Healthcare-Associated Outbreaks: What to Expect?

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Healthcare-Associated Infections Program

March 9, 2016
Objectives

• Define a suspected outbreak
• Roles & responsibilities
• Detect & Respond
• Provide examples of healthcare-associated outbreaks reportable to public health
What is reportable?

• Any case of a reportable disease* and, if unsure:
  – Highly transmissible, serious or severe health consequences

• “…any known or suspected common-source outbreaks; any uncommon illness of potential public health significance,” whether or not a reportable disease

Who must report?

• Each healthcare provider or any individual knowing of such a case

https://public.health.oregon.gov/DiseasesConditions/CommunicableDisease/ReportingCommunicableDisease/Pages/rules.aspx
What makes an HAI outbreak?

- Two or more cases of disease
- Epidemiologically-linked
- Occurring in a healthcare facility

- Reportable by the facility (ORS 442.015)
  - Hospital
  - Long term care facility
  - Ambulatory surgical center
  - Freestanding birthing center
  - Outpatient renal dialysis center
ROLES & RESPONSIBILITIES
Who are we?

Department of Human Services

Oregon Public Health Division

Acute & Communicable Disease Prevention

Healthcare-Associated Infection Program

OLRO

HRCQI
What does acute & communicable disease do?

“We’re the government, but not *that* part of the government.”

– Bill Keene
epidemiologist extraordinaire
Epidemiologists

What my friends think I do

What my parents think I do

What society thinks I do

What grandma thinks I do

What I think I do

What I really do
Protect Oregonians’ Health

• Surveillance
  – Carbapenem-resistant Enterobacteriaceae (CRE)

• Reporting
  – Communicable Disease Reporting
  – National Health Safety Network for healthcare-associated infections

• Support regulations to prevent disease
  – License healthcare facilities & providers

• Prevention and Response
  – Vaccines, Collaborations, Outbreaks, Coordination, Expertise
Protect Oregonians’ Health

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Our Partners
What is the role of Local Health Departments?

• Know their community
• Interview cases
• Investigate outbreaks
• Perform public health roles for the community
  – Vaccines, Women Infants & Children
  – Prevent chronic disease
  – Environmental health

http://oregonclho.org/
Carbapenem-resistant Enterobacteriaceae

- Since 2011
- Local health departments interview cases
- Screen co-residents to ensure transmission has not occurred
- Provide update input
- Stay tuned for webinar!

### Summary of recommendations for management of SNF residents with CRE

<table>
<thead>
<tr>
<th>Measure</th>
<th>CP-CRE infection</th>
<th>CP-CRE colonization</th>
<th>Non-CP-CRE infection</th>
<th>Non-CP-CRE colonization††</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notify receiving facility*</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Notify county health upon transfer or death</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Standard precautions</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Contact precautions† * Gown/gloves for in-room resident care</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>For residents at higher risk of CRE transmission</td>
</tr>
<tr>
<td>Door signage</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>For residents at higher risk of CRE transmission</td>
</tr>
<tr>
<td>Private room</td>
<td>Yes (strongly encouraged)</td>
<td>Yes (strongly encouraged)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Restricted to room</td>
<td>Yes</td>
<td>No**</td>
<td>No**</td>
<td>No**</td>
</tr>
<tr>
<td>Enhanced environmental cleaning</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Designated or disposable equipment</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>If &gt;1 case, cohort staff if feasible</td>
<td>Yes</td>
<td>Yes</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>If &gt;1 case, cohort residents if feasible</td>
<td>Yes</td>
<td>Yes</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>Consult with OHA regarding screening cultures</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Visitor recommendations:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Perform hand hygiene often, particularly after leaving the resident's room.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>- Gown/gloves if contact with body fluids is anticipated.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>- Gown/gloves if no contact with body fluids is anticipated.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Tattoo: Water contamination causing non-tuberculcosus mycobacterial infection

OREGON PUBLIC HEALTH
Acute & Communicable Disease Prevention

Regulated by Health Licensing Office
What is the role of Healthcare Facilities and Providers?

• Prevent
  – Practice best practices and current recommendations
  – Practice infection prevention, antimicrobial stewardship

• Be alert
  – Eyes and Ears of public health
  – Clusters of illness? Novel disease?

• Test
  – Cultures important to link cases

• Report & Respond
  – Reportable diseases
  – Outbreaks
Cellulitis in Memory Care

- 4 residents
- Ecthyma gangrenosum, cellulitis, surgical site infection
- “Strep throat” in staff
- Staff with finger abscess
- Notified public health

Group A Streptococcus
Transmission of Group A Strep in LTCF

- Skin infection, residents
- Pharyngitis, employees

Consultation

2/3...
3-day increments
...3/1 2
...3/3 0
Screening & Response

- Facility very collaborative
- Screened 42 of 46 staff, 40 of 41 residents
- 13/42 staff (32%) GAS on culture
- 8/40 residents (20%)
- Pet screening: negative

*GAS colonization usually <5% in adults
Hospital surgical site infections

- Regional meeting of Infection Preventionists
- Report of unusual joint surgical site infections (SSI)
- Rapidly-growing mycobacteria (RGM)
  - *Mycobacterium fortuitum*
- Notified public health
Methods

• **Case finding**
  – Surveillance, Health Alert, *Epi-X*
  – National Health Safety Network (NHSN)
    • Surveillance for healthcare-associated infections by healthcare facilities; required for hospitals

• **Matched Case Control Study**
  – Exposures: surgeon, vendor, OR, day, OR staff

• **Observation**
  – Watched 3 joint replacement surgeries

• **Environmental samples**
  – Based on epidemiology
Case Definition

- A surgical site NTM infection involving the skin, tissue, bone or joint
- Between July–December, 2013, or October–November, 2010
- In a patient who underwent knee or hip joint replacement surgery
- At Hospitals A, B, C, or D, within 1 year prior to the infection
Patient Summary

- 7 *M. fortuitum* and 2 *M. goodii*
- Onset October 2010–September 2014
- Aged 46–79 years (median 66 years)
- 5 female
- No trauma
- Different water systems
- Different intra-operative meds
- Deep incision, organ space SSI
- Significant morbidity
New School: Case Control Study

• Matched case-control
  – Matched on hospital, type of surgery
  – Same time period
  – 9 cases, 36 randomly selected controls
  – OR staff, time of surgery, age, device manufacturer, orthopedic practice…

• Person A’s presence in operating room associated with a
  24 times increased odds of infection in the patient
Person A Interview

- Vendor for manufacturer
- Used hot tub daily before work
- Some devices delivered to home
- Implant and loaner instrument storage in garage and car trunk (not unusual)
- Environmental testing
Operating Room Observations

- Frequent breaches by non-OR staff persons
- Vendor reps witnessed reaching with bare arms over surgical table to indicate instruments
  - Stood <1 foot to surgical table during pre-op prep
Who is on your team?

• Vendor reps an integral part
• Accountability for role in SSIs?
  – Share SSI data
  – Infection prevention training
  – Responsible for maintaining instruments outside OR
• Loaner instrumentation safety issues
  – Shared gaps with FDA
Remediation

• Hold non-hospital operating room staff to same standards
  
  *Association of peri-Operative Registered Nurses (AORN)*
  
  • Aseptic Practice
  • Patient Safety
  • Sterilization and Decontamination
  • Guidelines for Device Manufacturer Representatives

• Maintain hot tub and regular monitoring of chlorination
• Implants returned to vendor
DETECT & RESPOND
How do I know I have a problem?

- **EDUCATE**: Syndromes & communication

- **ASK**: Daily huddles with care staff:
  - Clusters of syndromic illness (flu, vomiting/diarrhea)
  - Clusters of NHSN-reportable HAIs (e.g., surgical site infections)
  - Emerging syndromes (e.g., duodenoscope-associated)

- **LOOK**:
  - Assess patient; confirm meets infection criteria
  - Collect and review laboratory results
  - Review medical charts for common risks or exposures
What if I notice a cluster?

• **Reach out** to your local health department
  – www.healthoregon.org/diseasereporting

• **Gather information: Line List**
  – Name, DOB, room (all ill, whether or not lab confirmed)
  – Dates of onset of illness
  – Key symptoms (fever, V, D, rash, pneumonia, cellulitis)
  – Outcomes
  – Vaccination status

• **Tools available here:**
Healthcare-Associated Infection Outbreaks

Guidelines for investigating HAI outbreaks, including multidrug-resistant organisms (MDRO)

Mandatory Outbreak Reporting

Acute care hospitals and long-term care facilities (LTCFs) are required to report to the local health authority under OAR 333-018-0000 any healthcare-associated infections (HAI), including by multidrug-resistant organisms (MDRO), that meet the following threshold: “any known or suspected common-source outbreaks; and an uncommon illness of potential public health significance” (OAR 333-018-0015; ORS 433.004). Local health authorities are empowered to investigate such outbreaks under OAR 333-019-0000, ORS 433.006.

Carbapenem-resistant *Enterobacteriaceae* is a reportable disease (OAR 333-018-0015; ORS 433.004).

Local health authorities need to report HAI outbreaks, including MDRO outbreaks, to the state communicable disease epidemiology program at 971-673-1111 within 24 hours of receiving an outbreak report.
Data Collection and Basic Descriptive Epidemiology

- Track cases using the Healthcare Associated Infection Case Log (pdf). The log can be completed by hospital or LTCF infection control staff; establishing a single point of contact is recommended.
- Use tools to get basic descriptive epidemiology, including an epidemic curve (i.e., cases by onset day).
- Review facility's microbiology laboratory for other cases of the same organism or MDRO within the last 12 months. If found, perform a limited chart review and note name, date of birth, source, room number, admission source, healthcare facility exposures.
- Consider performing a patient prevalence survey to assess burden of the organism or MDRO in healthcare facility. Refer to the Specimen Collection Protocol (pdf).
- Monitor the outbreak for new cases for 6 months.
- If ongoing transmission is identified, discuss performing further investigations (e.g., environmental prevalence survey).

Response

- Review case medical records for risk factors
- Environmental cleaning
  - High-touch Cleaning Checklist (pdf)
  - CDC Environmental Checklist for Monitoring Terminal Cleaning (pdf)
- Interfacility transfer forms: Find forms and resources at Interfacility Communication
- Patient prevalence survey
  - Tools: Patient letter (pdf), Staff Letter (pdf)
- Staff Education: Person Protective Equipment (PPE) Protocol (pdf)
- Patient Education:
  - 10 Ways to be a Safe Patient (pdf)
  - MDR Ab Patient Education (pdf)
  - CRE Patient Education: Oregon CRE Toolkit (pdf)
  - Provider CRE Notification Letter (pdf)
  - Prevention: CDC Detect/Protect (pdf)
What happens if I report a cluster?

• Local public health coordinates with facility staff:
  – Gather info
  – Identify pathogen
  – Form a plan to halt outbreak
  – Determine source

• Public health may contact other facilities
• Residents/Patients are usually not contacted
• Public health may ask to review resident’s charts
• Follow-up to ensure plan completed, outstanding issues
Outbreak expectations

• Facilities and providers will work collaboratively with PH
  – Make timely reports to public health*
  – Share information
  – Discuss recommendations

• Public health will work collaboratively with facilities and providers to contain the outbreak and identify a source:
  – Special lab testing
  – Protect personal health information
  – Work with providers to ensure patient safety
  – Educate facilities and providers, as indicated

* [www/healthoregon.org/diseasereporting](http://www/healthoregon.org/diseasereporting)
What’s the benefit of reporting a cluster?

- Prevent other residents from becoming ill
- Prevent staff from becoming ill
- Identify the issue and improve the system
Examples of response in action

• Ambulatory surgery center mycobacterial surgical site infections
  – On-site infection prevention consultation improved practice safety

• Hepatitis associated with medical care
  – Reviewed outpatient practice, and notified >1200 Oregonians
  – Reviewed dialysis center practice; provided strain type testing

• Influenza/Respiratory disease
  – Local health department helps identify contacts for prophylaxis, decreasing morbidity and death
  – Local health departments assisted 59 facilities during 2015

• Norovirus/Gastrointestinal disease
  – Assisted 81 facilities during 2015
Examples of response in action

• Carbapenem-resistant *Acinetobacter baumannii*
  – Identification led to trace-back to super-spreader patient and establishment of interfacility transfer communication process
One fine day at ACDP…

• Infection prevention control nurse, Hospital A
  – 2 isolates of *Acinetobacter baumannii*
  – 2 months apart
  – 2 patients from same Skilled Nursing Facility A

• Surveillance review identified other cases at Healthcare Facility B
<table>
<thead>
<tr>
<th>Patient</th>
<th>Outpatient Clinic A</th>
<th>Hospital A</th>
<th>Outpatient Clinic A</th>
<th>Health Care Facility B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient A</td>
<td>SNF A</td>
<td>9/21 - 9/26</td>
<td>NO</td>
<td>?</td>
</tr>
<tr>
<td>Patient B</td>
<td>10/12-10/15</td>
<td>9/28-9/30</td>
<td>11/24 - NOW (awaiting)</td>
<td>9/20-9/28</td>
</tr>
<tr>
<td>Patient C</td>
<td>10/10-10/12</td>
<td>10/18 - ?</td>
<td>2/13-3/20</td>
<td>6/11</td>
</tr>
</tbody>
</table>
t₀ + 5 months

SNF A

SNF C

t₀ + 18 months

HCF B

t₀ = 1/2012

t₀ + 19 months
Interfacility transfer communication

- Rule since January 1, 2014
- Healthcare facilities, including
  - Hospitals, birthing centers
  - Dialysis
  - Ambulatory Surgery Centers
  - Nursing homes, CBC
- Report to receiving facility
  - Written, any disease needing precautions (CDI, MDRO…)
- Receiving facility reports back
  - if present on admission
# Inter-facility Infection Control Transfer Form

**SENDING FACILITY TO COMPLETE FORM and COMMUNICATE TO ACCEPTING FACILITY**

*Please attach copies of latest culture reports with susceptibilities, if available*

<table>
<thead>
<tr>
<th>Patient/Resident Last Name</th>
<th>First Name</th>
<th>Date of Birth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Print or place Patient Label*

<table>
<thead>
<tr>
<th>Sending Facility Name</th>
<th>Sending Facility Unit</th>
<th>Sending Facility Phone #</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Is the patient/resident currently on antibiotics?  ☐ NO  ☐ YES  DX: ________________________________

Does the patient/resident have pending cultures?  ☐ NO  ☐ YES

Is the patient/resident currently on precautions?  ☐ NO  ☐ YES

**Type of Precautions (check all that apply)**  ☐ Contact  ☐ Droplet  ☐ Airborne  ☐ Other: ___________________________

<table>
<thead>
<tr>
<th>Does patient currently have an infection, colonization OR a history of a multidrug-resistant organism (MDRO)?</th>
<th>Colonization or history (Check if YES)</th>
<th>Active infection on treatment (Check if YES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRSA (methicillin-resistant <em>Staphylococcus aureus</em>)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>VRE (Vancomycin-resistant <em>Enterococcus</em>)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td><em>C. diff (Clostridium difficile, CDI)</em></td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td><em>Acinetobacter spp.,</em> multidrug-resistant</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Gram-negative organism resistant to multiple antibiotics* (e.g., <em>E. coli, Klebsiella, Proteus spp.</em>)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>CRE (carbapenem-resistant <em>Enterobacteriaceae</em>)</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
How does your facility communicate MDRO or CDI at transfer?
(N = 133)

- Our staff tells the staff at the receiving facility during resident sign-over
- We document into a specific MDRO field or "flag" on transfer documents
- We use a specific MDRO interfacility transfer communication form
- MDRO documentation is always part of the physician discharge summary
- Non-MDRO-specific medical chart or transfer documentation
- Our facility does not have a reliable way to communicate MDROs on transfer.
Implementation

• 121 of 133 (91%) reported sending an interfacility transfer form
• 70 of 133 (53%) reported receiving a form

• **Review your interfacility transfer form and process:**
  – Verbal is insufficient
  – Can’t be buried in discharge planning EPIC screens
  – Golden Rule
What can I do to improve response?

• Get to know the **infection preventionists** at your referring hospitals
  – They want to know you!
  – Great resources and pulse of what’s going on in region
  – Interfacility communication of infectious diseases
• Get to know your **public health partners**
  – [www.healthoregon.org/diseasereporting](http://www.healthoregon.org/diseasereporting)
• Know you **policies and procedures** for dealing with infectious diseases
  – e.g., Guidelines for Minimum Expectations in Outpatient Clinics
Resources provided by public health

- Advanced testing
- Advanced epidemiology and analysis
- Consultation with subject matter experts
- Correct reporting to other agencies (e.g., Medwatch)
- Connection with other facilities
- Second pair of eyes
- ...
- Lab Risk Assessment template!

http://oregonpatientsafety.org/
Healthcare-associated Infections (HAIs)

Infection Control Assessment Tools

The basic elements of an infection prevention program are designed to prevent the spread of infection in healthcare settings. When these elements are present and practiced consistently, the risk of infection among patients and healthcare personnel is reduced.

The Infection Control Assessment Tools were developed by CDC for awardees under the Epidemiology and Laboratory Capacity (ELC) Infection Control Assessment and Response (ICAR) Program to assist health departments in assessing infection prevention practices and guide quality improvement activities (e.g., by addressing identified gaps). These tools may also be used by healthcare facilities to conduct internal quality improvement audits.

Assessment tools were developed for the following healthcare settings: acute care (including hospitals and long-term acute care hospitals), outpatient, long-term care, and hemodialysis. Select the assessment tool below that is specific to your setting.

- Infection Control Assessment Tool for Acute Care Hospitals [PDF - 453 KB]
- Infection Control Assessment Tool for Long-term Care Facilities [PDF - 253 KB]
- Infection Control Assessment Tool for Outpatient Settings [PDF - 337 KB]
- Infection Control Assessment Tool for Hemodialysis Facilities [PDF - 278 KB]

NOTE: For Outpatient settings, the previously released Guide to Infection Prevention for Outpatient Settings and its companion Checklist (available at: http://www.cdc.gov/hai/settings/outpatient/outpatient-care-guidelines.html) have been revised and made consistent with the Outpatient Settings Infection Control Assessment Tool. While the same infection prevention elements are included in both the checklist and assessment tool, the facility demographics sections differ slightly. The assessment tool is intended for health department use to complete ELC activities whereas the checklist is intended primarily for healthcare facility use.

# Infection Control Self-Assessment Tools

## VIII. Injection Safety and Point of Care Testing

<table>
<thead>
<tr>
<th>Elements to be assessed</th>
<th>Assessment</th>
<th>Notes/Areas for Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. The facility has a policy on injection safety which includes protocols for performing finger sticks and point of care testing (e.g., assisted blood glucose monitoring, or AMBG).</td>
<td>○ Yes ○ No</td>
<td></td>
</tr>
<tr>
<td>B. Personnel who perform point of care testing (e.g., AMBG) receive training and competency validation on injection safety procedures at time of employment.</td>
<td>○ Yes ○ No</td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong> If point of care tests are performed by contract personnel, facility should verify that training is provided by contracting company</td>
<td>○ Yes ○ No</td>
<td></td>
</tr>
<tr>
<td>C. Personnel who perform point of care testing (e.g., AMBG) receive training and competency validation on injection safety procedures within the past 12 months.</td>
<td>○ Yes ○ No</td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong> If point of care tests are performed by contract personnel, facility should verify that training is provided by contracting company</td>
<td>○ Yes ○ No</td>
<td></td>
</tr>
</tbody>
</table>
EDUCATION
Educational opportunities

Bloodborne Pathogens Training

Safe Injection Practices: Protecting Yourself and Your Patients

A Bloodborne Pathogens Training Activity

View Training | View Text Transcript

oneandonlycampaign.org
Course & Webinars

• Infection Control Fundamentals Course
  – November, 1–3, 2016
  – FREE, open to all
    (includes other webinars)

• HAI Webinars: Lunch & Learn
  – 3rd Wednesday of the month, lunchtime
  – Open to all providers, LHDs, labs, etc.
Thank you for your collaboration to improve care for Oregonians!

Acute & Communicable Disease Prevention Team
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