Statewide Acute Care Survey on Practices Regarding Carbapenem-Resistant Enterobacteriaceae

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Background

- In 2011, along with a handful of other US states, Oregon made Carbapenem-resistant Enterobacteriaceae (CRE) reportable.
- Infection control practices and knowledge among infection preventionists (IPs) were unknown at the time surveillance was implemented. A state-wide survey of IPs was conducted to evaluate CRE infection control knowledge and practices

CRE Surveillance in Oregon

- CRE are defined as Enterobacteriaceae that:
  - » Are non-susceptible (i.e., intermediate or resistant) to ANY carbapenem (e.g., doripenem, ertapenem, imipenem, meropenem); and
  - » Resistant to ANY of the following 3rd generation cephalosporins tested: cefotaxime, ceftriaxone, or ceftazidime; or
  - » Possess/contain a gene sequence specific for carbapenemase (PCR); or
  - » Are positive for carbapenemase production by a phenotypic test (e.g., Modified Hodge Test).
- To date, 105 cases of CRE have been reported statewide
  - » Only three KPC producers
  - » Zero healthcare facility outbreaks

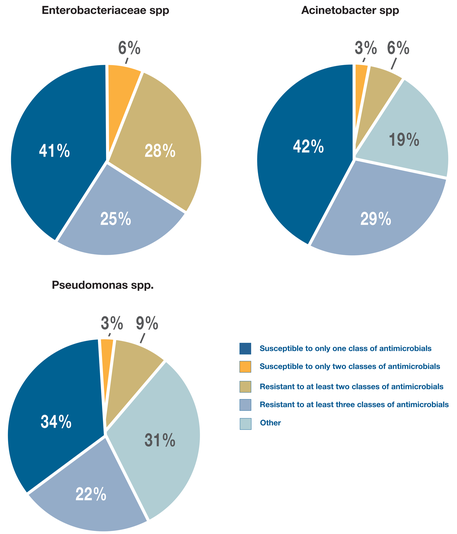
Methods

- November 2012 a 27-question self-administered survey was sent to 62 infection control programs in acute care settings in Oregon.
- The survey was created using SurveyMonkey®, and each IP received a unique survey link via email. Paper copies of the questionnaire were available upon request. Non-respondants received 2 follow up email reminders for survey completion.
- Questions addressed facility-specific definitions, policies and practices regarding surveillance, and control of multi-drug resistant organisms (MDRO) with a focus on CRE. Data were analyzed using IBM SPSS 21®.

Results

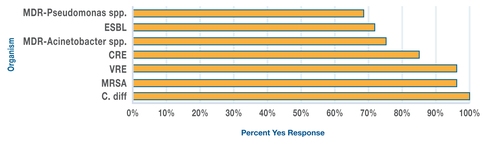
- Surveillance definitions
  - » Definitions of multi-drug resistant (MDR) Enterobacteriaceae varied widely across the 45 (73%) IC programs who responded.
  - » The definition of antibiotic classes was also not consistent. Although the majority of IPs (70%) did not consider cephalosporins and β-lactams to be in the same antimicrobial class, 21% were unsure and 9% considered them to be within the same class.

Figure 1 Surveillance definitions used by Oregon hospitals to define multi-drug resistance for the following gram negative organisms



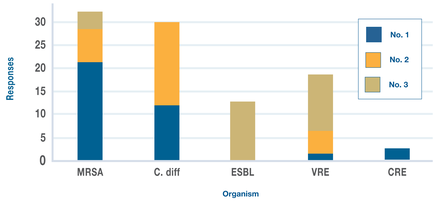
- Infection control response
  - » Only 3 (9%) respondents had encountered CRE in their facility.
  - » 15 (45%) facilities reported reviewing microbiology records to detect unrecognized CRE cases.
  - » A substantial proportion of IPs (42%) were not confident that their facility was made aware of a patient's MDRO status upon admission to the facility.
  - » 18% were not confident that a receiving facility was made aware of a patient's MDRO status upon admission.
  - » Most (85%) respondents recommended use of contact precautions for patients with CRE (Figure 2).
  - » No facility had performed a CRE point prevalence study.

Figure 2 MDROs indicating placement in contact precautions



- Education and Prioritization
  - » Most IPs were aware of the CDC CRE toolkit (94%)
  - » Few selected CRE (6%) as a top priority for prevention (Figure 3)
  - » All respondents expressed interest in CRE education.

Figure 3 IP program ranking of MDRO priorities

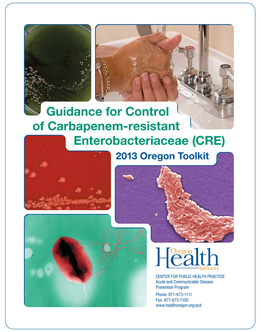


Conclusion

- Definitions of MDROs vary widely across Oregon acute care facilities. This confusion may limit inter-facility communication of MDROs.
- IPs lack confidence regarding awareness of patient's MDRO status upon admission and discharge
- Effective surveillance and prevention of the emergence of CRE in Oregon will require education of infection control programs and coordination of surveillance and control policies and practices among healthcare facilities.

Next steps/Recommendations

In order to meet these needs, Oregon has created the DROP-CRE Network to provide rapid detection of CRE, education and technical assistance for infection control programs and other health care facilities. A CRE Tool-kit



(*http://public.health.oregon.gov/DiseasesConditions/DiseasesAZ/CRE/Documents/cre_toolkit.pdf*) with guidance on CRE detection, treatment and control was created by the DROP-CRE network and distributed statewide to hospitals, laboratories, and long-term care facilities.

Recommendations for CRE Infection Prevention and Control in Acute and Long-Term Acute Care Hospital Settings

Think "NICE" when CRE are encountered:

Notify the county health department, pertinent clinician groups, and the antibiotic stewardship program to presence of CRE in the facility. Additionally, for carbapenemase-producing (CP-CRE), notify hospital administration.

Intervene on all cases with core infection prevention and control strategies: hand hygiene, contact precautions, private rooms, and optimized environmental cleaning. Reduce unnecessary antibiotics and use of invasive devices. Additionally, for CP-CRE, screen patient contacts and cohort staff and patients.

Communicate CRE infection or colonization status to the receiving facility upon patient transfer.

Educate patients, staff, and visitors about CRE.

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