ACADEMIC HOSPITAL JOURNAL

Volume 8, No. 1, March 2026

ISSN 2615-6253 (ONLINE)
ISSN 2615-6245 (PRINT)

Comparison of The Effectiveness of Intermittent and Continuous Pantoprazole Therapy in Peptic Ulcer Disease Bleeding

***Ade Wirastuti, Sri Rahmat Molidia, Salsabela, Kharina Anisya, Fortunata Saesarria Deisberanda, Kathina Deswi Aqsa, Muhammad Nur Ajwad, Abdurraafi' Maududi Dermawan, Fakhruddin, and Rommy**

Tanjungpura University, Pontianak, West Kalimantan, Indonesia

*Corresponding Author: adewirastuti@pharm.untan.ac.id

Submitted: January 2026 **Reviewed: January 2026** **Published: March 2026**

Abstract

Background: Peptic ulcer disease with melena is commonly encountered in clinical practice. Pantoprazole is widely used to control bleeding and heal ulcers, but there is still debate regarding the effectiveness of intermittent bolus administration compared to continuous infusion.

Objective: To review and evaluate the literature on the comparative effectiveness of pantoprazole administered via intermittent bolus versus continuous infusion.

Methods: This study employed a narrative literature review design. Literature searches were conducted in the PubMed, Google Scholar, ProQuest, and Sage Journals databases for publications from 2020 to 2025 using the keywords: "pantoprazole," "continuous infusion," "intermittent bolus," "effectiveness," "bleeding," and "peptic ulcer disease".

Result: Four articles met the inclusion criteria. Two studies reported no significant difference between intermittent bolus and continuous infusion administration. One study found that intermittent bolus administration was associated with a shorter length of stay, whereas another recommended continuous infusion for patients at high risk of upper gastrointestinal bleeding. There was heterogeneity in study design and reported outcomes.

Conclusion: There is no significant difference between continuous infusion and intermittent bolus administration of pantoprazole; given the limited number and quality of studies, further research is needed.

Keywords: Pantoprazole, Intermittent, Continuous, Bleeding, Peptic Ulcer Disease, Effectiveness

1. INTRODUCTION

In thehospitals, Peptic Ulcer Disease (PUD) with melena constitutes a common clinical situation and must certainly be treated without delay in order to avoid rebleeding of the Gastrointestinal (GI) tract and grave sequelae. In the clinic, Pantoprazole has been used as an effective therapy for ulcer healing and the prevention of recurrent gastrointestinal bleeding. Pantoprazole is a proton pump inhibitor (PPI) that effectively reduces gastric acid secretion. PPIs are increasingly used over time, and some 40–70% of inpatients receive them (1-3).

The controversial topic of how to use Pantoprazole as a PPI drug isthe efficacy of continuous infusion or bolus dosing in both stopping ulcer bleeding and preventing recurrence of bleeding. There have been a few reports in the literature on this topic, with conflicting results: some show no significant difference between continuous infusion and intermittent injections after pantoprazole. Some other studies have demonstrated that one of the benefits of this route was decreased rebleeding and hospitalisation (4,5).

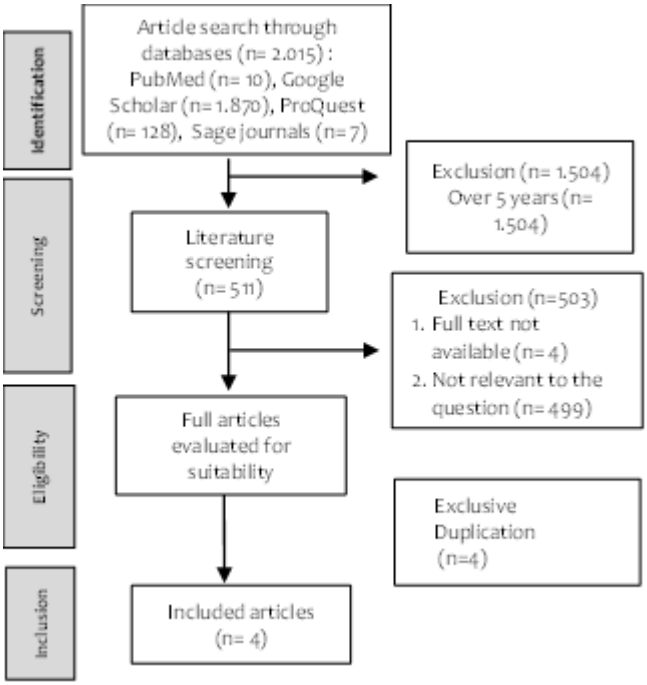
COPYRIGHT ©2020 THE AUTHOR(S). This article is licensed under a Creative Commons Attribution ShareAlike 4.0 International License

The purpose of this review is to assess the efficacy of intermittent pantoprazole therapy compared with continuous infusion in PUD patients presenting with melena. A newness is addressed by the emphasis in the literature review on integrating recent research results and providing an overall assessment of the advantages and disadvantages of these two methods. Therefore, we anticipate that this research will make both practical and scientific contributions to the rational use of pantoprazole treatment for PUD patients, particularly those withbleeding symptoms, and could lay the foundation for more reasonable clinical recommendations.

2. MATERIALS AND METHODS

Research design: This study is based on a narrative review. A literature search was performed on PubMed, Google Scholar, ProQuest, and Sage journals databases using the restricted keywords "Pantoprazole, Continuous infusion, Intermittent, Effectiveness, Bleeding and Peptic ulcer disease) for the years 2020 to 2025. A further manual selection of pertinent papers was carried out from the received research articles. The PRISMA checklist was used to conduct the article search, as described in **Figure 1**.

The review included freely accessible international articles on the comparative efficacy of intermittent and continuous pantoprazole therapy in PUD bleeding. Studies comparing only types of intravenous pantoprazole administration were excluded.



3. RESULTS

This study reports on the comparative effectiveness of intermittent versus continuous pantoprazole therapy in PUD bleeding, based on four articles included in this review (as shown in **Table 1**).

Table 1. Characteristics of the included studies

Research Subject	Research Design	Year	Effectiveness	Referensi
56 patients receiving intermittent PPI therapy and 41 receiving continuous infusion (pantoprazole or omeprazole)	Retrospective observational cohort	2022	No significant difference in rebleeding rate, length of hospital stay, or mortality	6
38 patients were treated with continuous pantoprazole infusion, and 60 patients with bolus injections	Retrospective *case control*	2023	Intermittent bolus dosing showed comparable efficacy and improved safety and cost-effectiveness	4

Research Subject	Research Design	Year	Effectiveness	Referensi
237 patients were treated with continuous PPI infusion (pantoprazole, esomeprazole) and 209 patients receiving intermittent bolus	Retrospective cohort	2022	There is no increased risk of rebleeding after intermittent bolus therapy	5
40 patients receiving intermittent pantoprazole infusion and 40 receiving continuous infusion	Randomized (coin-flip method)	2024	Intermittent infusion showed lower rebleeding rates compared to continuous infusion	7

4. DISCUSSION

PUD is a gastrointestinal disease frequently reported worldwide, with 0.1–0.3% of individuals developing it each year. In 77 (6.8%) of 1,139 patients with dyspepsia in Indonesia, ulcerswere detected at abdominal endoscopy (8).

Pantoprazole is a PPI for the treatment of PUD, which also has the capacity to heal the lesions and reduce ulcerbleeding. High-risk bleeding melena patients are advised to be treated with an intravenous bolus of 80 mg PPI, followed by a continuous infusion of 8 mg/hour for 72 hours (8,9).

The PPI in this case, Pantoprazole, may be administered either intermittently (in bolusdoses at intervals) or continuously (infused continuously over a period). Such a dosing forpantoprazole might be 40 mg IV every 12 hours. A typical continuous infusion dose would be an 80 mg bolus, followed by an infusion rate of 8 mg/hour for 72 hours (10,11).

Study (6) comparing the effectiveness of intermittent PPI administration with continuous infusion. Of the 97 patients who used PPIs, 56 patients were studied (6) comparing the effectiveness of intermittent PPI administration with continuous infusion. Of the 97 patients who used PPIs, 56 received intermittent administration, and 41 received continuous infusion. The results showed no significant difference between the two methods of administration in patient outcomes related to recurrent bleeding within 30 days (p=0.396), mortality within 30 days (p=0.308), and length of stay (p=0.067). Although the statistical analysis showed no significant difference, the results indicated that the clinical outcomes in the intermittent PPI group were numerically comparable to those in the continuous infusion group, with no increased risk of rebleeding or mortality. These findings are consistent with other studies showing that intermittent PPI administration is as effective as continuous infusion for upper gastrointestinal bleeding. Although they are equally efficacious, intermittent administration is more cost-effective than continuous administration (12). dy (4) seeking to compare the efficacy of Intermittent administration and continuous infusion, 98patients were treated with pantoprazole. Continuous pantoprazole infusion was administered to 38 patients, and intermittent boluses to 60. The report found a higher rate of gastrointestinal bleeding within 30days with continuous infusion (7%) than that for intermittent infusion (3%). Furthermore, the rehospitalisation rate was higher in the continuous infusion group (33%) than in the intermittent administration group (13%). The median length of stay (LOS) was 1 day shorter in the intermittent group than in the continuous infusion group. Although there were numerical differences in several clinical outcomes, statistical testing showed a p-value of 1, indicating that the differences did not reach statistical significance, possibly due to the relatively small sample size. Other studies reported similar findings to ours, showing no difference between the two routes in

rebleeding, mortality, and hospital stay duration 13. PI infusion was administered to 237 patients, and intermittent bolus PPI to 209 patients. The sample included 446 patientsfrom two hospitals. In that study, multivariate analysis revealed that continuous infusion of PPI was not significantly different from intermittent administration in terms of rebleeding rate (odds ratio 1.50), with a 95% confidence interval at the 0.05 level (0.91–2.50). There was also a significant difference in the risk of rebleeding in the multivariate analysis between continuous infusionand intermittent bolus administration of PPI. The patients who wereadministered continuous PPI infusion had high-risk factors such as prior history of liver disease and gastrointestinal bleeding. Furthermore, they also presented with a more severe disease as compared to the intermittent group. Thus, continuous infusion is a superior and moreefficient treatment for high-risk patients. Intermittent PPI use offers several benefits for hospitals and patients, leading to cost savings as a secondary effect of reduced need for mixed PPI infusions in the compounding room versus continuous infusion. Neither teaching hospital in this study utilised continuous infusion over intermittent PPIs for patients with GI bleeding, despite it not being associated withan increase in rebleeding. Another point is that another study reported that, from an economic perspective, intermittent use may yield greater cost savings among patients at low risk for upper gastrointestinal bleeding, whereas continuous infusion would be more frequent among those at high risk (14).

The latter (7) was conducted in 80 patients at risk of upper gastrointestinal bleeding and divided into two groups. Pantoprazole was administered as a continuous infusion to 40 patients,while intermittent pantoprazole was administered to 40 patients. After a 3-day course of pantoprazole, in patients treated with either continuous or intermittent infusion, 29 patients had clean-base ulcers, 3 patients had flat, pigmented, spotted ulcers, and 8 patients had visible blood vessel ulcers with bleeding in the continuous pantoprazole infusion group. In contrast, among the cohort with bolus-loading pantoprazole, 35 had clean-based ulcers (P = 0.44), 5 flat pigmented ulcers (P = 0.61), and no bleeding ulcers (P > 0.99). On the basis of these results, visible bleeding vascular ulcers were significantly more frequent in the continuous infusiongroup (eight patients) than in the intermittent group (P>0.028). In the present study, the mean hospitalisation duration was significantly longer in the continuous infusion group than in the II group (p>0.0001). According to this study's findings, intermittent PPI use is less likely to be associated with prolonged hospital stays or bleeding than continuous use. This is consistent with other studies, which reported that intermittent administration of PPIs reduced the risk of bleeding and the duration and amount of costs relative to continuous PPI infusion in patients who have received endoscopic hemostasis (15).

5. CONCLUSION

The author would like to thank all those who contributed to the preparation of this research article, especially colleagues from the Pharmacy study program at Tanjungpura University.

REFRENCES

1. Hidayanto A, Subrata SA, Widiyanto P. Prevalence and characteristics of peptic ulcer in patients presenting with hematemesis and/or melena undergoing esophagogastroduodenoscopy: a descriptive study. Inn Health and Soc. 2024;5(1). doi:10.31603/ihs.12514
2. Lu MH, Chiang HC. Turn over the new leaf of the treatment in peptic ulcer bleeding: a review of the literature. Therap Adv Gastroenterol. 2024;17:17562848241275318. doi:10.1177/17562848241275318
3. Mambo CD, Masengi ASR, Onibala FWR. Pengaruh Penggunaan Proton Pump Inhibitors (PPIs) Jangka Panjang terhadap Kanker Lambung. eCl. 2023;12(1):6-15. doi:10.35790/ecl.v12i1.45428
4. Hernandez IA, Morell J, Mulcahy L, Luzardo D. Comparison Between Pantoprazole Intermittent Dosing and Continuous Infusion in Suspected Upper Gastrointestinal Bleeding Prior to Endoscopy: Impact of a Pharmacist-Driven Protocol to Reduce Utilisation of

Pantoprazole Continuous Infusion. Cureus. Published online October 31, 2023. doi:10.7759/cureus. 48056

5. Leung T, Kedzior S, Moore K, Bierman J, Coralic Z. Intermittent Versus Continuous Infusion Dosing of Intravenous Proton Pump Inhibitors for Upper Gastrointestinal Bleeding. Ann Pharmacother. 2022;56(10):1127-1132. doi:10.1177/10600280211073936
6. Alzubaidi AS, Basilim AF. Comparison of intermittent and continuous proton pump inhibitor infusions in patients with non-variceal upper gastrointestinal bleeding at King Abdulaziz University Hospital, Jeddah, Saudi Arabia: A retrospective study. SMJ. 2022;43(8):941-945. doi:10.15537/smj.2022.43.8.20220128
7. Jafari S, Novin MS, Salarpour F. A Comparison between the Impacts of Continuous and Intermittent Intravenous Pantoprazole Injection on High Risk Upper Gastrointestinal Bleeding. J Adv Med Biomed Res. 2024;32(152):185-190. doi:10.61186/jambr.32.152.185
8. Makmun D. Ulkus Peptikum. PIP Interna; 2021.
9. Faust AC, Schwaner L, Thomas D, Sannapanei S, Feldman M. Pre-Endoscopy Use of Proton Pump Inhibitor Intravenous Bolus Dosing in Hemodynamically Stable Patients With Suspected Upper Gastrointestinal Bleeding: Results of a Pharmacist-Managed Hospital Protocol to Reduce Continuous Infusion Pantoprazole Use. Hosp Pharm. 2022;57(4):448-454. doi:10.1177/00185787211046854
10. Laine L, Barkun AN, Saltzman JR, Martel M, Leontiadis GI. ACG Clinical Guideline: Upper Gastrointestinal and Ulcer Bleeding. Am J Gastroenterol. 2021;116(5):899-917. doi:10.14309/ajg.0000000000001245
11. Choi CW, Kang DH, Kim HW, et al. High Dose Proton Pump Inhibitor Infusion Versus Bolus Injection for the Prevention of Bleeding After Endoscopic Submucosal Dissection: Prospective Randomised Controlled Study. Dig Dis Sci. 2015;60(7):2088-2096. doi:10.1007/s10620-015-3560-9
12. Feruza A, Neeladri MP. Comparative Analysis of Continuous versus Intermittent Proton Pump Inhibitor Therapy in Patients with Upper Gastrointestinal Bleeding Due to Ulcers. OJGas. 2024;14(03):99-107. doi:10.4236/ojgas.2024.143011
13. Smith R, Madiah Z, Tanasescu A, Stone A. OTU-15 Intermittent administration of PPI is not inferior to infusion following acute non-variceal upper gastrointestinal bleeding. In: Gastroduodenum. BMJ Publishing Group Ltd and British Society of Gastroenterology; 2019:A144.2-A144. doi:10.1136/gutjnl-2019-BSGAbstracts.273
14. Lei Y, Halasz J, Novak KL, Congly SE. Intermittent Proton Pump Inhibitor Therapy in Low-Risk Non-Variceal Upper Gastrointestinal Bleeding May Be Significantly Cost-Saving. Medicines. 2023;10(7):44. doi:10.3390/medicines10070044
15. Hsieh HH, Wu TY, Chen CH, Hour MJ. Cost-effectiveness and clinical outcomes of intermittent/continuous proton pump inhibitor infusion in high bleeding risk of ulcers: A retrospective observational cohort study. Medicine. 2021;100(49):e28064. doi:10.1097/MD.0000000000028064