

Legionnaires' Disease Outbreaks from Hospital Drinking Water Preventable with Disinfection, New Study Gives Evaluation Criteria to Control Legionella

Legionella experts give a stepwise approach to evaluate efficacy of disinfection methods. Authors recommend infection control practitioners lead environment of care team in choosing disinfection technologies; post-treatment followed by scheduled culturing for Legionella.

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Legionnaires' disease outbreaks, caused by Legionella in hospital drinking water, can be prevented using the right disinfection methods. Too often hospitals make treatment decisions on marketing claims not science. A research review paper, "Controlling Legionella in Hospital Drinking Water: An Evidence-Based Review of Disinfection Methods," published in *Infection Control and Hospital Epidemiology*, gives decision makers standard criteria to evaluate and choose the most effective Legionella disinfection methods for their facilities.

Legionella experts and authors Yusen E. Lin, PhD, MBA, National Kaohsiung Normal University, Kaohsiung, Taiwan; Janet E. Stout, PhD, director of Special Pathogens Laboratory (<http://www.specialpathogenslab.com>) and University of Pittsburgh Swanson School of Engineering; and Victor L. Yu, MD, University of Pittsburgh, rate the efficacy of systemic disinfection, focal disinfection, and short-term disinfection methods used in outbreak situations. They offer a four-step approach to assist hospitals in choosing the most effective method.

Choosing the right method or combination of methods reduces the risk of patients contracting Legionnaires' disease. Stout and her colleagues strongly recommend that infection control practitioners lead the environment of care team in choosing the best disinfection methodology. They also advocate for scheduled routine monitoring through culturing to ensure safe water.

"Hospitals relying on facilities managers and vendors in selecting a disinfection method may not be basing their decisions on evidence-based research. Our paper shows that some disinfection methods work better than others," says Dr. Stout, who along with Dr. Yu discovered the link between Legionella pneumophila in hospital drinking water and hospital-acquired Legionnaires' Disease in 1982 (<http://www.legionella.org>).

Common Legionella disinfection methods include: copper-silver ionization, chlorine dioxide, monochloramine, ultraviolet light, and hyperchlorination, (systemic disinfection); point-of-use filtration, (focal disinfection); superheat-and-flush with or without hyperchlorination (short-term disinfection methods in outbreak situations).

Hyperchlorination or heat and flush are often used during an outbreak, but are the least effective. Copper-silver ionization has fulfilled the four-step criteria for demonstrating efficacy.

The author's four-step evaluation process of disinfection systems includes ensuring the technology kills Legionella. This step is followed by a review of anecdotal experience for controlling Legionella contamination in hospitals, followed by literature review of peer-reviewed and published reports of controlled studies of years of efficacy for hospital-acquired Legionnaires' disease. Finally, to confirm with multiple hospitals that disinfection methods worked.

"We hope this review will assist hospitals in choosing a method that is safe, efficient and cost-effective," says Stout.

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