

# Local Health Department Roles in the Containment of Novel Resistance

**June 19, 2019**

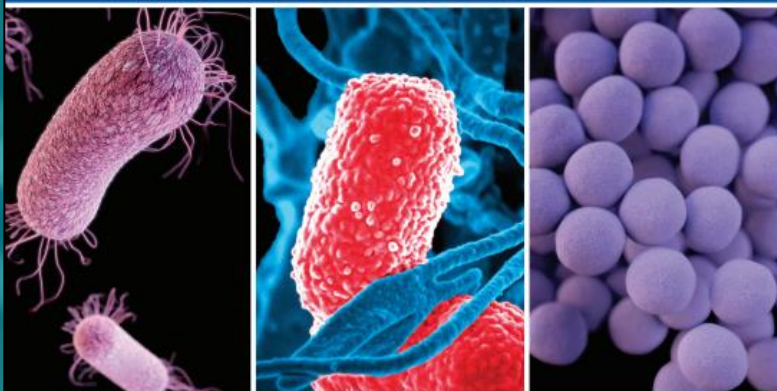
The webinar will begin at  
2:00 PM ET.

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- Please listen through the audio on your computer
- This webinar is being recorded and the recording will be shared
- Submit questions through the Q&A Box at any time. We will discuss questions at the end of all presentations
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# Local Health Department Roles in the Containment of Novel Resistance

Interim Guidance for a Public Health Response to Contain Novel or Targeted Multidrug-resistant Organisms (MDROs)



<https://www.cdc.gov/hai/containment/guidelines.html>



Centers for Disease  
Control and Prevention  
National Center for Emerging and  
Zoonotic Infectious Diseases

Updated January 2019

<https://www.cdc.gov/hai/containment/guidelines.html>

# NACCHO

National Association of County & City Health Officials

# Speaker Introductions

- **Katherine Wells, MPH**

Director of Public Health, City of Lubbock (Texas)

- **Emily A. Murskyj, MPH**

Epidemiologist, DuPage County Health Department (Illinois)

- **Alvina K. Chu, MHS**

Epidemiology Program Manager

Florida Department of Health in Orange County

- **Danielle A. Rankin, MPH, CIC**

Infection Control Assessment & Response Epidemiologist

Florida Department of Health

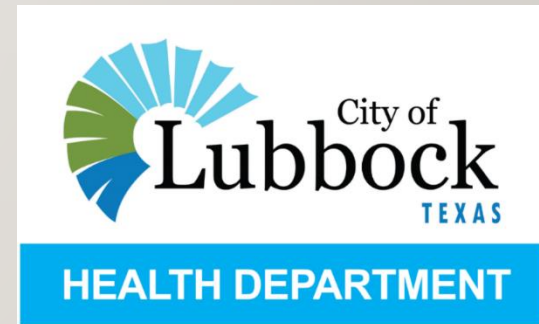


# REGIONAL CONTAINMENT OF VIM-CRPA LUBBOCK, TX

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KATHERINE WELLS

DIRECTOR: CITY OF LUBBOCK HEALTH DEPARTMENT



# LUBBOCK

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- Hub city located in South Plains Region of West Texas
- Population 252,000
- Largest cotton-growing region, home of Texas Tech University
- 5 hour drive to Dallas, Albuquerque, Austin, Oklahoma City



# OUTBREAK

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- In Aug 2017: 4 VIM-CRPA cases identified from acute hospital
- Texas state HAI epidemiologist and our Surveillance nurse worked together to investigate these cases
- By Sep 2018: 27 patients identified – 25% of nationally identified cases

# CARBAPENEM RESISTANT PSEUDOMONAS AERUGINOSA (CRPA)

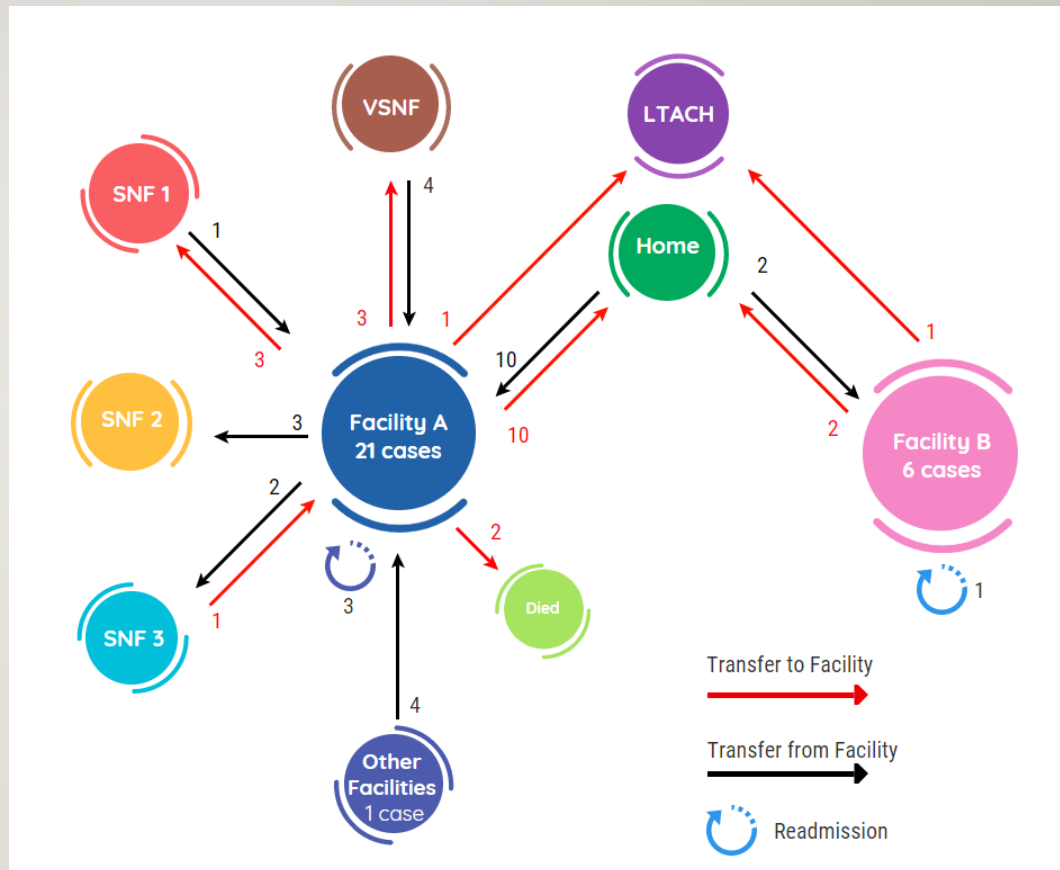
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- CRPA is a gram negative bacteria and a significant cause of Healthcare-Associated Infections
- Difficult to treat because of antibiotic resistance
- Potential for rapid transmission through mobile genetic elements
- VIM- The genetic mechanism of Carbapenem resistance in the current outbreak



# VIM-CRPA CASES

Lubbock Texas – as of October 2018



Month

# EPI AID- OCTOBER 2018

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- Identify common exposures in patients with VIM CRPA isolates through chart abstraction and interviews
- Describe regional epidemiology of VIM CRPA through laboratory data
- Perform infection control consultations at facilities with linkage to identified patients or health-care systems
- Long-term goal: Develop and implement a regional prevention strategy to limit the spread of VIM CRPA

# EPI AID RESULTS

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- 11 Facilities visited/7 ICARS completed
- No point source identified
- Environmental sampling – no reservoir identified
- PFG Patterns showed some similarities
- Point Prevalence Surveys – all negative
- Identified lapses in infection control – varied by facility – gaps included Hand hygiene, environmental cleaning, personal protection equipment, sink hygiene



# LUBBOCK REGIONAL PREVENTION STRATEGY

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## Be Prompt

Investigate new cases  
Perform contact screening

## Obtain Isolates

Submit clinical isolates to ARLN  
Conduct Active surveillance for  
CRPA

## Optimize Infection Prevention

## Transfer Form

Use inter facility notification form  
during patient transfer



# TRANSFER FORM

## Inter-Facility Infection Prevention Transfer Form

This form must be filled out for transfer to accepting facility with information communicated prior to or with transfer.  
 Please attach copies of latest culture reports with susceptibilities if available.

### Sending Healthcare Facility:

Patient/Resident Last Name	First Name	Date of Birth	Medical Record Number
Name of Sending Facility		Phone Number	Address
Sending Facility Contacts	NAME	PHONE	EMAIL
Case Manager/Admin/SW			
Infection Prevention			

### Personal Protective Equipment for Safe Patient Contact and Infection Prevention

Please check what is needed:

				
<input type="checkbox"/> Standard	<input type="checkbox"/> Gown	<input type="checkbox"/> Gloves	<input type="checkbox"/> Surgical (Droplet Mask)	<input type="checkbox"/> Fit-Tested N95

Does patient currently have an infection, colonization OR a history (in the last 12 months) of a positive culture of a multidrug-resistant organism (MDRO) or other organism of epidemiological significance?	History (Last 12 months) Check if YES	Current Check if YES
Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)		
Vancomycin-resistant <i>Enterococcus</i> (VRE)		
<i>Clostridium difficile</i>		
<i>Acinetobacter</i> , multidrug-resistant		
<i>E. coli</i> , <i>Klebsiella</i> , <i>Proteus</i> , etc. w/ Extended Spectrum $\beta$ -Lactamase (ESBL)		
Carbapenem-resistant Enterobacteriaceae (CRE)		
Carbapenem-resistant <i>Pseudomonas aeruginosa</i> (CRPA)		
Other:		

**Cultures pending:**

SYMPTOMS: Check any that **currently** apply:

<input type="checkbox"/> Cough/uncontrolled respiratory secretions <input type="checkbox"/> Incontinent of urine <input type="checkbox"/> Vomiting <input type="checkbox"/> Acute diarrhea or incontinent of stool	<input type="checkbox"/> Draining wounds <input type="checkbox"/> Other uncontained body fluid/drainage <input type="checkbox"/> Concerning rash (e.g. vesicular)	<input type="checkbox"/> None of the symptoms listed present
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Person completing form: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Role: \_\_\_\_\_



# 6 MONTH ASSESSMENT: MAY 2019

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- 9 ICARs completed –two additional facilities
  - Environmental Sampling completed at 3 facilities
  - Significant improvement in infection control practices observed
  - Admission screening implemented at acute care hospitals
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# DuPage County Health Department

Who are we?

- Communicable Disease and Epidemiology
  - Rashmi Chugh, MD, MPH - Medical Officer
  - Liz Murphy, MPH - Communicable Disease and Epidemiology Manager
  - Emily Murskyj, MPH - Epidemiologist



# DuPage County Health Department

## DuPage County Profile:

- 2010 census population of 916,924
- Race/ethnicity:
  - 77.9% White
  - 10.1% Asian
  - 4.6% Black
  - 13.3% Hispanic
- Healthcare facilities:
  - 6 acute care hospitals
  - 1 long-term acute care hospital
  - 40+ skilled nursing facilities



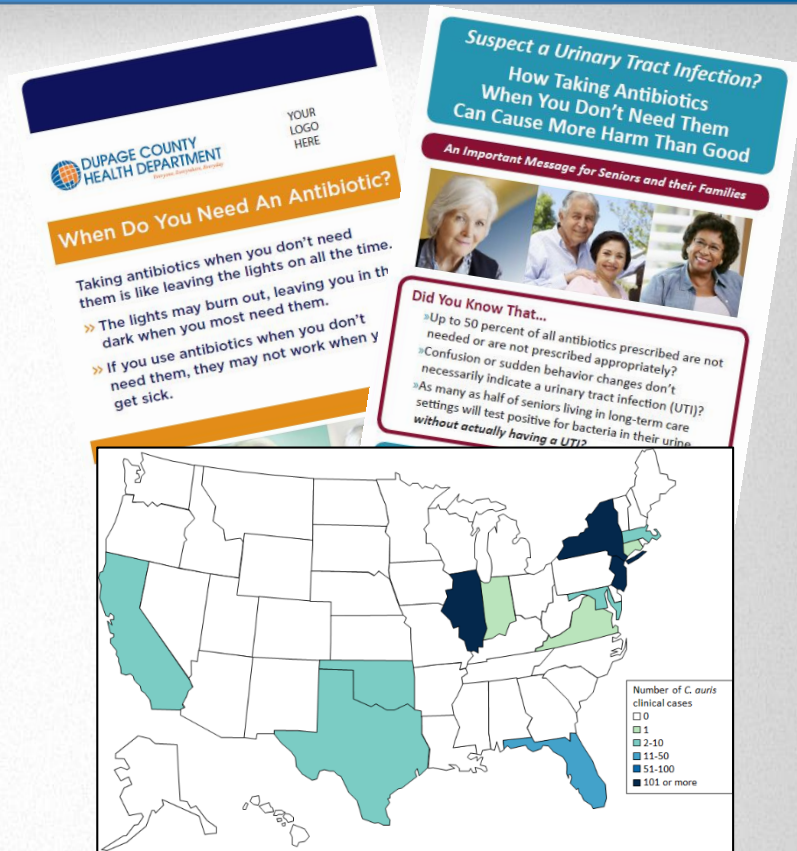
Worldatlas.com



# DuPage County Health Department

## HAI/AR Containment: Our Story

- Surveyed 11 LTCFs to assess infection control practices and capacity
- Promoting educational opportunities
  - IL AMS Summit
  - DuPage/Cook Technical Advisory Group
- Antimicrobial Stewardship
  - Partnered with a small number of facilities on their AMS programs, including assessments using the CDC Core Elements
  - Meeting and presenting to residents, families, and all levels of staff
  - Providing guidance on specific topics (e.g., asymptomatic bacteriuria)
- CRE and *C. auris*
  - Partnering with CDC, IDPH, and other local partners on response activities
  - 3 modified ICARs
  - 5 PPS completed
- Upcoming: expanding local ICAR capacity
  - Obtaining education and training on the ICAR tool from an infection prevention consultant with the goal of working collaboratively with our LTCFs to address identified gaps in a sustainable manner



U.S. Map: Clinical cases of *Candida auris* reported by U.S. states, as of April 30, 2019. Centers for Disease Control and Prevention

# Orange County, Florida Regional Containment Strategy

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National Association of County and City Health  
Officials (NACCHO) Containment Demo Site Webinar

June 19, 2019

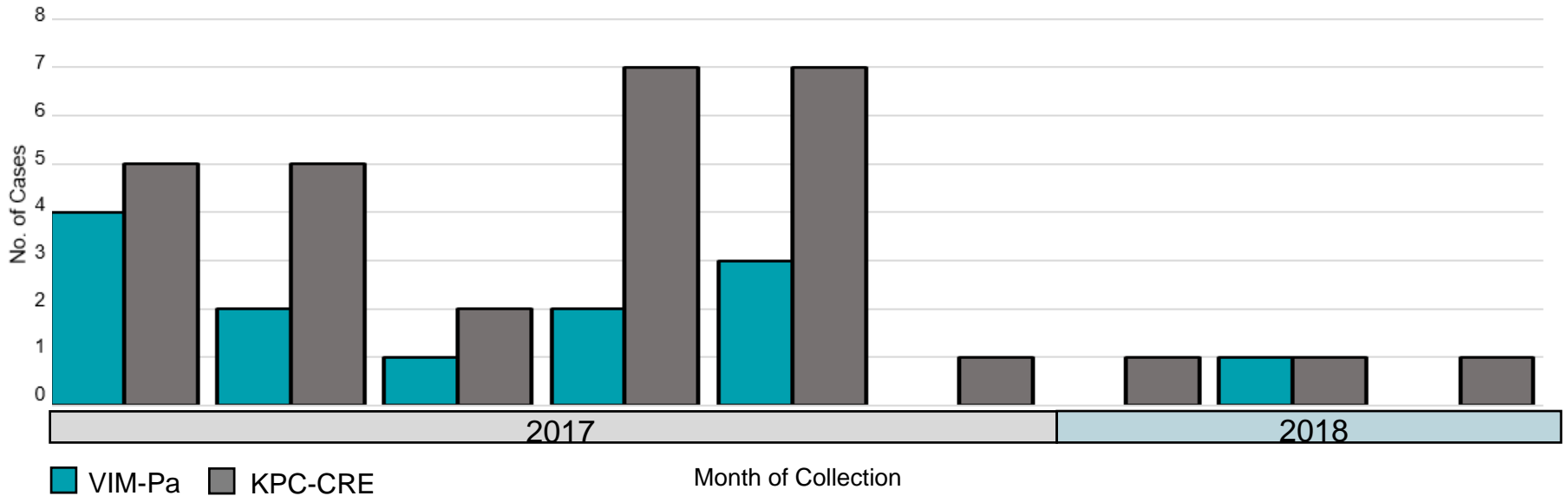


# Where is Orange County, FL



# Investigation Timeline

JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
Case identified Site visit D/C screen Lab surveillance PPS 1	ICAR (including HH and PPE audits) ADM screening PPS 2 PPS 3	Hurricane Irma response PPS 4	Environment observations Med device Reprocessing PPS 5 PPS 6	FDOH/CDC joint site visit Environment Sampling 1 PPS 7 PPS 8 PPS 9	Facility biweekly calls started PPS 10 PPS 11	Environment Sampling 2 PPS 12 PPS 13	Add'l HH and PPE audits PPS 14 PPS 15	Change from biweekly to monthly PPS PPS 16 PPS 17



# Cohort Study Results

Shared Medical Device(s)/Exposure	VIM-Pa			KPC-CRE		
	RR	95% CI	P-value	RR	95% CI	P-value
<b>Hemodialysis</b>	<b>2.25</b>	<b>1.16-4.35</b>	<b>0.03</b>	<b>2.38</b>	<b>1.21-4.71</b>	<b>0.01</b>
<b>Mechanical Ventilation</b>	<b>1.60</b>	<b>1.09-2.33</b>	<b>0.06</b>	<b>2.16</b>	<b>1.00-4.64</b>	<b>0.04</b>
<b>Tracheostomy</b>	1.36	1.10-1.68	0.08	2.27	0.84-6.19	0.08
<b>Speech Therapy</b>	0.72	0.10-4.99	0.74	1.84	0.28-12.02	0.5
<b>PICC Line</b>	1.47	0.05-4.35	0.48	<b>2.09</b>	<b>1.08-4.05</b>	<b>0.03</b>
<b>BIPAP/CPAP</b>	Undefined	--	--	1.21	0.48-3.07	0.69
<b>Occupational Therapy</b>	Undefined	--	--	Undefined	--	--
<b>Physical Therapy</b>	Undefined	--	--	Undefined	--	--

Note: Data were analyzed from patients admitted from July 05 to December 17, 2017. Abbreviations: RR= Relative Risk; CI=Confidence Interval

# Environmental Sampling Results



VIM+ *P. aeruginosa*



KPC+ *E. kobei*



KPC+ *E. cloacae*

# Environmental Sampling Results, Continued



KPC+ *E. asburiae*  
KPC+ *E. cloacae*



VIM+ *P. aeruginosa*



VIM+ *P. putida*



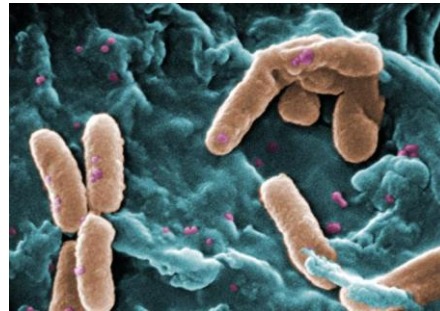
# Comprehensive Outbreak Summary

## Total Case Count

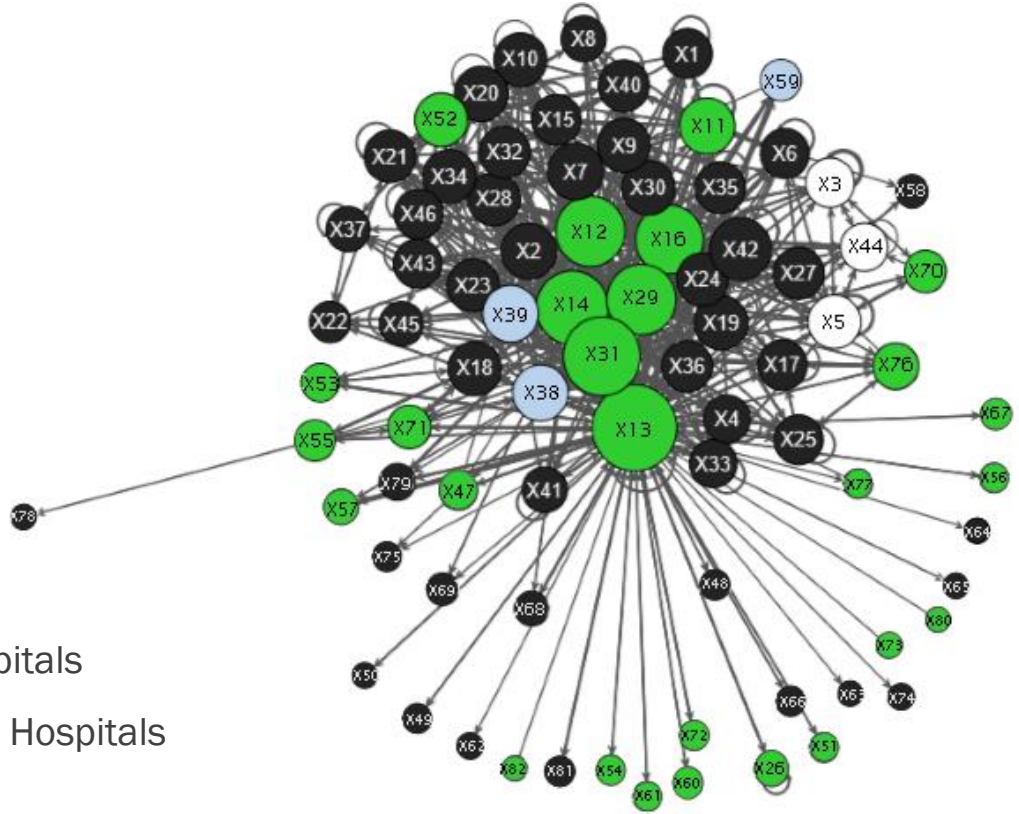
- VIM (n=9)
- VIM/KPC (n=6)
- KPC (n=44)

## Laboratory Totals

- Clinical isolates (n=260)
- Rectal screening
  - 30** Point-prevalence screenings (PPS) (n=1,160)
  - Admission screening (n=461)
  - Discharge screening (n=204)



# Central Florida Regional Response Efforts



- Nursing Homes
- Acute-Care Hospitals
- Post Acute-Care Hospitals
- Other

# Development of Guidance

- Factsheets
  - Health care personnel factsheet
  - Patients and family factsheet
- Patient assent
- Specimen collection



Available in English, Spanish,  
and Creole

Source: Rankin DA. An Outbreak of VIM-Producing *Pseudomonas aeruginosa* in a LTACH, Orange County FL, 2017. ARLN Quarterly Meeting, January 7, 2019.

# MDRO Fact Sheets

**Fact Sheet for Health Care Personnel:  
Multidrug-Resistant Organisms (MDRO)**

**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 Enterobacteriaceae	Multidrug-Resistant Acinetobacter	Multidrug-Resistant Pseudomonas aeruginosa
9,000 resistant infections*	7,300 resistant infections*	6,700 resistant infections*
600 deaths*	500 deaths*	440 deaths*
Urgent threat	Serious threat	Serious threat

\*Estimated number of infections or deaths per year


**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)
- Oxacillinase-48-type carbapenemases (OXA-48)
- New Delhi metallo- $\beta$ -lactamase (NDM)
- Impenemase (IMP) metallo- $\beta$ -lactamase
- Verona integron-encoded metallo- $\beta$ -lactamase (VIM)

**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 – bed rails, bedside tables, IV poles, catheters

**How can MDRO transmission be prevented?**  
Perform hand hygiene and wear appropriate personal protective equipment  
Keep patients with an MDRO in a single room; cohort patients with the same MDRO if a single room is not available  
Ensure effective cleaning of patient rooms and medical equipment  
Promote antimicrobial stewardship

If you have additional questions, please contact the Florida Department of Health Health Care-Associated Infection Prevention Program at: (e) HAI\_Program@FLHealth.gov (p) 850-766-0764




**Patient and Family Education:  
Multidrug-Resistant Organisms (MDRO)**

**What is an MDRO?**  
A germ that is not killed by the drugs meant to treat them

**How do MDROs spread?**

- Hands of health care workers, visitors, or family members
- Body fluids – drainage from wounds, urine, stool, saliva, blood
- Dirty objects or surfaces – bed rails, bedside tables, medical equipment

**How can the spread of MDROs be prevented?**  
Washing hands after touching body fluids or dirty surfaces




Use hand sanitizer (ABHR) and rub hands together until dry OR

**Stopping the spread of germs**  
Patients may be placed on contact precautions to control the spread of germs. Medical staff will advise if a patient is on any type of precautions and visitors will be instructed to wear protective gear such as gowns, gloves, or masks.

**Cleaning the environment**  
Keep the patient's room and everything around the patient clean and tidy. Medical staff will clean the patient's room daily using an approved product.

If you have additional questions, please contact the Florida Department of Health Health Care-Associated Infection Prevention Program at: (e) HAI\_Program@FLHealth.gov (p) 850-766-0764



**Patient and Family Education:  
Screening Tests**

**What is a screening test and why is it being done?**  
A screening test is used to see if patients have a certain germ. In this case, a patient with a multidrug-resistant organism (MDRO) was found in your region. An MDRO is a germ that is not killed by antibiotics. The Florida Department of Health has requested screening patients at this facility to make sure this germ has not spread.

**How is the screening test taken?**  
A rectal swab is used for the screening test. The patient's clinical care team will tell the patient the steps before collecting the screening test.

**Will it hurt?**  
No, it is a painless and non-invasive test. A person from the patient's clinical care team will collect the test.

**When will the test results come back?**  
Medical staff will tell the patient their results within 2-10 days after screening.

**What happens if the test result is positive?**  
If the patient has an MDRO, medical staff will tell the patient and may need to change medical treatment. To stop the spread to others, the patient will be put on contact precautions, which is a private room, and visitors may be told to wear gloves, gowns, or masks.

**How long will the patient have an MDRO?**  
It is not known how long patients will have an MDRO. Make sure to tell medical staff that the patient has a history of an MDRO each time the patient goes to a health care facility.

If you have additional questions, please contact the Florida Department of Health Health Care-Associated Infection Prevention Program at: (e) HAI\_Program@FLHealth.gov (p) 850-766-0764





# Patient Assent Documents

## AUTHORIZATION AND CONSENT FOR SCREENING OF MULTIDRUG-RESISTANT ORGANISMS

Recently, the Florida Department of Health (Florida Health) has found patients in our health care community who carry a rare germ that is not killed by antibiotics called a multidrug-resistant organism or "MDRO" for short. (Or insert specific suspected organisms [i.e., verona integron-encoded metallo-β-lactamase-producing *Pseudomonas aeruginosa* or "VIM"]). To make sure this germ does not spread, we are working with Florida Health to provide free testing to patients to make sure that they are not carrying it.

The purpose of this test and the procedure have been explained to me. By signing this form, I hereby voluntarily consent to the screening, and authorize [FACILITY NAME] to perform this test.

I understand that I have the right to refuse the screening. I further understand that I have the right to cancel this authorization and consent at any time prior to the performance of the screening.

### Patient / Legally Authorized Person (L.A.P.) Signature

\_\_\_\_\_  
Date      Time      Patient Signature      Print Name

\_\_\_\_\_  
Legally Authorized Person Signature      Print Name      Relationship

\_\_\_\_\_  
Witness to Signature or Phone Consent      Print Name

\_\_\_\_\_  
Qualified Staff / Interpreter Signature      OR

- Phone  
 Video

(Check) \_\_\_\_\_  
Print Qualified Staff / Interpreter Name      ID Number      Language Interpreted

## Florida Department of Health (Florida Health) Carbapenemase- Producing Organism(s) Template Script

Hi, my name is [INSERT NAME] and I work for [INSERT HEALTHCARE FACILITY NAME]. I'm here to talk to you about some screening the [INSERT HEALTHCARE FACILITY NAME] is doing to check for a rare germ. Recently, the Florida Department of Health, or "Florida Health" for short, has found patients in our health care community who carry a rare germ that is not killed by antibiotics called a multidrug-resistant organism or "MDRO" for short. (Or insert specific suspected organisms [i.e., Verona integron-encoded metallo-β-lactamase-producing *Pseudomonas aeruginosa* or "VIM"]).

We are screening patients for this germ because some people can carry this germ without knowing it. This is called colonization and these germs can be unknowingly spread to others in health care facilities. To make sure this germ does not spread, we are working with Florida Health to screen patients to make sure that they are not carrying it.

Conducting this test is completely voluntary and you can choose not to, but we and Florida Health recommend you get the test so that we may provide you with the most effective care.

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. If you're not comfortable with us doing this, you can use the swab yourself to gently wipe a few times around your anus. The downside to swabbing yourself is that it may decrease our ability to find the germ than if you let a health care professional do it.

The swab will be sent to a lab to test for the germ, 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 as confidential medical information.

Do you have any questions? [pause for questions]

Is it OK if we conduct the test?

Version 1.0 | February 2019

Florida  
HEALTH

# Specimen Collection Guidance

## Multidrug-Resistant Organism Point-Prevalence Survey Guidance:

### Specimen Collection and Shipping Procedures

#### PURPOSE

This guideline will aid in collecting and shipping specimens collected with Cepheid Swabs for multidrug-resistant organism colonization screening. To ensure we are obtaining accurate results, proper sampling and handling is critical. Please follow the processes provided below to ensure accuracy.

#### LOGISTICS

The Florida Department of Health (Florida Health) coordinates facility point-prevalence screenings prior to the date of collection. For any additional questions or concerns, please contact your Florida Health designee.

#### SPECIMEN COLLECTION

##### EQUIPMENT AND MATERIALS NEEDED FOR COLLECTION:

1. Appropriate personal protective equipment (PPE) as indicated by the patient's clinical care team (e.g., gloves, gowns, masks).



2. Specimen collection and transport system (e.g., dual swab collection device and individual biohazard bag).



#### PROCEDURE

1. The individual/proxy **MUST** provide informed consent and understand the collection procedure of a rectal swab.
2. Before beginning, perform hand hygiene and wear appropriate PPE, as indicated by the patient's clinical care team (e.g., gloves, gowns, masks).
3. Open the outer plastic packaging on the end that says "PEEL HERE", **OPPOSITE END** from the cotton tips.
4. While labeling, leave the dual swab enclosed in the plastic packaging to prevent contamination. Carefully remove the tube from the plastic packaging and label the tube (see LABELING INSTRUCTIONS section).
5. Pull the dual swab from the plastic packaging, being careful not to touch the cotton tips with your hands or on any other surfaces.
6. The dual swab may be moistened with **STERILE** saline or transport medium only. Do **NOT** use tap water or lubricating gel.

Version 2.0 | Revised February, 2019

Florida  
HEALTH  
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# Questions?

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Please enter your  
questions or comments in to the  
Q&A box

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# Thank you for joining today's webinar!

Contact us with questions

Email: [infectiousdiseases@naccho.org](mailto:infectiousdiseases@naccho.org)