



KEY POINT SUMMARY

OBJECTIVES

The objective of this study was to provide a field evaluation of a new POU filter and its efficacy in removing pathogens like *Legionella*, *Pseudomonas*, and total bacteria in water from faucets.

DESIGN IMPLICATIONS

POU filtration may be considered as a viable means of preventing the spread of HAIs through water faucets.

Field evaluation of a new point-of-use faucet filter for preventing exposure to *Legionella* and other waterborne pathogens in healthcare facilities

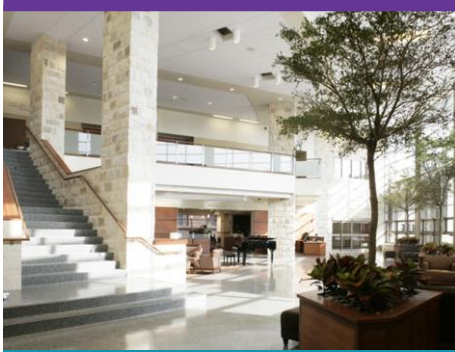
Baron, J.L., Peters, T., Shafer, R., MacMurray, B., & Stout, J.E. 2014 | *American Journal of Infection Control*. Volume 42, Issue 11, Pages 1193-1196

Key Concepts/Context

Waterborne pathogens exist in hospital water distribution systems in spite of different disinfection methods and can potentially cause hospital-acquired infections (HAIs) in patients. The authors refer to previous studies which indicated the ineffectiveness of disinfecting methods in the complete removal of *Legionella* pathogen from water fixtures. This, they emphasized, called for the use of additional interventions like point-of-use (POU) filters, especially for safeguarding high-risk patients. The authors refer to existing studies that indicate that POU filters are effective but have a very short efficacy life. This study evaluated a new POU filter installed in five faucets of a cancer center to determine their efficacy and the duration of their ability to filter pathogens. It was found that the new POU filters were effective in filtering out *Legionella* pathogens for longer than the 62 days assured by the manufacturers.

Methods

The methodology for the study involved sampling. It was carried out in a cancer center in the USA, where POU filters (recommended by the manufacturer for a maximum 62-day use) were installed on five faucets and samples from these were compared with those from five faucets without filters. The containers in which hot water samples were collected were treated to neutralize chlorine (used in the water distribution system), and the faucets with filters were wiped with an antiseptic wipe to remove bacteria from the external surface of the faucet. Samples were collected weekly for 17 weeks. Rainfall data was also collected from weeks 5 through 15. Counts of *Legionella* and total bacteria from both filtered and nonfiltered sites were compared using analysis of variance (ANOVA), and student t-tests were conducted to compare samples from both sites prior to installation of the filters.



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Findings

The study found that:

- There was no statistical difference in the concentration of Legionella ($P=0.74$) and bacteria count ($P=0.42$) in the faucets identified for the installation of the filters and the control faucets.
- There were no Legionella found in the samples during the entire study period from four of the five faucets with filters. This pathogen was found in the sample from one faucet in week 13, but subsequent samples did not show any Legionella. Further, there was a statistically significant reduction ($P<0.0001$) in the number of Legionella colonies found in the samples from the control faucets.
- In the first two weeks of the study, no bacteria were found in the water samples from the faucets with filters. In the subsequent study weeks, bacteria were found in the samples from these faucets, but it was a significant reduction when compared with the water samples collected prior to the filter installation ($P<0.0001$). The bacteria that were identified in the water samples are not known to have manifestation of any disease in humans.
- Samples from the control faucets showed small amounts of Legionella for the first few weeks.
- There were increases in Legionella counts from week 5, with spikes in weeks 9 and 14. From the rainfall data it was seen that there was higher-than-average rainfall in the week preceding the weeks with spikes in the Legionella count.

Limitations

Some limitations of the study were:

- Although the objective of the study was to also determine if the filter was effective in removing the Pseudomonas pathogen, the authors do not indicate whether any was found in the pre- or post-intervention water samples.
- The authors do not indicate how many or for how long water samples were collected from the identified faucets prior to installation of the filters.

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