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## Routine screening for carbapenemase-producing organisms in ERCP: A step toward safer endoscopy practice

*Dear Editor*,

We read with great interest the recent article by Bonato et al., entitled "Prevalence of Carbapenemase-producing Organisms (CPO) Colonization Before and After Endoscopic Retrograde Cholangiopancreatography (ERCP): A Prospective Observational Study" [1]. This study provides valuable insight into the risk of CPO transmission in ERCP operations. This topic is of critical importance in the field of gastroenterology given the global epidemic of multidrug-resistant organisms (MDROs). The authors' prospective evaluation of pre- and post-procedural CPO colonization highlights important clinical and public health implications, and we commend their efforts to address this understudied area. In the following, we offer constructive comments and suggestions to further deepen the understanding of CPO transmission during endoscopic operations.

The study's finding of a 4.8 % pre-procedural CPO colonization rate (including both known and newly identified carriers) is notable, particularly as 65.4 % of colonized patients were referred from other hospitals. This highlights the spread of MDROs between hospitals and supports the necessity of universal screening for CPO in endoscopy units, as previously advocated in Italian surveys showing limited pre-procedural screening practices [2]. The authors' data further confirm that patients with ERCP often have a complex medical history and belong to a high-risk group for CPO colonization. Therefore, there is a need for standardized screening protocols to identify asymptomatic carriers and prevent intra-hospital transmission.

The 2.5 % post-procedural colonization rate observed in initially negative patients is concerning, even in a center with rigorous reprocessing protocols (e.g., high-levels of disinfection, disposable caps). This aligns with prior reports showing persistent duodenoscope contamination despite best practices [3], which highlights the intrinsic challenges of reprocessing complex endoscopic devices. The study's emphasis on routine post-procedural screening as a tool for outbreak detection is crucial, as delayed identification of CPO transmission could lead to unrecognized spread in vulnerable populations.

While the study provides valuable data, several limitations warrant discussion. First, the single-center nature of the study may limit its general applicability because of differences in CPO prevalence and reprocessing practices across institutions. For example, the high proportion of patients with prior hospitalizations (79.9 %) and pancreaticobiliary endoscopies (74.5 %) reflects a tertiary care population, which may have higher baseline MDRO colonization rates compared to community settings. Multicenter studies across different healthcare tiers (e.g., primary, secondary, and tertiary hospitals) are needed to validate these findings and inform regional screening guidelines. Second, the 30.8 % refusal rate for post-procedural swabs introduces potential bias, as non-compliant patients might differ in clinical characteristics (e.g., older age, comorbidities) that influence CPO acquisition. Future studies may use strategies such as telemedicine sampling or patient education to improve follow-up rates and reduce missing data. Third, the study focuses on short-term colonization (72 h post-ERCP), but CPO infections may manifest later. Performing long-term follow-up (e.g., 30 days) would clarify the clinical impact of post-procedural colonization, including the progression to symptomatic infections (e.g., cholangitis, sepsis). Notably, sepsis occurred in 33.3 % of patients with postoperative colonization in this study, which underscores the need to link colonization data with clinical outcomes to quantify the true burden of ERCP-related CPO transmission. Lastly, the authors acknowledge the lack of cost analysis in the study, which is a critical gap in evaluating the feasibility of universal screening. While screening reduces the risk of transmission, the economic burden of PCR-based testing (e.g., Xpert Carba-R kits), isolation protocols, and extended duodenoscopy reprocessing (e.g., culture-based quarantine) must be balanced against the potential benefits of infection prevention. Cost-effectiveness studies comparing screening strategies (e.g., targeted vs. universal) are essential to guide resource allocation, particularly in healthcare systems with limited budgets.

The study's findings prompt us to think about innovative approaches to reduce the spread of MDROs in ERCP. While the authors use high-level disinfection and disposable caps, the emerging data suggest double high-level disinfection (DHLD) or ethylene oxide sterilization (EOS) may further reduce contamination rates [4], albeit with increased costs and turnaround times. Randomized trials comparing these methods in high-risk units may clarify whether intensive reprocessing is worth the additional resource investment.

The introduction of disposable duodenoscopes (e.g., EXALT Model D) offers a theoretical solution to reduce the risk of contamination. Pilot studies demonstrate comparable technical performance to reusable scopes [5], but their impact on CPO transmission remains unproven. A pragmatic trial comparing reusable vs. disposable scopes in CPO-endemic centers could provide definitive evidence of their role in infection control.

The study identifies KPC and NDM as the dominant carbapenemase genes, which is consistent with the epidemiological profile of MDRO in Italy [6]. Whole genome sequencing (WGS) incorporating CPO isolates allows for more precise tracing of the chain of transmission, distinguishing between intrinsic colonization

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and manipulation-related acquisition. WGS could also enhance outbreak detection by associating patient isolates with contaminated endoscopes or healthcare workers to enable targeted interventions.

In conclusion, Bonato et al.'s study is a vital contribution to the field that emphasizes the role of ERCP in CPO transmission and the value of pre- and post-procedural screening. Although the study has some limitations, these findings strengthen the case for standardized screening protocols in high-risk endoscopy units. As the MDRO problem intensifies, the integration of molecular diagnostics, advanced reprocessing techniques, and behavioral science will be key to reducing the risk of transmission. We call for further research to address the economic, technical, and epidemiological gaps identified in the article to ensure that ERCP remains a safe diagnostic and therapeutic tool in the era of antimicrobial resistance.

## Authors' contributions

Conceptualization and manuscript draft: Huan Luo. Critical revision for important intellectual content: Lei Pu.

All authors participated in discussions, critically revised the manuscript and approved the final version.

## Conflict of interest

The authors of this study declare that they do not have any conflict of interest.

## References

[1] Bonato G, et al. Prevalence of carbapenemase-producing organisms (CPO) colonization before and after endoscopic retrograde cholangiopancreatography (ERCP): a prospective observational study. Dig Liver Dis. 2025;S1590-8658(25):00733–9. doi:10.1016/j.dld.2025.04.024.
[2] Cennamo V, et al. The management of endoscopic retrograde cholangio- pancreatography-related infections risk: results of an italian survey at regional level. Ann Ig 2023;35(1):84–91.
[3] Rauwers AW, et al. Nationwide risk analysis of duodenoscope and linear echoendoscope contamination. Gastrointest Endosc 2020;92(3):681–91.
[4] Larsen S, et al. Rate and impact of duodenoscope contamination: a systematic review and meta-analysis. EClinicalMedicine 2020;25:100451.
[5] Muthusamy VR, et al. Clinical evaluation of a single-use duodenoscope for endoscopic retrograde cholangiopancreatography. Clin Gastroenterol Hepatol 2020;18(9):2108–17.
[6] Falcone M, et al. Bloodstream infections in patients with rectal colonization by Klebsiella pneumoniae producing different type of carbapenemases: a prospective, cohort study (CHIMERA study). Clin Microbiol Infect 2022;28(2):298.e1–298.e7.

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