

Clinical Use of Wet Endoscopes: Is it Safe or Suspect?

In October, OR Today published a summarized version of the latest multi-society guidelines for reprocessing flexible gastrointestinal endoscopes [New Guidelines Issued for Prevention of Endoscopy-Related Infections, pp 8-9, Vol. 3, No. 9, October 2003]. The guidelines can be viewed in its entirety at http://www.shea-online.org/pdfs/SHEA_endoscopes.pdf.

While the guidelines were developed to help prevent endoscopy-related infections, one reader believes they may, in fact, increase the risk for such an occurrence. Here Lawrence F. Muscarella, PhD, director, research and development, chief, infection control, Custom Ultrasonics Inc., outlines his concerns.

Several professional organizations recently endorsed a “multi-society” guideline for reprocessing flexible gastrointestinal endoscopes (*reference #1: Nelson DB, et al. Multi-society guideline for reprocessing flexible gastrointestinal endoscopes. Infect Control Hosp Epidemiol 2003 July;532-7*). These organizations include the American Society for Gastrointestinal Endoscopy (ASGE), Joint Commission on Accreditation of Healthcare Organizations (JCAHO), and the Association of periOperative Registered Nurses (AORN). Several important reprocessing recommendations were codified in this multi-society guideline,

including the instruction to dry the endoscope after high-level disinfection both between patient procedures and before storage. A review of several other published endoscope reprocessing guidelines written by some of the organizations that have endorsed this multi-society guideline indicates,

however, that there is some disagreement vis-à-vis the importance of drying the endoscope after reprocessing to prevent transmission of waterborne bacteria during endoscopy.

For instance, its endorsement of the multi-society guideline notwithstanding, AORN, in its “Recommended Practices” for reprocessing endoscopes does not recommend drying the endoscope between patient procedures (*reference #2: AORN. Recommended practices for cleaning and processing endoscope and endoscope accessories. AORN Journal 2003 Feb;77(2):434-42*). Rather, AORN recommends drying only after high-level disinfection of the last endoscope of the day—that is, before storage. Moreover, for current and future automated endoscope reprocessors (AERs) labeled to “sterilize” endoscopes using a liquid chemical sterilant (LCS) and to produce “sterile” rinse water, AORN does not recommend drying the endoscope at any time, either between patient procedures or before storage. (In addition to a FDA-cleared peracetic acid-based AER, an AER that uses performic acid, filtered rinse water, and is labeled to provide rapid chemical “sterilization” of flexible endoscopes has been submitted to and is pending 510(k) clearance by the FDA.) In contrast, the Society of Gastroenterology Nurses and Associates (SGNA) provides a more complete and thorough recommendation, emphasizing the importance of drying the endoscope both between patient procedures and before storage, irrespective of whether the AER is labeled to achieve high-level disinfection or “sterilization” (*references #3, #4: <http://www.sgna.org/resources/guideline3.cfm> and <http://www.sgna.org/resources/HLD.html>*).

Part and parcel to the published position to not dry the endoscope is the expressed recommendation to use immediately after reprocessing both rigid and flexible endoscopes that typically are wet with the water used to rinse the endoscope after immersion in the LCS (*reference #2*). Whereas the medical literature suggests the use of some types of wet flexible endoscopes, particularly some types of gastrointestinal (GI) endoscopes including colonoscopes and gastroscopes, is associated with a low risk of nosocomial infection caused by gram-negative (waterborne) bacteria, the introduction of just-reprocessed-and-soaking-wet-with-rinse-water bronchoscopes into the lungs of patients, many of whom may be critically-ill and immunosuppressed, is reported to pose a significant risk of nosocomial colonization and infection (*reference #5, #6, #7: Muscarella LF. Lessons from the bronchoscope case: What happened at Allegheny General? Healthcare Purchasing News, March 2003; Muscarella LF. To dry or not to dry the endoscope? Healthcare Purchasing News, October 2003; and, Muscarella LF. Leading a horse to water: are crucial lessons in endoscopy and outbreak investigations being learned? Infect Control Hosp Epidemiol. 2002 Jul;23(7):358-60; author reply 360*). Also reported to be of significant risk of nosocomial infection is the use of wet endoscopic retrograde cholangiopancreatography (ERCP) flexible GI endoscopes, as well as wet arthroscopes, laparoscopes, and other types of rigid endoscopes, most of which are critical instruments that routinely penetrate sterile tissue and are associated with a high risk of infection if contaminated.

The use of wet rigid and flexible endoscopes, a practice that has confusingly become routine in many healthcare facilities (*reference #2*), raises several important infection control concerns and questions, especially since the microbial quality of the water used to rinse the endoscope after immersion in the LCS is generally unknown. Currently, save for a few including the writer of this letter, no professional organization including the Centers for Disease Control and Prevention recommends monitoring the rinse water as required to determine

whether or not the rinse water is contaminated with bacteria (*reference #8: Muscarella LF. Application of environmental sampling to flexible endoscope reprocessing: the importance of monitoring the rinse water. Infect Control Hosp Epidemiol. 2002 May;23(5):285-9*). Monitoring the rinse water is also important to evaluate the operational performance of the water filtration systems typically used by AERs. Whenever the rinse water is not monitored and its microbial quality unknown, the claim associated with the reprocessed endoscope—"high-level disinfected" or "sterilized"—cannot be assured, because the possibility exists that the reprocessed endoscope may have been re-contaminated with waterborne bacteria during terminal water rinsing. Contaminated rinse water yields contaminated endoscopes irrespective of the potency, strength, or effectiveness of the LCS.

In conclusion, the purpose of this letter is threefold. First, to express my concern as potentially unsafe the routine practice of using just-reprocessed-and-soaking-wet-with-rinse-water endoscopes, particularly bronchoscopes and rigid endoscopes. Second, due to the potential for bacterial contamination of the endoscope during water rinsing, to recommend professional organizations evaluate the importance of microbiologically monitoring the water used to rinse endoscopes during reprocessing. And, third, for the sake of clarity, completeness, and patient safety, to request professional organizations consider inclusion of the following recommendation in their respective guidelines for reprocessing endoscopes: Irrespective of the claim of the LCS or AER (i.e., "high-level disinfection" or "sterilization"), or the quality of the water used to rinse the endoscope after chemical immersion (e.g., "clean" water, tap water, "bacteria-free" water, or water labeled as "sterile"), dry the endoscope after reprocessing both between patient procedures and prior to storage. Drying can be achieved by flushing each of the endoscope's internal channels with 70% alcohol followed by forced air.