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Introduction

- Stress ulcer increases morbidity and mortality in intensive care unit (ICU) patients.
- Stress ulcer prophylaxis (SUP) decreases gastro-intestinal (GI) bleeding in ICU patients with risk factor.
- Guidelines on SUP for ICU patients has been published in 1999 by the American Society of Health-System Pharmacists.¹
- The benefit of SUP in non-ICU patients has not been proven.

Aim

This prospective study is aimed at evaluating the use of proton pump inhibitors (PPIs) for SUP in a general surgery department.

Methods

- Prospective observational study during an 8-week period (March 8 to May 2, 2010) in the general surgery ward (53 beds) of the University Hospital of Lausanne, a tertiary teaching hospital in Switzerland.
- Inclusion criteria:
 - All patients hospitalized
- Exclusion criteria:
 - PPI treatment
 - Patient readmitted were not re-included.
- Appropriateness of PPI for SUP :
 - assessed for patients with a *de novo* PPI prescription only, and without risk factor for NSAID-related ulcer² or GI bleeding induced by an antiplatelet agent³.
 - based on criteria from the ASHP guidelines for ICU patients.¹ (No guidelines are available for non-ICU patients.)

Table 1: Risk factors for stress ulcer in ICU patients^{1, 4, 5}

	Risk factor
1	Respiratory failure: mechanical ventilation > 48h
2	Coagulopathy ^a
3	Head injury with Glasgow Coma Score of ≤10 or inability to obey simple commands
4	Thermal injury involving > 35 per cent of body surface area
5	Partial hepatectomy
6	Hepatic or renal transplantation
7	Multiple trauma with Injury Severity Score of ≥ 16
8	Spinal cord injury
9	Hepatic failure ^b
10	History of gastric ulceration or bleeding in the year before admission
11	Renal failure ^c
12	Occurrence of at least two of the following: <ul style="list-style-type: none"> - Sepsis - ICU stay of more than one week - Occult bleeding or overt bleeding - Corticosteroid therapy (>250 mg hydrocortisone or equivalent daily)

^a platelet count < 50,000 per cubic millimeter, International Normalized Ratio > 1.5 or partial -thromboplastin time > 2.0 times the control value.

^b any two of the following: a serum bilirubin concentration >8.8 mg/dl, a serum aspartate aminotransferase level > 500 U/l, a serum albumin level < 41 g/l, and clinical signs and symptoms of hepatic coma.

^c a creatinine clearance rate < 40 ml/min or a serum creatinine concentration > 2.8 mg/dl.

References

1. ASHP Therapeutic Guidelines on Stress Ulcer Prophylaxis. ASHP Commission on Therapeutics and approved by the ASHP Board of Directors on November 14, 1998. Am J Health Syst Pharm, 1999. 56: 347.
2. Lanza F. et al. Guidelines for prevention of NSAID-related ulcer complications. Am J Gastroenterol, 2009. 104: 728.
3. Bhatt D. et al. ACCF/ACG/AHA 2008 expert consensus document on reducing the gastrointestinal risks of antiplatelet therapy and NSAID use. Am J Gastroenterol, 2008. 103: 2890.
4. Cook D. et al. Risk factors for clinically important upper gastrointestinal bleeding in patients requiring mechanical ventilation. Canadian Critical Care Trials Group. Crit Care Med, 1999. 27: 2812.
5. Cook D. et al. Risk factors for gastrointestinal bleeding in critically ill patients. Canadian Critical Care Trials Group. N Engl J Med, 1994. 330: 377.

Results

- 320 consecutive patients were screened:
 - 255 included
 - 65 excluded
- 138 patients (54%) received a PPI prophylaxis, 52 of which (38%) were already receiving it before admission, whereas 86 (62%) were prescribed it during hospitalization (*de novo* prophylaxis). (Fig.1 and Table 2)

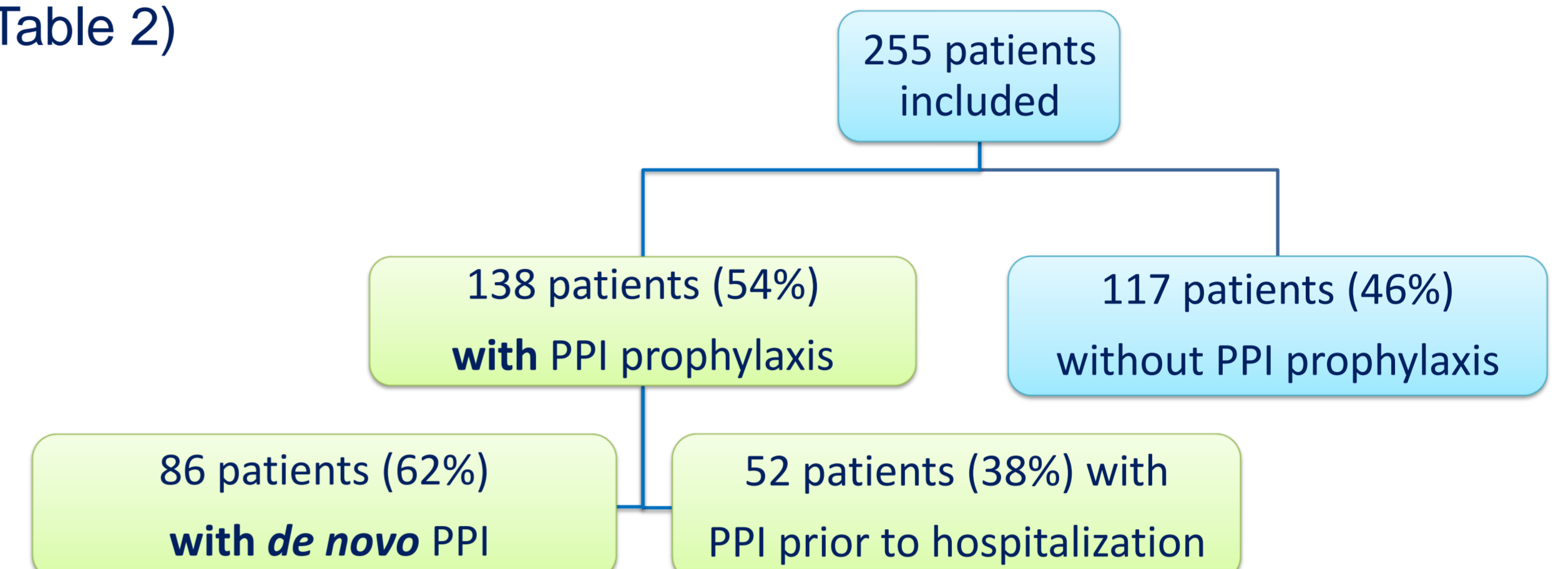


Fig. 1: PPI prophylaxis in the population of patients

Table 2: Patients population

	Patients with PPI (n = 138)	Patients without PPI (n = 117)
Age (years)	62 (17-93)	51 (16-92)
Sex ratio (M:F)	68:70	62:55
Length of stay (days)	7 (1-45)	4 (2-21)
With surgery	108 (88%)	100 (85%)

Values in parentheses are ranges.

- The most frequently prescribed PPI was esomeprazole according to the hospital drug policy, at a dosage of 40 mg/day. (Fig. 2)

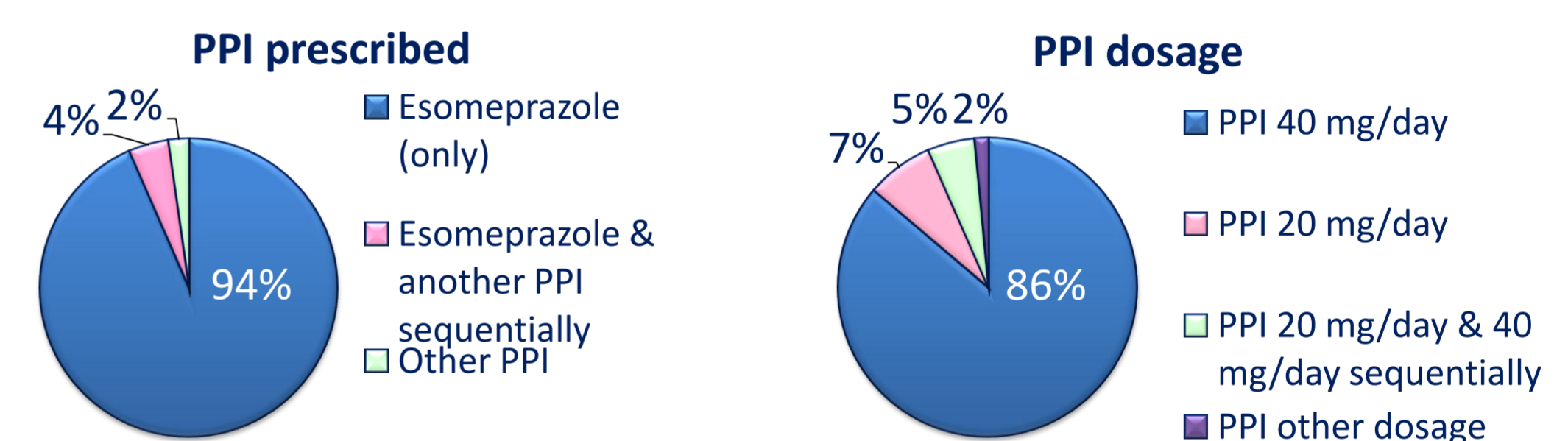


Fig. 2: PPI prescribed and dosage

- Out of the 86 patients with a *de novo* PPI prophylaxis, 13 had risk factors for NSAID-related ulcer and 6 for GI bleeding induced by an antiplatelet therapy. (Fig. 3)

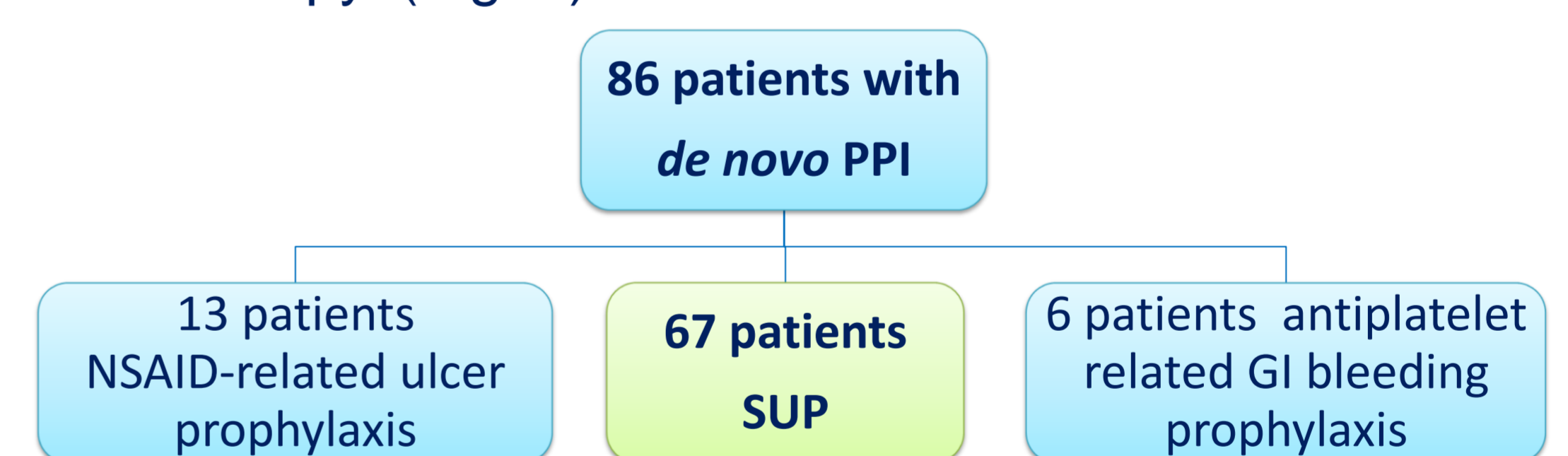


Fig. 3: PPI indication in patients with a *de novo* PPI prophylaxis

- The adequacy of PPI use for SUP was then assessed in 67 patients (Fig. 4):

- 53 patients (79%) had no risk factors
- 12 patients (18%) had one risk factor
- 2 patients had two risk factors

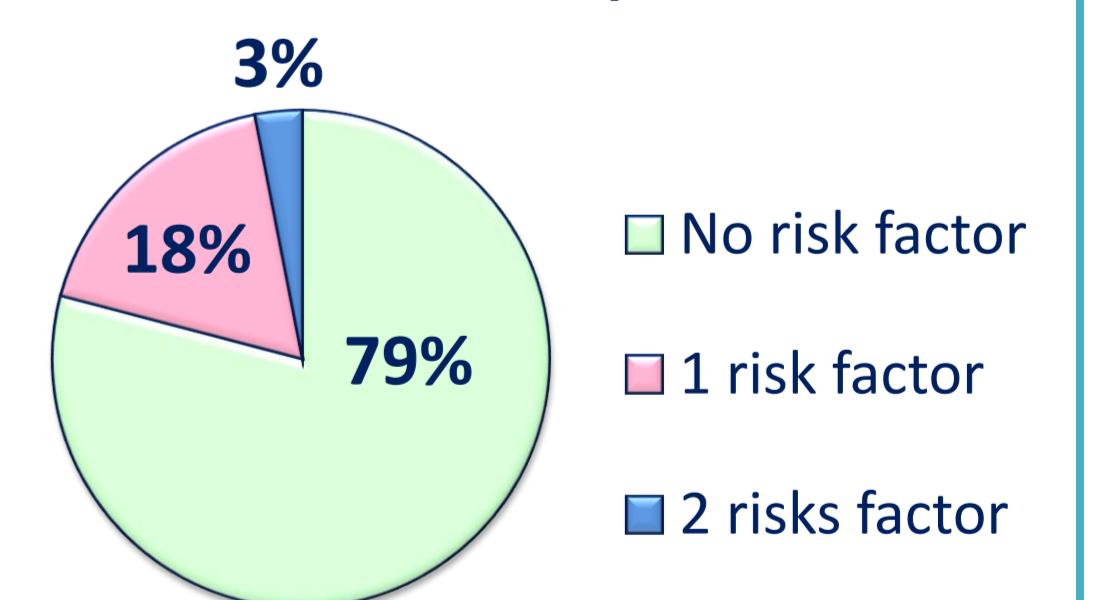


Fig. 4: Risk factors for SUP

- Drug prescriptions at discharge were reviewed for 76 patients with a *de novo* PPI prophylaxis during their stay (data not available for 10 patients).

- 26 patients (34%) were discharged with a PPI prescription.
- No indication for PPIs was found for 23 patients (88%).

Conclusion

- **The present survey highlights the overuse of PPIs for SUP in non-critically ill general surgery patients.**
- **This overuse persists at discharge.**
- **Further studies are necessary to clarify risk factors for stress ulcer in non-critically ill patients in order to better identify patients in need of SUP.**