

# CDC MMWR Report is all about 2017 Legionella Outbreak in Memphis Hotel

February 02, 2018

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The Centers for Disease Control and Prevention (CDC) released its weekly Morbidity and Mortality weekly report (MMWR) on January 19th. This release contained an investigative report about a 2017 Legionella outbreak that is associated with hotel hot tub and pool. Most of the outbreak cases were found by old fashioned investigative work rather than sample analysis.

The outbreak came to light after first 3 cases were identified. This pointed out the likely source to be hotel's hot tub. When further investigation was conducted, a total of 92 cases were identified. There were 16 hospitalizations and 1 death. All the rest of the infected individuals needed medical care.

The first 2 travel-associated cases of the outbreak was identified on June 26, 2017. CDC notified the Tennessee Department of Health of illnesses of two people – one in Florida and another in United Kingdom with both of them having common exposure in a Memphis Hotel in Tennessee. Another case was identified in June 27, 2017 in the Shelby County and was reported to the authorities by the local health department. All three persons tested positive for Legionella and reported using the hotel hot tub. On June 28, the Tennessee Health Department (TDH) was notified of 4 additional cases of Legionella. All of them were exposed to the hotel facilities. One of these people died.

On June 28, a public health directive was issued to the hotel closing its aquatic facility. This prompted a local and state investigation of the hotel premises that included environmental health, epidemiologic and laboratory health components. Expert consultation was done with a firm that was familiar with CDC Legionella reduction guidance for assessment, testing, and remediation of hotel's water systems. The testing by the specialists of the hotel aquatics facility revealed low chlorine residuals and improper water treatment monitoring. Chlorine residuals in water is expected to be in the range of 1-3 ppm but the results showed the residuals to be 0 ppm. The reports also identified three Legionella polymerase chain reaction in the hotel facilities:

- One in the pool
- One in the pool sand filter
- Other in hot tub sand filter

They isolated 2 non pneumophila Legionella species including an isolate from the hotel's aquatic facility sprinkler system.

An online survey was conducted to get additional exposure information among the hotel guests. A guest roster was requested which included a list of hotel guests before and after opening of hotel's aquatic facility i.e. from May 15 – June 27. On July 6, a total of 4000 emails and 209 letters were sent to all the guests. 983 responses were received after the survey end date, July 31. The following information was revealed from the survey:

- A total of 92 cases were identified
  - 9 laboratory-confirmed cases
  - 19 probable cases
  - 64 suspected cases

(All the people stayed in the hotel from May 15- June 27)

- Cases were reported from a total of 29 states and included United Kingdom, Canada and Australia too.
- Media age was reported to be 55 years.
- 26 of the cases reported were smokers.

### **About MMWR:**

The MMWR report is an epidemiological digest that is published every week by the CDC for the US. It is the main channel to publish public health information and recommendation from the state health departments and deliver it to various institutions and concerned audience. All the material published in the report is in weekly domain. Reports draws upon certain health related topic and also reports long term statistics along with current trend changes.

### **Legionella Increase in US:**

Legionnaire's disease has shown a drastic increase in the past few years. Some figures have suggested an increase in 450% of cases in the last 2 decades. In the year 2017, cases have been found everywhere from Las Vegas hotel, New York police station, Florida gym to everyone's most favorite place on Earth – Disneyland. However, the most common facilities for the outbreak of Legionella remained hospitals, hotels and long term care facilities. When answering questions about why there is an increase in cases, there is still not a single cause to point out. And everything from aging population to immunosuppressive medications is being blamed.

Legionella is a severe type of pneumonia that is caused by *Legionella pneumophila* that is found in both potable and non-potable water systems.

Here are some more *facts about Legionella* that you should know:

- Legionella cases are noticed more in the warmer months: summer and fall
- People who are aged above 50 are more susceptible to disease.
- Regardless of the age, 90% of those affected with Legionella are hospitalized.
- A study suggested that Legionella can spread by at least 6 km in air from the source.

The Legionella outbreak investigation that is reported in the MMWR also emphasizes on the importance of notification and collaboration among various institutions like health departments, laboratory disciplines etc. Prompt reporting of both domestic and international cases to CDC and then to the state and local health departments led to identification of the common hotel source and hence, initiating a rapid outbreak investigation of the hotel premises. This prevented any further increase in cases. Within 3 days of first case identification, environmental assessment was performed and within 12 days epidemiologic analyses and results were available. This helped in identifying the problem with the hotel's aquatic facilities and solving it.

On one hand, where prompt reporting, investigation and identification highlights the positive side of the outbreak related action, importance of obtaining clinical isolates during outbreak has to be stressed on more in future. There is a high need in providing clinical isolates for public Legionella investigation or any other outbreak investigation for that matter. The investigation did not have any isolates available for culture that could be used for subtyping or comparison with environmental isolates. A total of 70 persons required medical care and 16 were hospitalized which means that there were many missed opportunities of specimen collection. Emphasizing the need for providing clinical isolates and generating testing methods could definitely help in any future Legionella outbreaks.

## Sources:

- <http://www.dailymail.co.uk/health/article-4608136/Legionnaires-disease-cases-skyrocketing-US.html>
- <http://www.straitstimes.com/world/united-states/legionnaires-sickens-12-in-california-including-9-at-disneyland>
- <https://pennstatefoodsafety.blogspot.in/2018/01/cdc-mmwr-report-2017-legionella.html>
- <https://www.cdc.gov/mmwr/index.html>