Legionella case - San Luis Obispo & Monterey County Public Health Laboratories - A Joint Investigation

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Legionella
➢ Legionella bacteria, normally found in soil, surface water and groundwater can grow in water, environment & plumbing systems
➢ Legionella pneumophila can cause Legionnaire’s Disease (LD), pneumonia-like illness that can be fatal
➢ LD is on the rise in the U.S.
  • Rate of reported cases increased 5.5 times (2000 – 2017)

The case
➢ SLO Public Health Communicable Disease Mgr
➢ Christine Gaiger takes a phone call Friday morning, August 25, 2017
➢ Patient hospitalized in Texas with Dx of Legionnaire’s Disease
➢ Santa Clara County resident
➢ Visited SLO county, stayed at a resort cabin, visited Mid-State Fair
➢ Patient certain that LD contracted at resort

Response 1
➢ This is a Friday! But Deputy HO, Lab Dir, EHS Dir and staff meet—10am
➢ EH staffer—travels to resort the same day and collects 12 samples—from the cabin rented by the LD patient and other sites on the resort property; returns and stores samples refrigerated

Sample sheet

Response 2
➢ Monday, August 28
➢ Beebe calls Texas hospital—LD Dx by PCR, no Legionella culture performed = no pt isolate;
➢ 12 samples shipped overnight to Colo State PHL
➢ Wednesday, August 30
➢ Colo State PHL reports one grab sample is Legionella PCR, culture is under way
➢ Sample is LD pt cabin kitchen hot water
Response 3
➢ SLO Public Health notifies resort that the cabin hot water system must be treated to remove Legionella and three negative samples are required to demonstrate successful treatment.

Response 4
➢ Resorts conduct treatment, collects post-treatment samples and sent to Monterey County PHL.

Response 5
➢ MCPHL received 5 samples for Legionella testing on September 6, 2017.
➢ Samples were collected in bottles without sodium thiosulfate to neutralize chlorine that could inactivate Legionella – not ideal.
➢ Samples were tested anyway by Legionella culture and PCR.
➢ Lab suggested resort staff recollect samples using bottles with sodium thiosulfate.

Response 6
➢ Wednesday, September 19
➢ Monterey County PH Lab receives 5 samples from the Resort.
➢ All 5 samples were positive for Legionella by PCR; 2 were also positive by culture.

Legionella Results Summary

<table>
<thead>
<tr>
<th>Cottage</th>
<th>Sample Date</th>
<th>August 30</th>
<th>September 6</th>
<th>September 19</th>
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<tbody>
<tr>
<td>Cove 1</td>
<td>PCR</td>
<td>Monterey</td>
<td>Monterey</td>
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<tr>
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<tr>
<td>Cove 5</td>
<td>PCR</td>
<td>Monterey</td>
<td>Monterey</td>
<td>Monterey</td>
</tr>
</tbody>
</table>

Post Testing Events
➢ Resort replaces hot water fixtures and retests.
➢ October 13, 2017, SLO County Health Officer issues an order to the Resort: Units positive for L. pneumophila will remain closed until 3 separate hot water samples taken 24 hrs apart test negative.
➢ Uncertain whether additional post remediation samples were collected to obtain 3 negative results.
MCPHL: CDC ELITE Laboratory

- Environmental Legionella Isolation Techniques Evaluation Program
- ELITE certified laboratories must demonstrate successful testing proficiency
- MCPHL currently performs 3 different Legionella test methods

Legionella Test Methods

- Several different lab tests available for Legionella detection vary in usefulness, advantages and disadvantages
- Important to consult with lab regarding sample collection, transport and test interpretation

- CDC ELITE program recommends using CDC culture method plus additional testing (PCR & biochemical, antibody testing)
- PCR testing may be more sensitive; however, PCR can detect dead or injured organisms that are unable to grow on culture media
- IDEXX Legiolert testing is useful for screening and monitoring
- Legionella isolated using CDC culture method can be analyzed using Whole Genome Sequencing to compare Legionella strain types

Whole Genome Sequencing to Establish Link

- SLO PH lab performed WGS to type Legionella strains from water samples; however, since the hospital did not obtain Legionella culture, we were unable to link strains from resort to that of patient
- Establishing links between Legionella isolated from environmental and clinical samples requires timely coordination between Environmental Health, Laboratories and Communicable Disease Experts

Questions???