

INTRODUCTION

- PPIs are commonly used in critically ill patients for stress ulcer prophylaxis. By decreasing gastric acidity, they predispose patients to nosocomial infections such as Ventilator Associated Pneumonia (VAP), linked to significant morbidity and mortality.
- While prior randomized trials have explored this, real-world ICU data are limited.
- Using the MIMIC-IV ICU database, we evaluated whether early or prolonged PPI exposure was associated with increased VAP incidence in mechanically ventilated ICU patients.

METHODS

- This was a single-center retrospective study that analyzed adult patient records (more than 18 years of age) who underwent 24hr-pH and HRM testing. We included HH status, BMI, HRM findings (LES basal pressure, IRP, ineffective swallows), and 24-hour pH-impedance parameters (Demeester score, total/upright/supine acid exposure time (AET), longest reflux episode, Mean nocturnal baseline Impedance (MNBI), weakly/non-acidic reflux. Analysis was performed in STATA; group comparisons were performed using Mann-Whitney U and chi-square tests. Pearson correlations assessed associations between continuous variables, including BMI and manometric findings.

RESULTS

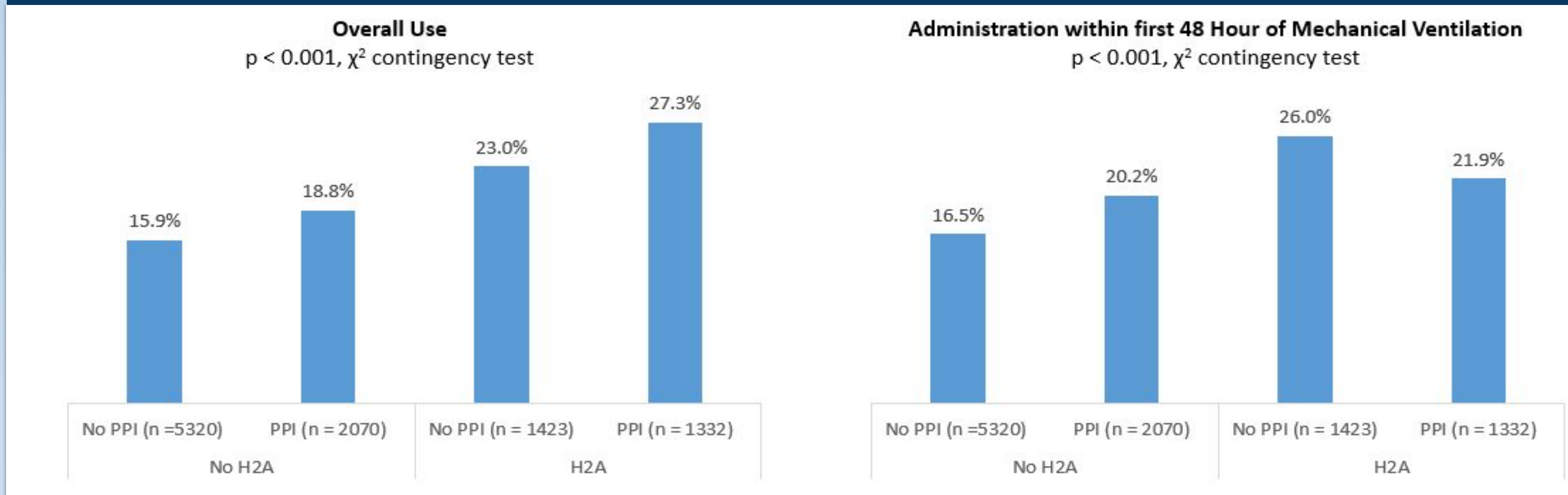


Fig. 1 Adjusting for duration of mechanical ventilation, the rate of VAP prolonged use of PPIs during or prior to initiation of mechanical ventilation, up to 16.7% for patients with < 7 days and 41.6% for patients with 7 + days receiving ventilation and >2 weeks of PPI

- Among 10,865 ICU patients, early PPI use was associated with increased VAP incidence in those ventilated < 7 days (12.7% vs. 9.6%, $p < 0.001$), but not in those ventilated ≥ 7 days (36.6% vs. 33.0%, $p = 0.06$).
- VAP incidence also increased with prolonged PPI use during and prior to ICU admission. In patients ventilated < 7 days, VAP rates increased from 8.9% (no PPI) to 16.7% (>2 weeks of PPI).
- Among those ventilated ≥ 7 days, VAP incidence ranged from 31.6% (no PPI) to 41.6% with >2 weeks of PPI exposure ($p < 0.001$).

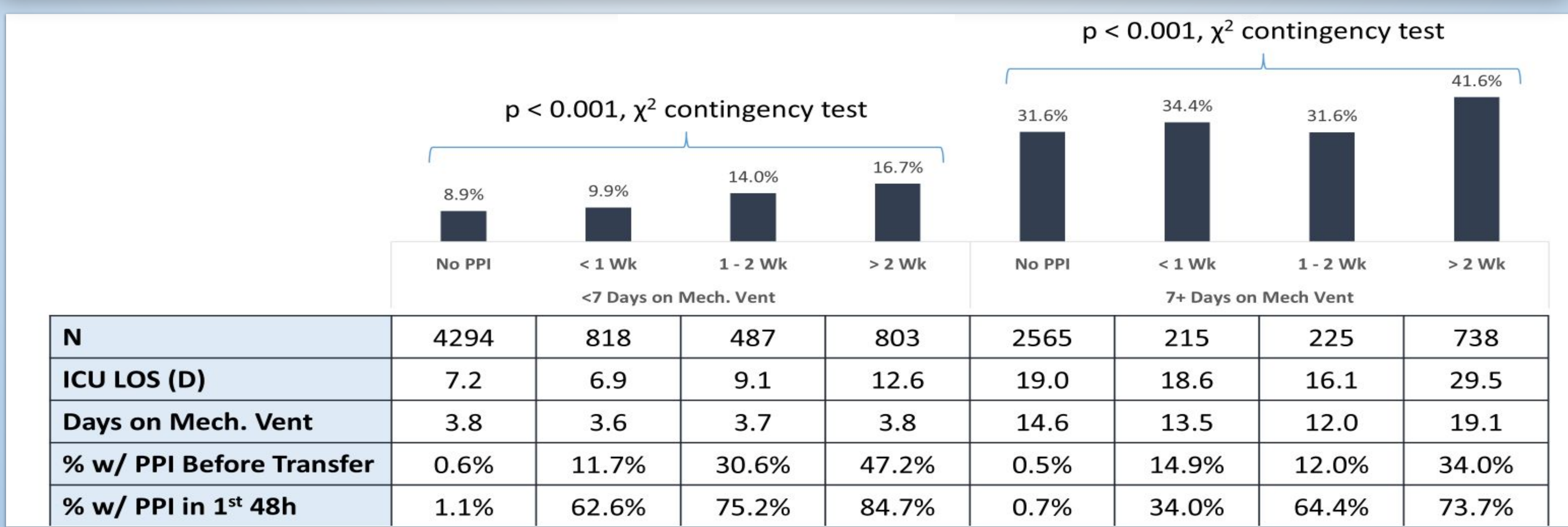


Fig. 2 The rate of VAP increases with both use of PPIs and H2B among patients intubated for at least 48 hours.

DISCUSSION

- Both early and prolonged PPI use were associated with increased incidence of VAP particularly among patients ventilated for less than 7 days.
- These findings highlight the need to assess judicious use of acid suppression in all ICU patients. This study captures prescribing patterns, and suggests that variation in exposure, timing, duration, and indication could increase infection incidence in lower-risk patients.
- Confounding by indication or illness severity cannot be excluded. Future directions include multivariable modeling and propensity-matched analysis to clarify whether PPI use independently contributes to VAP risk.

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Presenter: Anjali Rajagopal, MBBS
Affiliation: Department of Medicine, University of Connecticut Health Center
Email: dranjalirajagopal@gmail.com

