IDENTIFICATION AND ISOLATION OF LEGIONELLA FROM ENVIRONMENTAL WATER SAMPLES IN THE STATE OF MARYLAND: A 2011 THREE MONTH ANALYSIS OF UNUSUAL ACTIVITY MARKED BY THREE MULTI-REGION LEGIONELLA SPECIES OUTBREAKS

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BACKGROUND

The Maryland Department of Health and Mental Hygiene (MD DHMH) Laboratories Administration identified a three month period of unusual environmental Legionella species outbreak activity from multiple regions with associated cases of morbidity and mortality within the State of Maryland. Legionella is a reportable disease under the Code of Maryland Regulations (COMAR 1010.06.01.03. Reportable Diseases, Conditions, Outbreaks, and Unusual Manifestations; Submitting Clinical Materials). The MD DHMH Laboratories is the only certified laboratory within the State of Maryland for the CDC ELITE Program (Environmental Legionella Isolation Techniques Evaluation), which certifies the laboratory in the isolation of Legionella from water samples.

OBJECTIVE

Since Legionella from community water sources can be epidemiologically linked with Legionnaires’ disease, the MD DHMH laboratories isolate Legionella culture from environmental water sources and detect Legionella species and serogroups to identify potential environmental sources of pathogenic Legionella. This study evaluated the identification and isolation of Legionella species in the State of Maryland environmental water samples and swabs collected during a 2011 three month period that included an unprecedented three multi-region Legionella species outbreak scenario with associated cases of morbidity and mortality.

STUDY DESIGN

The MD DHMH Laboratories Administration Division of Virology and Immunology performed pre-remediation and/or post-remediation testing for three Legionella outbreaks in three Maryland regions during the period of October 2011 to December 2011.

METHODS

For each of the approximate 400 bulk water and swab specimens collected, the laboratory performed sample filtering (bulk water), culture isolation (bulk water and swabs), and strain serotyping by direct fluorescent antibody (DFA) to identify Legionella species and serotypes.

TIMELINE

Environmental Legionella Outbreaks in the State of Maryland from October 2011 to December 2011.

SITE 1

Legionella outbreak at a nursing center. 35 pre-remediation specimens collected (18 bulk water, 17 swab). RESULTS: 29 specimens tested reactive for Legionella pneumophila serogroup 1 (LP1); 3 specimens tested reactive for Legionella spp. (non-pneumophila); 3 specimens tested non-reactive for Legionella.

SITE 2

Legionella outbreak at assisted living center. 63 pre-remediation specimens collected (32 bulk water, 31 swab) and 40 post-remediation specimens collected (21 bulk water, 19 swab) RESULTS: 23 pre-remediation specimens tested reactive for Legionella pneumophila serogroup 6 (LP6); 16 specimens tested reactive for Legionella spp. (non-pneumophila); 3 specimens tested reactive for both LP6 and non-pneumophila Legionella spp.; 11 specimens tested non-reactive for Legionella.

SITE 3

Legionella outbreak at apartment complex. 19 pre-remediation specimens collected (11 bulk water, 8 swab) and 17 post-remediation specimens collected (9 bulk water, 8 swabs). RESULTS: 3 specimens tested reactive for Legionella pneumophila serogroup 1 (LP1); 3 specimens tested reactive for both LP1 and non-pneumophila Legionella spp.; 13 specimens tested non-reactive for Legionella.

SUMMARY OF RESULTS

Each of the three sites tested positive for detectable levels of Legionella species. Sites #1 and #3 contained a combination of Legionella pneumophila serogroups 1 and 6 and non-pneumophila Legionella species. Site #2 contained Legionella non-pneumophila species only.

DISCLAIMER

The contents of this poster are solely the responsibility of the researchers and do not necessarily represent the official views of the State of Maryland Department of Health and Mental Hygiene Laboratories Administration.