Florida Department of Health
Response to a Novel Organism

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Health Care-Associated Infection Prevention Program
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Objectives

- Introduce multidrug-resistant organisms (MDRO), specifically those with novel resistance patterns that have been investigated in Florida
- Discuss strategies used to contain novel or targeted MDROs and how the outbreak investigation occurred in the state
Background

- Multidrug-resistant strains of *Pseudomonas aeruginosa* (MDRPA) is a global concern\(^1\)
  - Increased morbidity and mortality\(^1\)
  - Outbreaks of MDRPA are mostly caused by MDRPA that produce carbapenemases\(^1\)
- VIM-producing *Pseudomonas aeruginosa* had not previously been identified in Florida
Notable MDRO Case

- Verona Integron-Encoded Metallo-Beta-Lactamase (VIM)-producing *Pseudomonas aeruginosa*
- Discovered through enhanced surveillance between DOH and an acute care hospital
- Patient in a long-term acute care facility
- Novel mechanism of resistance in the state (and the U.S.)
- 14 cases identified during the outbreak
  - Led to the identification of a concurrent KPC outbreak within the same facility
- Implemented containment strategies to reduce and prevent ongoing transmission
## Containment Strategies: Identify the Organism

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<td>Organisms with resistance mechanisms novel to the U.S. or organisms with no current treatment options having the potential to spread more widely within a region (e.g. vancomycin-resistant <em>Staphylococcus aureus</em>)</td>
<td>Organisms primarily found in health care settings, but not regularly in the region (e.g. Verona Integron-Encoded Metallo-Beta-Lactamase (VIM)-producing CRE, New Delhi Metallo-β-lactamase-producing CRE)</td>
<td>Organisms targeted by the facility that are established in the U.S. and identified in the region but not endemic (e.g. CRE-producing <em>Klebsiella pneumoniae</em> carbapenemase)</td>
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Implemented Containment Strategy:
• Ensure notification to primary caregiver, patient-care personnel, health care staff.
• Ensure implementation of infection control measures.
• Inform patient and family.
• Conduct a health care investigation.
• Conduct a contact investigation.
• Implement a process to ensure adherence to infection control measures.
Goals of Response

- Identify if transmission has occurred and is continuing to occur
- Guide containment and prevention measures
Continued Containment Strategies

- Continuation or adjustment of transmission-based precautions
- Maintained database of patients and contacts
- Guided and assisted with multiple Infection Control Assessment and Response (ICAR) site visit with the HAI Program
- Decide on the need for active laboratory surveillance
  - Identifies patients colonized with a particular organism who are not showing symptoms
  - Point-prevalence studies (PPS)
  - Admission and discharge screening
- Continued collaboration between the HAI Program, CHD, BPHL, and the facility
- Attended conference call(s) with DOH, CDC, and BPHL (as needed)
Contact Investigation

• HAI Program provided guidance in conjunction with CDC
• Indication for point-prevalence survey
  o Rapidly evaluate prevalence of CRE in facility
  o Typically screen all patients present on unit
  o Useful when previously unrecognized CRE patients have been housed on certain wards/units
  o Evaluated for additional transmission during outbreak
Active laboratory surveillance

- Screening of patients who might not be epidemiologically linked to known CRE patient but met pre-specified criteria
  - All admissions
  - High-risk patients (e.g., those admitted from long-term acute care facilities, patients who received medical care in endemic regions)
  - High-risk settings (e.g., intensive care units)
  - Discharge screens

- More useful in areas with higher CP-CRE prevalence and during CRE outbreaks
Broader Screening

• Prospective surveillance of laboratory cultures.
• Environmental cultures generally not recommended unless transmission identified or suspected.
  o Coordinated through CDC
  o Onsite technical assistance provided
Role of BPHL

- Isolate testing
- Serve as subject matter experts (SME)
- Forward isolates to CDC or the Antibiotic Resistance Laboratory Network (ARLN) regional lab
Role of the HAI Program

- SMEs
- Guidance and reference to appropriate guidance documents
- Provide notification to the CHDs
- CDC contacts, especially for organisms of interests
- Educational and webinar material
- Staff to conduct ICARs and onsite technical assistance
Lessons Learned

• Collaboration with facility leadership is instrumental for success of outbreak response and prevention.
• Need for patient education resources to inform on role of PPS for continuity of the investigation.
• Communication with all stakeholders is essential.
• When preparing for PPS it is important to establish capacity, resources, man-power required, and proper collection and shipping methods.
• Need for continual assessment and gap mitigation.
Resources

• Interim Guidance for a Health Response to Contain Novel or Targeted Multidrug-resistant Organisms (MDROs)
  o www.cdc.gov/hai/containment/guidelines.html

• Facility Guidance for Control of Carbapenem-Resistant Enterobacteriaceae (CRE) – November 2015 Update CRE Toolkit
  o www.cdc.gov/hai/organisms/cre/cre-toolkit/index.html

• Infection Control Assessment Tools
  o www.cdc.gov/hai/prevent/infection-control-assessment-tools.html
Thank you!

Questions?
Thank you!

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