



# Welcome

Office for State, Tribal, Local and Territorial Support  
presents

*CDC Vital Signs* Town Hall

## **CDC's Containment Strategy for Unusual Antibiotic Resistance**

April 10, 2018  
2:00–3:00 PM (ET)

# Agenda

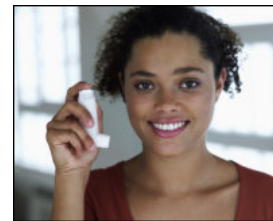
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Time	Agenda Item	Speaker(s)
2:00 pm	Welcome & Introduction	<b>Matthew Penn, JD, MLIS</b> Director, Office of Public Health Law Services, Office for State, Tribal, Local and Territorial Support
2:05 pm	Vital Signs Overview	<b>Arjun Srinivasan, MD, (Capt, USPHS)</b> Associate Director for Healthcare-Associated Infection Prevention programs, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention
2:10 pm	Presentations	<b>Marion A. Kainer, MD, MPH, FRACP, FSHEA</b> Director, Healthcare Associated Infections and Antimicrobial Resistance Program, Tennessee Department of Health  <b>Stephanie R. Black, MD, MSc</b> Medical Director, Communicable Disease Program, Chicago Department of Public Health
2:35 pm	Q&A and Discussion	<b>Matthew Penn, JD, MLIS</b>
2:55 pm	Wrap-up	
3:00 pm	End of Call	

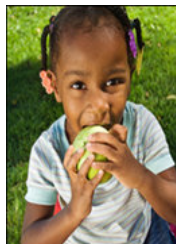


# CDC VitalSigns™

TOWN HALL TELECONFERENCE



to support STLT efforts and build momentum around the monthly release of CDC *Vital Signs*



# CDC Vital Signs: Containing Unusual Resistance

Arjun Srinivasan, MD (CAPT, USPHS)  
Associate Director, Healthcare-Associated  
Infection Prevention Programs  
Division of Healthcare Quality Promotion

April 10, 2018

Centers for Disease Control and Prevention  
**MMWR**  
Early Release / Vol. 67  
Morbidity and Mortality Weekly Report  
April 3, 2018

**Vital Signs: Containment of Novel Multiple Antibiotic Resistance Mechanisms — United States**

Kan Raouf Woodhouse, MCF, Marya Spalding Wilson, PhD, Lindsay M. Justice, V, MD, MPH, Sarah Malla, PhD, Rachel B. Stevens, PhD, Paul Nancy Weiss, Akshay Shrivastava, MAJ, Corinn Mahon, MPH, Alexander J. Ayon-Sotomayor, MCF, Michael Crisp, MD

**Vital Signs<sup>®</sup>**  
APR 3, 2018

**221** New nationwide testing in 2017 uncovered 221 instances of unusual resistance genes in "nightmare bacteria."

**1 in 10** 11% of screening tests, in people with no symptoms, found a hard-to-treat germ that spreads easily.

**1st** The Containment Strategy keeps new threats from spreading. Launch at the first sign of unusual resistance.

**Containing Unusual Resistance**  
Early, aggressive action can prevent spread


More than 23,000 Americans die each year from infections caused by germs resistant to antibiotics. While antibiotic resistance (AR) threats vary nationwide, AR has been found in every state. And unusual resistance germs, which are resistant to all or most antibiotics tested and are uncommon or carry special resistance genes, are constantly developing and spreading. Lab tests uncovered unusual resistance more than 200 times in 2017 in "nightmare bacteria" alone. With new resources nationwide, early and aggressive action—when even a single case is found—can keep germs with unusual resistance from spreading in health care facilities and causing hard-to-treat or even untreatable infections. For example, CDC estimates show that this aggressive approach could prevent 1,600 cases of CRE in one state over three years. Health departments can lead the Containment Strategy and act swiftly with health care facilities and CDC at the first sign of unusual resistance.

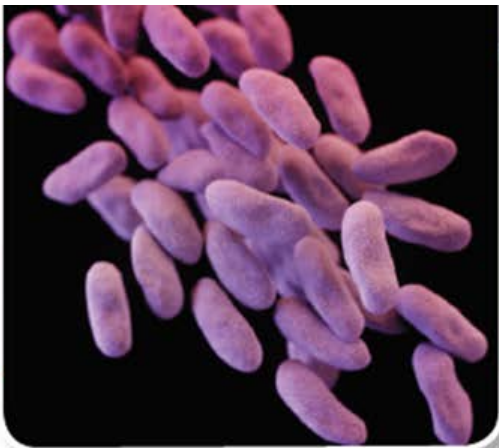
**State and local health departments can:**

- Make sure all health care facilities know what state and local lab support is available and what isolates (pure samples of a germ) to send for testing. Develop a plan to respond rapidly to unusual genes and germs when they first occur.
- Assess the quality and consistency of infection control in health care facilities across the state. Help improve practices.
- Coordinate with affected health care facilities, the new AR Lab Network regional labs, and CDC for every case of unusual resistance. Investigations should include onsite infection control assessments and colonization screenings for people who might have been exposed. They could spread it to others. Continue until spread is controlled.
- Provide timely lab results and recommendations to affected health care facilities and providers. If the patient came from or was transferred to another facility, alert that facility.

**Want to learn more?**  
Visit [www.cdc.gov/vitalsigns/containing-unusual-resistance](http://www.cdc.gov/vitalsigns/containing-unusual-resistance)

\*CRE is carbapenem-resistant Enterobacteriaceae.





PROBLEM:

**Antibiotic-resistant germs can spread like wildfire.**

- Once antibiotic resistance spreads, it is harder to control.
- Finding and responding to unusual resistance early, before it becomes common, can help stop its spread and protect people.
- New or rare types of antibiotic resistance can be easier to contain when found rapidly—like a spark or campfire.

# Main Points

- “Unusual” types of antibiotic resistance (AR) are widespread across the U.S.
- CDC’s Containment Strategy is an aggressive approach to stop the spread of “unusual” AR.
- For carbapenem-resistant Enterobacteriaceae (CRE) alone, CDC estimates show that the Containment Strategy would reduce infections by 76%.

## Antibiotic Resistance Can Spread Like Wildfire



From people with and without symptoms of infection



Between facilities



Between germs

**STOP SPREAD AT THE FIRST SIGN  
OF UNUSUAL RESISTANCE**

Vital<sup>CDC</sup>signs™



# First Results from AR Lab Network

- *MMWR* report summarized the experience over the first several months of improved lab testing by CDC's Antibiotic Resistance Lab Network.
- Expanded laboratory testing capacity in all 50 states, 5 cities, and Puerto Rico for rapid identification. Regional labs support colonization testing.
- Health departments and health care facilities can work together to aggressively respond to protect patients from these threats and keep infections from spreading within and between facilities.

221

New nationwide testing in 2017 uncovered 221 instances of unusual resistance genes in "nightmare bacteria."

1 in 10

11% of screening tests, in people with no symptoms, found a hard-to-treat germ that spreads easily.

1st

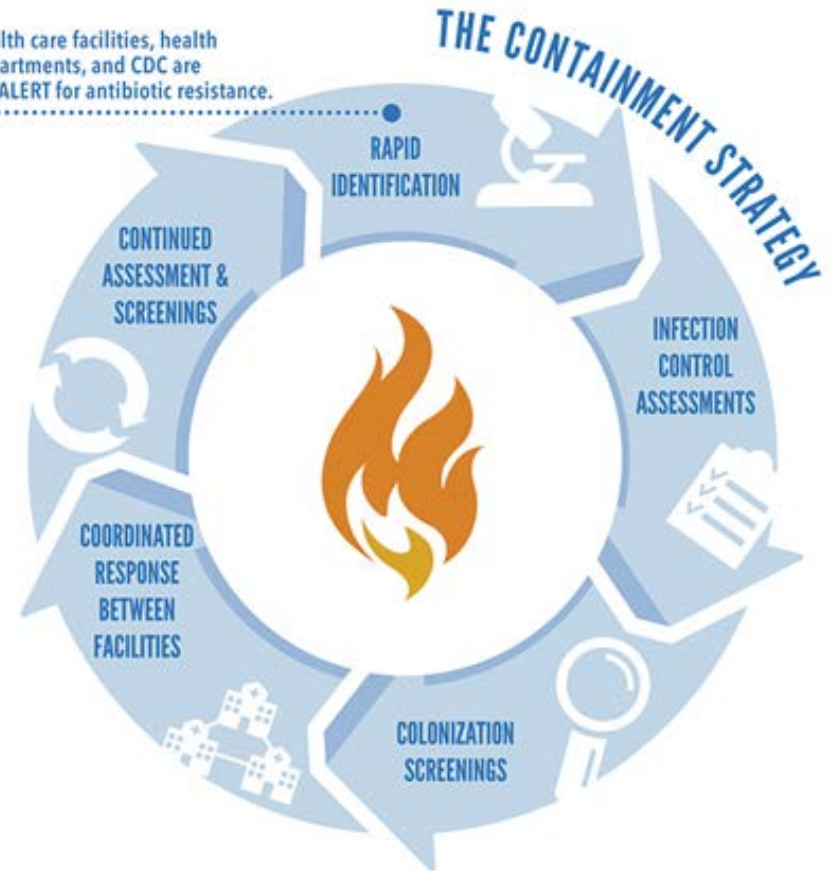
The Containment Strategy keeps new threats from spreading. Launch at the first sign of unusual resistance.

# The Containment Strategy



Health care facilities, health departments, and CDC are ON ALERT for antibiotic resistance.

- Rapid detection in health care facilities
- Infection control assessments led by the health department
- Colonization screenings, when needed
- Coordination between healthcare facilities
- Continued vigilance until spread is controlled





# Containment Strategy: Be on guard to contain the first spark.

## THE NATION CAN IDENTIFY AND RESPOND TO UNUSUAL ANTIBIOTIC RESISTANCE



In addition to leading the Containment Strategy, CDC is working with other Federal agencies to combat antibiotic resistance nationwide by preventing infections and improving antibiotic use. CDC's activities are supported by ongoing resources from Congress.

**7**  
AR Lab Network  
Regional Labs

**56**  
AR Lab  
Network State  
and Local Labs

**500+**  
Local Staff to  
Combat AR

**35**  
Advanced  
Programs to  
Prevent Spread &  
Improve Antibiotic  
Use

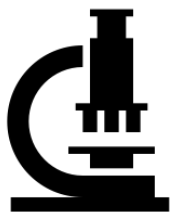
**49**  
Projects Exploring  
Innovative Detection  
& Prevention



## Rapid Containment Response in Tennessee

**Marion A. Kainer MD, MPH, FRACP, FSHEA**  
Director, Healthcare Associated Infections and  
Antimicrobial Resistance (HAI/AR) Program  
[Hai.health@tn.gov](mailto:Hai.health@tn.gov)

# Day 1: Identification and Next Steps



**NDM +  
*Klebsiella pneumoniae*  
(CP-CRE)  
30 minutes:**



**“Dr. X: we have identified NDM in one of your patients. This is a Tier 2 organism. We will be following CDC’s guidance document. Would like to have conference call to discuss.”**



**2 hours after identification of NDM:**



**Conference Call**



**Joint Risk Assessment**

	Tier 1	Tier 2	Tier 3
Infection Control Assessment	Green	Green	Green
Laboratory lookback	Green	Green	Green
Prospective surveillance	Green	Green	Green
Healthcare roommate screening	Green	Green	Green
Broader healthcare contact screening	Green	Yellow	Red
Household contact screening	Green	Yellow	Red
Environmental sampling	Green	Yellow	Red
Healthcare personnel screening	Green	Yellow	Red

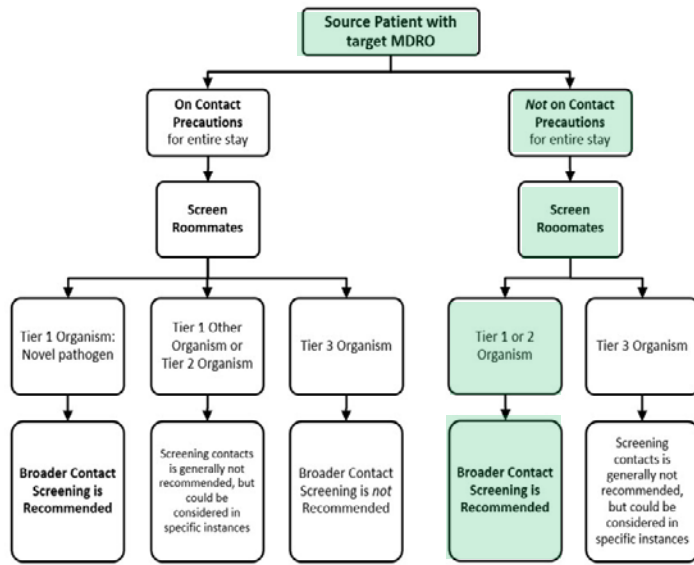


# Day 1: Joint Risk Assessment



Hospital Day 20

# Recommendations: Based on CDC's Containment Guidance



	Tier 1	Tier 2	Tier 3
Infection Control Assessment	Yes	No	Yes
Lab Lookback	Yes	No	Yes
Prospective Surveillance	Yes	No	Yes
Healthcare Roommate screening	Yes	No	Yes
Broader Healthcare Contact Screening	Yes	Sometimes	No
Household Contact Screening	Yes	Sometimes	No
Environmental Sampling	Sometimes	No	No
Healthcare Personnel Screening	Sometimes	No	No

Yes  Sometimes  No 

# Day 1 continued; Day 2: Collect Swabs



Hospital Leadership



Logistics



- Confirm best address for shipment of swabs
- Point of contact for swabs
- Email: Document packet, including instructions, FAQ, sample assent, specimen requisition form

*NextDay...*



Assent

Frequently Asked Questions (FAQs) and Example Verbal Scripts to Request Assent for Multidrug-Resistant Organism (MDRO) Screening



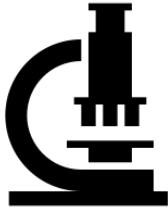
Collect Swabs



Regional Laboratory

# Day 3: Regional Laboratory: Testing

*NextDay...*



**12/12 swabs negative**

- 11 patients on unit >3 days
- 5 patients on unit before contact precautions initiated



**Dr. X notified of results**

**< 48 hours after initial NDM notification**

# Keys to Rapid Response

- **Advance protocol knowledge**

- **Effective communications:**

- Healthcare staff
- Hospital leadership
- Laboratory
- Health department

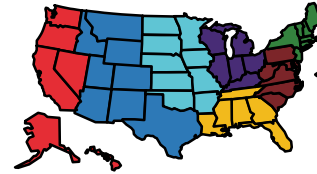


- **Logistics**

- **ARLabNetwork:**

- Report out results within 2 working days of specimen receipt

- **CP-CRE reportable, isolate submission required in Tennessee**





# Advance Protocol Knowledge

- **Multi-disciplinary Advisory Group on Healthcare Associated Infections (HAI)**
- **Statewide monthly call with Infection Preventionists**
- **Association for Professionals in Infection Control (APIC) chapter meetings**
- **Emerging Infection Program (EIP) Scientific Day**
- **Monthly statewide webinar for Public Health (PH) staff**
- **Regional Tabletop Containment Exercises x 8**
- **Laboratory “Roadshow”**

## *Planned:*

- **Chief Medical Officer (CMO) Society meeting (to raise awareness among senior healthcare leadership)**

# Early Identification: Timely Isolate Submission

- Isolate submission: required in Tennessee (TN)
- **Prioritization:**
  - CRE isolates from patients hospitalized outside U.S. in last 6 months
  - Isolates from laboratories serving high risk patient populations



**CP-CRE is National Notifiable  
(effective: January 2018)**

**Proposal to add *Candida auris***

17-ID-04

Committee: Infectious Disease

Title: Public Health Reporting and National Notification of Carbapenemase Producing Carbapenem-Resistant Enterobacteriaceae (CP-CRE) for *E. coli*, *Klebsiella* spp. and *Enterobacter* spp.

# ARLN Admission Screening



CDCHAN 00341-02-14-2013  
Distributed Feb. 14, 2013



- Patients with hospitalization outside the U.S. in past 6 months
  - Screen patient
  - Place in Contact Precautions pending screening result
- ARLN now can process these admission colonization swabs

## *How to operationalize?*

- Protocol for direct admissions
- Travel question (time interval)



Day 1

# Potential Challenges to Rapid Containment

- **Laboratories may be located out of jurisdiction**

- Long term acute care hospitals (LTACHs)
- Ventilator skilled nursing facilities (vSNF)
- Dialysis facilities
- Skilled nursing facilities (SNF)
- May not report and/or submit isolates



**Delay in recognizing threat**

- **Name of healthcare facility where specimen was collected may not be noted on isolate/specimen submission form**

- Centralized laboratory / Referred out



**Delay in initiating containment response**

# Acknowledgements

- **Laboratory staff:**
  - Hospital, State PH Lab/ Regional Lab for the South East Region
- **Hospital staff:**
  - Hospital epidemiologist, infection preventionists, nurses, hospital leadership
- **Public health (PH) staff:**
  - HAI/AR team, regional/local PH

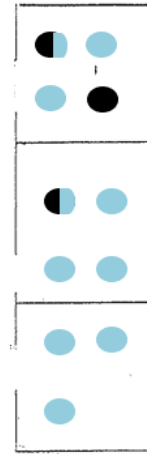


**Epidemiology and Laboratory Capacity Cooperative Agreement**



**TECHNICAL SUPPORT**

**Epidemiology staff  
Laboratory staff**



The room where it  
happened...  
VIM and *C. auris* in Chicago

**Stephanie R. Black, MD, MSc**  
**Medical Director, Communicable Disease Program**  
**April 10, 2018**  
**CDC Vital Signs Town Hall**  
**[stephanie.black@cityofchicago.org](mailto:stephanie.black@cityofchicago.org)**

# Collaboration

## Chicago Prevention and Intervention Epicenters



COOK COUNTY HEALTH  
& HOSPITALS SYSTEM

CC+HHS

PROTECT and REALM



# Outbreak Notification

- Nov 2016 point prevalence survey
- Chicago skilled nursing facility with ventilated residents (vSNF A)
- 20 cases of VIM-producing *Pseudomonas aeruginosa* colonization
- All rectal screening cultures

	VIM-PA	Total Swabbed	% Positive
Skilled nursing floor	4	56	7%
Ventilated/Trached floor	16	62	26%
Total	20	118	17%

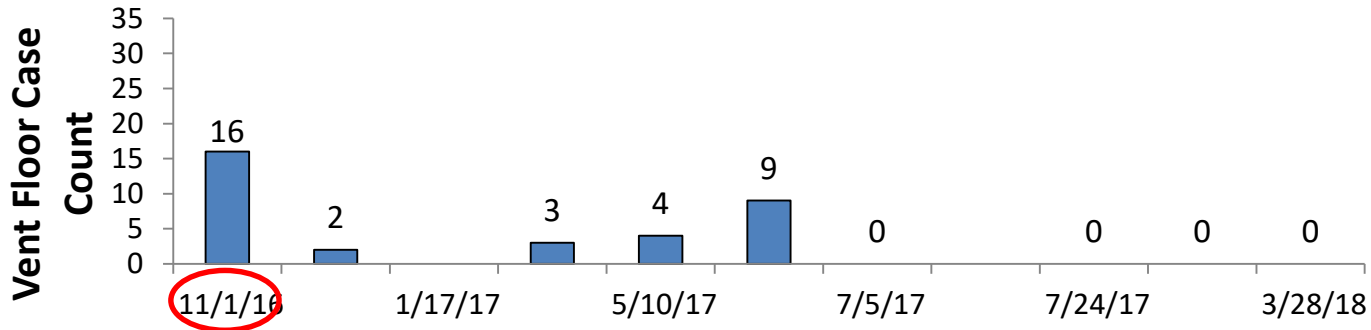
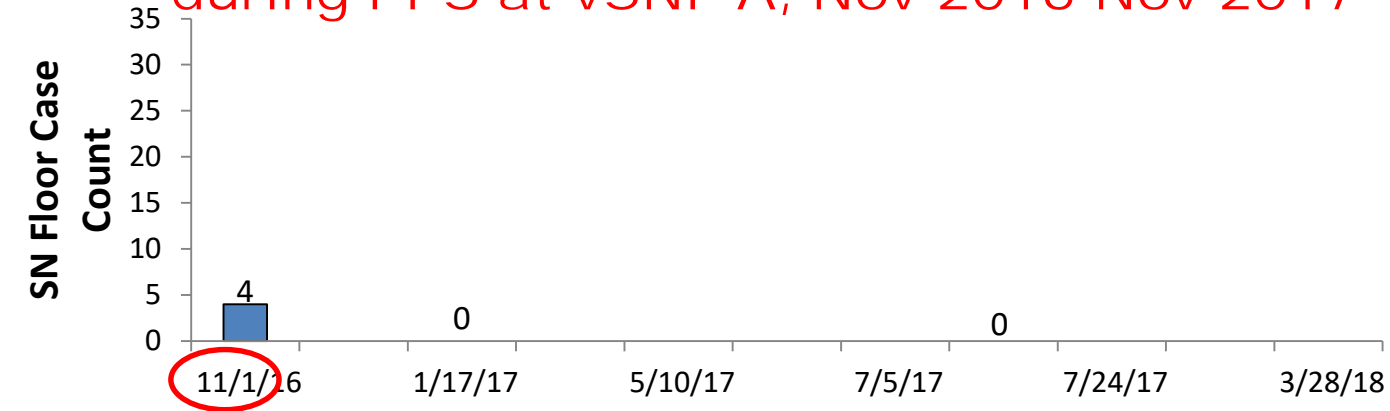


# Interventions

- Recommendations:
  - CHG bathing on ventilator unit
  - Improved environmental cleaning practices
  - APIC follow up hand hygiene and bathing practices
  - Cohorting
- Chicago Dept Public Health/Illinois Dept Public Health actions:
  - Carbapenemase-producing Pseudomonas added to XDRO Registry
  - Environmental sampling
  - Follow up point-prevalence surveys

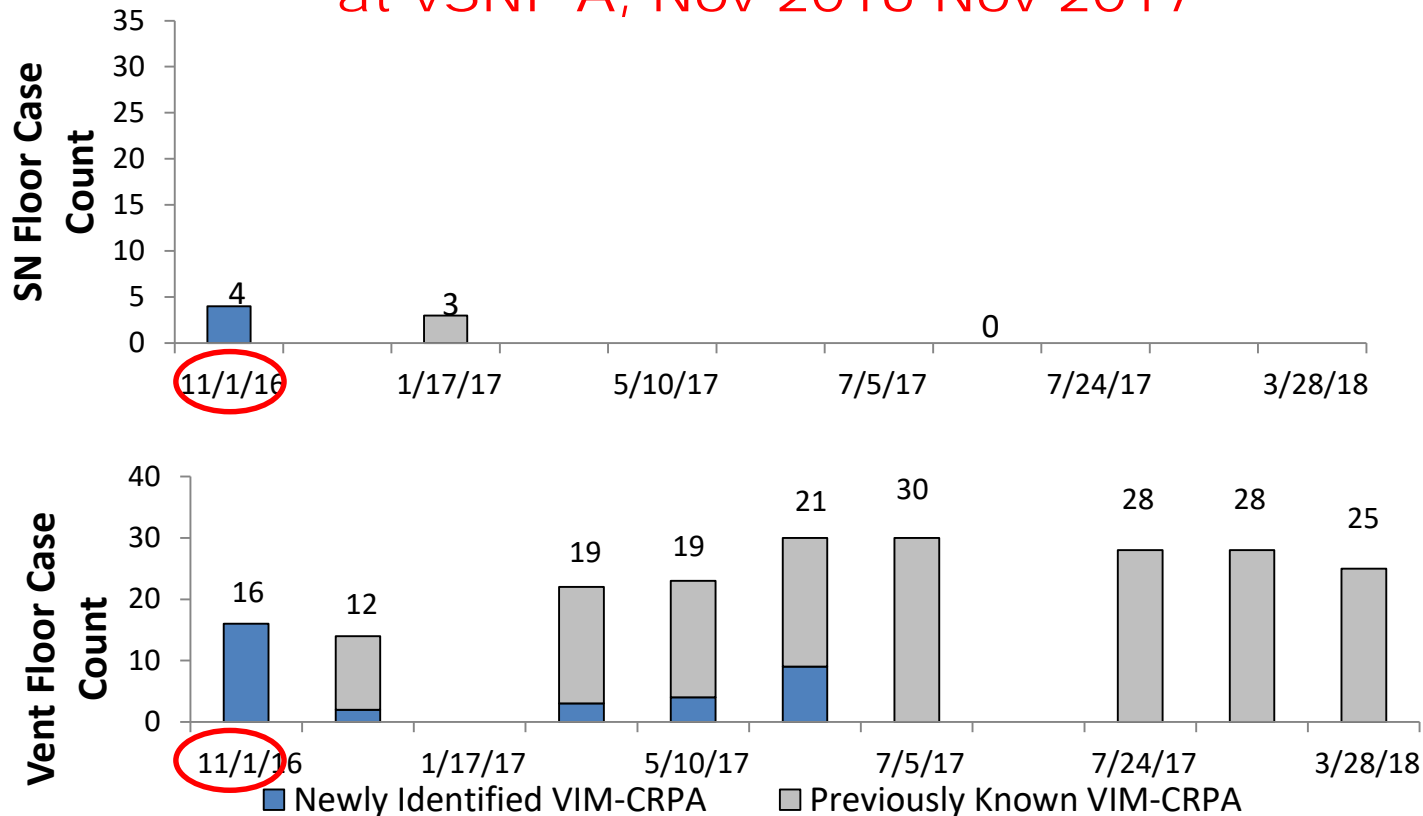


## Number of newly identified VIM-CRPA during PPS at vSNF A, Nov 2016-Nov 2017



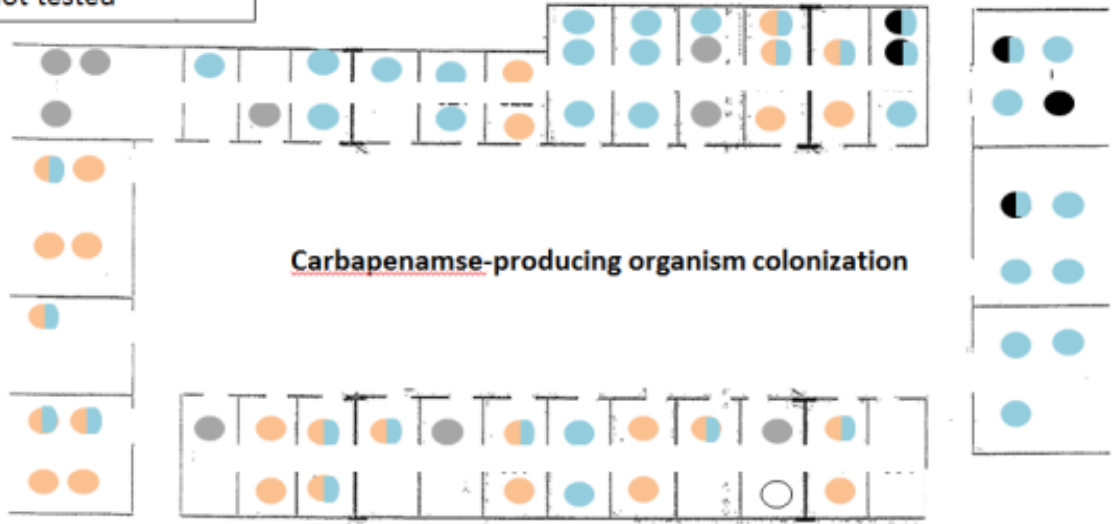
■ Newly Identified VIM-CRPA

## Total number of VIM-CRPA on days of PPS at vSNF A, Nov 2016-Nov 2017

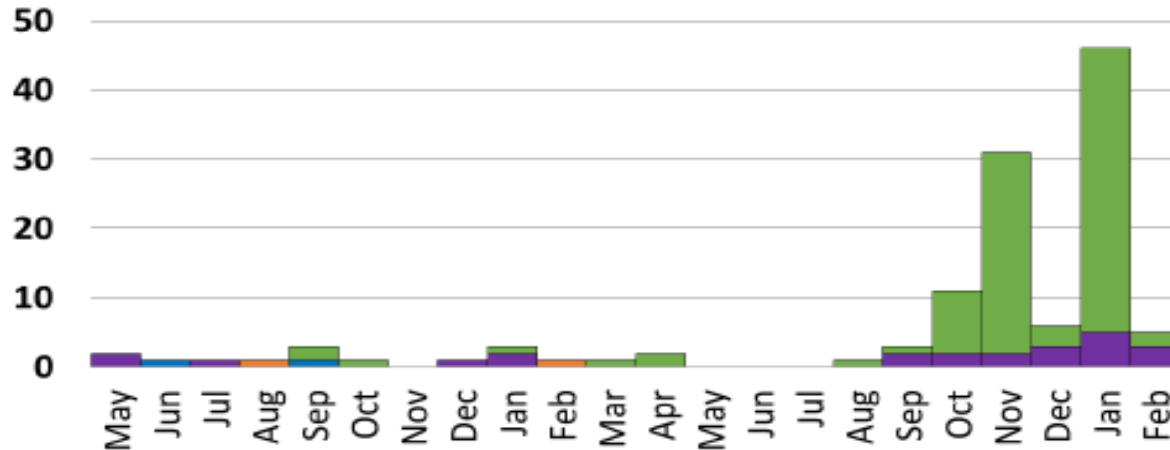


# vSNF A Ventilator/Trach Floor July 2017 PPS Results

- VIM-PA
- NDM
- KPC or CRE with unknown mechanism
- CRE & CRPA negative
- Not tested



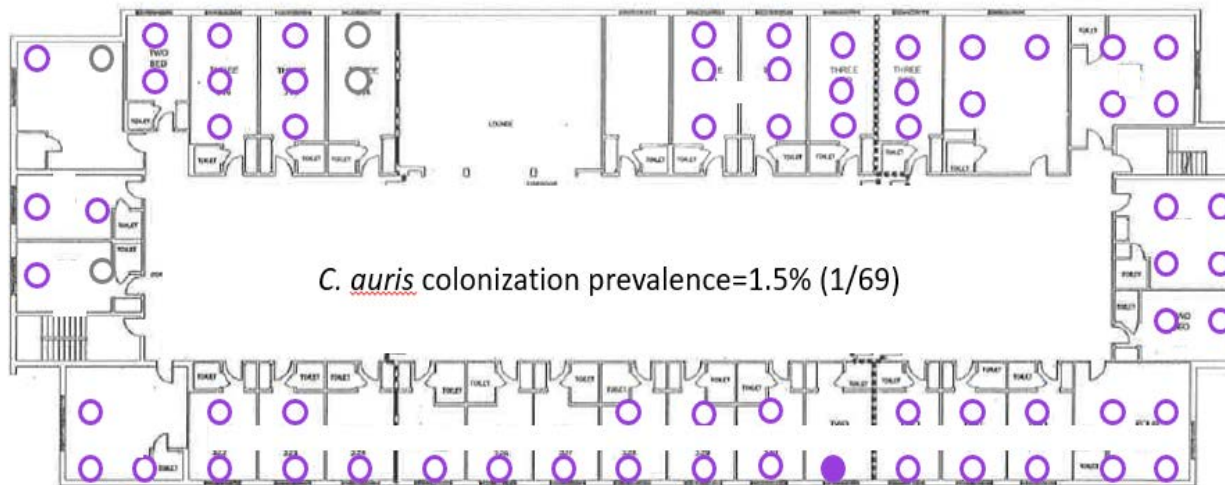
## *C. auris* cases (n=120) – Illinois, May 2016-March 8, 2018



■ Clinical (n=23) ■ Probable (n=2) ■ Suspect (n=2) ■ Screening (n=93)

- **Confirmed:** Laboratory evidence of *C. auris* from clinical culture.
- **Probable:** Laboratory evidence of *C. haemulonii* from clinical culture & epidemiologic linkage to confirmed case.
- **Suspect:** Laboratory evidence of *C. haemulonii* from clinical culture & no epi link.
- **Screening:** Laboratory evidence of *C. auris* from screening or surveillance culture.

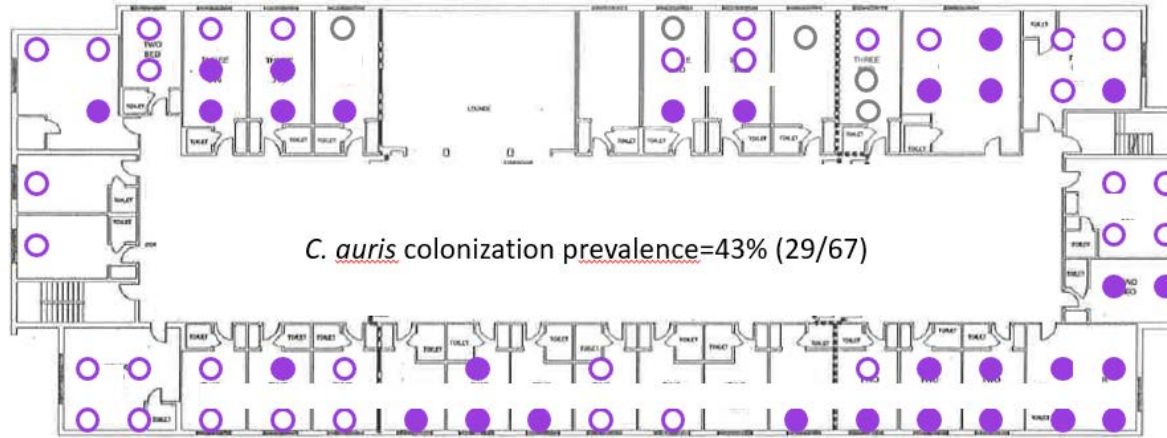
## **vSNF B Ventilator/Trach Floor March 2017 *C. auris* PPS Results**



*C. auris* colonization prevalence=1.5% (1/69)

- *C. auris* positive
- Screened negative for *C. auris*
- Not tested for *C. auris* (refused or not in room)

## vSNF B Ventilator/Trach Floor January 2018 *C. auris* PPS Results



- *C. auris* positive
- Screened negative for *C. auris*
- Not tested for *C. auris* (refused or not in room)

## **vSNF B Ventilator/Trach Floor** **January 2018 *C. auris* and CPO PPS Results**



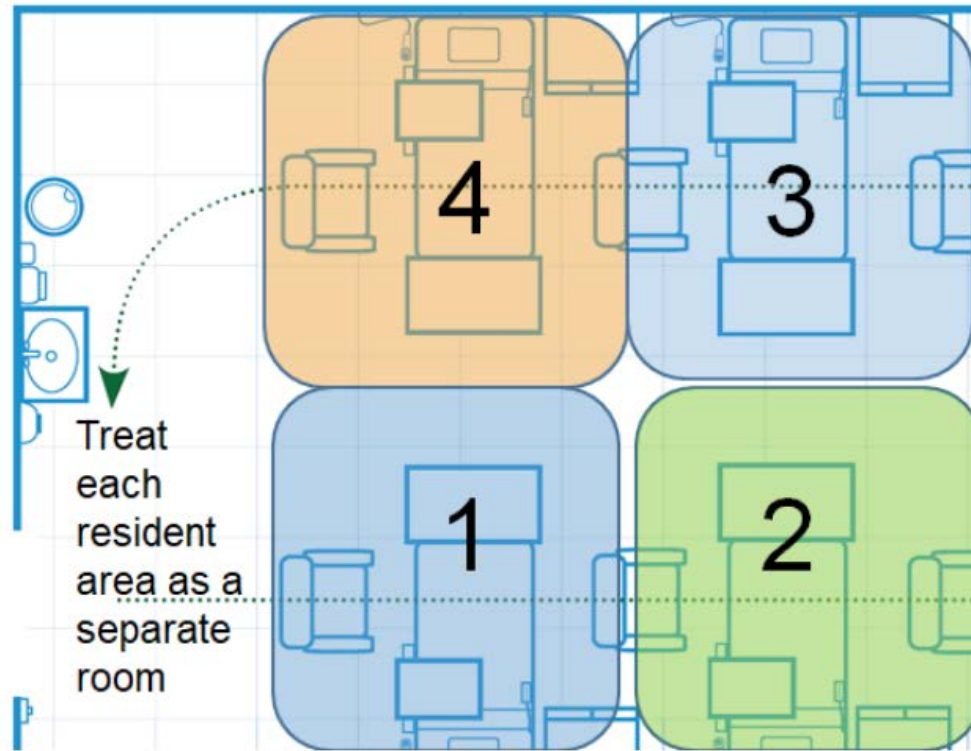
- *C. auris*
- *C. auris* and KPC
- KPC or CRE with unknown mechanism of resistance
- *C. auris*, KPC, and NDM
- *C. auris*, VIM-CRPA, and KPC
- *C. auris* and KPC-CRPA
- Screened negative for *C. auris*, but not tested for CRE
- Screened negative for CRE and *C. auris*



# vSNF\* B Outbreak Response Strategy

- Intervention bundle
  - Surveillance and XDRO registry access
  - Contact precautions and cohorting
  - Daily chlorhexidine gluconate bathing
  - Accessible hand hygiene
  - Environmental cleaning
- Cohorting consultation
- Set expectations

# How to clean a quad room



# Summary

- Monitor implementation and provide ongoing support and technical assistance
- Health alert to local facilities to place SNF\* residents who are vented/trached on contact precautions and clean room with sporicidal agent
- Notify patient sharing networks
- Continued point prevalence surveys
- Environmental sampling post cleaning

# Acknowledgements

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Carl Froilan

Mary Hayden

Michael Lin

William Trick

Robert Weinstein

## **vSNF A and B staff**

# CDC Vital Signs Electronic Media Resources

- Become a fan on Facebook  
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- Follow us on Twitter  
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- Vital Signs interactive buttons and banners  
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# Thank You



For more information, please contact Centers for Disease Control and Prevention.

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Email: [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov)  
Web: [www.cdc.gov](http://www.cdc.gov)

The findings and conclusions in this presentation are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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*Vital Signs* Town Hall Teleconference

**May 8, 2018**

**2:00–3:00 PM (ET)**