

Abstract

An evaluation was made of the prevalence of *Legionella* species in hot water distribution systems in West Bank hospitals and their possible association with *Pseudomonas aeruginosa*.

Legionella and *P. aeruginosa* was investigated in this study in six West Bank hospitals - Ramallah, Alia- Hebron, Beit Jalla, Alwatani, Rafidia, and Jenin – representative of different region of West Bank (Northern, Central, and Southern West Bank). A total of 134 water samples were collected (53 samples for *Legionella* analysis, and 81 samples for *P. aeruginosa*).

L. pneumophila sg (2-14) was isolated from 33 (62.3%) of 53 samples that were analyzed. In the positive samples, the mean number of *L. pneumophila* sg (2-14) was 6.17×10^3 CFU/L with range from 100 CFU/L to 2.85×10^4 CFU/L

P. aeruginosa were isolated from 17 (21%) of 81 samples, with levels ranging from 1 CFU/200 mL to TNTC CFU/200 mL.

To assess the effect of heat disinfection on *L. pneumophila* sg (2-14), samples were taken from hospital tap water systems before and after thermal disinfection. In Biet Jalla hospital, the water system was heated to 80°C and held at this temperature for 30 minutes, all distal outlets were flushed with this hot water, positive samples with *L.*

pneumophila were reduced from 100% (before heat disinfection) to 17% (after heat disinfection). At Jenin hospital thermal disinfection was conducted at 70°C for 30 minutes, the concentration of *Legionella* was reduced, but not killed completely.

It was demonstrated that the high number of *Legionella* in water distribution systems can be successfully reduced by heat treatment, but not totally killed. However, thermal disinfection at 70°C for 30 minutes in Jenin hospital was successfully efficient for the elimination of all *P. aeruginosa* in water distribution systems, there was a reduction in *P. aeruginosa* positive samples from 100% to 0%.

In this study it was noticed that all the pediatric divisions in West Bank governmental hospitals were contaminated with either *P. aeruginosa* or *L. pneumophila* sg (2-14) or both, which is considered a real health hazard to children's health. Also the faucet in incubators room where premature babies bath in are contaminated.