Impact of a Pharmacist Managed Protocol Substituting Intermittent Intravenous Proton Pump Inhibitor for Continuous Infusion Administration

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Abstract

BACKGROUND: Guidelines for the treatment of upper gastrointestinal bleeding (UGIB) recommend use of continuous infusion proton pump inhibitors. However, recent studies have suggested these patients may be safely managed with IV push proton pump inhibitors (PPI).

METHODS: This is a retrospective review of patients who received intravenous pantoprazole for suspected UGIB before and after the implementation of a revised pharmacist managed protocol. This revised protocol allowed pharmacists to substitute pantoprazole 40mg IV every 12 hours for a pantoprazole infusion in hemodynamically stable patients. The original protocol allowed transition to intermittent pantoprazole after receipt of at least one continuous infusion bag. The primary endpoint was the incidence of re-bleeding within 7 days.

RESULTS: A total of 182 patients were included. The re-bleeding rate at day 7 was 8% in the original protocol group compared to 6% in the revised protocol group (p=0.77). Compared to the original protocol, the revised protocol reduced the median number of continuous infusions per patient [2 (IQR 1-5) vs 0 (IQR 0-3); p<0.001], but increased the median number of IV push injections [2 (IQR 0-5) vs 4 (IQR 2.5-6); p=0.002]. This resulted in a 32% lower medication cost per patient. There were no significant differences between groups regarding ICU admission, hospital length of stay, or hospital mortality.

CONCLUSIONS: Restriction of continuous infusion pantoprazole in hemodynamically stable UGIB patients demonstrated no difference in re-bleeding rates within 7 days with a potential to reduce proton pump inhibitor exposure and costs.

Objective

To evaluate the effects of an updated protocol which allows pharmacists to automatically substitute intermittent pantoprazole for continuous infusion pantoprazole in patients with UGIB

Methods

Retrospective chart review
- Original protocol group:
  - May 1, 2018 to July 31, 2018
- Revised protocol group:
  - August 7, 2018 to October 31, 2018

Inclusion Criteria
- ≥ 18 years of age
- Intravenous pantoprazole for an UGIB
  - Pantoprazole is THD's formulary PPI

Exclusion Criteria
- Pantoprazole for non-UGIB diagnosis
- Transferred from an outside hospital after admission for ≥ 24 hours

Outcomes
- Primary:
  - Incidence of upper gastrointestinal re-bleeding within 7 days of initiating treatment with PPI
- Secondary:
  - Pantoprazole continuous infusion bags
  - Pantoprazole IV push administrations
  - Blood transfusions
  - Endoscopic interventions
  - Length of hospital stay
  - Hospital mortality

Statistical Analyses
- Categorical data: X^2 or Fisher's exact test
- Continuous data: Mann-Whitney U test
- GraphPad QuickCalcs (GraphPad Software, Inc. La Jolla, CA)

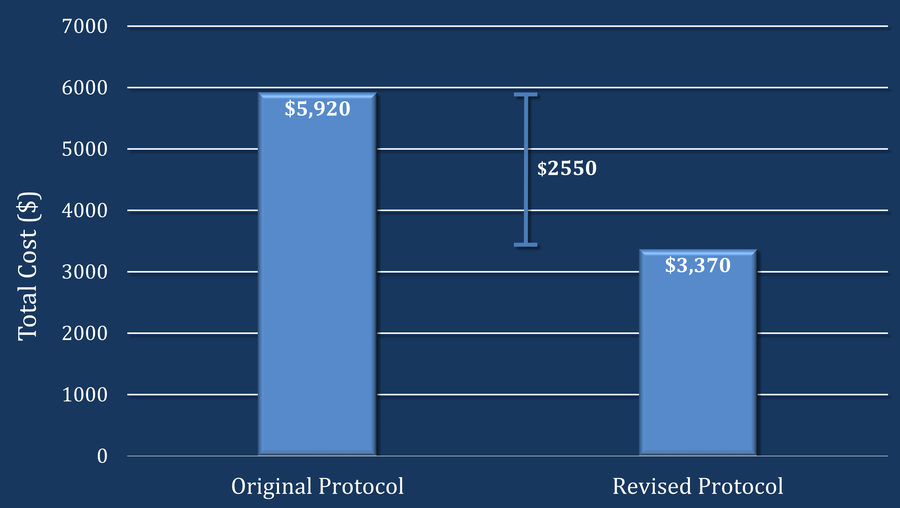
Results

Primary Outcome

	Original Protocol (n=99)	Revised Protocol (n=83)	P-value
Incidence of re-bleeding within 7 days – n (%)	8 (8.1)	5 (6.0)	0.77

Secondary Outcomes

	Original Protocol (n=99)	Revised Protocol (n=83)	P-value
Patients initially started on IV push PPI – n (%)	22 (22.2)	45 (54.2)	**<0.001**
Continuous infusion bags per patient – median (IQR)	2 (1-5)	0 (0-3)	**<0.001**
IV push PPI per patient – median (IQR)	2 (0-5)	4 (2.5-6)	**0.002**
Requirement of blood transfusions – n (%)	63 (63.6)	41 (49.4)	0.07
Requirement of repeat blood transfusions – n (%)	45 (71.4)	24 (58.5)	**0.03**
Endoscopic interventions – n (%)	45 (45.5)	26 (31.3)	0.07
Time to endoscopy from PPI (hrs) – median (IQR)	21 (12-36)	24 (18-39)	0.63
Length of hospital stay (days) – median (IQR)	4 (2-7)	4 (3-6)	0.85
Mortality – n (%)	6 (6.1)	4 (4.8)	0.76



Study Limitations

- Retrospective chart review
- Primary endpoint based on accuracy of chart documentation
- Single-center study
- Protocol could be overridden at physician discretion

Conclusions

- Implementation of this pharmacy managed protocol had no detrimental effect on the incidence of re-bleeding within 7 days
- Statistically significant differences in:
  - Number of patients initially started on IV push PPI
  - Number of pantoprazole continuous infusion bags per patient
  - Number of pantoprazole IV push injections per patient
  - Requirement of repeat blood transfusions
- No significant difference in:
  - Blood transfusions
  - Endoscopic interventions
  - Hospital length of stay
  - Hospital mortality
- The protocol resulted in a cost reduction of ~$2550 over the study time frame
  - 32% lower cost per patient

References

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