Antibiotic Stewardship Across the Healthcare Spectrum

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Acute and Communicable Disease Prevention
Oregon Public Health Division
Conference line

- Please join us on the conference line:
  - 877-873-8018
  - Participant Code: 787-2333
Objectives

- Understand the current picture of antimicrobial use and resistance in Oregon
- Identify common themes and challenges in implementing the core elements of antimicrobial stewardship programs across healthcare settings
- Learn about resources and assistance the Oregon Health Authority can provide
POLL
Clinicians
• Consensus guidelines
• Training of students in health professions
• Training on management of upper respiratory tract infections and motivational interviewing

General public
• Mass media
• Printed materials to give patients
• Development of curriculum for K-6 and high school students
Proportion of patients filling antibiotic prescriptions vs proportion needing antibiotics, Oregon, 2016

Gonzales CID 2001;33:757-62; Oregon APAC data, 2016
Proportion of patients receiving broad and narrow* spectrum antibiotics, by syndrome, Oregon, 2016

<table>
<thead>
<tr>
<th>Syndrome</th>
<th>Broad</th>
<th>Narrow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Otitis Media</td>
<td>24.0%</td>
<td>43.1%</td>
</tr>
<tr>
<td>Sinusitis</td>
<td>42.8%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Pharyngitis</td>
<td>10.5%</td>
<td>22.3%</td>
</tr>
<tr>
<td>Bronchitis</td>
<td>38.8%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Common cold</td>
<td>7.3%</td>
<td>3.1%</td>
</tr>
</tbody>
</table>

*Includes penicillin, ampicillin, amoxicillin, and first generation cephalosporins
THE PROBLEM OF ANTIBIOTIC RESISTANCE
Antibiotic Resistance: should we be concerned?

Estimated minimum number of illnesses and deaths caused by antibiotic resistance*:

At least $2,049,442$ illnesses, $23,000$ deaths

*bacteria and fungus included in this report

Estimated minimum number of illnesses and death due to Clostridium difficile (C. difficile), a unique bacterial infection that, although not significantly resistant to the drugs used to treat it, is directly related to antibiotic use and resistance:

At least $250,000$ illnesses, $14,000$ deaths
Why antibiotic resistant infections cost us all more
Antibiotic prescription costs in billions

For 2009, total costs $10.7 billion

- Community: 6.5 billion
- Hospitals: 3.6 billion
- Nursing homes: 0.5 billion

Too many antibiotics in use

1/3 of antibiotic use is inappropriate

1 in 2
More than half of all hospital patients receive an antibiotic.

Individual impact

- Diarrhea
- *C. difficile*
- ED visits
- Microbiome disruption

Linder et al. 2008 CID
Healthcare-Associated Infections (HAI) Program
Oregon Health Authority

OUR WORK
OHA HAI Program Activities: Focus on Antimicrobial Stewardship

Encourage the appropriate use of antibiotics and aims to reduce the problem of antibiotic-resistant bacteria in Oregon

Large scale prevalence studies to inform best national estimates of HAIs and antimicrobial use

DROP-CRE Network

- Detect and contain multidrug-resistant organisms in Oregon
- Provide resources to prevent and control antibiotic-resistant organisms (CRE toolkit, statewide antibiogram)

Reporting via NHSN

- Publish annual reports of healthcare-associated infections in Oregon
- Promote the use of antibiotic use and antibiotic resistance modules in NHSN for ASP efforts

Partners in Prevention & Stewardship
Antibiotic stewardship programs (ASP)
Use the chat box to share ideas.

WHO SHOULD HAVE AN ASP?
Antibiotic Stewardship Program

Goals

- Minimize Resistance
- Prevent overuse, misuse and abuse
- Correct drug, dose and duration

Outcomes

- Decrease antibiotic use
- Decrease antimicrobial resistant bacteria and *C. difficile* infections
- Decrease healthcare costs
CDC Core Elements – Outpatient

Commitment
Demonstrate dedication to and accountability for optimizing antibiotic prescribing and patient safety.

Action for policy and practice
Implement at least one policy or practice to improve antibiotic prescribing, assess whether it is working, and modify as needed.

Tracking and reporting
Monitor antibiotic prescribing practices and offer regular feedback to clinicians, or have clinicians assess their own antibiotic prescribing practices themselves.

Education and expertise
Provide educational resources to clinicians and patients on antibiotic prescribing, and ensure access to needed expertise on optimizing antibiotic prescribing.
CDC Core Elements – Hospitals and LTCF

**Leadership commitment**
Demonstrate support and commitment to safe and appropriate antibiotic use in your facility

**Accountability**
Identify physician, nursing and pharmacy leads responsible for promoting and overseeing antibiotic stewardship activities in your facility

**Drug expertise**
Establish access to consultant pharmacists or other individuals with experience or training in antibiotic stewardship for your facility

**Action**
Implement at least one policy or practice to improve antibiotic use

**Tracking**
Monitor at least one process measure of antibiotic use and at least one outcome from antibiotic use in your facility

**Reporting**
Provide regular feedback on antibiotic use and resistance to prescribing clinicians, nursing staff and other relevant staff

**Education**
Provide resources to clinicians, nursing staff, residents and families about antibiotic resistance and opportunities for improving antibiotic use
OREGON DATA
**Oregon outpatient settings**

**HealthInsight**

(through Quality Innovation Network-Quality Improvement Organization):

<table>
<thead>
<tr>
<th></th>
<th>Clinics</th>
<th>Urgent Care</th>
<th>EDs</th>
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<tbody>
<tr>
<td><strong>Number of participating sites</strong></td>
<td>169</td>
<td>16</td>
<td>35</td>
</tr>
<tr>
<td><strong>Percent meeting all four CDC Outpatient Core Elements</strong></td>
<td>90%</td>
<td>25%</td>
<td>5%</td>
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<tr>
<td><strong>Interventions used</strong></td>
<td>Webinars</td>
<td>Technical assistance in policy development, tracking and reporting, education and training</td>
<td>Webinars</td>
</tr>
<tr>
<td><strong>Process or outcome measures</strong></td>
<td>Assessed prescribing practices within clinics (duration of antibiotic)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Barriers</strong></td>
<td>Aligning interventions across all settings</td>
<td></td>
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</tr>
</tbody>
</table>
Oregon outpatient settings (through Quality Innovation Network-Quality Improvement Organization):

Percent of Oregon outpatient facilities meeting each core element

- Commitment: 95%
- Action: 90%
- Tracking and Reporting: 80%
- Education and Expertise: 95%
Oregon Inpatient Settings: NHSN Annual Survey results

Percentage of Oregon Hospitals Meeting all 7 Core Elements of an Antimicrobial Stewardship Program, 2015–2017

- **2015**: 17.4%
- **2016**: 48.6%
- **2017**: 82.9%

- **Critical Access Hospitals**
- **Acute Care Hospitals**
Oregon Inpatient Settings: NHSN Annual Survey results

Percentage of Oregon Hospitals by Number of Core Elements Met, 2015–2017
Oregon Inpatient Settings: NHSN Annual Survey results

Percentage of Oregon Hospitals that Meet Each Core Element, 2015–2017

- Leadership
- Accountability
- DrugExpertise
- Action
- Tracking
- Reporting
- Education

2015  2016  2017
Oregon nursing homes

HealthInsight (through Quality Innovation Network-Quality Improvement Organization):

- 105 participating in Resident Safety Collaborative
  - Encouraged participation in antibiotic stewardship and infection prevention webinars
- 21 homes engaged in *C. difficile* infection (CDI) prevention cohort
  - Entering CDI surveillance data into National Healthcare Safety Network (NHSN) database.
  - HealthInsight measuring number reporting CDI to NHSN, infections/month
- Barriers: cumbersome reporting system; competing priorities/low infection rate; turnover of credentialed staff
Unifying Concepts

**Leadership commitment**
Demonstrate support and commitment to safe and appropriate antibiotic use in your facility.

**Accountability**
Identify physician, nursing and pharmacy leads responsible for promoting and overseeing antibiotic stewardship activities in your facility.

**Drug expertise**
Establish access to consultant pharmacists or other individuals with experience or training in antibiotic stewardship for your facility.

**Action**
Implement **at least one** policy or practice to improve antibiotic use.

**Tracking**
Monitor **at least one process** measure of antibiotic use and **at least one outcome** from antibiotic use in your facility.

**Reporting**
Provide regular feedback on antibiotic use and resistance to prescribing clinicians, nursing staff and other relevant staff.

**Education**
Provide resources to clinicians, nursing staff, residents and families about antibiotic resistance and opportunities for improving antibiotic use.
Tracking & Reporting

Common challenges

**Tracking**
Monitor *at least one process measure of antibiotic use and at least one outcome from antibiotic use in your facility*

**Reporting**
Provide regular feedback on antibiotic use and resistance to prescribing clinicians, nursing staff and other relevant staff

https://www.cdc.gov/antibiotic-use/healthcare/implementation/core-elements-small-critical.html
Oregon health plan data

Oral antibiotic use in 10 Oregon health plans by antibiotic class, 2015-17.

Antibiotic Prescriptions per Member per Month

- Cephalosporins
- Macrolides
- Penicillins
- Quinolones
- Tetracyclines
Tracking and Reporting Antibiotic Use and Resistance via the National Healthcare Safety Network (NHSN)

Antimicrobial Use (AU) and Antimicrobial Resistance (AR) Module

**AU Module**
- Provides a mechanism for hospitals to report and analyze antimicrobial use as part of Antimicrobial Stewardship efforts
- Allows for risk-adjusted comparisons of antibiotic use to a national aggregate

**AR Module**
- Facilitates evaluation of antimicrobial resistance data using a standardized approach
- Provides hospitals with improved awareness of a variety of AR issues to aid in clinical decision making and prioritize transmission prevention efforts

**Electronic needs**
- eMAR or Bar Coding Medication Administration (AU module)
- Electronic Laboratory Information System (AR module)
- Ability to collect and package data using HL7 standardized format
Education

Educate clinicians about resistance and optimal prescribing

https://www.cdc.gov/antibiotic-use/healthcare/implementation/core-elements-small-critical.html
Antibiotics are not always the answer.

Taking antibiotics puts you at risk. Bacteria can change and become resistant.

Learn when they work. Learn how to use them.

**Antibiotics:**
1. Don’t work for viruses such as colds or the flu.
2. Use only when you have a bacterial infection.
3. Always finish your full prescription.
4. Never share them or save them for later.

Learn more at www.healthoregon.org/antibiotics
### Oregon Statewide Antibiogram

Also stratified by Portland Tri-county and non Portland Tri-county

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**Oregon – 1 January- 31 December 2015 Cumulative Antimicrobial Susceptibility Report * **

<table>
<thead>
<tr>
<th></th>
<th>Penicillin</th>
<th>Ampicillin</th>
<th>Oxacillin</th>
<th>Ceftiraxone</th>
<th>Tetracycline</th>
<th>Linezolid</th>
<th>Dalomycin</th>
<th>Meropenem</th>
<th>Trimethoprim- Sulfamethoxazole</th>
<th>Vancomycin</th>
<th>Clindamycin</th>
<th>Erythromycin</th>
<th>Nitrofurantoin</th>
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<tr>
<td><strong>S. aureus †</strong></td>
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<tr>
<td>MRSA</td>
<td>8858</td>
<td>0%</td>
<td></td>
<td>96%</td>
<td>100%</td>
<td>100%</td>
<td></td>
<td>97%</td>
<td>100%</td>
<td>66%</td>
<td>8%</td>
<td>98%</td>
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<tr>
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<td>100%</td>
<td>96%</td>
<td>100%</td>
<td>100%</td>
<td></td>
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<td>87%</td>
<td>66%</td>
<td>100%</td>
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<td><strong>S. pneumoniae</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>87%</td>
<td>100%</td>
<td>95%</td>
<td>84%</td>
<td>100%</td>
<td>90%</td>
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<tr>
<td>Meningitis</td>
<td>254</td>
<td>81%</td>
<td></td>
<td>95%</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Non-Meningitis</td>
<td>254</td>
<td>99%</td>
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<tr>
<td><strong>E. faecalis</strong></td>
<td>7421</td>
<td>99%</td>
<td>99%</td>
<td></td>
<td>21%</td>
<td>99%</td>
<td>100%</td>
<td></td>
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<tr>
<td><strong>E. faecium</strong></td>
<td>578</td>
<td>50%</td>
<td>37%</td>
<td></td>
<td>37%</td>
<td>100%</td>
<td>93%</td>
<td></td>
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<tr>
<td><strong>S. agalactiae</strong></td>
<td>391</td>
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<td>100%</td>
<td></td>
<td>100%</td>
<td>100%</td>
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</table>

**Notes:**
* Includes 2015 isolate data compiled from voluntary antibiogram submission of 30 Oregon acute care facilities.
† All Isolates not tested against all agents
‡ Total Sample: All S. aureus combined (28471) includes MRSA (8858), MSSA (13854), and S. aureus not otherwise specified (5759).

Reducing the spread of antibiotic resistant bacteria

Interfacility Transfer Communication

Transferring Patients with Multidrug-Resistant Organisms (MDRO)

As part of best practice during patient transfers, information about a patient’s medical status, including colonization or infection with a multidrug-resistant organism, should travel with a patient and be readily available to medical providers.

On this page:

- What does Oregon law require?
- Why are we doing this?
- What should health care facilities do?
- Sample interfacility transfer forms
- Resources

What does Oregon law require?

OAR 333-019-0052 (pdf) - “Communication During Patient Transfer of Multidrug-Resistant Organisms” - sets patient safety expectations about timely communication between health care facilities about multidrug-resistant organisms or pathogens that warrant Transmission-based Precautions. Transmission-based Precautions are disease- or syndrome-specific precautions taken in addition to Standard Precautions, based on the disease or syndrome transmission route and exposure risk (e.g., influenza requires droplet; tuberculosis requires airborne; diarrhea requires contact).

Effective January 1, 2014: When a referring health care facility transfers or discharges a patient who is infected or colonized with a multidrug-resistant organism (MDRO) or pathogen which warrants Transmission-based Precautions, it must include written notification of the infection or colonization to the receiving facility in transfer documents. The referring facility must ensure that the documentation is readily accessible to all parties involved in patient transfer (for example, referring facility, medical transport, emergency department, receiving facility).
Long Term Care Resources

Long Term Care Facility HAI Toolkit

On this page:

Infection Control Resources

- Antimicrobial stewardship
- Handwashing and environmental cleaning
- Rules
  - Interfacility transfer rule
  - HAI reporting
- General training and resources

Organism Specific Resources

- Multidrug resistant organisms
- Norovirus
- Respiratory conditions
- Urinary tract infections/ Catheter associated urinary tract infections

Infection Control Resources

Antimicrobial Stewardship

- CDC’s Core Elements of Antibiotic Stewardship for Nursing Homes
  
  Guidance: Nursing homes are encouraged to work in a step-wise fashion, implementing one or two activities to start and
NEXT STEPS
Using data for action

• Annual Surveys with antimicrobial stewardship questions
  – Survey sent to long-term care facilities
  – Upcoming survey to hospitals

• Collecting Antibiogram Reports from Oregon Laboratories
Communication
Techniques: Active Listening

- Seek to understand
- Be non judgmental
- Use silence effectively
- Give undivided attention

http://www.state.gov/m/a/os/65759.htm
“My child has been really sick for days and I want an antibiotic so they can feel better.”

Content reflection
• “You feel that an antibiotic is the solution.”

Feeling reflection
• “You’re worried about your child.”

Meaning reflection
• “You are wanting to take action.”
Key Principles

Express Empathy
- Convey that you understand the other person

Develop Discrepancy
- Current and desired behavior

Roll with Resistance
- Don’t oppose - reframe as momentum toward change

Support Self Efficacy
- Key element to change

1) Engage

- Build a relational foundation
- Establish roles in the relationship
- Establish a rapport and build trust
- Promote mutual buy-in
2) Focus

Develop and maintain a strategic focus

Collaborate on the conversation

Use more of a following and guiding vs directive approach
3) Evoking

Explore patient’s motivation, goals and ideas

Identify and resolve ambivalence

Help patient discover reasons for making a change

Identify barriers to change

Preparation: Target date, supports, resources
4) Plan

Develop a commitment to change

Focus on the “how”

Collaborate on incremental goals

Include structure, accountability and benchmarks
The Spirit

Collaboration

Compassion

Acceptance

Evocation

The Spirit
EVALUATION QUESTION
THANK YOU

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Lisa.c.takeuchi@state.or.us
CDC Resources

• Implementation of Antibiotic Stewardship Core Elements

• Core elements checklist

• Antibiotic Use in the United States: Progress and Opportunities

• CDC’s Antibiotic Stewardship Training Series
More resources

• Minnesota Department of Health resources: [Minnesota Guide to a Comprehensive Antimicrobial Stewardship Program](#)

• Implementing an Antibiotic Stewardship Program: Guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America: [https://academic.oup.com/cid/article/62/10/e51/2462846](https://academic.oup.com/cid/article/62/10/e51/2462846)

OHA Resources

- CRE toolkit
- Oregon AWARE
- Recommendations for specific MDROs
- Long Term Care Facility HAI toolkit