Residual Soil Testing of Endoscopes

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Introduction/Background

In April of 2015, the CDC issued a warning pertaining to the transmission of carbapenem-resistant Enterobacteriaceae (CRE) via duodenoscopes, an endoscope used to examine the biliary system. This has led to a larger discussion surrounding patient safety and the reprocessing of endoscopes. No requirement exists regarding testing or culturing endoscopes, although the investigation into mitigating the risk of infection via these devices continues.

In January 2017, as part of our data-driven quality improvement program, the Gregory Endoscopy Centre at Brigham and Women's Faulkner Hospital implemented residual soil testing of endoscopes to assess the efficacy of manual cleaning, the most critical step in endoscope reprocessing. Informatics has assisted us in collating and communicating the results to staff, as well as pointing the way forward.

Methods

Healthmark's Channel Check was selected as the method of testing. The kit contains test strips with 3 testing pads. When submerged in water irrigated through the endoscope channels, the pads will change colors when exposed to carbohydrate, protein, and/or blood. When the strip reveals the presence of soil, the scope is manually cleaned again and re-tested. Results are recorded to identify which scope tested positive and which tech processed it. Six endoscopes are tested daily and rotated to ensure that all inventoried endoscopes are tested weekly

Results

Six hundred and sixty tests were performed from January through June, 2017. 8.25% of endoscopes tested, or 54 of the 660, contained residual soil. In June of 2017, staff re-education was done and an additional flushing step was implemented. These steps resulted in the reduction of the percentage of endoscopes with residual soil to 2.6%. The months of September and October saw an increase to 8% in endoscopes containing residual soil. It was discovered that the additional flushing was being done with clean water contained in the sink. Since the sink itself was re-used with each endoscope, it was presumed to have released contaminants into the water. In November 2017, Medivator's Scope Buddy high velocity flushing system was initiated. This resulted in a drop in residual soil to 2% for November and December 2017.

Discussion/Conclusion

Through the residual soil testing program we discovered the importance of remaining in close contact with the reprocessing staff and communicating results to them in real time, that despite brushing and flushing, the components of biofilm are very challenging to remove, and that upper endoscopes and endoscopes with elevator channels retain residual soil at a higher rate than colonoscopes. Our next steps will consist of data collection to assess the actual incidence of retained residual soil in each type of endoscope, any association that may exist with an individual technician, and which substance is retained most often.

References

1. Petersen BT. Duodenoscope reprocessing: risk and options coming into view. http://www.giejournal.org/article/S0016-5107(15)02650-4/fulltext. Accessed May 27, 2016.

2. Petersen, BT, Cohen, J, Hambrick, D, et al. Multisociety guideline on reprocessing of flexible endoscopes: 2016 update. Gastrointestinal Endoscopy, 2017; 82:2; 282-294