A Local Public Health Laboratory’s Role and Surge Implications During a Long-term Shigellosis Outbreak

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Abstract

Objective: To describe the metrics, challenges, successes and lessons learned by a local public health laboratory during a prolonged surge of shigellosis within a community setting.

Scope

- Surveillance
- Epidemiology
- Investigation
- Contact tracing
- Outbreak management
- Laboratory

Introduction

Shigellosis, caused by various species of Shigella, is a highly infectious agent, is spread through the fecal-oral route, and can cause severe illness, including bloody diarrhea, fever, and abdominal cramping. The laboratory played a key role in detecting resistant strains and outbreak management. The laboratory, although with surge workload well beyond its capacity, managed to maintain quality control and provide timely results.

Shigella sonnei Strain Characterization

Rhamnose Utilization

Antibogram

Pulsed Field Gel Electrophoresis (PFGE) Activity

Epidemiological & Investigational Issues & Strategies

Summary and Conclusions

1. Shigella outbreaks can be challenging for public health professionals as they can occur in a variety of settings, including day care centers, schools, and restaurants.
2. Understanding the epidemiology and microbiology of Shigella is crucial for effective outbreak investigation and management.
3. Enhanced awareness of the ongoing outbreak resulting in an increase in testing and reporting.
4. The laboratory, although with surge workload well beyond its capacity, managed to maintain quality control and provide timely results.

Other strategies

- Surveillance
- Epidemiology
- Investigation
- Contact tracing
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Additional references

2. Rapid ID by lab to characterize strain and antibiotic sensitivity is critical for understanding the magnitude and potential spread of the outbreak.
3. Shigella sonnei

97.57% similarity

n=76: J16X01.0199

n=178: J16X01.0283

Shigella Reported Cases - Milwaukee 1978-1988

Laboratory Surge Implications of 15 Month Long Shigellosis Outbreak

<table>
<thead>
<tr>
<th>Description / Timeline</th>
<th>Main Goals &amp; Challenges</th>
<th>Strategies &amp; Solutions</th>
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</thead>
<tbody>
<tr>
<td>- Surveillance</td>
<td>- Monitor for outbreaks</td>
<td>- Establish early warning system</td>
</tr>
<tr>
<td>- Epidemiology</td>
<td>- Identify affected areas</td>
<td>- Increase testing capacity</td>
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<tr>
<td>- Investigation</td>
<td>- Track the spread of illness</td>
<td>- Develop case definition and criteria</td>
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<td>- Contact tracing</td>
<td>- Identify and notify contacts</td>
<td>- Implement contact tracing protocols</td>
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<tr>
<td>- Outbreak management</td>
<td>- Respond promptly to outbreaks</td>
<td>- Develop outbreak response plan</td>
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<tr>
<td>- Laboratory</td>
<td>- Maintain quality control</td>
<td>- Increase laboratory staff</td>
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Shigella sonnei Cases 2007-2008

<table>
<thead>
<tr>
<th>Year</th>
<th>Non-outbreak Cases</th>
<th>Outbreak Cases</th>
<th>Total Cases</th>
<th>Lab confirmed outbreak-related cases of Shigella sonnei</th>
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</thead>
<tbody>
<tr>
<td>2007</td>
<td>10</td>
<td>150</td>
<td>160</td>
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<tr>
<td>2008</td>
<td>12</td>
<td>100</td>
<td>112</td>
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