

# Clinically Significant Gastrointestinal Bleeding Using Proton Pump Inhibitors or Histamine Type-2 Receptor Antagonists in Patients Intubated for Over 48 Hours: A Systematic Review and Meta-Analysis

W. Khokher, MD<sup>1\*</sup>, N. Kesireddy, MD<sup>1</sup>, S. Iftikhar, MD<sup>1</sup>, A. Beran, MD<sup>1</sup>, Z. Abuhelwa, MD<sup>1</sup>, S. Malhas, MD<sup>1</sup>, T. Saif, MD<sup>1</sup>, R. Assaly, MD<sup>2</sup>

<sup>1</sup>Division of Internal Medicine, Department of Medicine, The University of Toledo, Toledo, OH 43614

<sup>2</sup>Division of Pulmonary and Critical Care Medicine, Department of Medicine, The University of Toledo, Toledo, OH 43614

\*Corresponding author: [Waleed.Khokher@utoledo.edu](mailto:Waleed.Khokher@utoledo.edu)

Published: 05 May 2023

**Introduction:** The use of stress ulcer prophylaxis (SUP) is routine in the intensive care unit (ICU) to prevent serious deleterious effects of gastrointestinal bleeding (GIB). Aim of our investigation was to perform a literature review and meta-analysis to compare the effectiveness of proton pump inhibitors (PPIs) to histamine type-2 receptor antagonists (H2RAs) in a selective high risk patient population that has been mechanically ventilated for over 48 hours.

**Methods:** Comprehensive search of published studies indexed in PubMed/MEDLINE, EMBASE, and the Cochrane Central Register of Controlled Trials to obtain randomized controlled trials (RCTs) that evaluated the use of PPIs and H2RAs in patients intubated for >48 hours. Primary outcome was the occurrence of clinically significant or overt GIB (CS/O-GIB). Secondary outcomes were occurrence of ventilator associated pneumonia (VAP), ICU mortality, and ICU length of stay (LOS).

**Results:** Seven RCTs involving 27905 patients that were mechanically ventilated for >48 hours were including in the meta-analysis. Rate of CS/O-GIB was significantly lower in patients receiving PPIs compared to H2RAs while intubated (1.6% vs. 2.5%, RR 0.59, 95% CI 0.45-0.79, P = 0.0003, I<sup>2</sup>= 31%). There was no significant difference between the two groups in-terms of rate of VAP, ICU mortality, and ICU LOS.

**Conclusion:** This meta-analysis demonstrates that PPIs in patients mechanically ventilated for over 48 hours are more effective in preventing CS/O-GIB when compared to H2RAs, without leading to a significant increase in the rate of VAP.