Cleaning and sterilization techniques leave ureteroscopes contaminated

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The techniques used to clean and sterilize flexible ureteroscopes leave behind contamination including debris, residue, and bacteria, according to a new study being presented at the 44th Annual Conference of the Association for Professionals in Infection Control and Epidemiology (APIC). Researchers concluded that these failures may result in the use of dirty scopes.

"APIC is concerned that the techniques used in the field are insufficient, and that current methods in place are introducing more contamination with the reprocessing of each scope," said Linda Greene, RN, MPS, CIC, FAPIC, 2017 APIC president. "The results of this study are concerning and should prompt hospitals to ensure that proper cleaning verification and visual inspections are being performed."

The study, conducted by Ofstead & Associates, Inc., is the latest of its kind to raise concerns about infections associated with endoscopic procedures, as outbreaks have been linked to contaminated duodenoscopes, gastroscopes, bronchoscopes, and cystoscopes.

Ureteroscopy is a common outpatient surgical procedure. Doctors insert a thin, flexible scope into a patient's urinary tract to look for and remove kidney stones. Most flexible ureteroscopes are reused following cleaning and high-level disinfection or sterilization.

"This study underscores the importance of consistently monitoring reprocessing outcomes to ensure ureteroscopes are sterile and safe for

patient use," said lead study author Cori Ofstead, MSPH. "Sterilization failures were unexpected and are deeply concerning."

Researchers sampled 16 ureteroscopes at two institutions after they were cleaned and sterilized with hydrogen peroxide gas. They detected contamination on 100 percent of the scopes. Every scope exceeded the benchmark for protein, hemoglobin was found on 63 percent, and 44 percent had higher adenosine triphosphate (ATP) levels than anticipated. Visual inspections identified debris protruding into channels, oily deposits, and white foamy residue, an abnormality researchers had never seen.

Reprocessing failures have also been found in other endoscopes. There are currently no reprocessing standards or benchmarks for permissible levels of residue specific to ureteroscopes. Therefore, the study used published benchmarks for manually cleaned gastrointestinal endoscopes, even though the level of residual contamination on sterilized ureteroscopes should be far lower than the amount allowed for clean gastrointestinal endoscopes. Sterilization is supposed to eradicate all viable microbes, and as such, microbial cultures should always be negative for sterilized instruments.

Researchers also tested two new ureteroscopes and found hemoglobin and protein levels increased after initial reprocessing—before they had ever been used. While no patients were involved in this study, Ofstead said the study is evidence that contaminated scopes are being used, with unknown implications for patients.

"Sterilization doesn't work if scopes aren't clean," Ofstead said. Noting that scopes are not routinely examined after reprocessing, she said, "If they had been conducting cleaning verification tests or visual inspections, every one of these scopes would have been removed from service. Every scope should be inspected, every time - and there must

accountability measures set in place."

The study also uncovered a lack of bedside cleaning in the operating rooms, and long delays in processing of scopes after use, fundamental flaws that may have contributed to reprocessing failures.

A previous study conducted by researchers at Duke Medicine found that 15 percent of patients suffer complications such as sepsis, urinary tract infections, and hospitalization following ureteroscopy. About 11 percent of men and 6 percent of women in the United States have kidney stones at least once during their lifetime.

"Additional evidence is needed so the guideline-issuing bodies can make informed decisions about what standards to set in place," Ofstead concluded.

A forthcoming article in the *American Journal of Infection Control* contains more detail on the study.

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