Review of Healthcare-Associated Infection (HAI) and Multidrug-Resistant Organism (MDRO) Reporting Requirements in the United States

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Overview

- Background: Nationwide and Maryland
- Motivation for PHASE Project
- Methods & Results
- Conclusions
- Lessons Learned
  - Limitations and Challenges
  - Public Health Implications
- Acknowledgements
- Questions
In the News.....

Morbidity and Mortality Weekly Report (MMWR)

Vital Signs: Carbapenem-Resistant Enterobacteriaceae

Weekly
March 8, 2013 / 62(09);165-170

The Washington Post

Health & Science

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CDC says ‘nightmare bacteria’ a growing threat

By Lena H. Sun, March 05, 2013

USA TODAY

Deadly 'superbugs' invade U.S. health care facilities

DEADLY BACTERIA THAT DEFY DRUGS OF LAST RESORT
Background: Nationwide

- HAIs have been estimated to cost over $33 billion in direct medical costs
- Emergence of MDROs such as Carbapenem-resistant *Enterobacteriaceae* (CRE) have made headlines for their threat to patient safety
- HAI/MDRO reporting varies across states, with a lack of comprehensive information available for comparison between health departments.
Background: Maryland

• Maryland is currently an Emerging Infections Program (EIP) member state
  ○ Participating in Multi-Site Resistant Gram-Negative Bacilli Surveillance (MuGSI) program for CRE
    ▪ Past PHASE project on CRE prevalence in Maryland
    ▪ CRE found in 80% of hospitals

• Maryland currently mandates:
  ○ HAI - central line-associated bloodstream infections (CLABSI) and certain surgical site infections (SSI), MRSA and healthcare worker vaccination (HCW) rates to MHCC
  ○ MDRO – VRSA/VISA
  ○ HAI Outbreak – general definition (above baseline)
Motivation for PHASE Project

- DHMH is interested in looking over the reporting guidelines in other states to determine what can be improved in Maryland’s:
  - HAI outbreak definitions
  - HAI reporting requirements and criteria
  - MDRO (specifically CRE) reporting requirements and criteria

- With this, I hope to help bring some perspective to what Maryland can do to remain at the vanguard of combating HAIIs and MDROs within its borders.
Methods

- From 2012-2013, a systematic review was performed to ascertain the current state of HAI/MDRO reporting requirements in the US and identify potential new conditions for Maryland health facilities to report.
- Additionally, DHMH indicated carbapenem-resistant *Enterobacteriaceae* (CRE) as an MDRO for further inquiry to determine feasibility of expanded CRE reporting.
Methods

- In order to investigate outbreak definitions and HAI/MDRO requirements, an organized approach was necessary to present the information.
- A comprehensive table was developed created and divided into the following sections:
  - Headings: State, HAI Outbreak Definition, HAI Reporting Requirements, CRE/MDRO Reporting Requirements.
Methods

- Strategies to capture the definitions included using consistent keyword phrases on scientific and general search engines for each state.
  - e.g. for HAI outbreaks, terms included “(state) HAI outbreak definitions,” “(state) outbreak definitions,” “(state) healthcare associated infections outbreak,” etc.

- Further information and context provided by email and phone contact with HAI/MDRO coordinators in other states, Maryland infection preventionists, and other professional organization surveys.
Results
Mandatory HAI Reporting among States

Legend
Any HAI Reporting Mandate?
- No
- Yes
Conclusions

- **Explicit HAI outbreak definitions not commonly found in state reporting requirements**
  - Infection preventionists in Maryland against specified definition due to perceived loss of independence
  - Need to balance IP wishes with state interests

- **Sixteen states have no codified mandate for HAI reporting, and among those that do, reportable HAI conditions vary considerably**
  - CLABSI (n=34) attributed to the relative ease of case detection; reporting for surgical site infections (SSI) and catheter-associated urinary tract infections (CAUTI) follow
Conclusions

- MDROs selected for reporting vary by state
  - E.g. vancomycin-resistant/intermediate *Staphylococcus aureus* (VRSA/VISA) are commonplace
  - Methicillin-resistant *S. aureus* (MRSA) is less commonplace, not mandated or may be only lab reportable

- Seven states have enacted mandatory reporting for CRE, yet concerns over accurate case detection have been highlighted as a significant obstacle towards implementation.
  - Maryland must take the difficulties faced by other states into consideration when revamping CRE reporting requirements
# Case definition for MuGSI

<table>
<thead>
<tr>
<th>Species</th>
<th>Category</th>
<th>Definition of carbapenem-nonsusceptibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>E. Coli</strong></td>
<td><strong>Carbapenem-nonsusceptible</strong></td>
<td>Intermediate or resistant to: imipenem, meropenem, OR doripenem AND resistant to (if tested) ceftazidime, ceftriaxone, and cefotaxime</td>
</tr>
<tr>
<td><strong>Klebsiella</strong>* species &amp; <strong>Enterobacter</strong>** species</td>
<td><strong>Enterobacteriaceae</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Acinetobacter baumannii</strong>§</td>
<td><strong>Carbapenem-nonsusceptible</strong></td>
<td>Intermediate or resistant to: imipenem, meropenem, OR doripenem</td>
</tr>
<tr>
<td></td>
<td><strong>Acinetobacter baumannii</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Klebsiella pneumoniae and Klebsiella oxytoca

**Enterobacter aerogenes and Enterobacter cloacae

§ includes A. baumannii, A. baumannii complex, A. calcoaceticus-baumannii complex (including A. calcoaceticus)
Limitations and Challenges

- HAI/MDRO regulations constantly changing and may not be up-to-date
- Information on state-specific reporting requirements not always readily available
- The presence of a regulation does not always translate into full implementation
- Conflicting information on whether or not specific HAI conditions are reportable
Public Health Implications

- Awareness of the successes and obstacles faced by other states in their respective reporting structures are integral for Maryland to update their mandates.
- CDC public health analysts exploring using comprehensive table in “phConnect” website for state epidemiologists across the United States.
  - Table has been submitted to several HAI coordinators for reference in their reviews.
- Abstracts submitted to CSTE and IDSA/IDWeek.
- Clarifying specific HAI and MDRO reporting criteria will be a vital next step.
Acknowledgements

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Thank you! Questions?