



Improvement of Proton Pump Inhibitor Prescribing at Vancouver General Hospital



Andrea Wan, B.Sc.(Pharm); Shirin C. Talkhi; Claire Dixon; Hafeez Dossa; Jenifer Tabamo, RN; Mark Roberts, MD; Katelyn Halpape, PharmD; Karen Dahri, PharmD

Background

- Proton pump inhibitors (PPIs) are a class of medications widely used to suppress gastric acid secretion by inhibiting the H⁺/K⁺ ATP pump
- In 2015, the Canadian Institute of Health Information reported that PPIs accounted for over \$250 million dollars of annual prescribed drug spending, ranking 9th in the top 100 drug classes used in British Columbia
- Emerging evidence of adverse events associated with chronic PPI use

Objectives

- Phase I: Retrospective Chart Review**
 - Primary:** to characterize the appropriateness (documented and approved indication) of PPI orders continued or initiated in-hospital
 - Secondary:** to characterize the adverse events that may be associated with PPI use
- Phase II: Educational Intervention**
 - Evaluate whether the implementation of educational interventions (interprofessional in-servicing, ward-displayed infographic, PPI prescribing card, patient counseling sheet) can impact prescribing

Methods

- Phase I: Retrospective Chart Review**
 - Design:** Single-center, retrospective chart review
 - Inclusion criteria:**
 - Patients admitted to the internal medicine or family practice units between January 1 to December 31, 2015
 - Received a formulary PPI (oral pantoprazole or esomeprazole)
 - Hospital stay greater than 24 hours
 - Statistical analysis:** Descriptive statistics
- Phase II: Educational Intervention**
 - Design:** For each 4-week block:
 - In-servicing sessions** to physicians, medical students, medical residents, nurses, pharmacists
 - In person: 15 minutes each, 6-8 per block
 - Online: 7-minute video, link distributed at the beginning of each block
 - Educational resources:** ward-displayed infographic, PPI prescribing card, patient counseling sheet
 - Qualitative Survey**
 - Study period:** January 30 to March 24, 2017
 - Statistical analysis:** Descriptive statistics

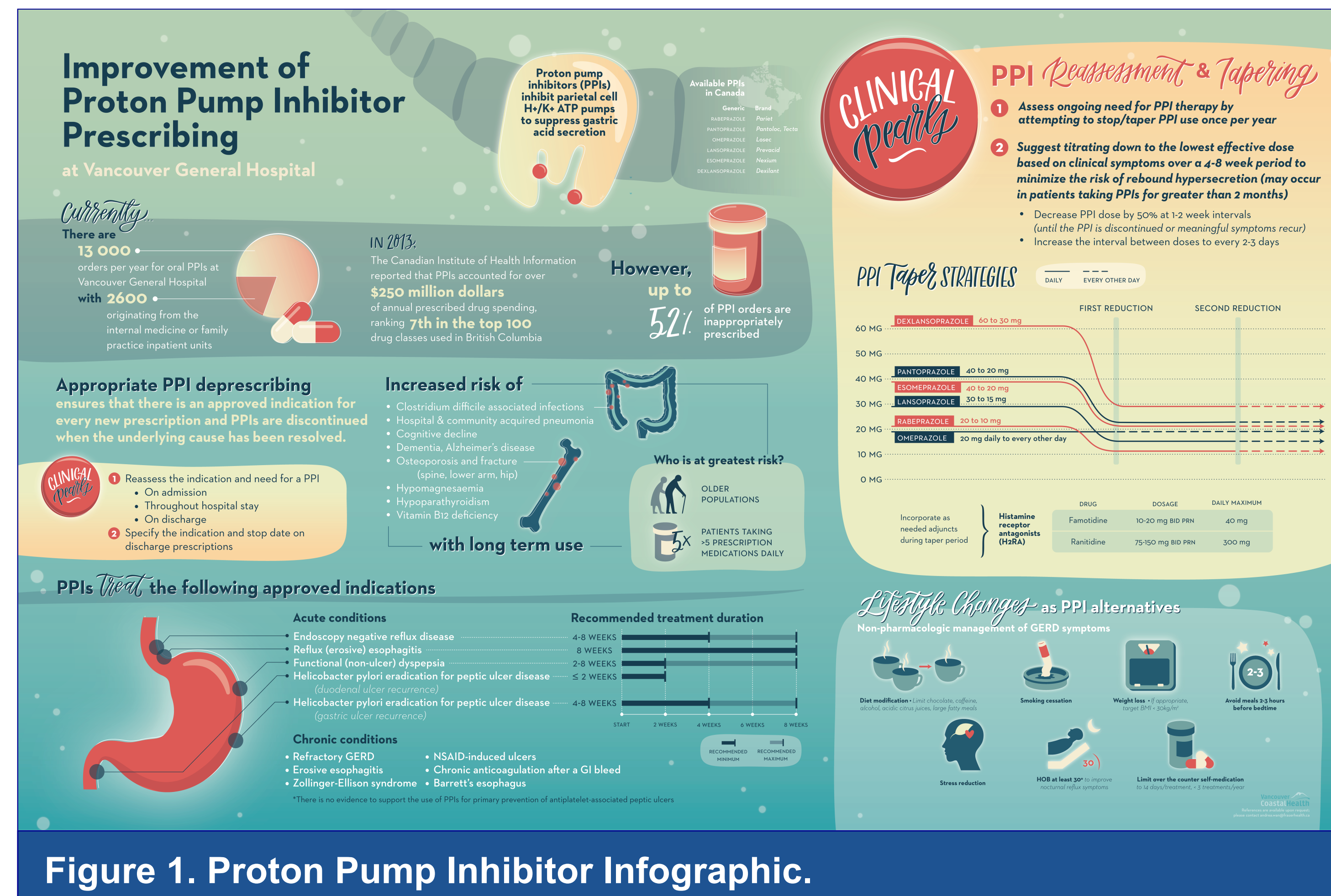


Figure 1. Proton Pump Inhibitor Infographic.

Results

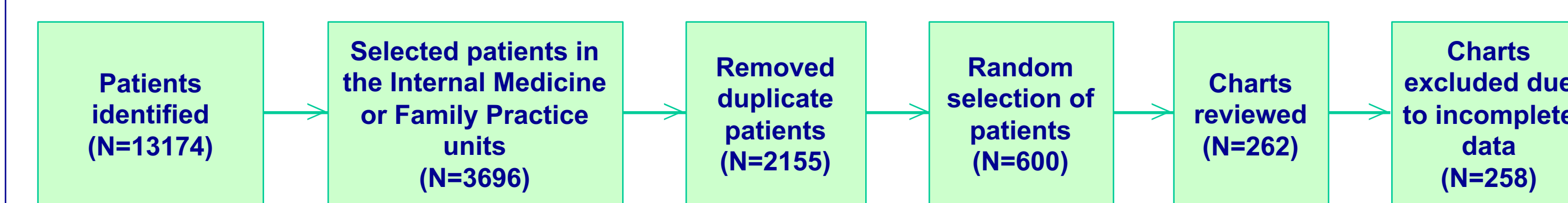


Figure 2. Flow Diagram.

Table 1. Phase I: Retrospective Chart Review. Baseline Characteristics.

	N=258
Mean age ± SD (age range in years)	74 ± 15 (30-101)
Sex, N (%)	
Male	135 (52)
Hospital unit, N (%)	
Internal Medicine	163 (63)
Family Practice	95 (37)
Length of stay, median (IQR in days)	9 (16)

Table 2. Phase I: Retrospective Chart Review. PPI Usage.

	N (%); N=258
PPI initiated in hospital	83 (32)
PPI continued on admission	175 (68)
Duration of PPI use, median (IQR in weeks)	
≤ 8 weeks	18 (48)
9 – 52 weeks	63 (24)
> 52 weeks	71 (28)
	41 (16)

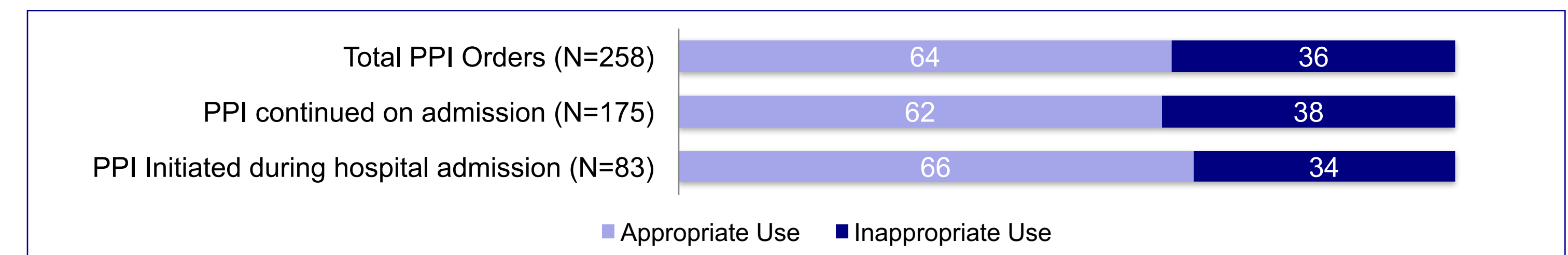


Figure 3. Appropriate PPI orders (%).

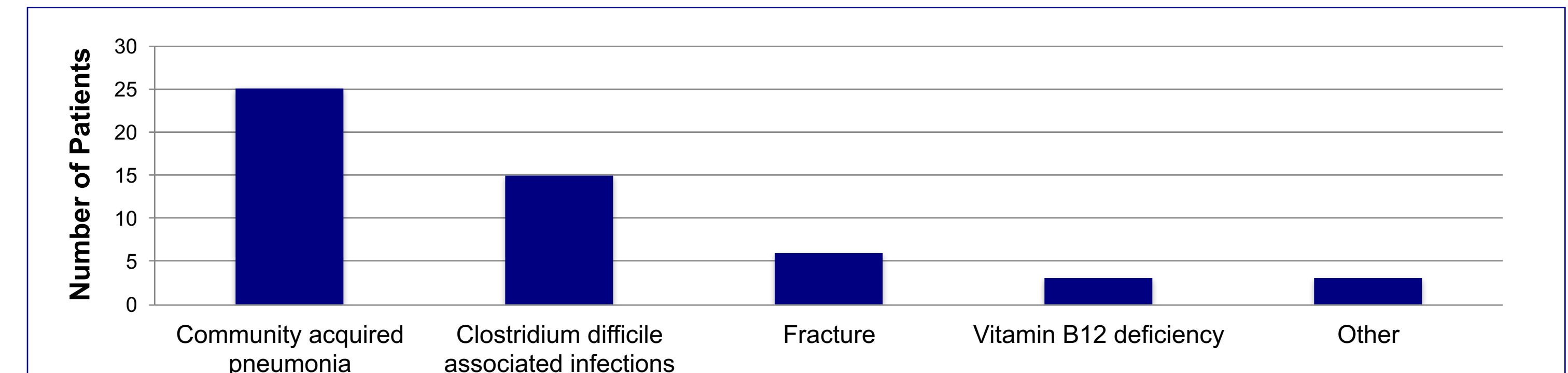


Figure 4. Potential adverse event outcomes associated with PPI use.

Table 3. Phase II: Educational Intervention. Survey participant demographics.

Profession	Number (%); N=46
Nurse	22 (48%)
Medical Resident	10 (22%)
Physician	8 (17%)
Pharmacist	3 (6.5%)
Medical Student	3 (6.5%)

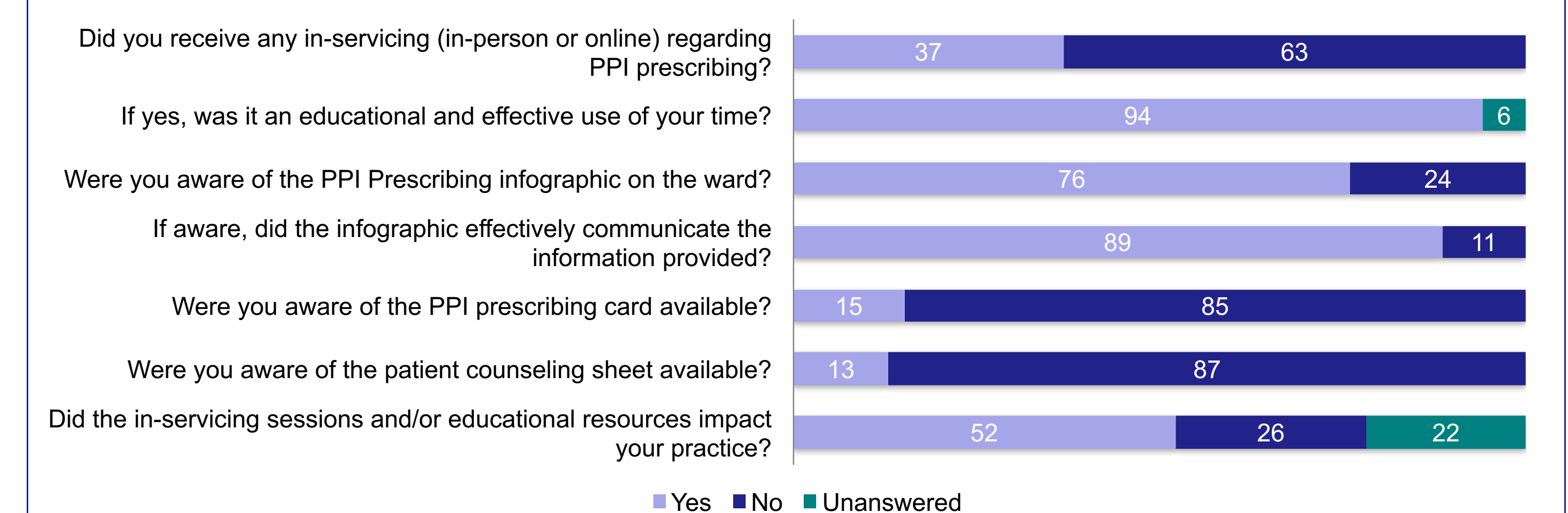


Figure 5. Survey results expressed as a % (N=46).

Discussion and Conclusions

- 36% of PPI orders did *not* have an appropriate indication
- Community acquired pneumonia and *Clostridium difficile* associated infections were the most common adverse events potentially associated with PPI use
- In-servicing sessions and the provision of educational resources on PPI prescribing impacted the clinical practice of 52% of survey participants
- Next steps:** Studying the long-term impact of an interdisciplinary approach to reassess and document the indication and ongoing need for a PPI (on admission, throughout hospital stay, and upon discharge) on patient outcomes may be beneficial

Limitations

- Small sample size
 - Phase I: number of charts reviewed, Phase II: number of survey responses
- Causality of adverse events not assessed
- Impact to PPI prescribing not assessed

