

# Surgeons' choice of skin disinfectant impacts infection risk, Canadian-American study shows

January 31 2024

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Does the type of solution used by surgeons to disinfect skin before surgery impact the risk of surgical site infection? According to new

research from an international trial jointly led by McMaster University and the University of Maryland School of Medicine—yes, it does.

Researchers of [the PREPARE trial](#), which enrolled nearly 8,500 participants at 25 hospitals in Canada and the United States, found the use of iodine povacrylex in alcohol to disinfect a patient's skin could prevent surgical site [infection](#) in thousands of patients undergoing [surgery](#) for a closed fracture each year.

The findings, published in *The New England Journal of Medicine*, are poised to have many hospitals consider a [policy change](#) to the use of iodine povacrylex in alcohol for fracture surgeries.

"This trial represents a highly successful collaboration between McMaster University, the University of Maryland School of Medicine, and 25 trauma centers across Canada and the United States. This multi-center approach allowed us to quickly and efficiently address an important clinical research question that will lead to the prevention of thousands of infections each year," says Sheila Sprague, co-principal investigator of the trial and an associate professor in the Department of Surgery at McMaster.

"Importantly, our collaborations will continue to grow to address other unanswered questions in orthopedic trauma surgery."

The trial included 6,785 patients undergoing surgery to treat a closed lower extremity or pelvic fracture and 1,700 patients undergoing surgery to treat an open fracture. Closed fractures occur when the bone is broken, but the skin is intact. Open fractures have an exceptionally high risk of infection due to the [open wound](#) and bone being exposed to environmental bacteria for hours before surgery.

Researchers compared the two most commonly used antiseptic products

in the United States and Canada. Patients with closed fractures randomized to receive 0.7% iodine povacrylex in 74% isopropyl alcohol for skin antisepsis experienced fewer post-operative surgical site infections than those randomized to receive 2% chlorhexidine gluconate in 70% isopropyl alcohol. In patients with open fractures, the risk of infection was similar between the two different antiseptic skin preparation solutions.

"Although some guidelines favor antisepsis with [chlorhexidine gluconate](#) over an iodophor, all recommendations have recognized a lack of consensus with respect to the most effective agent. Our results suggest that the use of iodine povacrylex in alcohol as preoperative skin antisepsis could prevent surgical-site infection in thousands of patients with closed fractures each year," says Gerard Slobogean, co-principal investigator of the trial and an orthopedic trauma surgeon at the University of Maryland's R Adams Cowley Shock Trauma Center.

Jeffrey Wells, trial executive committee member and patient partner, says, "As a patient involved in the trial, it was my job to ensure that the voice of trauma patients was heard in the design, implementation, and dissemination of the trial."

The authors say, to their knowledge, this randomized controlled trial is substantially larger than prior trials, which allowed them to detect important differences in infection. While the trial only included fracture surgery patients, they say that the findings might also be relevant to other surgical disciplines.

**More information:** Skin Antisepsis before Surgical Fixation of Extremity Fractures, *New England Journal of Medicine* (2024). [DOI: 10.1056/NEJMoa2307679](https://doi.org/10.1056/NEJMoa2307679)

Provided by McMaster University

Citation: Surgeons' choice of skin disinfectant impacts infection risk, Canadian-American study shows (2024, January 31) retrieved 28 April 2024 from

<https://medicalxpress.com/news/2024-01-surgeons-choice-skin-disinfectant-impacts.html>

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