

MEDICATION MONITORING: Stress Ulcer Prophylaxis Clinical Guidelines

I. PURPOSE

To ensure safe evidence based utilization of stress ulcer prophylaxis to prevent upper gastrointestinal bleeding while minimizing the adverse effects of acid suppressive therapy through a standardized pharmacy driven clinical practice guideline that will evaluate and discontinue inappropriate acid suppression therapy in the ICU environment.

II. BACKGROUND

In 2012, an undertaking at Stanford Health Care (SHC) by Wong et al revealed that approximately 28% of patients in our intensive care units (ICUs) inappropriately received acid suppressing medications for stress ulcer prophylaxis (SUP). Commonly utilized acid suppressing medications utilized include, but are not limited to, proton pump inhibitors (PPIs) and H2-receptor antagonists (H2RAs). This practice has resulted in unintended consequences. Use of these medications has resulted in nationally observed increases in rates of *Clostridium difficile* colitis infections and nosocomial pneumonia. It was estimated that daily PPI use in the inpatient setting resulted in a greater than 70% increase in the odds of developing *C. difficile* colitis.⁹ In a strictly medical ICU population, PPIs were independently associated with an increased risk of *C. difficile* infections. Additionally, this study also found no difference in gastrointestinal hemorrhage despite the use of acid suppressing medications.⁵ Acid suppressing therapy has also been associated with a greater risk of developing both community and nosocomial pneumonias. In a 2011 systematic review and meta-analysis, acid suppressive therapy resulted in an estimated additional 1 case of pneumonia for every 200 patients treated.⁸ In a strictly cardiothoracic population, PPI use was found to be an independent risk factor for nosocomial pneumonia.¹¹

The United States Food and Drug Administration (FDA) has changed product labeling to reflect additional risks seen with acid suppressing medications. These include but are not limited to long bone fractures, *C. difficile* associated diarrhea, electrolyte abnormalities (hypomagnesemia), vitamin deficiencies, CYP-450 drug interactions, thrombocytopenia, pneumonia, medication absorption changes and many more. The indications for SUP are ill-defined in the literature; however, the risks are clearly detailed. To date, the American Society of Health-System Pharmacists (ASHP) is one of the few health organizations that have put forth comprehensive guidelines for the use of acid suppressing medications in the setting of SUP. The strongest indications to date come from a study by Cook et al that found the only independent risk factors for stress ulcer development were coagulopathy and mechanical ventilation for more than 48 hours.⁴ Studies have also found that acid suppressive therapies do not affect the rate of GI bleed in patients with no risk factors. In fact, researchers have noted that 72% of patients who developed a bleed, in an inpatient setting, had been receiving some form of bleeding prophylaxis.¹² The goal of this clinical practice guideline is to facilitate acid suppressive therapy in a way that is informed and follows current best practice standards.

III. POLICY

Upon identification, SHC clinical pharmacists will discontinue inappropriate stress ulcer prophylaxis using evidence-based guidelines and best practice standards.

- A. Approved indications for stress ulcer prophylaxis⁴
1. Patients on mechanical ventilation for greater than 48 hours^{6*}
 2. Coagulopathy defined as platelet count <50, INR >1.5 or PTT 2x baseline^{6 *}
 3. Traumatic head injuries with a Glasgow Coma Score \leq 10 or inability to follow simple commands
 4. Burns affecting >35% total body surface area
 5. Major trauma with an Injury Severity Score \geq 16
 6. Spinal cord injury
 7. Partial hepatectomy
 8. Solid organ transplantation perioperatively in the ICU setting
 9. Use of two antiplatelet agents (i.e. clopidogrel, aspirin, cilostazol, ticagrelor, dipyridamole)¹
 10. Any **TWO** of the following
 - Sepsis
 - ICU stay >7 days
 - Occult bleeding lasting more than 6 days
 - High dose steroids with a daily dose greater than:
 - 250 mg of hydrocortisone
 - 50 mg of methylprednisolone
 - 60 mg of prednisone
 - 10 mg of dexamethasone

*Independent risk factor for GI bleed

- B. Treatment Indications (NOT considered stress ulcer prophylaxis)
1. Zollinger-Ellison Syndrome
 2. Acute upper GI bleed
 3. Erosive esophagitis
 4. Helicobacter pylori treatment
 5. Gastric or duodenal ulcer
 6. Gastroesophageal Reflux Disease (GERD)
 7. Regular scheduled use of an acid suppressing medication prior to admission
- C. Steroid use with no other risk factors and NPO status are not indications for stress ulcer prophylaxis
- D. Literature **DOES NOT** support stress ulcer prophylaxis outside of the ICU environment

IV. PROCEDURE

When scheduled acid suppression therapy is prescribed for stress ulcer prophylaxis and the patient does not meet the accepted criteria for use, the unit based clinical pharmacist will

discontinue the drug and send the ordering practitioner a text page identifying discontinuation based on clinical practice guidelines per approval of the Chief Medical Officer and Pharmacy and Therapeutics. Orders for treatment and patients on general medicine floors do not fall under the scope of this guideline and will not be discontinued.

V. DISCLAIMER

The pharmacist's clinical judgment in conjunction with the approved Pharmacy and Therapeutics clinical practice guideline will be utilized in all final stress ulcer prophylaxis decisions. Open communication between all members of the healthcare team is highly encouraged.

VI. REFERENCES

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13. Terdiman JP, Ostroff JW. Gastrointestinal bleeding in the hospitalized patient: a case-control study to assess risk factors, causes, and outcomes. *Am J Med.* 1988 Apr;104(4):349-54.

VII. DOCUMENT INFORMATION

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