CURRENT METHOD OF HIGH LEVEL DISINFECTION (HLD) OF DUODENOSCOPES APPEARS TO PREVENT CARBAPENEM-RESISTANT ENTEROCOCCAL (CRE) COLONIZATION AND TRANSMISSION: A QI PROJECT

Nadia Huq MD1, Melissa Unruh RN3, Brian Buggy MD3, Charles Brummitt MD2, Nalini Guda MD2
Aurora St. Luke’s Medical Center, Milwaukee, Wisconsin, Department of Medicine1 Department of Gastroenterology2 Department of Infectious Diseases3

PROBLEM
Infection rates with carbapenem-resistant enterococci (CRE) have increased significantly in the past decade and mortality from infections linked to CRE has been reported as high as 50%.1,2 Recently, there have been some outbreaks of CRE infection related to endoscopic retrograde cholangiopancreatography (ERCP) and in some cases enterococcal ultrasound.3 This has led to a widespread concern regarding the safety of current scope reprocessing and the risk of spread of infections. Due to the outbreaks, the current disinfection practices have been brought into question and although current recommendations by the Centers for Disease Control and Prevention and the American Society of Gastrointestinal Endoscopy are to continue high level disinfection, the effectiveness of this strategy remains uncertain.

A multi-disciplinary committee of administrators, infectious diseases personnel and gastroenterologists was formed to assess the adequacy of HLD and to monitor scope related infections at St.Luke’s Medical Center.

OBJECTIVE
The objective of this study was to formally evaluate current high level disinfection methods of duodenoscopes by monitoring scope cultures and possible related infections. The committee reviewed literature on the potential for resistant infection and developed a multi-disciplinary committee involving endoscope reprocessing personnel, infection control, and the department of gastroenterology.

METHODS
The committee recommended that the scope reprocessing personnel be educated again about the manufacturers’ and CDC guidelines for scope reprocessing. At our institution, a manual brush was always used to reach behind the scope for cleaning which was later used as a standard protocol by the manufacturer. Importance of HLD was stressed to the staff and scope reprocessing personnel.

Beginning in Aug 2015, eight duodenoscopes and EUS scopes were cultured at the elevator tip and distal portion of the biopsy channel biweekly for 5 months on every Friday morning using an Eswab™ collection kit. The kit is a liquid-based multipurpose collection and transport system that maintains viability of aerobic, anaerobic and fastidious bacteria for up to 48 hours at room and refrigerator temperature.13

BACKGROUND
The design of the ERCP and EUS scope tips are intricate especially due to the elevator.3,23 This area is thought to be hard to reach with conventional/current screening methods and is thought to result in colonization and subsequent spread of infections.5 So far, outbreaks took place at facilities that adhered to high level disinfection (HLD) as per the manufacturers’ instructions.2 Due to the outbreaks, the current practices have been brought into question and the manufacturers’, endoscopy societies, and the Centers for Disease Control have been taking an active part in monitoring scope reprocessing and spread of infections.1,2,3,11

Microbiological surveillance can be used to assess the quality of re-processing endoscopic instruments and as a result, identify any flaws in disinfection methods or operator-dependent factors.4 Using endoscope cultures alone does not isolate the true rate of infection transmission, so this data coupled with infection rates monitored as a part of quality improvement can help to validate the re-processing protocol for endoscope cleaning.1,6

RESULTS
During reprocessing monitoring of five duodenoscopes and three EUS scopes over an eight month period, elevator and channel culture results were all negative for CRE colonization (Table 1).

CONCLUSIONS
HLD appears to eliminate the risk of colonization and transmission of CRE during this quality improvement period. As a result, it seems useful to train reprocessing personnel to clean the elevator portion of the scope and to monitor these results as a cost effective way to identify potential CRE contamination and risk of transmission. Furthermore, regular monitoring for outbreaks via multidisciplinary committee could supply infection control management to detect potential outbreaks.

REFERENCES
7. Over the same time period, 11 CRE cases were reported at the same facility, with 5 of 11 considered to be hospital acquired by the Aurora infection prevention committee (Table 2).

| Coccal Culture | CRE Culture
|---------------|----------------|
| S. pneumoniae | CRE negative
| S. aureus | CRE negative
| E. coli | CRE negative

Table 2 Positive CRE cultures at St. Luke’s Medical Center from January 2015 to August 2015.

| Coccal Culture | CRE Culture
|---------------|----------------|
| S. pneumoniae | CRE negative
| S. aureus | CRE negative
| E. coli | CRE negative

Table 3 Negative CRE cultures at St. Luke’s Medical Center from January 2015 to August 2015.

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