carbapenemase – Tier 3
 - Class B: Metallo beta-lactamases – up to 71% mortality in hospitals – Tier 2
 - NDM – New Delhi metallo-beta-lactamase
 - VIM – Verona Integron encoded metallo-beta-lactamase
 - IMP - Imipenemase
 - OXA-48 like - Oxacillinase – Tier 2
 - mCIM+, PCR-
 - MCR-1 – Tier 3
 - MCR-2 – Tier 3



Candida auris (*C. auris*)



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C. auris

- Always reportable, always Tier 2
- Became reportable in TX in Jan 2021.
 - Some people have never heard of it, so you'll have to provide education.
- Is often multi-drug resistant.
- There are only 3 classes of anti-fungals available for *C. auris*.
 - Triazole
 - Polyene
 - Echinocandin
- Is easily misidentified.



Vancomycin-Intermediate Staph aureus (VISA) and Vancomycin-Resistant Staph aureus (VRSA)

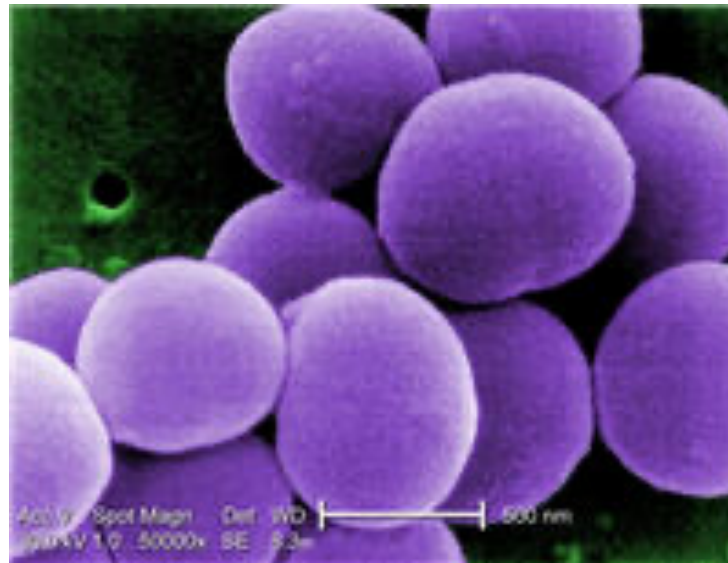


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VISA/VRSA

- Always reportable
- A very big deal
- Not often identified (and we'd like to keep it that way)



Preventing Transmission



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Preventing Transmission

- Most HAIs are spread through contact transmission. On the hands of healthcare workers and on surfaces/equipment.
- Most important considerations:
 - Transmission-based precautions
 - Communication between facilities
 - Maintaining proper hand hygiene
 - Wearing appropriate PPE
 - Environmental cleaning and disinfection
 - With an appropriate disinfection product



Preventing Transmission

- Communication Between Facilities-
 - DCHHS is very strongly recommending that all Dallas County facilities implement use of the Inter-Facility Transfer Form.
 - Verbal notification from one facility to another is not enough.



INTER-FACILITY INFECTION PREVENTION TRANSFER FORM

This form must be completed for transfer of a patient to the receiving facility. Information should be communicated prior to and during the transfer.

Affix patient label here or complete patient information below.

Patient Name: _____
DOB: _____ MRN: _____





TRANSFER INFORMATION

Transfer Date: _____ Sending Facility Name, City/State: _____
Sending Facility Point of Contact and Phone Number (for follow up questions): _____
Receiving Facility Name, City/State: _____

ISOLATION STATUS

Currently in Isolation? Yes No (standard precautions only)
If Yes, Check Type(s) of Isolation:

<input type="checkbox"/> Contact	<input type="checkbox"/> Contact plus Hand Hygiene with Soap/Water	<input type="checkbox"/> Droplet	<input type="checkbox"/> Airborne
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SIGNIFICANT INFECTIOUS DISEASE HISTORY

Does the patient have a history of any known MDRO or infectious disease? Yes No
If Yes, check box(es) below and provide supporting lab reports and antimicrobial susceptibility results, if available.

<input type="checkbox"/> <i>Acinetobacter</i> , multidrug-resistant (MDR-A)	<input type="checkbox"/> <i>Candida auris</i>	<input type="checkbox"/> Carbapenem-resistant Enterobacteriaceae (CRE)	<input type="checkbox"/> Carbapenem-resistant <i>Pseudomonas aeruginosa</i> (CRPA)
<input type="checkbox"/> <i>Clostridioides difficile</i> (C. diff.)	<input type="checkbox"/> Extended Spectrum β -lactamase (ESBL)	<input type="checkbox"/> Influenza or Influenza-like illness (ILI)	<input type="checkbox"/> Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)
<input type="checkbox"/> <i>Mycobacterium tuberculosis</i> (TB)	<input type="checkbox"/> Vancomycin-resistant <i>Enterococcus</i> (VRE)	<input type="checkbox"/> Other: (example: pertussis)	

SIGNS AND SYMPTOMS

Check all that **currently** apply:

<input type="checkbox"/> Incontinent of urine	<input type="checkbox"/> Draining wounds	<input type="checkbox"/> Vomiting	<input type="checkbox"/> Rash (e.g., vesicular)
<input type="checkbox"/> Acute diarrhea or incontinent of stool	<input type="checkbox"/> Cough/uncontrolled respiratory secretions	<input type="checkbox"/> Other uncontained body fluids/drainage	<input type="checkbox"/> Other (specify): _____

OTHER RISK FACTORS

Does the patient currently have any of the following devices? Yes (check all that apply) No

<input type="checkbox"/> Central line/PICC	<input type="checkbox"/> Hemodialysis Catheter	<input type="checkbox"/> Urinary Catheter	<input type="checkbox"/> Suprapubic catheter
<input type="checkbox"/> Nasogastric/PEG tube	<input type="checkbox"/> Tracheostomy	<input type="checkbox"/> Fecal management system	<input type="checkbox"/> Ventilator/Intubated

Other (specify): _____

Cultures pending? Yes, date collected: _____ No

ATTACH MEDICAL ADMINISTRATION RECORD (MAR)

Additional Comments: _____



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Preventing Transmission

- Environmental Cleaning and Disinfection-
- Appropriate disinfectant products for *C. auris*:
 - Anything from EPA List P
- Appropriate disinfectant products for CRE:
 - Anything from both EPA Lists E and H



Search EPA.

[Environmental Topics](#) ▾ [Laws & Regulations](#) ▾ [Report a Violation](#) ▾ [About EPA](#) ▾

[Pesticide Registration](#)

List P: Antimicrobial Products Registered with EPA for Claims Against Candida Auris



Additional resources can be found in our toolkit on the DCHHS HAI webpage.

If you have any questions, you can always call us at 214-819-2004 and ask for the HAI team.

