Healthcare-Associated Outbreaks: What to Expect?

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Oregon Public Health Division
Healthcare-Associated Infections Program

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Oregon Health Authority

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

*OAR 333-018-0015

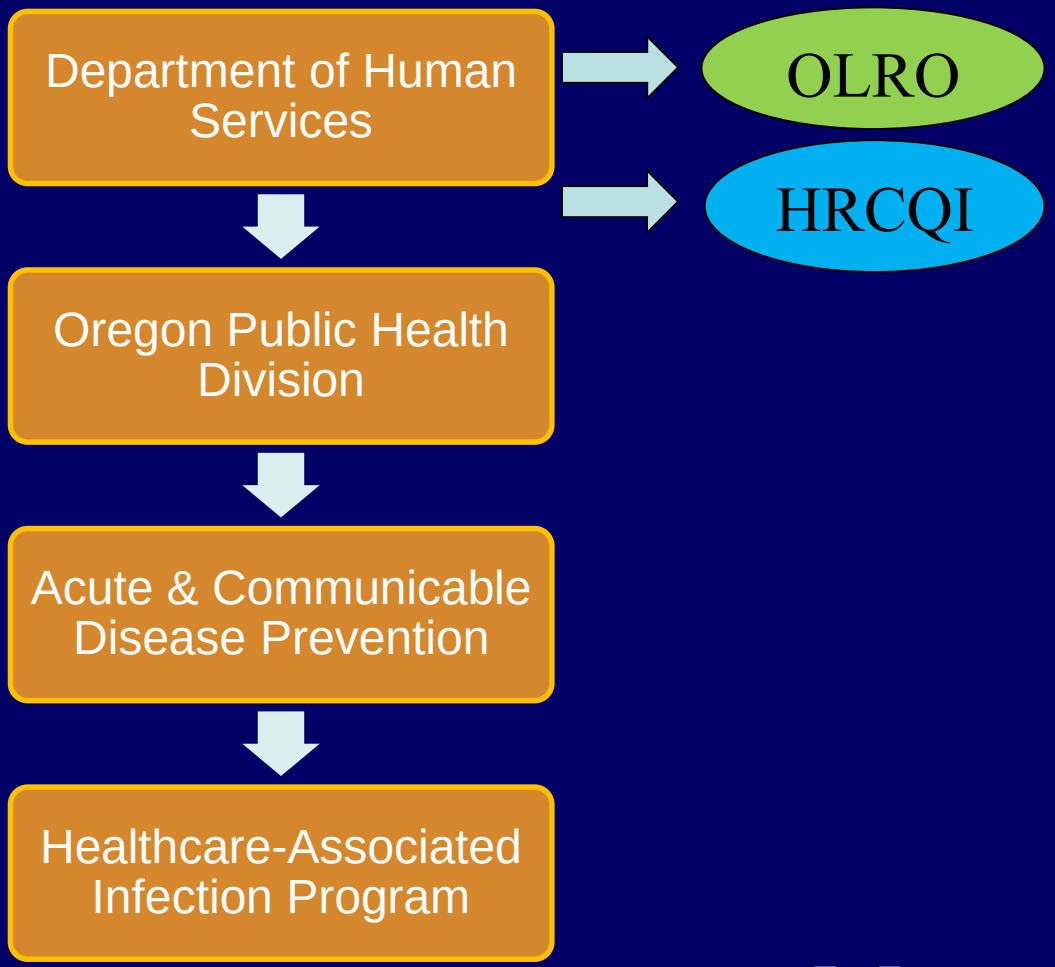
What makes an HAI outbreak?

- 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
OLRO
HRCQI
Oregon Public Health Division
Acute & Communicable Disease Prevention
Healthcare-Associated Infection Program

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

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Our Partners

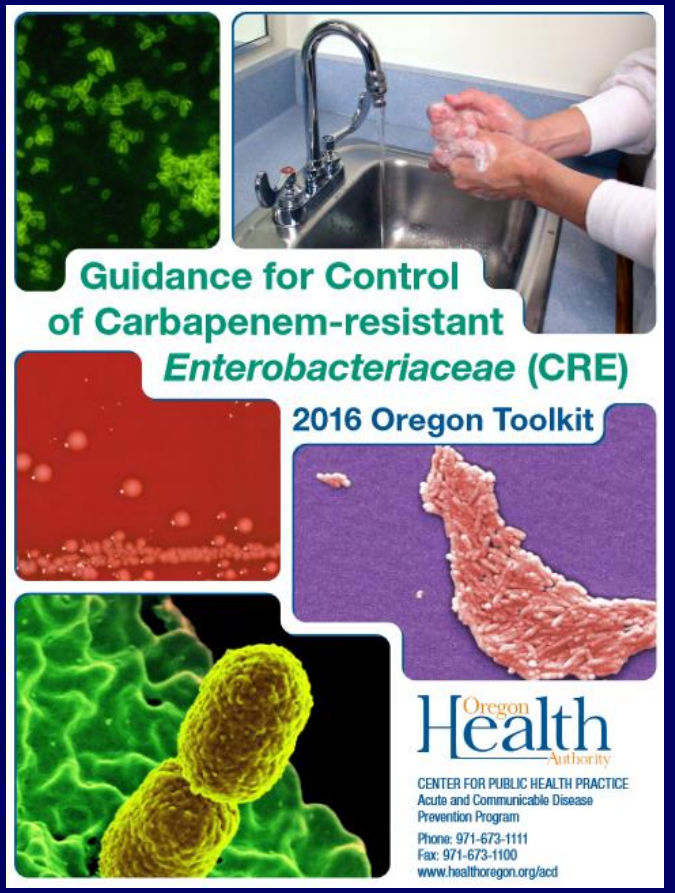
What is the role of Local Health Departments?

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

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!

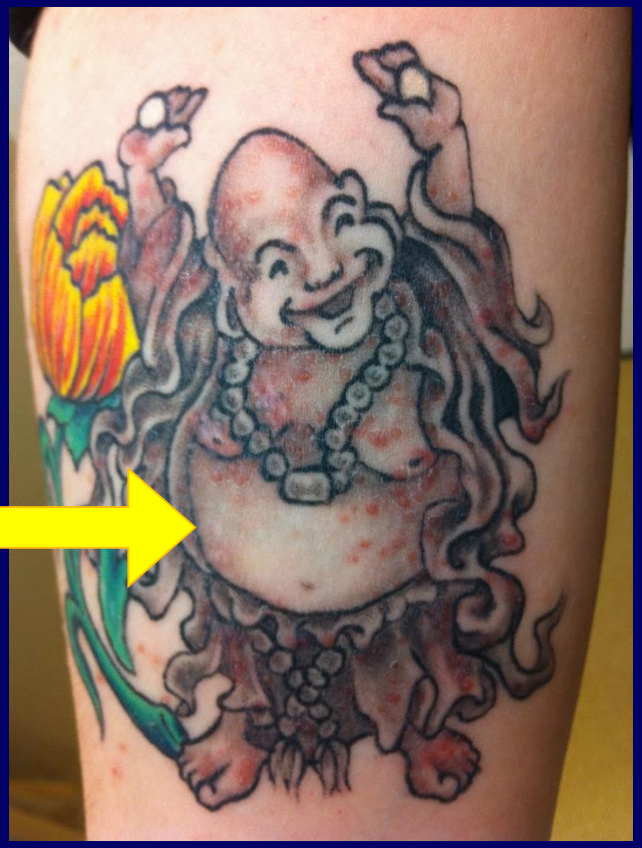


http://public.health.oregon.gov/DiseasesConditions/DiseasesAZ/Pages/disease.aspx?did=108

Summary of recommendations for management of SNF residents with CRE

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

Tattoo: Water contamination causing non-tuberculous mycobacterial infection



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

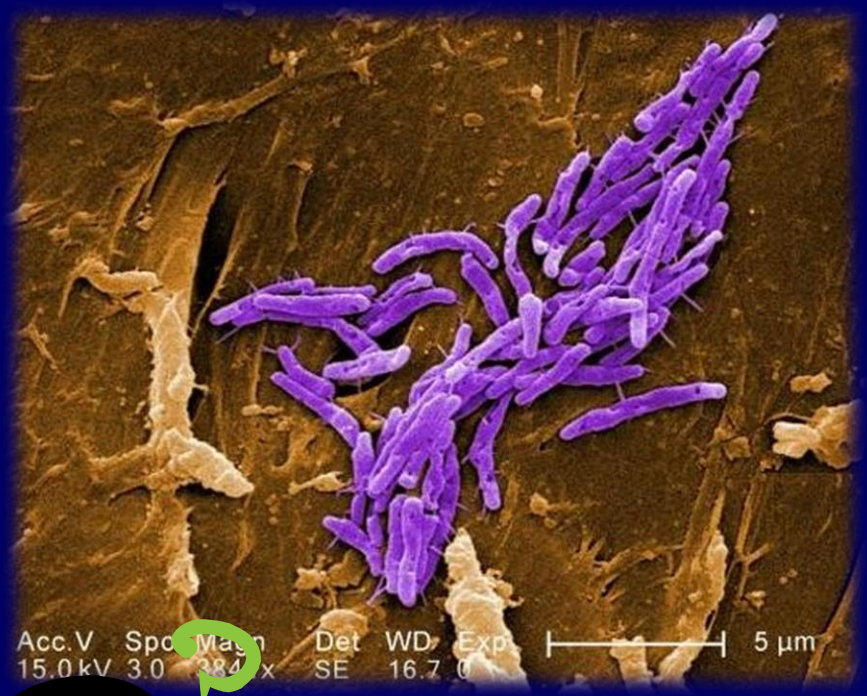
Screening & Response

- 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

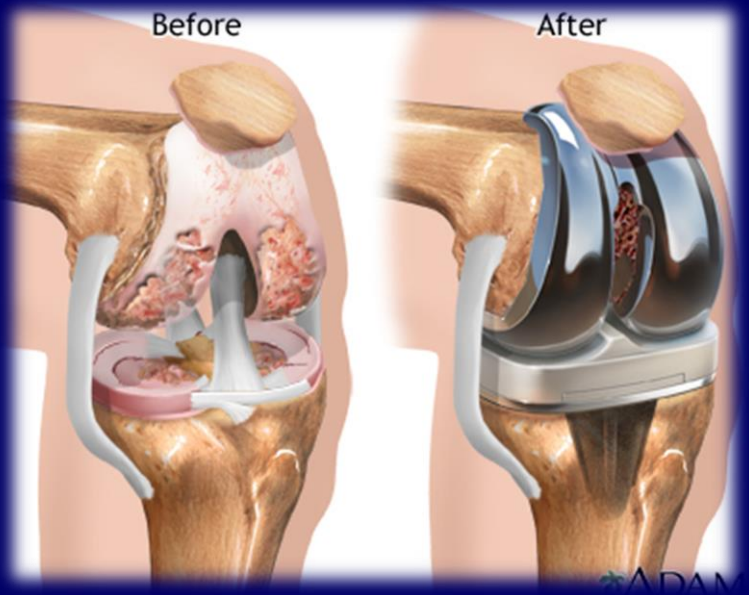
- Case finding
  - Surveillance, Health Alert, *Epi-X*
  - National Health Safety Network (NHSN)
    - Surveillance for healthcare-associated infections by healthcare facilities; required for hospitals
- Matched Case Control Study
  - Exposures: surgeon, vendor, OR, day, OR staff
- Observation
  - Watched 3 joint replacement surgeries
- Environmental samples
  - Based on epidemiology

Case Definition

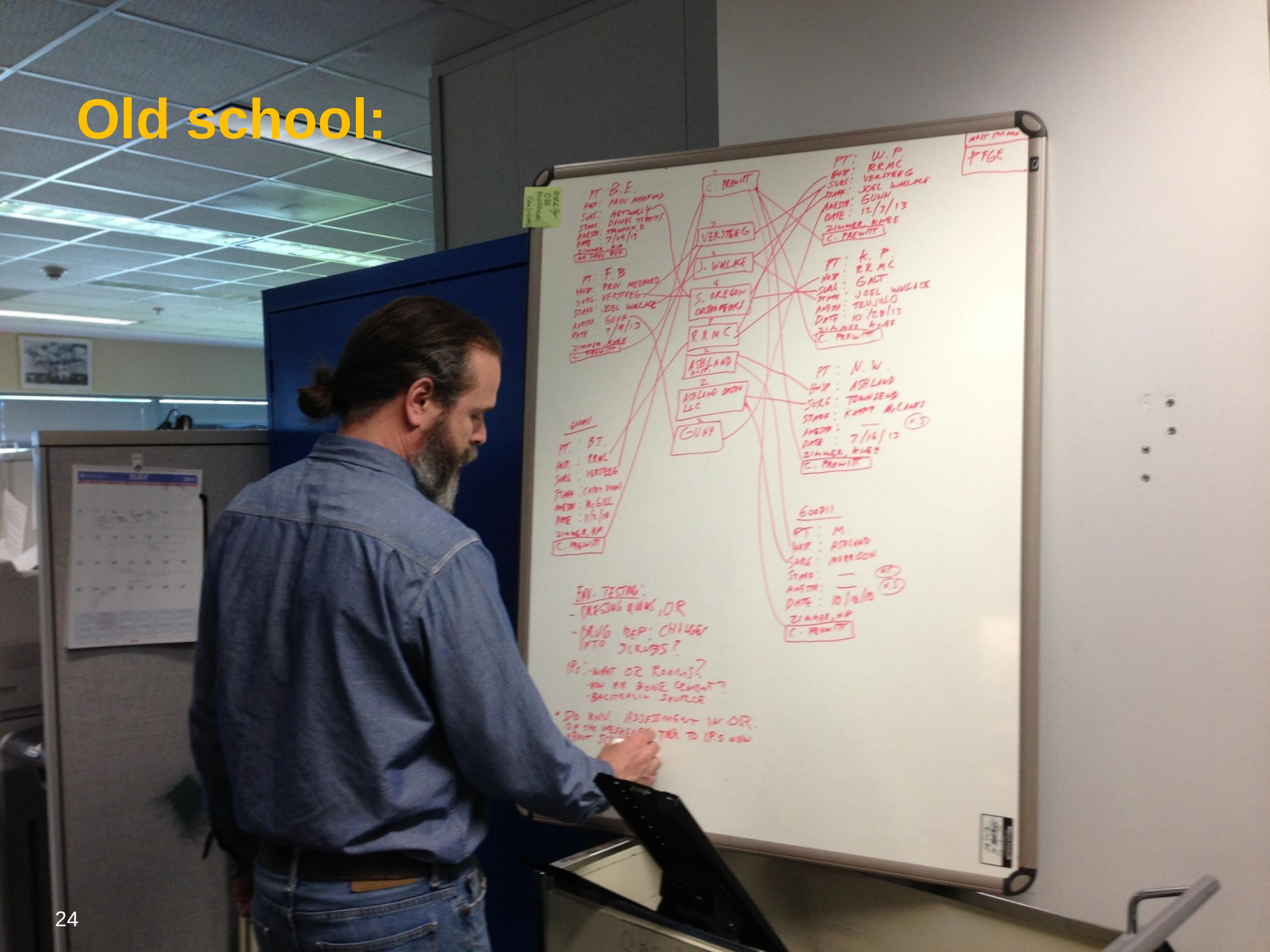
- A surgical site NTM infection involving the skin, tissue, bone or joint
- Between July–December, 2013, or October–November, 2010
- In a patient who underwent knee or hip joint replacement surgery
- At Hospitals A, B, C, or D, within 1 year prior to the infection

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



Old school:


C. PREWITT
VERSTEEG
J. WALLACE
S. OREGON
RRMC
ASHLAND
GUNN
PT: B.E.
PT: F.B
PT: W.P.
PT: K.P.
PT: N.W.
PT: B.T.
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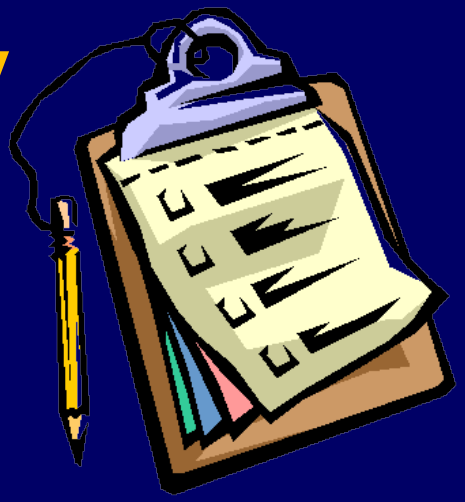
C. PREWITT
C. PREWITT
C. PREWITT
C. MCGUIRE
INV. TESTING:
- DRESSING WOUNDS, OR
- DRUG DEP. CHILDREN INTO DRUGS?
IPs: - WHAT OR ROOMS?
- BACITRACIN SOURCE

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

Oregon Health Authority

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:
  - https://public.health.oregon.gov/DiseasesConditions/CommunicableDisease/Outbreaks/Pages/index.aspx

Healthcare-Associated Infections (HAI)

- Learn about HAIs
- For Health Care Facilities
- For Health Professionals
- For the Public
- HAI Reporting
- HAI Surveillance
- HAI Validation
- HAI Prevention
- HAI Publications and Maps
- Infection Control Resources

Healthcare-Associated Infection Outbreaks

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

On this page:

www.healthoregon.org/hai

Related Resources

- Diseases A-Z
- Emerging Infections
- CDC's HAI website
- National Healthcare Safety Network (NHSN)
- HAI Definitions (pdf)

Contact Us

- HAI Staff Directory
- Acute & Communicable Disease Prevention Section

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; ar 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

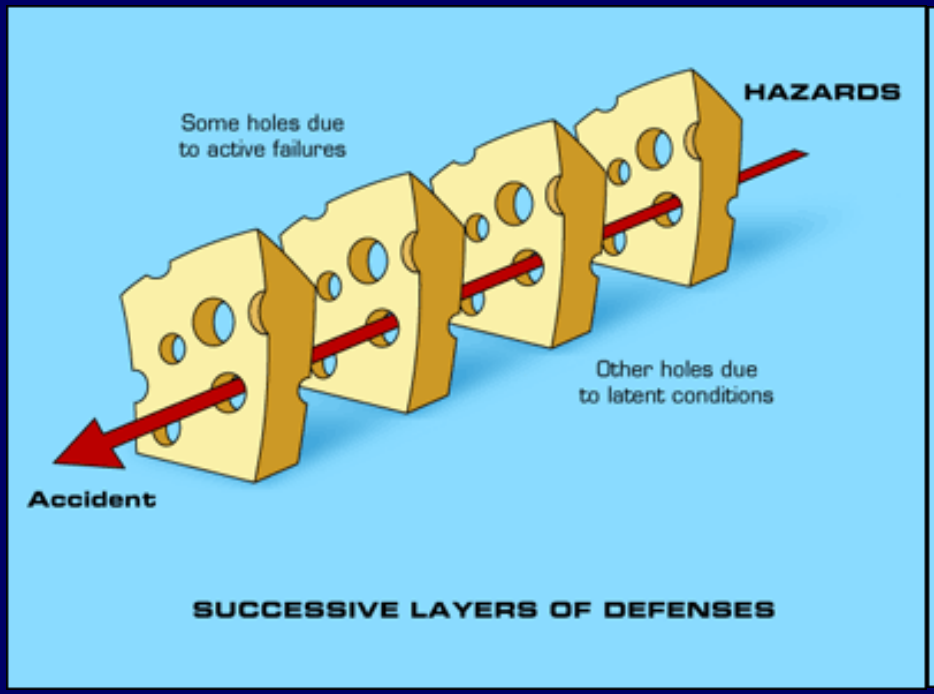
Outbreak expectations

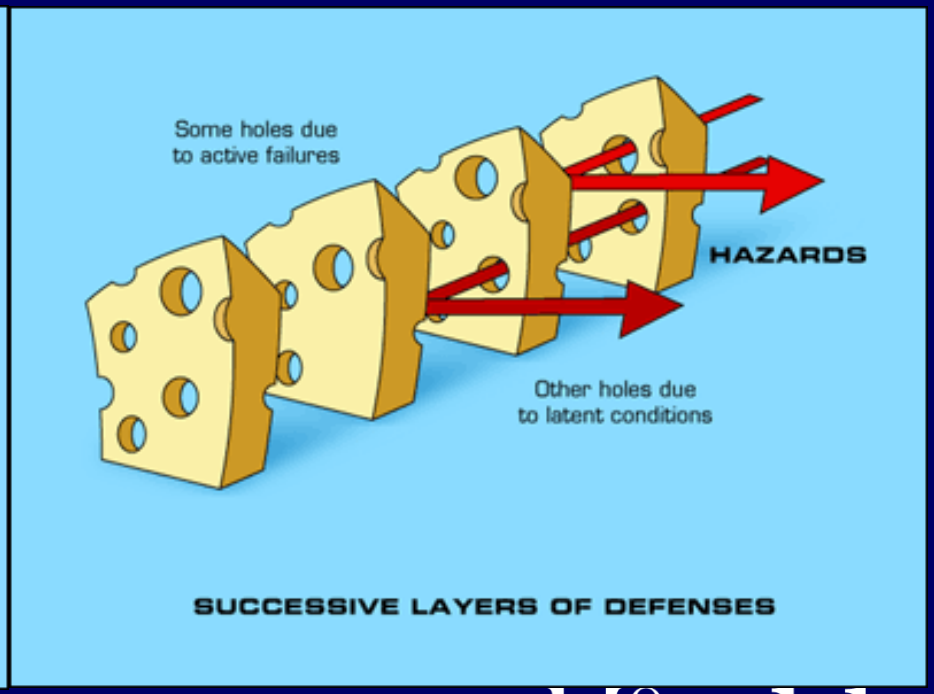
- Facilities and providers will work collaboratively with PH
  - Make timely reports to public health*
  - Share information
  - Discuss recommendations
- Public health will work collaboratively with facilities and providers to contain the outbreak and identify a source:
  - Special lab testing
  - Protect personal health information
  - Work with providers to ensure patient safety
  - Educate facilities and providers, as indicated

* www/healthoregon.org/diseasereporting

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

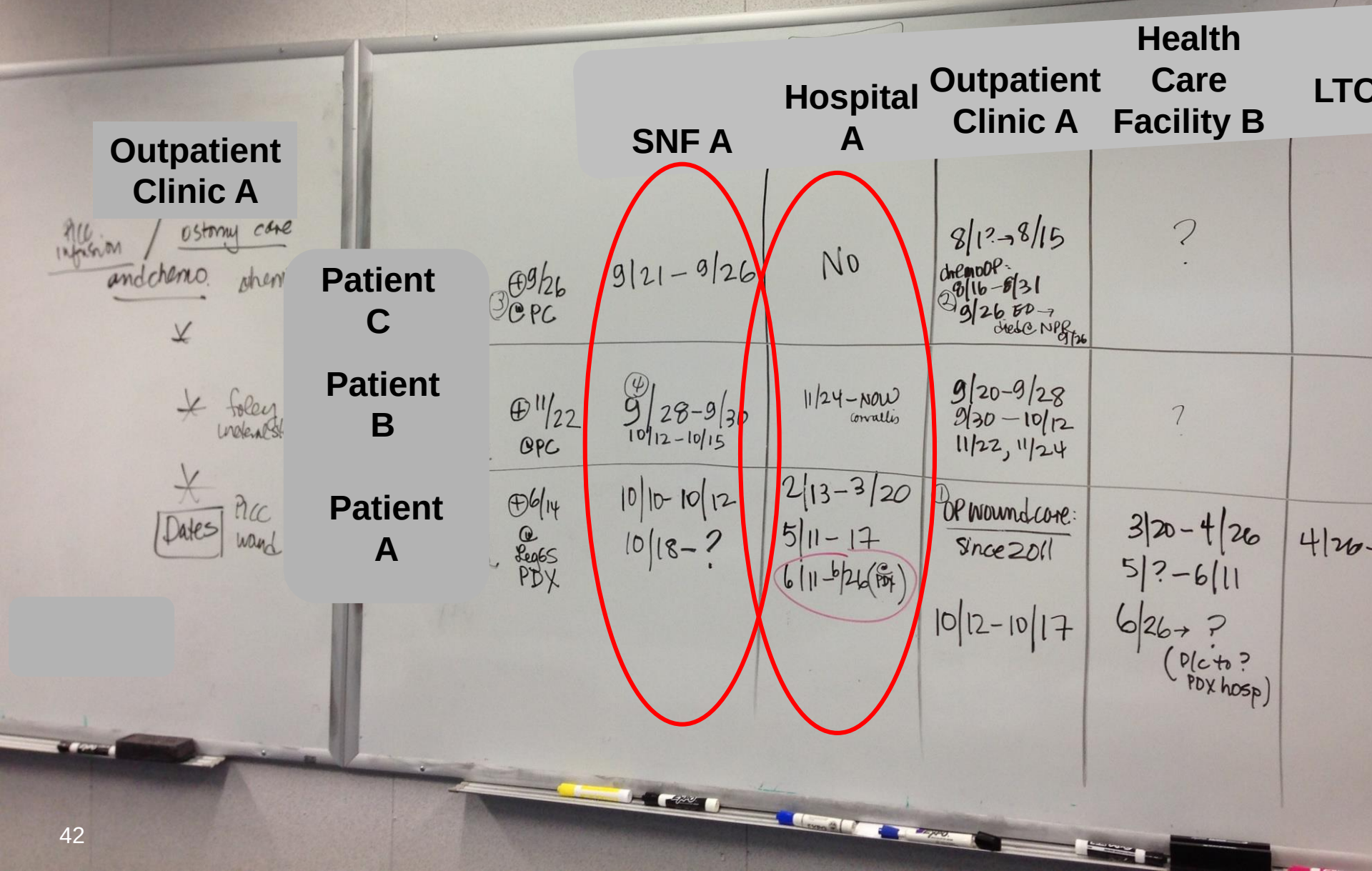
One fine day at ACDP…

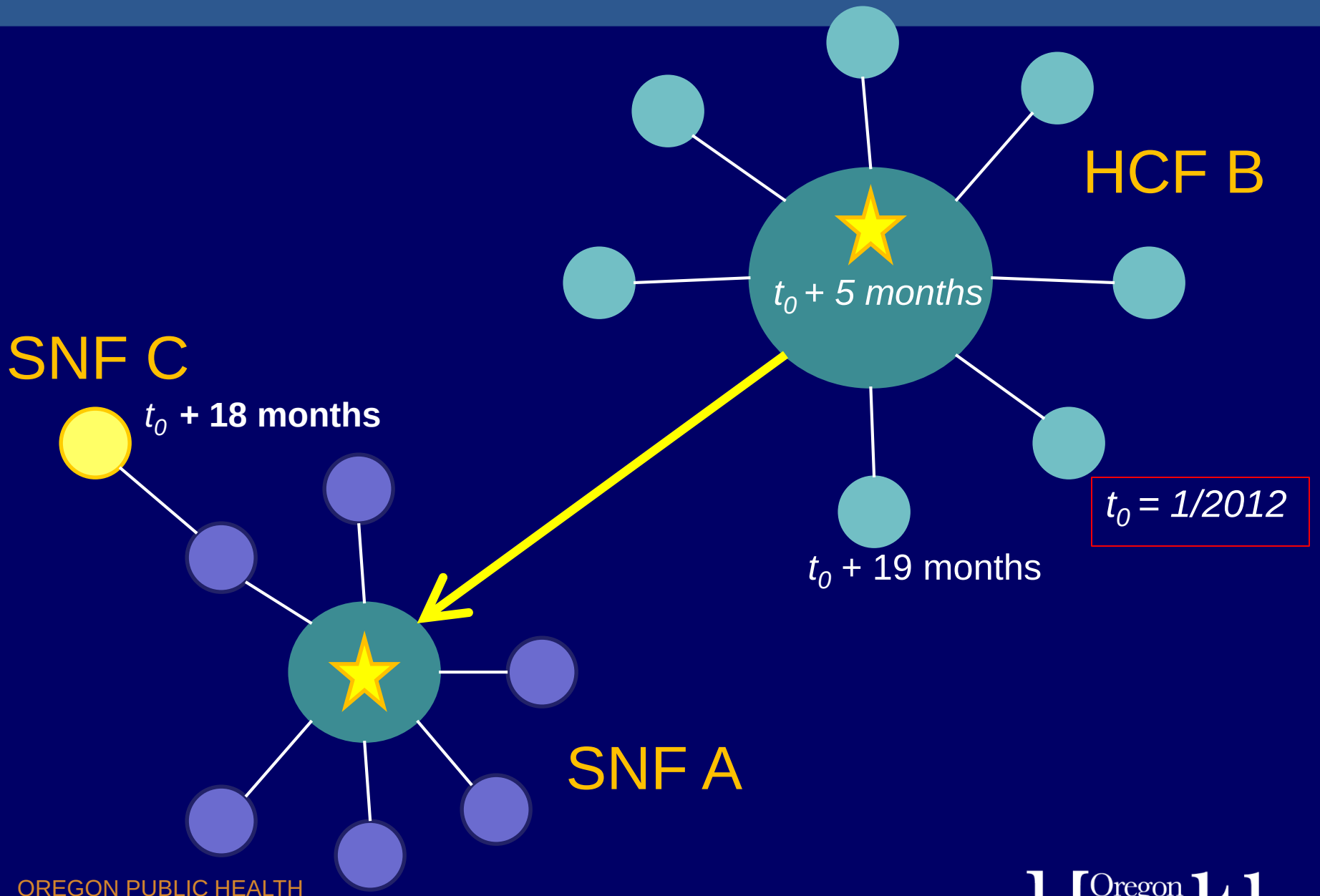
- Infection prevention control nurse, Hospital A
  - 2 isolates of *Acinetobacter baumannii*
  - 2 months apart
  - 2 patients from same Skilled Nursing Facility A

- Surveillance review identified other cases at Healthcare Facility B


A. baumannii

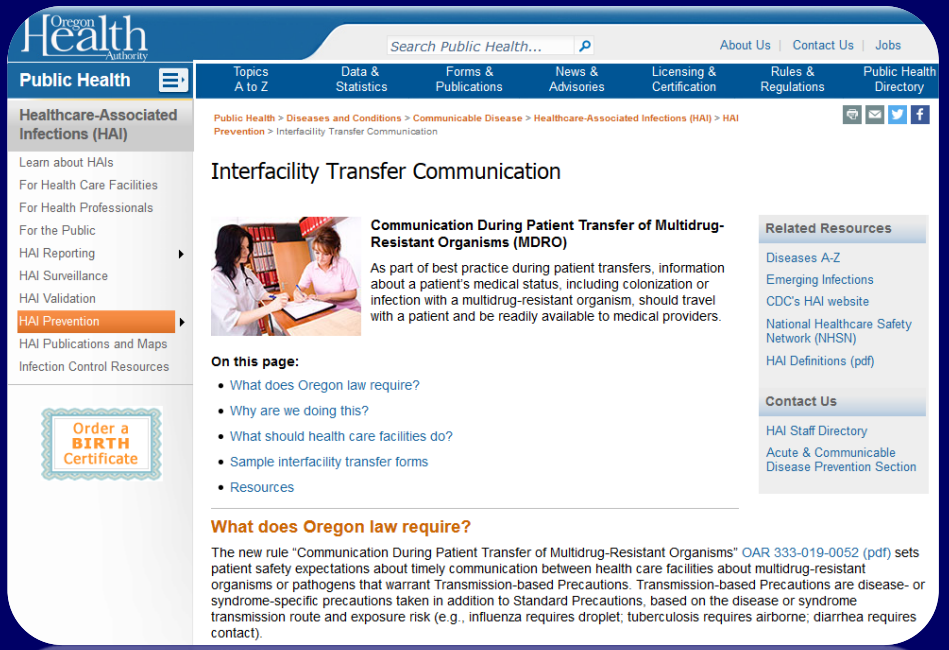
Traceback


Outpatient Clinic A
SNF A
Hospital A
Outpatient Clinic A
Health Care Facility B
LTC
Patient C
Patient B
Patient A
PICC infusion / ostomy care
and chemo
foley
Dates
PICC wand
⊕9/26 @PC
9/21 – 9/26
No
8/12 → 8/15
chemoOP: 8/16 – 8/31
9/26 ED → liedC NPR 9/26
?
⊕11/22 @PC
9/28 – 9/30
10/12 – 10/15
11/24 – NOW
corvallis
9/20 – 9/28
9/30 – 10/12
11/22, 11/24
?
⊕6/14 @Legs PDX
10/10 – 10/12
10/18 – ?
2/13 – 3/20
5/11 – 17
6/11 – 6/26 (PDX)
OP woundcare: since 2011
10/12 – 10/17
3/20 – 4/26
5/? – 6/11
6/26 → ?
(D/C to ? PDX hosp)
4/26


HCF B
t_0 + 5 months
SNF C
t_0 + 18 months
t_0 = 1/2012
t_0 + 19 months
SNF A

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

Patient/Resident Last Name	First Name	Date of Birth
Print or place Patient Label		

Sending Facility Name	Sending Facility Unit	Sending Facility Phone #

Is the patient/resident currently on antibiotics? □ **NO** □ **YES** **DX:** _____

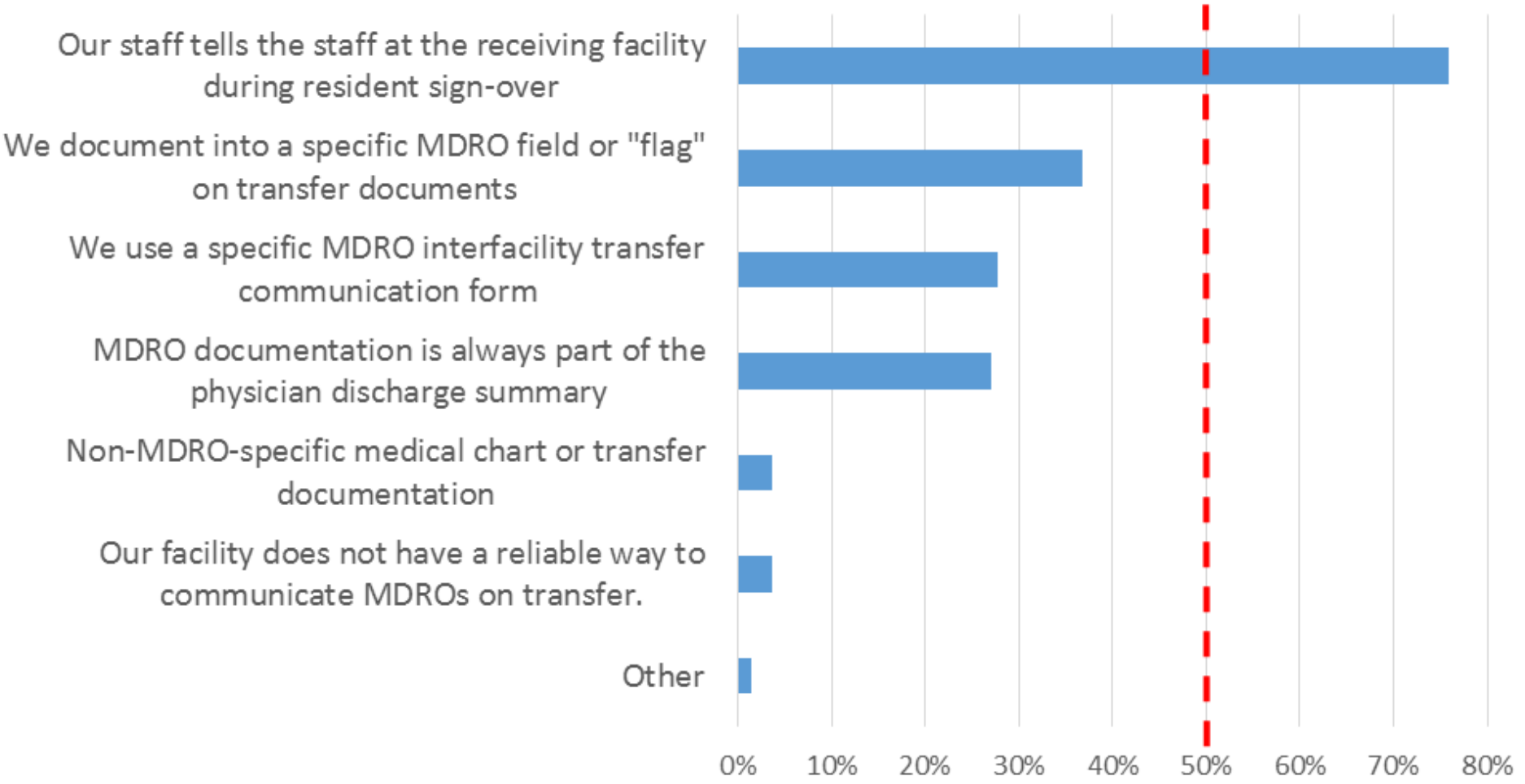
Does the patient/resident have pending cultures? □ **NO** □ **YES**

Is the patient/resident currently on precautions? □ **NO** □ **YES**

Type of Precautions (check all that apply) □ **Contact** □ **Droplet** □ **Airborne** □ **Other:** _____

Does patient currently have an infection, colonization OR a history of a multidrug-resistant organism (MDRO)?	**Colonization or history** *Check if YES*	**Active infection on treatment** *Check if YES*
MRSA (methicillin-resistant *Staphylococcus aureus)*	☐	☐
VRE (Vancomycin-resistant *Enterococcus*)	☐	☐
C. diff *(Clostridium difficile, CDI)*	☐	☐
Acinetobacter **spp.,** multidrug-resistant	☐	☐
Gram-negative organism resistant to multiple antibiotics* (e.g., *E. coli, Klebsiella, Proteus* spp.)	☐	☐
CRE (carbapenem-resistant *Enterobacteriaceae*)	☐	☐

How does your facility communicate MDRO or CDI at transfer? (N = 133)



Source: 2015 Oregon HAI Survey of SNFs

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
- Know you policies and procedures for dealing with infectious diseases
  - e.g., Guidelines for Minimum Expectations in Outpatient Clinics

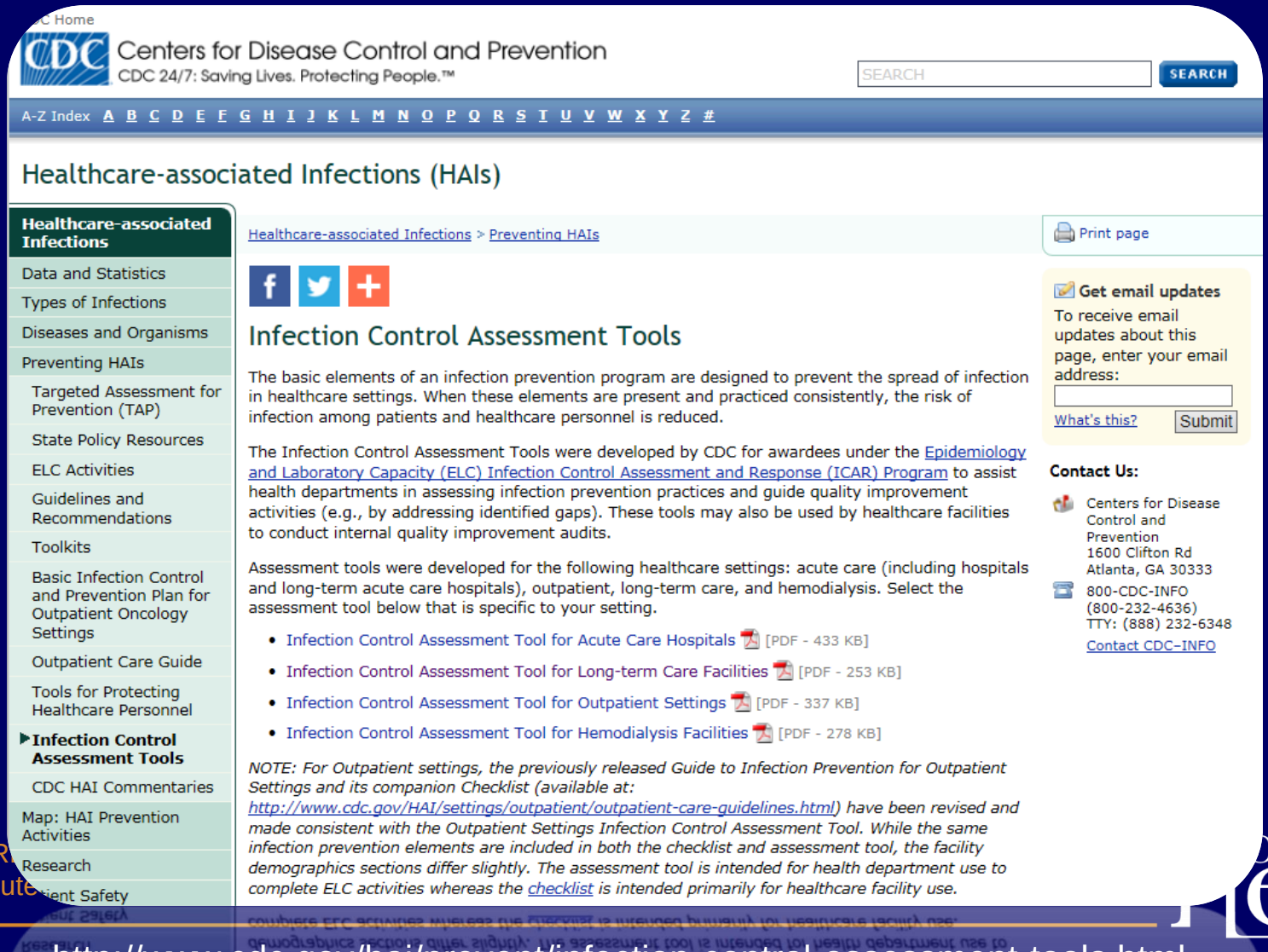
RESOURCES

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/

Oregon Patient Safety Commission On-Site Consultations 2016–2017



http://www.cdc.gov/hai/prevent/infection-control-assessment-tools.html

Infection Control Self-Assessment Tools

VIII. Injection Safety and Point of Care Testing		
Elements to be assessed	**Assessment**	**Notes/Areas for Improvement**
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).	○ Yes ○ No	
B. Personnel who perform point of care testing (e.g., AMBG) receive training and competency validation on injection safety procedures at time of employment. *Note: If point of care tests are performed by contract personnel, facility should verify that training is provided by contracting company*	○ Yes ○ No	
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. *Note: If point of care tests are performed by contract personnel, facility should verify that training is provided by contracting company*	○ Yes ○ No	

http://www.cdc.gov/hai/prevent/infection-control-assessment-tools.html

EDUCATION

Educational opportunities

oneandonlycampaign.org

Course & Webinars

- Infection Control Fundamentals Course
  - November, 1–3, 2016
  - FREE, open to all
  - http://oregonpatientsafety.org/news-events/past-events/knowledge-share-webinar-series/696/
    (includes other webinars)

- HAI Webinars: Lunch & Learn
  - 3rd Wednesday of the month, lunchtime
  - Open to all providers, LHDs, labs, etc.
  - https://public.health.oregon.gov/DiseasesConditions/CommunicableDisease/HAI/Prevention/Pages/Lunch-and-Learn.aspx

Thank you for your collaboration to improve care for Oregonians!

Acute & Communicable Disease Prevention Team
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