**SUPPLEMENTARY MATERIALS**

**Supplementary Methods.**

*Guideline implementation.*

The study guideline included recommendations for prophylactic acid suppressant use during chemotherapy and for symptomatic management. This guideline was developed through a multidisciplinary collaboration to reduce rates of *C.difficile* infection in our hematology-oncology units. We disseminated the guideline electronically to both housestaff and advanced practice provider (i.e., nurse practitioners and physician assistants) teams and posted the guideline on an institutional electronic repository for evidence-based practice guidelines. In-person education was provided in the initial month after guideline introduction for the non-house staff teams with a 30-minute session focused on reviewing the evidence supporting our guideline and recommended strategies for acid suppressant use. Due to frequent change in house staff providers on the inpatient hematology-oncology services, twice weekly in-person orientations were held for the duration of the intervention period, which included a 10-minute orientation to oncology-focused infection prevention interventions. This orientation included an introduction to our guideline and review of the supporting medical evidence.

*Statistical Methods.*

Clinical characteristics and outcomes of patients in the baseline and intervention groups were compared using chi-square or Fischer’s exact test for categorical variables and the Wilcoxon rank-sum test for continuous variables. Poisson regression was performed to describe the impact of our intervention on rates of *C.difficile* positive tests per 1000 patient days. Segmented regression analysis was performed using Newy-West standard errors and the Cumby-Huizinga test for autocorrelation (Stata 14.2, StataCorp LC, College Station, TX).

**Supplementary Results.**

Over the entire duration of the study, there was an average of 951.0 days of PPI therapy per month (standard deviation [SD] 196.9), with an average of 2417.7 patient days per month on the combined study units (SD 98.8). Average rate of laboratory identified hospital onset *C.difficile* was 2.052/1000 patient days (SD 1.140).

**SUPPLEMENTARY TABLES**

**Supplementary Table 1**. Segmented regression analysis of acid suppressant administration comparing the baseline period (September 2016 – October 2017) to the intervention period (November 2017 – August 2018)

|  |  |  |  |
| --- | --- | --- | --- |
| **Model** | **Change in level immediately after intervention**  **β2 (95% CI)** | **Difference in slope after intervention**  **β3 (95% CI)** | **F test, *P*-Value** |
| PPI DOT | -195.5 (-303.2, -87.8), *P*=0.001 | -18.2 (-25.1, -11.2), *P*<0.001 | <0.001 |
| PPI DOT / 1000 patient days | -46.3 (-87.1, -5.5), *P*=0.03 | -12.25 (-15.4, -9.1), *P*<0.001 | <0.001 |
| H2RA DOT | -102.9 (-247.6, 41.7), *P*=0.15 | 19.06 (5.1, 33.0), *P*=0.01 | 0.006 |
| H2RA DOT /1000 patient days | -15.6 (-80.3, 49.1), *P*=0.62 | 3.81 (-3.0, 10.7), *P*=0.26 | 0.02 |
| *C.difficile* / 1000 patient daysa | -0.37 (-2.54, 1.81), *P=*0.73 | -0.053 (-0.30, 0.19), *P=*0.66 | 0.86 |

NOTE. CI, confidence interval; PPI, proton pump inhibitor; DOT, days of therapy; H2RA, histamine-2 receptor antagonist

aPositive test for *C.difficile*

**Supplementary Table 2**. Proton pump inhibitor order indications comparing the baseline cohort (August 12, 2017 to November 12, 2017) to the intervention cohort (November 13, 2017 to February 13, 2018)

|  |  |  |  |
| --- | --- | --- | --- |
| **Characteristics** | **Baseline No. (%) n=155** | **Intervention No. (%) n=126** | ***P* Value** |
| Housestaff providera | 81 (54) | 80 (63) | 0.10 |
| New orderb | 43 (28) | 23 (18) | 0.047 |
| New order indication  GERD  GI bleeding  Prophylaxisc  Other  Not listed | 9 (21)  6 (14)  10 (24)  4 (10)  13 (31) | 7 (30)  6 (26)  4 (17)  2 (9)  4 (17) | 0.57 |
| Continued on discharge  Continuation of  PTA medication | 106 (70)  94 (89) | 107 (85)  95 (89) | 0.004  0.22 |
| Discharge indication  GERD  GI bleeding  Prophylaxisc  Other  Not listedd | 53 (50)  6 (6)  1 (1)  3 (3)  43 (41) | 42 (49)  6 (6)  0 (0)  5 (5)  54 (50) | 0.40 |

NOTE. GERD, gastroesophageal reflux disease; GI, gastrointestinal; PTA, prior-to-admission

aVersus advanced practice provider

bNot a prior-to-admission medication

cProphylaxis of gastrointestinal bleeding during receipt of chemotherapy or high-dose corticosteroid therapy

dNo indication for PPI documented in provider notes at discharge

**Supplementary Table 3**. Rates of gastrointestinal bleeding comparing baseline (August 12, 2017 to November 12, 2017) to the intervention cohort (November 13, 2017 to February 13, 2018)

|  |  |  |  |
| --- | --- | --- | --- |
| **Characteristics** | **Baseline**  **No. (%) n=155** | **Intervention**  **No. (%) n=126** | ***P* Value** |
| PPI indication documented as for GIB | 6 (3.9) | 6 (4.8) | 0.75 |
| Endoscopy confirmed  Upper GIB  Lower GIB | 2 (1.3)  0 (0) | 1 (0.8)  1 (0.8) | 0.67  0.27 |
| Symptomatic GIB  Hematemesis  Melena  Hematochezia | 2 (1.3)  2 (1.3)  0 (0) | 1 (0.8)  2 (1.6)  1 (0.8) | 0.67  0.86  0.27 |
| ICU transfer for GIB | 2 (1.3) | 1 (0.8) | 0.51 |

NOTE. PPI, proton pump inhibitor; GIB, gastrointestinal bleeding; ICU, intensive care unit