Legionnaires' disease prevention: more doubts than certainties

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Abstract

This short paper focuses on some of the troubling issues concerning Legionnaires' disease prevention. Examples of such are its constant under-reporting, the lack of consensus concerning environmental surveillance (when and where these tests should be performed) as well as the threshold for *Legionella* colonisation (CFU/L). Even environmental treatment aspects are not completely agreed upon by all researchers.

Introduction

Almost 30 years have passed since the first reported outbreak of hospital-acquired Legionnaires' disease in Washington DC in 1975, [1] nonetheless many problems remain unsolved in the quest to prevent this disease.

Controversial issues

Under-reporting affects the computing of Legionnaires' disease incidence. In the recent past, case notification has increased in Europe[2] and in Italy,[3] but a certain number of cases (almost 50% in Italy)[4] remains undiagnosed or unnotified. This has lead to a lack of preventative measures, but the most disturbing problem is that there is no widespread consensus on what to do in terms of environmental surveillance, namely when and what sites to check and what is the threshold for *Legionella* colonisation (CFU/L).

An example of inconsistent advice for preventive programmes is demonstrated clearly in the USA where the Pittsburgh University team[5] endorses regular environmental microbiological tests on hot water tanks, showers and taps, even in the absence of disease, while on the other hand the Centers for Disease Control and Prevention (CDC)[6] recommend this kind of periodic surveillance only for transplant units.

Another critical point is the possible link between *Legionella* colonisation in environmental samples and incidence of disease. Many US or Spanish researchers deny the existence of a threshold for hot water system in health-care facilities, whereas their colleagues in France, Italy, Switzerland and UK fix this level at 10^3 CFU/L.[7]

The relationship between home water system colonization and risk of infection is even more controversial. A recent editorial by Pedro-Botet et al.[8] concludes that "the risk for individuals residing in homes colonized with *Legionella pneumophila* appears to be low, although sample sizes of the prospective studies were small".

The debate is also severe on when and how to implement environmental treatment programmes. For instance, in health-care facilities some researchers – including those in the Pittsburgh team[5] – recommend treatment on the basis of laboratory results, while others (CDC)[6] suggest to wait for positive cases and eventual epidemiological investigation. While Ditommaso et al.,[7] state, that in regards to enviromental treatment, "decontamination methods cannot eliminate *Legionella* definitely, without effective continuous treatment strategies".

Conclusions

Legionnaires' disease prevention is based on a multifactor strategy which needs revision based on more field experience. Among the relatively few agreed recommendations, we have:

1) a high index of suspicion for the diagnosis of Legionnaires' disease;
2) a maintenance scheme of water systems in health-care facilities, hotels and other accommodation sites;[9]
3) the use of sterile water for aerosol-generating devices;
4) the environmental surveillance in patient-care areas for persons at high-risk for Legionnaires' disease.

If anything, now we know that we cannot eradicate this germ and the best we can do is to reduce its harm.

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