Title : Evaluation of Pantoprazole Continuous Infusion at an Academic Institution

Purpose:

Continuous proton-pump inhibitor infusions are commonly utilized in the management of gastrointestinal bleeding, however, studies have suggested that twice daily dosing may be as efficacious. Considering this data and recent pantoprazole shortages, The University of Kansas Health System implemented a pantoprazole optimization policy on July 17th, 2019 favoring pantoprazole twice daily dosing over continuous infusion (CI) unless specific criterion were met to warrant use of a drip strategy. This study was performed to assess the effectiveness of policy initiation on pantoprazole utilization in the setting of upper gastrointestinal bleeding (UGIB).

Methods:

A retrospective chart review was performed in patients with confirmed UGIB six weeks pre- and post-policy implementation. Patients were identified by screening for pre-determined ICD-10 codes frequently associated with UGIB whom also received pantoprazole CI and/or twice daily dosing during the twelve week study period. Data collection included initial CI versus twice daily dosing and those receiving CI were also evaluated for empiric versus criteria-confirmed initiation, criteria for CI met or unmet, total duration of CI, duration of CI without approved criteria, and transition to twice daily dosing. The primary outcome was a pre- and post-policy comparison of mean CI hours without an approved indication per patient case. Secondary outcomes include pre- and post-policy analysis of pantoprazole costs and number of empiric CI vs twice daily dosing.

Results:

A total of 28 and 24 patients received CI pantoprazole during the pre- and post-policy implementation periods respectively. Conversely, 74 and 40 patients received initial twice daily pantoprazole pre- and post-policy. No statistical significance was found between the mean hours per patient of CI pantoprazole use without appropriate indication before versus after policy go-live (17.99 vs 12.75 hours, 95% CI -3.70 to 14.17, p = 0.24). The percentage of empiric CI usage (ordered before UGIB was confirmed via endoscopy) with respect to total CI utilization during each period increased from 64.29% to 83.33%. Cost estimates comparing twice daily and CI were based on acquisition costs of $6 for one vial of 40 mg pantoprazole; 72 hours of therapy with twice daily dosing yielded a cost of $28.8, while 72 hours of CI dosing yielded a cost of $86.40. Projected treatment costs were estimated based on the total number of UGIB patients over the 12-week time frame of the study. Twice daily vs CI costs were based on the average number of UGIB patients estimated if all were to be treated with either twice daily or CI dosing for a period of 72 hours each. Cost extrapolation revealed that twice daily dosing compared to CI dosing for all UGIB patients estimated over 1 year time would result in cost savings of $36,110.88.

Conclusions:

While no statistical significance was found between mean hours per patient of CI without approved indication, there was a potential downward trend noted justifying further study to assess potential changes in prescribing over time. Empiric use of CI increased after policy implementation, which was an unexpected finding and warrants further investigation. A majority of the CI ordered after policy

implementation had the first selectable criteria chosen; many of which did not end up meeting said criteria upon chart review and perhaps indicates that providers were ordering without evaluating for twice daily dosing candidacy. Analysis of results suggest additional education and potential order entry optimizations may improve twice daily dosing utilization.