Long Beach CRE Prevention Collaborative
June 6th, 2018
Watch as bacteria evolve antibiotic resistance

- *E. coli* evolved resistance to antibiotics as they grew across a giant petri dish coated with increasing concentrations of antibiotics. At the end of the experiment, the bacteria near the center of the plate could withstand a dose of antibiotics 1,000 times higher than the starting bacteria.
Agenda

• Introduction and Housekeeping
• CRE Updates
• Site Visit Update
• Preventing Transmission of MDRO in SNF and ACH
• Scenarios and Breakout Sessions
### Timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>Day/time</th>
<th>Task</th>
</tr>
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<tbody>
<tr>
<td>March 13</td>
<td>Tue 8-10am</td>
<td>Kick-off Meeting</td>
</tr>
<tr>
<td>June 6</td>
<td>Wed 8am-12pm</td>
<td>1st learning/discussion session</td>
</tr>
<tr>
<td>July 25</td>
<td>Wed 9-10am Skilled Nursing Facilities</td>
<td>1st conference/check-in call</td>
</tr>
<tr>
<td></td>
<td>10-11am Acute Care Hospitals</td>
<td></td>
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<tr>
<td>Sept 19</td>
<td>Wed 8am-12pm</td>
<td>2nd learning/discussion session</td>
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<tr>
<td>Oct 24</td>
<td>Wed 9-10am Skilled Nursing Facilities</td>
<td>2nd conference/check-in call</td>
</tr>
<tr>
<td></td>
<td>10-11am Acute Care Hospitals</td>
<td></td>
</tr>
<tr>
<td>Dec 12</td>
<td>Wed 8am-12pm</td>
<td>3rd learning/discussion session</td>
</tr>
<tr>
<td>Jan 23, 2019</td>
<td>Wed 9-10am Skilled Nursing Facilities</td>
<td>3rd conference/check-in call</td>
</tr>
<tr>
<td></td>
<td>10-11am Acute Care Hospitals</td>
<td></td>
</tr>
<tr>
<td>Mar 13, 2019</td>
<td>Wed 8am-12pm</td>
<td>Final learning/discussion session</td>
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CRE Collaborative Expectations

› Actively engage all CRE team members by ensuring participation in all collaborative activities (e.g. observational assessment, learning and discussion sessions, etc.)

› Commit to a prevention action plan and participate in a one-time onsite prevention assessment

› Conduct surveillance and share information regarding CRE
# Survey Results

<table>
<thead>
<tr>
<th>Rank</th>
<th>Topic</th>
<th>Avg Ranking</th>
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<tbody>
<tr>
<td>1</td>
<td>Infection Prevention</td>
<td>2.36</td>
</tr>
<tr>
<td>2</td>
<td>Antimicrobial Stewardship</td>
<td>3.45</td>
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<tr>
<td>3</td>
<td>Isolation Protocol</td>
<td>3.73</td>
</tr>
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<td>4</td>
<td>Lab Interpretation of CRE and Carbapenemases</td>
<td>5.09</td>
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<tr>
<td>5</td>
<td>Enhancing Interfacility Communication</td>
<td>5.36</td>
</tr>
<tr>
<td>6</td>
<td>CRE Reporting Requirements</td>
<td>5.55</td>
</tr>
<tr>
<td>7</td>
<td>Environmental Cleaning</td>
<td>5.55</td>
</tr>
<tr>
<td>8</td>
<td>Antibiogram</td>
<td>5.91</td>
</tr>
<tr>
<td>9</td>
<td>Reporting into National Healthcare Safety Network (NHSN)</td>
<td>8</td>
</tr>
</tbody>
</table>
## Long Beach CRE

### Table 1: CRE Organisms Reported in Long Beach, Q1 2018

<table>
<thead>
<tr>
<th></th>
<th>Carbapenem-resistant Organism</th>
<th>K. pneumoniae</th>
<th>Enterobacter</th>
<th>E. coli</th>
<th>Total</th>
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<tbody>
<tr>
<td><strong>Hospital</strong></td>
<td></td>
<td>9</td>
<td>6</td>
<td>0</td>
<td>15</td>
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<tr>
<td><strong>Skilled Nursing Facility</strong></td>
<td></td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>11</td>
<td>6</td>
<td>0</td>
<td>17</td>
</tr>
</tbody>
</table>
Long Beach CRE

Source of Specimen: Long Beach, Q1 2018 (N=17)

- Sputum: 29%
- Urine: 35%
- Wound: 6%
- Blood: 6%
- Respiratory: 12%
- Retroperitoneal: 6%
- Unknown: 6%
### Table 2: Carbapenemase Testing, Q1 2018

<table>
<thead>
<tr>
<th>Strain</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klebsiella pneumoniae carbapenemase (KPC)</td>
<td>2</td>
</tr>
<tr>
<td>Unspecified Carbapenemase*</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8</strong></td>
</tr>
</tbody>
</table>

*Modified Hodge Test*
Long Beach CRE

CRE cases by Month in Long Beach

Number of Cases

Jan  Feb  Mar  Apr  May  Jun  July  Aug  Sep  Oct  Nov  Dec

2017  2018
Antibiograms Due

› Due June 1!

› Hospitals: send antibiogram to Emily.Holman@longbeach.gov or Nick.Lefranc@longbeach.gov

› SNFs: if already obtain antibiograms through reference labs either email directly to us, or check with lab that it has been submitted to LA County

› Long Beach will forward Antibiograms to LA County for analysis
  › Excel format is preferred (but PDF okay)
Updates on CRE
CRE in United States

Percentage of *E. coli* and *Klebsiella pneumoniae* isolates from selected HAI reported as resistant to a carbapenem — NHSN, 2006–2015

*Central line-associated bloodstream infections and catheter-associated urinary tract infections.*
Once antibiotic resistance spreads, it is harder to control—like a wildfire.

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.

UNUSUAL ANTIBIOTIC-RESISTANT GERMS

- Resistant to all or most antibiotics tested, making them hard to treat, and
- Uncommon in a geographic area or the US, or
- Have special genes that allow them to spread their resistance to other germs

Examples of unusual resistance: Vancomycin-resistant Staphylococcus aureus (VRSA), Candida auris, and certain types of “nightmare bacteria” such as carbapenem-resistant Enterobacteriaceae (CRE).
CDC Antibiotic Resistance Lab Network (ARLN)

1 IN 4 GERMS TESTED WAS POSITIVE. 25% of the germs had special genes that allow them to spread their resistance to other germs. In response, many investigations were conducted and screening tests were performed.

1 IN 10 SCREENING TESTS WAS POSITIVE. If left undetected, patients without symptoms could continue spreading rare, hard-to-treat germs in the health care facility.
Health care facilities, health departments, and CDC are ON ALERT for antibiotic resistance.

The Containment Strategy:
- Rapid Identification
- Infection Control Assessments
- Colonization Screenings
- Coordinated Response Between Facilities
- Continued Assessment & Screenings
- Coordinated Response Between Facilities

Public health teams nationwide can launch early, aggressive responses to contain spread and protect people—at the first sign of antibiotic resistance, every time.

Find guidance, lab protocols, and more resources: www.cdc.gov/HAI/Outbreaks/MDRO
Site Visits

• Total facilities visited:
  – One Acute Care
  – Five Long Term Care

• Number of facilities with scheduled visits
  – One ACH
  – One LTCF
  ▪ Eight Facilities need to schedule a visit

• Number of facilities participating- 16
  – Three - Acute Care Facilities
  – Thirteen -Long Term Care Facilities
Preventing the Spread of Multidrug-Resistant Organisms (MDRO) in Healthcare Settings

Zenith Khwaja
HAI Liaison Infection Preventionist
Healthcare-Associated Infections (HAI) Program
Center for Health Care Quality
California Department of Public Health
What are Multidrug-Resistant Organisms (MDRO)?

- Bacteria that become resistant to one or more antibiotics
- Due to overuse or inappropriate use of antibiotics
  - Antibiotics can no longer control or kill bacteria
  - Infections are difficult to treat
- Examples
  - Methicillin-resistant *Staph aureus* (MRSA)
  - Vancomycin-resistant *Enterococci* (VRE)
  - Resistant gram-negative bacteria such as
    - Carbapenem-resistant Enterobacteriaceae (CRE)
    - Multidrug resistant *Acinetobacter*
Who is at Risk for MDRO?

Persons with;

• Diabetes, chronic kidney disease, open wounds
• Prolonged use of antibiotics
• Invasive procedures
• Age >65 years
• Age-related immunity
• Extended health care facility stay
• Repeated admission to hospitals or long-term care facilities
MDRO Transmission

MDRO are spread by:

- Health care providers (HCP)
  - Primarily via unclean hands of HCP
- Contaminated environment
- Contaminated equipment
- Introduction during procedures
Preventing MDRO

• Prevent MDRO emergence
  – Appropriate use of antibiotics

• Prevent MDRO transmission (spread)
  – Hand hygiene
  – Environmental cleaning and disinfection
  – Personal protective equipment (PPE)
  – Standard and Transmission-based isolation precautions
  – Identify and isolate residents with MDRO

• Prevent MDRO infections
  – Remove invasive devices as soon as no longer necessary
Standard Precautions

• Basic care practices to be used during **all patient care** in **all health care settings**
• Prevent health care personnel and the environment from spreading organisms that can cause disease to other patients
• Protect healthcare personnel


[https://www.cdc.gov/hicpac/pdf/core-practices.pdf](https://www.cdc.gov/hicpac/pdf/core-practices.pdf)
Standard Precautions Elements

1. Hand hygiene
2. Injection safety and safe medication use
3. Selection and use of **personal protective equipment (PPE)** based on activities being performed
   - specifically, gloves, gowns, face masks
4. Minimizing potential exposures
   - for example, respiratory hygiene and cough etiquette
5. Environmental cleaning and disinfection
6. Reprocessing reusable medical equipment **between each patient** and when soiled

Core Infection Prevention and Control Practices - CDC HICPAC, 2016

[https://www.cdc.gov/hicpac/pdf/core-practices.pdf](https://www.cdc.gov/hicpac/pdf/core-practices.pdf)
Transmission-based Precautions

• Developed by Centers for Disease Control and Prevention (CDC) in 1996
  – Centers for Medicare and Medicaid Services (CMS) requirement for SNF in 2016
• Used when Standard precautions may not be enough to prevent transmission
• Used in addition to Standard precautions
• Three types of Transmission-based precautions
  • **Contact precautions**
  • Droplet precautions
  • Airborne precautions
Acute Care Hospitals: Is it a policy in your facility that patients infected or colonized with CRE are routinely placed in contact precautions while these patients are in your facility?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, all infected or colonized patients</td>
<td>325(84)</td>
</tr>
<tr>
<td>Yes, only all infected patients</td>
<td>30(8)</td>
</tr>
<tr>
<td>Yes, only those with certain characteristics that make them high-risk for transmission (e.g., wounds, diarrhea, presence of an indwelling device)</td>
<td>16(4)</td>
</tr>
<tr>
<td>Yes, only those admitted to high-risk settings (e.g., ICU)</td>
<td>1(1)</td>
</tr>
<tr>
<td>Not applicable: my facility never admits these patients</td>
<td>11(3)</td>
</tr>
<tr>
<td>No</td>
<td>4(1)</td>
</tr>
</tbody>
</table>

Source: 2017 NHSN Annual Survey
Enhanced Standard Precautions*

- Developed in 2010 for use in California skilled nursing facilities (SNF)
  - CDPH with the California Association of Health Facilities (CAHF)
- Intended to prevent MDRO transmission in SNF
- Applies to all SNF residents, regardless of known MDRO colonization or infection
- Based on resident risk factors
- Adapts isolation precautions to allow SNF residents to leave their rooms safely

*NOTE: Revision coming soon (Summer 2018)
## Risk Factors for Enhanced Standard Precautions

- Consider if residents are at **high** or **low** risk for MDRO transmission

<table>
<thead>
<tr>
<th><strong>High risk</strong> for spreading MDRO</th>
<th><strong>Low risk</strong> for spreading MDRO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Poor functional status</strong></td>
<td><strong>Higher functional status</strong></td>
</tr>
<tr>
<td>Such as</td>
<td>Such as</td>
</tr>
<tr>
<td>• Dependent on assistance for</td>
<td>• Able to carry out ADLs with</td>
</tr>
<tr>
<td>activities of daily living (ADLs)</td>
<td>minimal assistance</td>
</tr>
<tr>
<td>• Unable to maintain personal</td>
<td>• Cognitively intact</td>
</tr>
<tr>
<td>hygiene</td>
<td>• Maintains personal hygiene</td>
</tr>
<tr>
<td><strong>Presence of indwelling devices</strong></td>
<td><strong>No indwelling devices</strong></td>
</tr>
<tr>
<td>Such as central lines, urinary</td>
<td></td>
</tr>
<tr>
<td>catheters</td>
<td></td>
</tr>
<tr>
<td><strong>Ventilator dependent</strong></td>
<td><strong>Not on ventilator, no tracheotomy</strong></td>
</tr>
<tr>
<td><strong>Wounds</strong></td>
<td><strong>No wounds</strong></td>
</tr>
<tr>
<td><strong>Incontinence</strong></td>
<td>** Continent**</td>
</tr>
</tbody>
</table>
Using Enhanced Standard Precautions for High Risk SNF Residents

- Room placement
  - Place in **private room** (preferred)
  - Cohort when private room not available

- Select **appropriate PPE** for the task
  - Gloves & gowns or gloves only

- Hand hygiene (**consistently**)!

- Special considerations for
  - Room cleaning and disinfection
  - Medical equipment
  - Transportation

- **Communicate** with hospitals or other facilities upon transfer
Acute Care Hospitals: Among patients with an MDRO admitted to your facility from another healthcare facility, please estimate how often your facility receives information from the transferring facility about the patient’s MDRO status?

- More than half of the time: 46%
- About half of the time: 20%
- All of the time: 12%
- Less than half of the time: 18%
- Not applicable: my facility does not receive transferred patients with MDROs: 2%
- None of the time: 2%

Source: 2017 NHSN Annual Survey
Summary

• MDRO bacteria require specific care practices to prevent and control spread in SNF

• Enhanced Standard Precautions
  – Address the burden of MDRO colonization in SNF
  – Applied based on each resident’s clinical and functional status
  – Can prevent MDRO transmission when used appropriately and consistently
CDC References

• Nursing Homes and Assisted Living (Long-Term Care Facilities)
  https://www.cdc.gov/longtermcare/index.html

• Multidrug-resistant organisms (MDRO) Management
  https://www.cdc.gov/infectioncontrol/guidelines/mdro/index.html

• Hand Hygiene in Healthcare Settings
  https://www.cdc.gov/handhygiene/providers/guideline.html

• Standard Precautions for All Patient Care
  https://www.cdc.gov/infectioncontrol/basics/standard-precautions.html

• Isolation Precautions
  https://www.cdc.gov/infectioncontrol/guidelines/isolation/index.html

• Carbapenem-Resistant Enterobacteriaceae in Healthcare Settings
  https://www.cdc.gov/hai/organisms/cre/index.html

• CRE Prevention Toolkit
Break
Scenario #1

- A resident at a SNF was transferred to an acute care hospital, and four days later had a positive clinical culture for carbapenem-resistant *Klebsiella pneumoniae*. Several days later, after the infection has resolved, a discharge planner at the ACH is discussing the transfer of the patient back to the SNF.
Scenario #2

- The local public health department received a report from a local acute care hospital about a long term SNF resident who tested positive for CRE. After contacting the hospital, it appears that the patient was discharged back to the SNF. The local health department is now calling the SNF to report the result and discuss infection prevention.
Breakout Discussion

• Acute Care Hospitals
  – What are the steps from time the patient is tested to the time the patient is placed on contact precautions?
  – Are there criteria to discontinue the use of contact precautions?
  – How often does your facility receive information from the transferring facility about the patient’s MDRO status?
  – Have you had trouble placing patients with CRE at a SNF?
Breakout Discussion

• Skilled Nursing Facilities
  – Are residents with CRE infection/colonization routinely assessed for risk of transmission?
  – Does your facility use contact precautions, or enhanced standard precautions, on patients with MDROs like CRE?
  – How does your facility determine room placement for a resident with CRE?
  – How often does your facility receive information from the transferring facility about the patient’s MDRO status?
Breakout Session: Recap