Small State, Big Collaboration: New Hampshire’s Statewide Antibiograms

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Background

- New Hampshire Division of Public Health Services (DPHS) developed capacity and process to produce annual statewide antibiograms using hospital antibiogram data to:
  - Monitor trends over time
  - Promote antimicrobial stewardship
  - Provide a tool for clinicians to help guide empiric antibiotic selection

Methods

- DPHS requested legally-required antibiogram data in a fillable form, separating isolates recovered from urine cultures and all other sources for 2016 then 2017 data
- DPHS validated reported data
- 2 versions of each antibiogram made:
  - Simple percent susceptible
  - Numerator and denominators also shown
- External and DPHS ID and pharmacy subject matter experts analyzed antibiograms and created clinical executive summary
- Reports were disseminated widely through email listservs, the electronic New Hampshire Health Alert Network (HAN), posted to NH DPHS website, incorporated into local CME activities

Results

- 2017 Urine Isolate Composition
- 2017 Non-Urine Isolate Composition

Clinical Messages

- Preferred agents to treat an acute outpatient bacterial pneumonia suspected due to Streptococcus pneumoniae
  1. Amoxicillin
  2. Amoxicillin-clavulanate
  3. Cefuroxime

Asymptomatic bacteria should not be treated with antibiotics in most cases

- National data shows that 44% of outpatient antibiotic prescriptions are written for acute respiratory conditions, at least half of which are caused by viruses and will not respond to antibiotics (JAMA 2016;315:1864-73).

Additions to the 2017 Antibiogram and Executive Summary

- Antibiotics used to predict other antibiotics were noted
- A chart of recommended antibiotic duration by select syndrome was included
- Recommendations regarding interpretation and re-evaluation of patients with history of penicillin allergy

Antibiogram Results

<table>
<thead>
<tr>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Hospitals Represented</td>
<td>23</td>
</tr>
<tr>
<td># of Urine Only Isolates</td>
<td>39,707</td>
</tr>
<tr>
<td># of Non-Urine Isolates</td>
<td>20,280</td>
</tr>
<tr>
<td>% of Staphylococcus aureus isolates resistant to oxacillin (all sources)</td>
<td>32.6%</td>
</tr>
<tr>
<td>% of Enterococcus spp. isolates resistant to vancomycin (all sources)</td>
<td>4.5%</td>
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<tr>
<td>Susceptibility of Streptococcus pneumoniae to azithromycin</td>
<td>68%</td>
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</tbody>
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Conclusions

- NH’s small size, centralized public health structure, and close working relationships with all hospitals allowed for efficient production
- Our process serves as model for other states
- Lessons learned include
  - Technical assistance is needed for standardized reporting
  - Commercial labs should also be included
  - Identified need to track antibiotic use and promote antimicrobial stewardship
  - DPHS incorporated experience and feedback following development of the first antibiogram, and observed markedly increased efficiency for all stakeholders for development of the second

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