

VUMC Multidisciplinary Surgical Critical Care Service

Gastrointestinal Stress Ulcer Prophylaxis Guidelines

Purpose:

The purpose of this guideline is to standardize the prevention of stress ulcers in the Surgical Intensive Care Unit (SICU).

Background:

Critically ill patients are at risk for gastrointestinal (GI) hemorrhage primarily from gastric or duodenal ulcers. The pathogenesis of stress ulceration is multifactorial involving acid hypersecretion, epithelial turnover in the gastric mucosa, and altered secretion of mucus and bicarbonate.³ Ulceration can occur within 24 hours of admission to the intensive care unit (ICU). The incidence of gastrointestinal (GI) bleeding is not well defined. A prospective study of 2,252 patients reported an incidence of clinically relevant GI bleeding of 1.5%. In addition, these patients had an increase in ICU length of stay by up to 8 days and an increase in mortality 4-fold higher than ICU patients without GI bleeding.^{1,2}

The American Society of Health-System Pharmacists (ASHP) published therapeutic guidelines on stress ulcer prophylaxis (SUP) in 1999.³ Based on these guidelines and the works by Cook and colleagues, specific risk factors for stress ulcers have been identified. Patients most at risk include critically ill patients requiring mechanical ventilation, and patients with a coagulopathy.¹ Other identified risk factors include spinal cord injury, prior history of GI hemorrhage, acute renal failure, burn, sepsis,⁵ increased severity of illness, increased ICU length of stay,⁶ and requirement of high-dose steroids.^{3,4,7}

Acid suppression medications can be used to prevent stress ulceration. There is not strong evidence to support a specific agent,^{3,15} but histamine type-2 antagonists and proton pump inhibitors tend to be most frequently utilized. These agents tend to be better tolerated and are easily administered compared to antacids and sucralfate. Acid suppression medications may have significant side effects that should be considered when starting stress ulcer prophylaxis therapy.⁹ Some of these adverse effects include pneumonia,^{3,10} *clostridium difficile* infection,^{11,12} bone fractures,¹³ and rebound acid secretion with discontinuation.¹⁴

Numerous analyses describe the role of enteral nutrition (EN) in the prevention of stress-related gastrointestinal bleeding. EN prevents mucosal ischemia and ulceration by increasing splanchnic blood flow and increasing gastric pH (to a lesser degree). Pre and post-pyloric EN should provide some degree of protection against stress-related mucosal ulceration. However, data describing EN as the sole stress ulcer prophylaxis in hypersecretory states, including major head injury and burn patients, is lacking.¹⁵

Patient Risk Categories:

Low Risk	<ul style="list-style-type: none">• Patient does not have any risk factors listed under the moderate or high risk
Moderate Risk	<ul style="list-style-type: none">• Chronic NSAID/ASA use• High dose prolonged steroids<ul style="list-style-type: none">• >250mg of hydrocortisone or equivalent• ICU stay > 10 days• Outpatient PUD Treatment
High Risk	1 of the following Criteria:
	<ul style="list-style-type: none">• Mechanical Ventilation > 48h• Coagulopathy<ul style="list-style-type: none">○ Overt bleeding with hemodynamic changes○ Transfusion of 2 units of blood in 24 hours• History of GI hemorrhage within the past year• Traumatic Brain Injury (TBI)• Multiple Trauma (ISS ≥16)• Spinal Cord Injury
	≥ Two of the following Criteria:
	<ul style="list-style-type: none">• Sepsis• ICU length of stay more than 1 week• Use of high dose corticosteroids<ul style="list-style-type: none">• >250mg of hydrocortisone or equivalent• Occult bleeding lasting 6 days or more

NSAID = Non-Steroidal Anti-Inflammatory Drug, ASA = Aspirin, GI = Gastrointestinal, PUD = Peptic Ulcer Disease, ISS = Injury Severity Score

Indications for Prophylaxis:

High Risk Patients:

- All patients should receive prophylaxis

Moderate Risk Patients:

- Prophylaxis should be considered

Low Risk Patients:

- Prophylaxis is not required

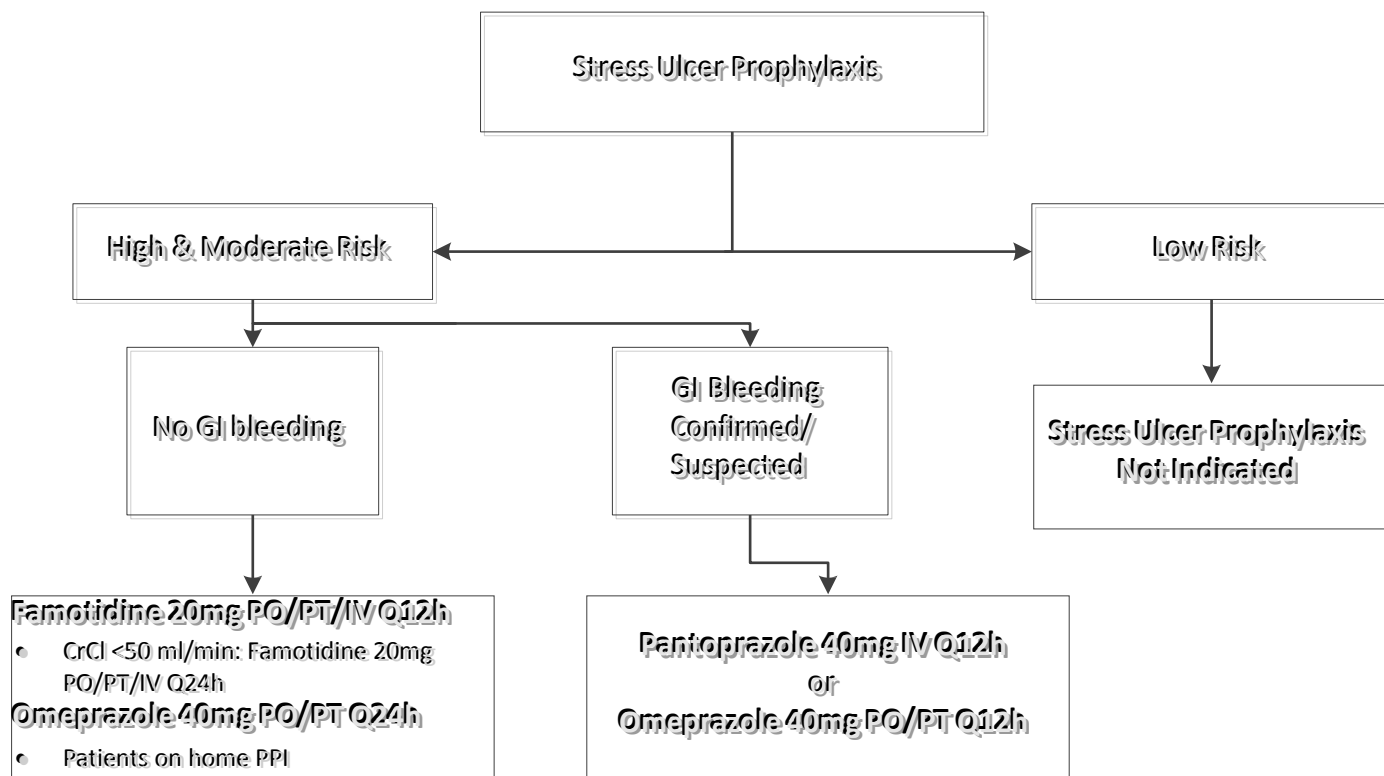
Preferred Medications:

First line agent:

- Famotidine 20mg PO/PT/IV q12h
 - CrCl < 50 ml/min: Famotidine 20mg PO/Per Tube/IV q24h

Patients on a PPI at home or confirmed/suspected upper gastrointestinal bleeding

- Omeprazole PO/PT 40mg q24h or Pantoprazole 40mg IV q24h



Duration of Therapy:

Stress ulcer prophylaxis can be discontinued once goal enteral nutrition is reached, or the patient is eating a regular diet. In patients with significant traumatic brain injuries (TBI) or burn, stress ulcer prophylaxis should be continued until discharged from the ICU.

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Last Updated: July 2013

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