



KEY POINT SUMMARY

OBJECTIVES

To describe an outbreak of *P aeruginosa* within a new MSICU and the role of hand hygiene sinks in colonizing the pathogens.

Outbreak of multidrug-resistant *Pseudomonas aeruginosa* colonization and infection secondary to imperfect intensive care unit room design

Hota, S., Hirji, Z., Stockton, K., Lemieux, C., Dedier, H., Wolfaardt, G., Gardam, M. A., 2009 | *Infection Control & Hospital Epidemiology*. Volume 30, Issue 1, Pages 25-33

Key Concepts/Context

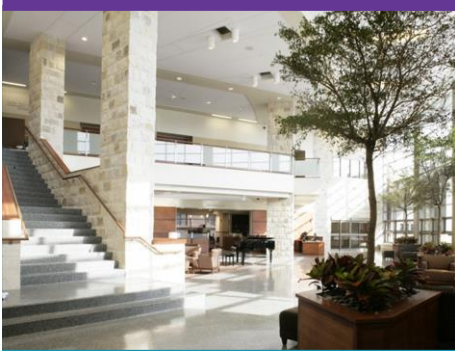
Pseudomonas aeruginosa is an infection-causing pathogen that has been associated with a high number of hospital-associated infections (HAIs), especially since the pathogen began developing multidrug resistance. As an increasing number of healthcare facilities are being redesigned, there is a growing need for researchers and designers to understand how pathogens can survive and spread HAIs in the context of these new designs. This is especially important in units such as medical/surgical intensive care units (MSICUs) where patients and staff are especially vulnerable to infection. In this study, an outbreak of *P aeruginosa* was traced back to hand hygiene sink drains in a newly installed MSICU.

Methods

The authors studied the cases of 36 patients who were exposed to HAIs over the span of two years and compared the biological information from their infections with aspects of the hospital's physical environment. Identifying genetic similarities between the patient's infections and specific areas within the hospital allowed the researchers to identify the root cause of their HAIs. They were also asked to complete a small survey on noise levels, whether they were affected by noise or specific noises, and whether their sleep was affected.

Findings

After identifying the source of the HAI outbreak as the hand hygiene sinks within the facility's surgical intensive care units, the researchers proposed and implemented simple room and sink design modifications that helped end the spread of pathogens. The sinks produced a wide splash radius and featured narrow faucet



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heads, which contributed to both the colonization and spread of *Pseudomonas aeruginosa*. The findings emphasize the importance of installing hand hygiene sinks

Limitations

This study took place in a single healthcare facility that featured relatively uniform designs throughout all of its intensive surgical care units.

Design Implications

Hand hygiene sinks are imperative tools for curbing the spread of healthcare-associated infections, but they can also act as incubators for harmful pathogens if they are not adequately designed or located within the medical environment. Sinks should be designed to minimize the splash radius and should be installed at a safe distance from patients undergoing surgery and areas housing sterilized equipment.

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