

CADTH RAPID RESPONSE REPORT: REFERENCE LIST

# Pre-Procedural Medications for Endoscopic Retrograde Cholangiopancreatography: Clinical Effectiveness and Guidelines

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## Research Questions

1. What is the clinical effectiveness of pre-procedural medications for endoscopic retrograde cholangiopancreatography?
2. What are the guidelines for pre-procedural medications for endoscopic retrograde cholangiopancreatography?

## Key Findings

Two systematic reviews with meta-analyses, four randomized controlled trials, three non-randomized studies, and six evidence-based guidelines were identified regarding the clinical effectiveness or use of pre-procedural medications for endoscopic retrograde cholangiopancreatography.

## Methods

A limited literature search was conducted by an information specialist on key resources including MEDLINE All via Ovid, the Cochrane Library, the University of York Centre for Reviews and Dissemination (CRD) databases, the websites of Canadian and major international health technology agencies, as well as a focused Internet search. The search strategy was comprised of both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were endoscopic retrograde cholangiopancreatography and premedication. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2010 and July 1, 2020. Internet links were provided, where available.

## Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

**Table 1: Selection Criteria**

|                      |   |
|----------------------|---|
| <b>Population</b>    | Adult patients with suspected problems of the biliary or pancreatic ductal systems  |
| <b>Intervention</b>  | ERCP with pre-procedural medications, alone or in combination with each other, including: <ul style="list-style-type: none"> <li>• Analgesics (e.g., meperidine hydrochloride)</li> <li>• Muscarinic antagonists (e.g., glycopyrrolate)</li> <li>• Medication to treat anxiety (e.g., lorazepam)</li> <li>• Prophylactic antibiotics</li> </ul> |
| <b>Comparator</b>    | Q1: ERCP with no pre-medications<br>ERCP with one or more placebo pre-medication<br>ERCP with an alternative pre-medication<br>Q2: Not applicable   |
| <b>Outcomes</b>      | Q1: Clinical effectiveness (e.g., discomfort, saliva production, anxiety, infection) and safety (e.g., disorientation)<br>Q2: Recommendations regarding the use of pre-medications for ERCP   |
| <b>Study Designs</b> | Health technology assessments, systematic reviews, randomized controlled trials, non-randomized studies, evidence-based guidelines  |

ERCP = endoscopic retrograde cholangiopancreatography.

## Results

Two systematic reviews with meta-analyses,<sup>1,2</sup> four randomized controlled trials,<sup>3-6</sup> and three non-randomized studies<sup>7-9</sup> were identified regarding the clinical effectiveness of pre-procedural medications for endoscopic retrograde cholangiopancreatography. In addition, six evidence-based guidelines<sup>10-15</sup> were identified that included recommendations regarding the use of pre-procedural medications for endoscopic retrograde cholangiopancreatography. No relevant health technology assessments were identified.

Additional references of potential interest that did not meet the inclusion criteria are provided in the appendix.

## Health Technology Assessments

No literature identified.

## Systematic Reviews and Meta-analyses

1. Garg R, Mohan BP, Krishnamoorthi R, Rustagi T. Pre-endoscopic retrograde cholangiopancreatography (ERCP) administration of rectal indomethacin in unselected patients to reduce post-ERCP pancreatitis: a systematic review and meta-analysis. *Indian J Gastroenterol.* 2018;37(2):120-126.  
[PubMed: PM29619673](#)
2. Brand M, Bizo D, O'Farrell P, Jr. Antibiotic prophylaxis for patients undergoing elective endoscopic retrograde cholangiopancreatography. *Cochrane Database Syst Rev.* 2010(10):CD007345.  
[PubMed: PM20927758](#)

## Randomized Controlled Trials

3. Parekh DV, Rambhia S, Joshi MA, Kumar V, Pawar V, Pohekar MJ, et al. Randomized placebo controlled study of diclofenac as premedication for endoscopic retrograde cholangiopancreatography. *Int Surg J* 2020;7:730-2.
4. Kim NH, Kim HJ, Bang KB. Prospective comparison of prophylactic antibiotic use between intravenous moxifloxacin and ceftriaxone for high-risk patients with post-ERCP cholangitis. *Hepatobiliary Pancreat Dis Int.* 2017;16(5):512-518.  
[PubMed: PM28992884](#)
5. Ulusoy H, Coskun I, Arslan M. Effects of midazolam or tramadol premedication on early cognitive function in endoscopic retrograde cholangiopancreatography (ERCP): a randomized, controlled, double-blind study. *J Int Med Res.* 2016;44(3):542-556.  
[PubMed: PM26944385](#)
6. Amornyotin S, Chalayonnawin W, Kongphlay S. A randomized controlled trial of preprocedure administration of parecoxib for therapeutic endoscopic retrograde cholangiopancreatography. *J Pain Res.* 2012;5:251-256.  
[PubMed: PM23049274](#)

## Non-Randomized Studies

### *Retrospective Cohort*

7. Kohli DR, Shah TU, BouHaidar DS, Vachhani R, Siddiqui MS. Significant infections in liver transplant recipients undergoing endoscopic retrograde cholangiography are few and unaffected by prophylactic antibiotics. *Dig Liver Dis*. 2018 11;50(11):1220-1224. [PubMed: PM29907534](#)
8. Wang J, Shen Y, Zhong Z, Wu S, Zheng L. Risk factors for post-endoscopic retrograde cholangiopancreatography (ERCP) pancreatitis and the effect of octreotide combined with nonsteroidal anti-inflammatory drugs on preventing its occurrence. *Med Sci Monit*. 2018;24:8964-8969. [PubMed: PM30531679](#)

### *Prospective Cohort*

9. Voiosu TA, Bengus A, Haidar A, et al. Antibiotic prophylaxis prior to elective ERCP does not alter cholangitis rates or shorten hospital stay: results of an observational prospective study of 138 consecutive ERCPS. *Maedica (Buchar)*. 2014;9(4):328-332. [PubMed: PM25705300](#)

## Guidelines and Recommendations

10. Dumonceau JM, Kapral C, Aabakken L, et al. ERCP-related adverse events: European Society of Gastrointestinal Endoscopy (ESGE) guideline. *Endoscopy*. 2020;52(2):127-149. [PubMed: PM31863440](#)  
*See: Recommendation 5.1 (p.133)*
11. Domagk D, Oppong KW, Aabakken L, et al. Performance measures for ERCP and endoscopic ultrasound: a European Society of Gastrointestinal Endoscopy (ESGE) quality improvement initiative. *Endoscopy*. 2018;50. [https://www.esge.com/assets/downloads/pdfs/guidelines/2018\\_a\\_0749\\_8767.pdf](https://www.esge.com/assets/downloads/pdfs/guidelines/2018_a_0749_8767.pdf). Accessed 2020 Jul 8.  
*See: Recommendation 1 (p.4)*
12. Aabakken L, Karlsen TH, Albert J, et al. Role of endoscopy in primary sclerosing cholangitis: European Society of Gastrointestinal Endoscopy (ESGE) and European Association for the Study of the Liver (EASL) clinical guideline. *Endoscopy*. 2017;49(6):588-608. [PubMed: PM28420030](#)  
*See: Recommendation 1 (p.590)*
13. Chandrasekhara V, Khashab MA, Muthusamy R, et al. Adverse events associated with ERCP. *Gastrointest Endosc*. 2017;85(1):32-47. [PubMed: PM27546389](#)  
*See: Recommendation 11 (p.43)*
14. ASGE Standards of Practice Committee, Khashab MA, Chithadi KV, et al. Antibiotic prophylaxis for GI endoscopy. *Gastrointest Endosc*. 2015; 81(1):81-9. [PubMed: PM25442089](#)  
*See: Recommendation 4 (p.86-87)*

15. Dumonceau J-M, Andriulli A, Elmunzer BJ, et al. Prophylaxis of post-ERCP pancreatitis: European Society of Gastrointestinal Endoscopy (ESGE) guideline—updated June 2014. *Endoscopy*. 2014;46:799–815.  
[PubMed: PM25148137](#)  
*See: Section 5.2.1. Nonsteroidal anti-inflammatory drugs (NSAIDs) (p.802-804)*

## Appendix — Further Information

### Systematic Reviews and Meta-analyses

#### *Alternative Comparator*

16. Hou YC, Hu Q, Huang J, Fang JY, Xiong H. Efficacy and safety of rectal nonsteroidal anti-inflammatory drugs for prophylaxis against post-ERCP pancreatitis: a systematic review and meta-analysis. *Sci Rep.* 2017;7:46650.

[PubMed: PM28440297](#)

#### *Unclear Comparator*

17. Liu L, Li C, Huang Y, Jin H. nonsteroidal anti-inflammatory drugs for endoscopic retrograde cholangiopancreatography postoperative pancreatitis prevention: a systematic review and meta-analysis. *J Gastrointest Surg.* 2019;23(10):1991-2001.

[PubMed: PM30251071](#)

18. Pekgoz M. Post-endoscopic retrograde cholangiopancreatography pancreatitis: a systematic review for prevention and treatment. *World J Gastroenterol.* 2019;25(29):4019-4042.

[PubMed: PM31413535](#)

19. Wan J, Ren Y, Zhu Z, Xia L, Lu N. How to select patients and timing for rectal indomethacin to prevent post-ERCP pancreatitis: a systematic review and meta-analysis. *BMC Gastroenterol.* 2017;17(1):43.

[PubMed: PM28298192](#)

#### *Timing of Antibiotic Administration is Unclear*

20. Yang C, Zhao Y, Li W, et al. Rectal nonsteroidal anti-inflammatory drugs administration is effective for the prevention of post-ERCP pancreatitis: An updated meta-analysis of randomized controlled trials. *Pancreatology.* 2021;17: 681-688.

[PubMed: PM28734720](#)

21. Cao WL, Yan WS, Xiang XH, Chen K, Xia SH. Prevention effect of allopurinol on post-endoscopic retrograde cholangiopancreatography pancreatitis: a meta-analysis of prospective randomized controlled trials. *PLoS ONE.* 2014;9: e107350.

[PubMed: PM41759328](#)

22. Zhang ZF, Yang N, Zhao G, Zhu L, Zhu Y, Wang LX. Preventive effect of ulinastatin and gabexate mesylate on post-endoscopic retrograde cholangiopancreatography pancreatitis. *Chin Med J.* 2010;123(18):2600-2606.

[PubMed: PM21034635](#)

### Randomized Controlled Trials

#### *Alternative Comparator*

23. Luo H, Zhao L, Leung J, et al. Routine pre-procedural rectal indometacin versus selective post-procedural rectal indometacin to prevent pancreatitis in patients undergoing endoscopic retrograde cholangiopancreatography: a multicentre, single-blinded, randomised controlled trial. *Lancet.* 2016;387(10035):2293-2301.

[PubMed: PM27133971](#)

## *Timing of Antibiotic Administration is Unclear*

24. Patai A, Solymosi N, Patai AV. Effect of rectal indomethacin for preventing post-ERCP pancreatitis depends on difficulties of cannulation: results from a randomized study with sequential biliary intubation. *J Clin Gastroenterol*. 2015;49(5):429-437.

[PubMed: PM25790233](#)

## Non-Randomized Studies

### *Timing of Antibiotic Administration is Unclear*

25. Ishigaki T, Sasaki T, Serikawa M, et al. Evaluation of antibiotic use to prevent post-endoscopic retrograde cholangiopancreatography pancreatitis and cholangitis. *Hepatogastroenterology*. 2015;62(138):417-424.

[PubMed: PM25916074](#)

26. Olsson G, Arnelo U, Lundell L, Persson G, Tornqvist B, Enochsson L. The role of antibiotic prophylaxis in routine endoscopic retrograde cholangiopancreatography investigations as assessed prospectively in a nationwide study cohort. *Scand J Gastroenterol*. 2015;50(7):924-931.

[PubMed: PM25769041](#)

### *Alternative Outcomes*

27. Minami T, Sasaki T, Serikawa M, Ishigaki T, Murakami Y, Chayama K. Antibiotic prophylaxis for endoscopic retrograde cholangiopancreatography increases the detection rate of drug-resistant bacteria in bile. *J Hepatobiliary Pancreat Sci*. 2014;21(9):712-718.

[PubMed: PM24925282](#)

### *Unclear Comparator*

28. Wobser H, Gunesch A, Klebl F. Prophylaxis of post-ERC infectious complications in patients with biliary obstruction by adding antimicrobial agents into ERC contrast media—a single center retrospective study. *BMC Gastroenterol*. 2017;17(1):10.

[PubMed: PM28086796](#)

## Guidelines and Recommendations

### *Abstract Not Available*

29. Bai Y, Li F, Wang SL, et al. Chinese expert consensus on perioperative medications for endoscopic retrograde cholangiopancreatography (ERCP). *J Dig Dis*. 2019;20(3):103-113.

[PubMed: PM30604509](#)

### *Quality Performance Measures*

30. Adler DG, Lieb JG2nd, Cohen J, et al. Quality indicators for ERCP. *Gastrointest Endosc*. 2015;81(1):54-66.

[PubMed: PM25480099](#)