

## What GI stress ulcer prophylaxis should we provide hospitalized patients?

### EVIDENCE-BASED ANSWER

Patients in intensive care unit (ICU) settings who are receiving prolonged mechanical ventilation (for >48 hours) or who have a coagulopathy or multiple organ dysfunction (especially renal failure) should receive stress ulcer prophylaxis. Current evidence does not support prophylaxis for non-ICU patients<sup>1,2</sup> (strength of recommendation [SOR]: **B**,

based on multiple systematic reviews). Prophylaxis with H<sub>2</sub> receptor antagonists (H<sub>2</sub>RAs) and sucralfate are equally efficacious in lowering mortality and length of hospital stay.<sup>3</sup> No randomized controlled trials demonstrate that proton pump inhibitors (PPIs) are superior to H<sub>2</sub>RAs or sucralfate (SOR: **B**, based on multiple systematic reviews.)

### CLINICAL COMMENTARY

#### Consider a protocol to identify patients needing prophylaxis in the ICU

Many patients may enter the hospital already on a PPI for reflux disease or prevention of gastrointestinal side effects from other medications. This Clinical Inquiry shows that only certain patients in the hospital will benefit from

prophylaxis for stress ulcers and have less bleeding. Therefore, consider using a protocol to identify those specific patients in the ICU and place them on an H<sub>2</sub> blocker, PPI or sucralfate automatically.

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### Evidence Summary

Critically ill patients are at increased risk of bleeding from stress-induced gastroduodenal ulceration. Decades ago, ICUs began using pharmacologic prophylaxis on most patients to prevent gastrointestinal bleeding, which had a mortality rate as high as 80%. Before the advent of prophylaxis, the incidence of upper gastrointestinal bleeding was 6% to 25%.<sup>4</sup> Since then, improvements in ICU management have decreased this incidence to 0% to

2.8%.<sup>5</sup> Recent studies suggest that only ICU patients with certain risk factors benefit from ulcer prophylaxis (**TABLE**).<sup>1</sup>

Our search retrieved 20 randomized controlled trials and 6 systematic reviews with meta-analyses from the Medline database since 1990. It was difficult to find a consensus on the matter of stress ulcer prophylaxis because of inconsistencies in the outcomes measured in these studies. We focused on studies examining clinically important bleeding, but even in these

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TABLE

## Risk factors for stress ulcers

STRESS ULCER RISK FACTORS	ODDS RATIOS FOR CLINICALLY IMPORTANT BLEEDING (95% CI)
Mechanical ventilation >48 hours <sup>5</sup>	3.4 (1.0–11)
Platelet count <50,000 <sup>1,2</sup>	2.58 (1.19–5.57)
Maximum serum creatinine <sup>1</sup>	1.16 (1.02–1.32)

studies definitions and measurements vary. Few studies addressed mortality or length of stay; those that did reported no significant difference in either outcome with prophylaxis.

Medications used to prevent gastrointestinal bleeding have included antacids, sucralfate, H2RAs, and PPIs. Sucralfate and H2RAs have been studied most frequently, and both agents significantly reduce the incidence of clinically important bleeding in high-risk patients. Compared with placebo, the odds ratio for clinically important bleeding was 0.44 with ranitidine (95% confidence interval [CI], 0.22–0.88) and 0.58 with sucralfate (95% CI, 0.34–0.99).<sup>6</sup> In a population with a clinically important bleeding incidence of 3% to 6%, a range consistent with the most recent studies we reviewed, the number needed to treat to prevent 1 bleeding episode is 30 to 60 for ranitidine and 40 to 79 for sucralfate.

Some studies suggest that pharmacologic prophylaxis may increase the incidence of aspiration pneumonia in ventilator-dependent patients. The largest randomized trial addressing this issue (N=1200) found no significant difference between H2RAs and sucralfate in ventilator-associated pneumonia.<sup>3</sup> Improved ICU management, such as frequent suctioning, upright positioning, and use of enteral nutrition may help prevent nosocomial pneumonia due to aspiration.

### Recommendation from Others

In the *American Journal of Health-System Pharmacy*, Allen et al<sup>5</sup> state “the frequency of clinically important bleeding is low ...

the majority of recently published prospective studies and meta-analyses have been unable to demonstrate a reduction in clinically important bleeding with pharmacologic agents.” A 2001 Agency for Healthcare Research and Quality evidence report<sup>7</sup> states that the evidence is not conclusive that all intensive care patients benefit from stress ulcer prophylaxis and that clinicians “may consider use of prophylactic agents in very high risk patients.”

### REFERENCES

1. Cook D, Heyland D, Griffith L, Cook R, Marshall J, Pagliarello J. Risk factors for clinically important upper gastrointestinal bleeding in patients requiring mechanical ventilation. Canadian Critical Care Trials Group. *Crit Care Med* 1999; 27: 2812–2817.
2. Cook DJ, Reeve BK, Scholes LC. Histamine-2-receptor antagonists and antacids in the critically ill population: stress ulceration versus nosocomial pneumonia. *Infect Control Hosp Epidemiol* 1994; 15: 437–442.
3. Cook D, Guyatt G, Marshall J et al. A comparison of sucralfate and ranitidine for the prevention of upper gastrointestinal bleeding in patients requiring mechanical ventilation. Canadian Critical Care Trials Group. *N Engl J Med* 1998; 338:791–797.
4. Zinner MJ, Rypins EB, Martin LR, et al. Misoprostol versus antacid titration for preventing stress Ulcers in postoperative surgical ICU patients. *Ann Surg* 1989; 210:590–595.
5. Allen ME, Kopp BJ, Erstad BL. Stress ulcer prophylaxis in the postoperative period. *Am J Health Syst Pharm* 2004; 61:588–596.
6. Cook DJ, Reeve BK, Guyatt GH, et al. Stress ulcer prophylaxis in critically ill patients: resolving discordant meta-analyses. *JAMA* 1996; 275:308–314.
7. Making health care safer: a critical analysis of patient safety practices. Evidence report/technology assessment #43. Contract no. 290-97-0013, Chapter 43, AHRQ 2001, Rockville, Md.

### FAST TRACK

## Sucralfate and H2RAs reduce rates of clinically important bleeding for those in ICUs