

Abstract

BACKGROUND: *Legionella pneumophila*, *Mycobacterium avium*, and *Pseudomonas aeruginosa* are opportunistic premise plumbing pathogens (OPPPs) that persist and grow in household plumbing, habitats they share with humans. Infections caused by these OPPPs involve individuals with preexisting risk factors and frequently require hospitalization.

OBJECTIVES: The objectives of this report are to alert professionals of the impact of OPPPs, the fact that 30% of the population may be exposed to OPPPs, and the need to develop means to reduce OPPP exposure. We herein present a review of the **epidemiology** and **ecology** of these three bacterial OPPPs, specifically to identify common and unique features.

METHODS: A Water Research Foundation-sponsored workshop gathered experts from across the United States to review the characteristics of OPPPs, identify problems, and develop a list of research priorities to address critical knowledge gaps with respect to increasing OPPP-associated disease.

DISCUSSION: OPPPs share the common characteristics of disinfectant resistance and growth in biofilms in water distribution systems or premise plumbing. Thus, they share a number of habitats with humans (e.g., showers) that can lead to exposure and infection. The frequency of OPPP-infected individuals is rising and will likely continue to rise as the number of at-risk individuals is increasing. Improved reporting of OPPP disease and increased understanding of the genetic, physiologic, and structural characteristics governing the persistence and growth of OPPPs in drinking water distribution systems and premise plumbing is needed.

CONCLUSIONS: Because broadly effective community-level engineering interventions for the control of OPPPs have yet to be identified, and because the number of at-risk individuals will continue to rise, it is likely that OPPP-related infections will continue to increase. However, it is possible that individuals can take measures (e.g., raise hot water heater temperatures and filter water) to reduce home exposures.