Researchers: Hospital Water Taps Contaminated With Bacteria

New research finds significantly higher levels of infectious pathogens in water from faucet taps with aerators compared to water from deeper in the plumbing system. Contaminated water poses an increased risk for infection in immunocompromised patients. The study was published in the February issue of *Infection Control and Hospital Epidemiology*, the journal of the Society for Healthcare Epidemiology of America.

"Aerators are a reservoir for drug-resistant bacteria and a source of infection for patients at risk," said Maria Luisa Cristina, PhD, a lead author of the study. "Safe water is vital to ensuring patient safety where waterborne infections increase morbidity, mortality, treatment costs, compensation claims and prolong hospital stays."

Researchers from the University of Genova in Italy and collaborating universities studied cold and hot water samples at two tertiary care hospitals for a year from faucets used by healthcare professionals for handwashing, surgical washing, and washing of medical equipment.

This study assessed growth of bacteria at both the faucet and deeper within the water distribution system. Cold and hot water sampling was carried out first with the aerators in faucets in place to assess the risk at each outlet point and then after disinfecting and flame-sterilizing the outlet point and letting the water run for two minutes to analyze the microbiological features of the plumbing system.

Researchers found the total microbial load was up to 10 times greater when aerators were in place than after they had been sterilized. Their findings show that opportunist micro-organisms like *Legionella* spp., *Acinetobacter* spp. and other Gram-negative bacteria were significantly higher at the faucet than in the plumbing system. Throughout the study, researchers consistently noted chlorine levels that were too low and hot water temperatures that were below the minimal temperature needed to prevent the growth of *Legionella*. Both of these factors promote the growth of waterborne pathogens.

In a commentary published alongside the study, Tara Palmore, MD, notes the need for additional research on the topic: "Hospitals tend to have large, complex waterworks with low-flow areas that produce stagnation and biofilm formation; hot and cold water temperatures that are not well regulated may be ideal for bacterial growth...the work of Cristina et al. is valuable in quantifying the frequency, magnitude, and location of the potential hazard to patients from hospital water in their facilities. There is still a significant gap in our understanding of how and when such risk translates to patient infections."

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