

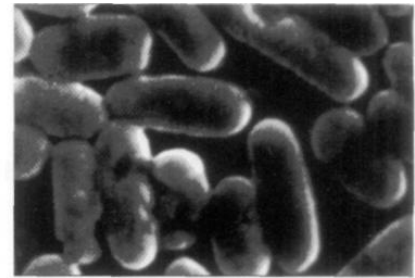
Stopping *Legionella* and Other Waterborne Pathogens in Their Tracks-

A Global Perspective

by Judy Angelbeck, Ph.D.



Legionella Pneumophila



Pseudomonas Aeruginosa



Aspergillus spp.

For many people the word *Legionella* conjures up memories of the Hotel Bellevue in Philadelphia, Pa. In 1976. That is where Legionnaires' disease was first identified and named when a group of American Legion conventioners were taken sick, some fatally, from a contaminated air conditioning system. What most people don't realize is that the source of *Legionella* infection is waterborne. *Legionella* bacteria are one of many pathogens that are ubiquitous in the environment and occur naturally in the water supply. For the majority of people exposed to *Legionella* bacteria, the outcome is benign. However, for sensitive populations, such as newborns and the elderly, the immunocompromised or those recovering from recent surgery, cancer, burns, or suffering from chronic lung disease, the outcome can be serious and life threatening. The problems and risks associated with waterborne pathogens, including but not limited to *Legionella* bacteria, are most critical in places where there is a concentration of immunocompromised people such as in hospitals, nursing homes and long term care facilities. (See Table 1).

Hospital acquired infections

increasing worldwide

Nosocomial, or hospital acquired infections, are increasing at an alarming rate worldwide. According to the U.S. Centers for Disease Control and Prevention (CDC), nearly two million patients contract infections during their stay in U.S. hospitals (about 10 percent of all hospitalized patients), resulting in significant morbidity, mortality and financial burden. In 1995, nosocomial

Although water is often overlooked as the source of the outbreaks, it is increasingly being recognized as a significant culprit. A recent survey found that as many as five out of six hospitals in one geographic area of the U.S. had *Legionella* bacteria in the water supply. According to Janet Stout, Ph.D., microbiologist and Director of Special Pathogens Laboratory at the Veteran Affairs Pittsburgh Healthcare System, approximately 18,000 cases of Legionnaires' disease occur annually in the U.S. and 25 percent of these are acquired from hospital water systems.

Despite the growing incidence, the number of outbreaks continues to be underestimated, due to mis-diagnosis and underreporting. *Legionella* bacteria are not automatically or routinely cultured for when a hospitalized patient contracts pneumonia. Some experts contend that hospitals may also refrain from reporting cases due to misunderstandings surrounding *Legionella* and the specter of negative publicity associated with it.

The incidence of hospital acquired waterborne illness has also increased throughout Europe. The European Working Group for Legionella Infections

Organism	Transmission route	Health Effects
<i>Legionella</i>	Aerosolized droplets	Pneumonia
<i>Cryptosporidium</i>	Water	Chronic diarrhea May be
<i>Aspergillus</i>	Water and airborne	Lung lesions, DVT Usually fatal
Mycobacteria (Non-tubercular)	Aerosolized droplets	Pneumonia
<i>Pseudomonas</i>	Aerosolized droplets	Skin, urinary and respiratory

infections resulted in 88,000 deaths in the U.S. at a cost of \$4.5 billion. Simply put, hospital acquired infections affect one in 20

patients and kill more people annually than homicides and car accidents combined. The CDC also reports that 23 percent of all Legionnaires' disease reported in the U.S. in the 1980s was acquired in hospitals and of these cases, 40 percent of the patients died, twice the rate for infections acquired outside the hospital.