The Implementation of Multidrug-Resistant Bacterial Testing to Prioritize Duodenoscope Sterilization: Experience from a High-Volume Health System

Jad P. AbiMansour, M.D., Eric Vargas, M.D., John A. Martin, M.D., Bret T. Petersen, M.D.
Division of Gastroenterology and Hepatology, Mayo Clinic, Rochester, MN, USA

BACKGROUND

- Preventing patient-to-patient transmission of infectious pathogens is a significant safety concern for reusable duodenoscopes (1)
- Device sterilization, commonly performed with ethylene oxide gas (ETO) is the highest level of disinfection available for flexible endoscopes (1,2)
- However, due to cost, environmental impact with restriction in some locales, need for specialized facilities, and global shortages, ETO sterilization is not widely used

AIMS

- Describe the feasibility, implementation, and impact of a systematic testing protocol among patients undergoing endoscopic retrograde cholangiopancreatoscopy (ERCP) to detect multidrug resistant organism (MDRO) colonization in order to guide subsequent duodenoscope reprocessing.

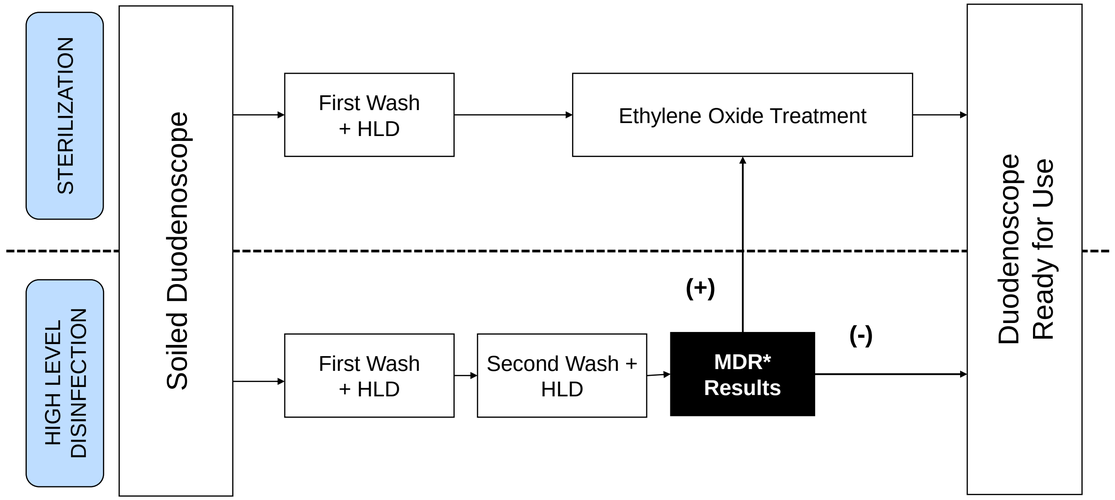
METHODS

- Retrospective review of all patients who underwent MDRO testing via rectal swab at the time of their ERCP between January 2018 and May 2022
- Tertiary care center and satellite community practices within a single healthcare system
- Patients tested after daily sterilization capacity was exceeded during a national shortage of ETO canisters in 2022
- In community practices, all patients undergoing ERCP underwent per rectal polymerase chain reaction (PCR) testing
- PCR test targets included:

Abbreviation	Pathogen
Oxa-48	Oxacillin-hydrolyzing beta-lactamase
KPC	Klebsiella pneumoniae carbapenemase
NDM	New Delhi metallo-beta-Lactamase
VM	Verona metallo-beta-Lactamase

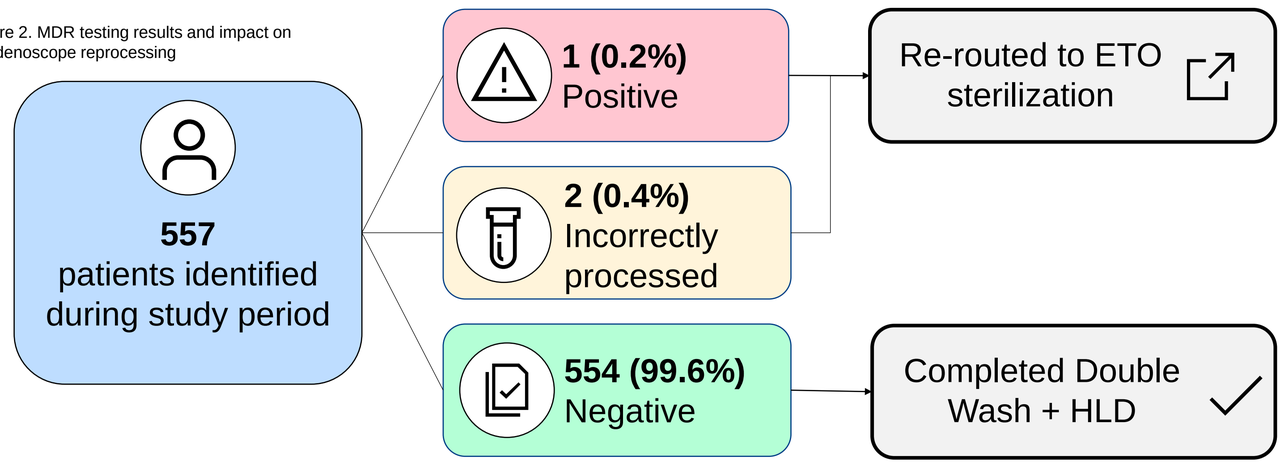
TESTING AND STERILIZATION PROTOCOL

Figure 1. Schematic outlining MDR testing paradigm to prioritize duodenoscopes for sterilization with EGO



RESULTS

Figure 2. MDR testing results and impact on duodenoscope reprocessing



DISCUSSION

- Implementation of a point-of-care testing model was efficient and feasible in both a tertiary care and community setting
- Rate of MDRO colonization was low overall in this population (0.2%)
- This rate was similar to prior studies in patients undergoing ERCP, including one study evaluating a POC testing strategy which found a 0.5% incidence of carbapenem-resistant organisms (3)

CONCLUSIONS

- Point of care MDR testing may help optimize resource utilization while minimizing the risk of inter-patient pathogen transmission in facilities with moderate to high rates of MDRO carriage
- Additional studies are needed to evaluate this model's performance in a broader patient population, as well as delineate cost-efficacy and environmental impact.

REFERENCES

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CONTACT

Jad AbiMansour, MD
abimansour.jad@mayo.edu
@AbiMansourMD