Hospital Pharmacy

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Uncritical Use of Proton Pump Inhibitors in Non-Intensive Care Units of a University Hospital

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Background

Proton pump inhibitors (PPI) are widely used off label for stress ulcer prophylaxis (SUP) in hospital patients.

PPI are not as harmless as they were thought to be!

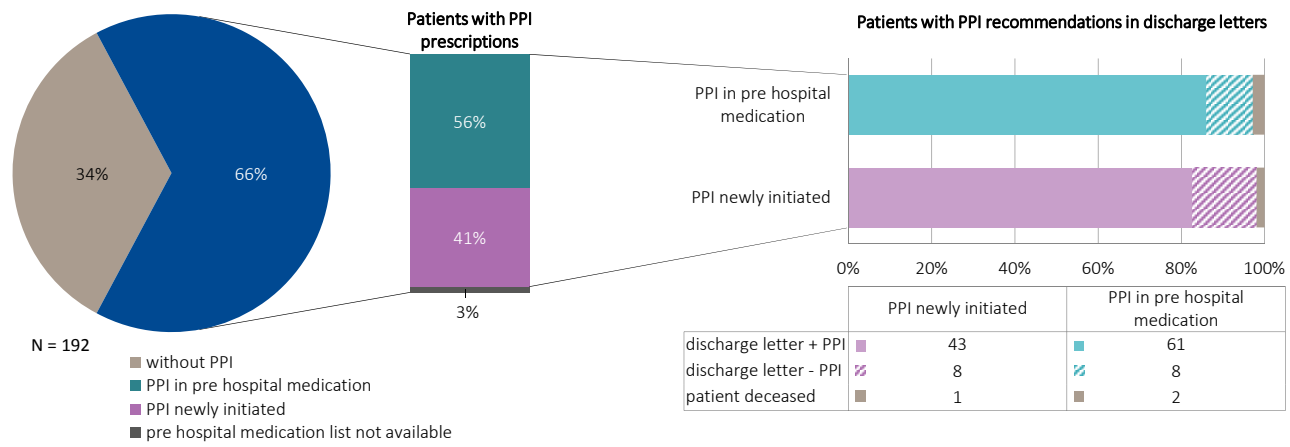
- risk of pneumonia and *C. difficile* infections[1]
- higher incidence of myocardial infarction[2]
- acute kidney injury[3]

The aim of the study was to survey the status quo of the quantity of PPI usage in a university hospital, paying particular attention to plausibility of its use.

Results

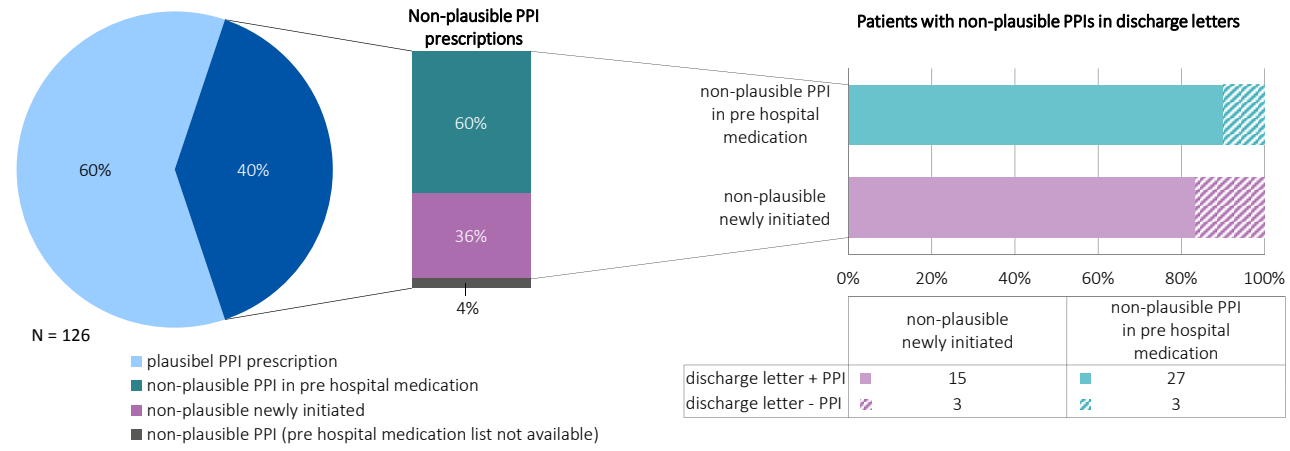
- ✓ Medication of 192 patients was screened
- ✓ 66 % (n = 126) received a PPI **(Fig. 2A)**
  - → 56 % pre hospital prescriptions → continued during hospital stay in 89 %
  - → At discharge a PPI was prescribed in 85 % → 41 % newly initiated
- ✓ 40 % of PPI prescriptions were non-plausible → 36 % were new inpatient prescriptions **(Fig. 2B)**
- ✓ **In total 8 % (15/192 patients) of all patients were leaving hospital with a new and 14 % (27/192 patients) with a continued pre hospital, non-plausible PPI!**

A – PPI prescriptions



	PPI newly initiated	PPI in pre hospital medication
discharge letter + PPI	43	61
discharge letter - PPI	8	8
patient deceased	1	2

B – Plausibility of PPI prescriptions



	non-plausible newly initiated	non-plausible PPI in pre hospital medication
discharge letter + PPI	15	27
discharge letter - PPI	3	3

Figure 2 – Proportion of patients with (**A**) PPI and (**B**) non-plausible PPI prescriptions, regarding origin of PPI prescriptions and PPI recommendations in discharge letters

Methods

- ✓ Point prevalence analysis
- ✓ 3 surgical and 4 internal wards
- ✓ Screening electronic patient record for PPIs in pre hospital medication, hospital medication and discharge letters
- ✓ Checking PPI prescriptions for plausibility **(Fig. 1)**

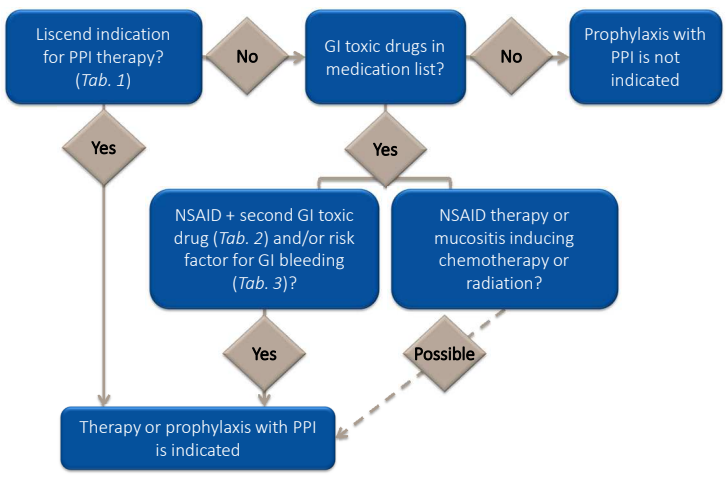


Table 1 - *Approved indications*

Indications
Helicobacter pylori eradication
Zollinger-Ellison syndrome
Duodenal ulcer (2 - 4 weeks)
Duodenal ulcer relapse prophylaxis
Gastric ulcer (4 - 8 weeks)
Gastric ulcer relapse prophylaxis
NSAID-Induced gastric ulcer (4 - 8 weeks)
NSAID-Induced gastric ulcer prophylaxis
Erosive esophagitis (4 - 8 weeks)
Erosive esophagitis long-term therapy
Gastroesophageal reflux disease (4 weeks)

Table 2 - *GI toxic drugs*[6,4]

Drug class
NSAIDs incl. Low dose ASS
+ Cortisone > 10mg Prednisolone equivalents/day
+ Aldosterone antagonists (low evidence)
+ Selective serotonin reuptake inhibitors
+ Anticoagulants

Table 3 - *Risk factors for GI bleeding*[7,8]

Risk factors
Age > 60 years
History of gastroduodenal ulcer
Previous bleeding in upper GI tract
Coagulopathy (INR > 1.5 or thrombocytes < 5000)

Figure 1 – UKE-Algorithm for evaluating the plausibility of PPI prescription

Discussion

One third of PPI prescriptions was not reasonable in our patients. The uncritical prescription of PPI in hospital may lead to a vicious circle of inpatient prescription, which is continued in the outpatient care, without questioning the indication, and further continuation in the case of another hospitalization.

In conclusion, with respect to the growing evidence of the hazard potential of PPI, it is important to verify the indication for each PPI prescription and reduce unnecessary "just in case SUP".

References

1. MacLaren et al, 2014; 2. Shah et al, 2015; 3. Antoniou et al, 2015; 4. García Rodríguez et al, 2011; 5. Herzig et al, 2013; 6. Masclee et al, 2014; 7. Cook et al, 1994; 8. Cash et al, 2002