Clinical Summary:
Comparison of bacteria on new, disposable, laundered, and unlaundered hospital scrubs

Key Points
● As a cost-saving measure (as well as for staff allergic to chemicals used in the hospital laundering process), an increasing number of hospitals allow personnel to launder their uniforms, lab coats and operating room scrubs at home.

● Home laundering may not meet the specified measures necessary to achieve a reduction in microbial levels in soiled hospital attire. These measures involve specific mechanical, thermal and chemical components.¹

● Home laundering has been shown to be less effective for cleaning surgical attire than laundering by health care facilities.²

● In this study, data revealed that 79% of the analyzed scrub swatches were positive for some type of gram-positive cocci; with 10% classified as Staphylococcus aureus and 69% were positive for coliform bacteria.

Background
A consequence of higher laundering costs is that an increasing number of hospitals are allowing personnel to launder their uniforms, lab coats and even operating room (O.R.) scrubs at home. While the relative contribution of contaminated scrubs in the spread of nosocomial infection is not known, hospital leadership and infection control teams must weigh the risk of potential infection transmission against the cost savings realized by the facility if staff purchase and launder their own scrubs. The Association of periOperative Nurses (AORN) Recommended Practice on Surgical Attire specifically states that: “All individuals who enter the semi-restricted and restricted areas should wear freshly laundered surgical attire that is laundered at a health care accredited laundry facility or disposable surgical attire provided by the facility and intended for use within the perioperative setting”.³

Objectives
The aim of this study was to identify and quantify types of bacteria found on unwashed O.R., hospital-laundered, home-laundered, new cloth and new disposable scrubs.
Design
Scrub tops, pants, and jackets were taken from the O.R. laundry bin at the end of the shift. Scrubs laundered at home were taken from multiple nurses who had direct patient contact. New and disposable scrubs were tested new. All laundered scrubs were processed in the hospital laundry under controlled conditions while home laundered were from multiple sources with no set standards. Samples were tested from standardized areas from shirts and pants and were pummeled in a Steward stomacher. Samples were plated and incubated for 3-5 days after which colonies were counted. Welch’s t-test was used to identify significant differences (P<.05).

Results
Unwashed hospital O.R. scrubs had the highest bacterial counts (85 CFU/cm²) followed by home-laundered scrubs (16 CFU/cm²), new disposable scrubs (5 CFU/cm²) and hospital-laundered scrubs (2 CFU/cm²). Hospital laundered scrubs had significantly fewer bacteria than home-laundered scrubs. There was no statistical difference in the total number of bacteria on hospital-laundered scrubs and on unused new and disposable scrubs.

Conclusion
Whether microbes on clothing are transferred to patients was not assessed during this study and the literature is not conclusive on the direct correlation of contaminated attire and nosocomial infection. However, home laundering is not monitored for quality, consistency or safety. Exposure of health care personnel and their family members to blood and other potentially infectious materials may result from improper handling and decontamination of surgical attire. While controlled laundering can reduce the risk of transferring pathogenic microorganisms from the facility to the home, the use of harsh chemicals used in the process can be dermal sensitive to some staff. Additionally, the strict protocol to be followed per CDC guidelines can add additional cost in textile management for the facility. While there was no statistically significant difference in the microbial contamination of hospital-laundered and disposable scrubs, disposable scrubs may be a viable option for staff who are sensitive to chemicals. Disposable scrubs may also be financially advantageous over the increased costs in the industrial laundry process.