Purpose
To ensure duodenoscopes are safe for patient use by utilizing evidence-based research and expert recommendations on proper cleaning and reprocessing techniques.

Background
Clinicians have always recognized the need to ensure the cleanliness and integrity of the duodenoscopes used on patients in the endoscopy department. A recent outbreak of carbapenem-resistant enterobacteriaceae (CRE) infections in patients who had undergone endoscopic retrograde cholangiopancreatography (ERCP) procedures created a spotlight on the reprocessing of these particular endoscopes in a sweeping effort to prevent illness and possibly death from scope contamination. Agencies such as the Centers for Disease Control and Prevention (CDC) and the United States Food and Drug Administration (FDA) created recommendations and guidelines for proper scope reprocessing. Scope reprocessing includes meticulous manual cleaning of the scope followed by high-level disinfection. Yet despite following manufacturer’s instructions for both manual cleaning and high level disinfection, hospitals across the United States associated patient illness and deaths with CRE colonization. Since there was no association of superbug infections associated with upper endoscopies or colonoscopies, the particular design of the ERCP scope came into question (Tokar, Allen & Kochman, 2015). The ERCP scope has an elevator mechanism that enables the endoscopist to manipulate equipment through the scope for therapeutic interventions. It was discovered that despite adhering to manufacturer’s instructions regarding scope reprocessing, bacteria still remained on the scopes due to the intricate design of the elevator which made accessing all areas of the elevator difficult.

Actions
- Adenosine triphosphate bioluminescence assay (ATP) testing was instituted for all ERCP scopes after manual cleaning. ATP measures the amount of residual organic matter found on a sample. Twenty Relative Light Units (RLU) was set as the threshold of acceptable debris level. A RLU reading of 20 or above, requires the scope to be manually cleaned once again.
- Surveillance culturing was instituted. The nurse manager and infection control specialist continue to conduct culture audits on every duodenoscope once each month. Additional scopes were purchased since cultured scopes need to remain in quarantine for 48 hours until culture results are received.
- Prior to expert recommendations, endoscopy technicians spent countless hours testing multiple brushes in an effort to find the most effective model for removing bio-burden. Later, the manufacturer endorsed one specific brush, which the UVM team now uses.
- In-services were conducted by manufacturing representatives to ensure guidelines were being properly followed.
- Audits via direct observation were randomly conducted to ensure staff were competent at performing scope reprocessing.
- Once a scope has been manually cleaned, ATP tested and high level disinfected, it is then sterilized with ethylene oxide gas.

Results
- One duodenoscope repeatedly failed ATP testing despite following proper cleaning guidelines. A blood clot in the elevator channel, not visible to the eye, was eventually discovered and cleaned, proving the worth of ATP testing.
- The culturing activity has reinforced the effectiveness of the present manual cleaning, high level disinfection, ATP testing and ethylene oxide sterilization process, ensuring a safe product for our patients. There have been no high risk organisms recovered throughout this process.
- Manufacturers have recently initiated a plan to replace the forceps elevator mechanism. In addition, manufacturers have written new reprocessing guidelines for duodenoscopes, which have since been implemented into practice.

Team Effort
- The Centers for Disease Control reported in 2014, “if ERCP-related transmission of CRE is suspected, reprocessing and preventative maintenance procedures for ERCP endoscopes should be evaluated” (Frias et al., 2014, para. 5).
- This evaluation occurred as a result of many health care workers coming together to share knowledge and experience. This team included scope technicians, managers, infection control specialists, central sterile reprocessing staff, administrators and educators to scrutinize the scope reprocessing process, review CDC and FDA recommendations and create a reprocessing protocol that would, without a doubt, ensure the safety of our patients.

References


IT TAKES A VILLAGE TO CLEAN A SCOPE
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