

Improve hand hygiene and patient decolonization to help stem high-risk *S. aureus* transmission in the operating room

November 27 2018



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Adherence to proven protocols for disinfecting surgeons' hands, patients'

skin, and operating room surfaces could help to halt the spread of dangerous *Staphylococcus aureus* (*S. aureus*) pathogens in the operating room and beyond, according to new research published in the *American Journal of Infection Control* (AJIC), the journal of the Association for Professionals in Infection Control and Epidemiology (APIC).

Despite solid evidence supporting improved practices for hand hygiene, vascular access, and patient skin disinfection, "adherence to evidence-based, basic, preventive measures is abysmal," University of Iowa researchers report. "These failures may help to explain why up to 7 percent of patients undergoing surgery continue to contract at least one postoperative [infection](#)."

In the midst of an increase in the spread of antibiotic-resistant *S. aureus* pathogens from acute care settings to healthy members of the community, researchers from the University of Iowa Hospitals and Clinics identified and characterized the epidemiology of particularly pathogenic *S. aureus* sequence types (STs) in the [operating room](#). *S. aureus* isolates were collected from three academic medical centers. Transmission dynamics for hyper transmissible, strong biofilm-forming, antibiotic-resistant, and virulent STs were assessed by using a systematic phenotypic and genomic approach combined with a new software platform, OR PathTrac (RDB Bioinformatics, Omaha, NE). The [transmission](#) story for these key pathogens was mapped and reported.

"The increase in the spread of *S. aureus* pathogens beyond the acute care setting is alarming, but we know that there are evidence-based practices that can address this critical patient safety issue," said Randy W. Loftus, MD, lead study author from the Department of Anesthesia, University of Iowa Hospitals and Clinics, Iowa City, IA, USA. "The goal of the study was to increase awareness around the transmission of the different strains, with the aim of improving compliance with proven infection control measures."

Dr. Loftus and his colleagues found that *S. aureus* ST 5 is a more pathogenic strain associated with increased strength of biofilm formation and increased risk of transmission and infection. Two of the ST 5 isolates were linked by whole cell genome analysis to postoperative infection, an alarming finding that likely underestimates the true magnitude of the problem. The combination of ST 5 pathogenicity, an aging patient population, and increasingly complex surgical procedures may help to explain the increase in the community spread of invasive methicillin resistant *S. aureus* infections; vulnerable patients could acquire these pathogens during routine care in the operating room and later develop an infection.

The researchers confirmed patient skin surfaces and healthcare provider hands as sources of ST 5 pathogen transmission. This suggests that strict compliance with processes to decolonize patients of bacteria before surgery and to maintain hand hygiene compliance during surgery will likely help control the spread of this important strain characteristic. They noted as well that operating room environmental surfaces were linked with transmission, indicating the importance of continually assessing the effectiveness of environmental cleaning protocols.

"By understanding the transmission story of an organism, we can identify areas where infection prevention practices can be strengthened," said 2018 APIC President Janet Haas, Ph.D., RN, CIC, FSHEA, FAPIC. "To improve outcomes for our [patients](#), we need to continually assess and make process improvements to ensure that we do the right thing for every patient, every time."

More information: Randy W. Loftus et al. High-risk *Staphylococcus aureus* transmission in the operating room: A call for widespread improvements in perioperative hand hygiene and patient decolonization practices, *American Journal of Infection Control* (2018). [DOI: 10.1016/j.ajic.2018.04.211](https://doi.org/10.1016/j.ajic.2018.04.211)

Provided by Elsevier

Citation: Improve hand hygiene and patient decolonization to help stem high-risk *S. aureus* transmission in the operating room (2018, November 27) retrieved 6 May 2024 from <https://medicalxpress.com/news/2018-11-hygiene-patient-decolonization-stem-high-risk.html>

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