SUBJECT: GI Prophylaxis

SUPERSEDES: New **PAGE:** 1 of 3

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PURPOSE: To provide guidelines for initiating GI prophylaxis.

DEFINITIONS:
- H2-blockers = histamine 2 receptor antagonists (e.g., famotidine)
- PPI = proton pump inhibitors (e.g., pantoprazole)
- Clinically important GI bleeding = evidence of upper GI bleed with any of the following[1]:
  - Hemodynamic changes not explained by other causes
  - Need for transfusion of more than 1 unit of blood
  - Decrease in hemoglobin level
  - Bleeding on upper GI endoscopy
  - Need for interventional radiology or surgery to control bleeding.

INCLUSION CRITERIA: 1) All SICU patients 2) All EGS/trauma patients (progressive and floor)

SPECIAL POPULATIONS: The following patient populations REQUIRE long-term stress ulcer prophylaxis which should be continued regardless of if they meet the criteria listed in this guideline[2]:
- Acute upper GI bleed
- Roux-en-Y Gastric Surgery
- Home medication
- Erosive esophagitis
- Helicobacter pylori treatment
- Gastric or duodenal ulcer
- Gastroesophageal Reflux Disease (GERD)
- Zollinger-Ellison Syndrome

PROTOCOL:
- GI prophylaxis should be considered in critically-ill patients with the following[3]:
  - Mechanical ventilation (MV) WITH either acute kidney injury (SCr x2 baseline), shock[4,5], or no enteral nutrition
    - Shock requiring GI prophylaxis is continuous infusion of vasopressors/inotropes, systolic pressures below 90mmHg, MAP below 70mmHg, or plasma lactate $\geq$ 4
    - **If the patient is receiving enteral feeding, GI prophylaxis provides no additional protection[6]**
      - No studies distinguish pre- vs post-pyloric enteral nutrition so they should be considered equivalent
  - Severe liver disease consisting of portal hypertension, variceal bleed, hepatic encephalopathy, or cirrhosis proven by biopsy

  - Coagulopathy on admission (defined as INR $\geq$ 2 (off warfarin) or platelets < 30K)
- IV H2-blockers or PPI should be reserved for patients unable to tolerate enteral medications
- Evaluate daily if the patient needs to be on stress ulcer prophylaxis and discontinue when therapy is no longer warranted.
- Pharmacologic Agents:
  - **Famotidine** (H2-blocker):
    - Dosing:
      - Normal renal function (CrCl >50 mL/min)
        - 20mg PO/PT/IV q12hr
      - Renal dysfunction (CrCl <50 mL/min)
        - 20mg PO/PT/IV q24hr
  - **Pantoprazole** (Proton Pump Inhibitor)
    - Dosing:
      - 40mg PO/IV q24hrs
    - Limit use to:
      - Patients with clinically significant GI bleeding
      - PPI as home medication (if appropriate indication)

Examples of patients who do not require GI prophylaxis:

- Non-MV patients who are NPO prior to procedure/surgery
- Non-MV patients who are being fed post-pyloric or through TPN without additional risk factors/indications
- Patient who is only septic
- Steroid use with no other risk factors
- Acute hepatic failure
- Use of anticoagulants
- Cancer
- Home PPI without appropriate indication (should be stopped if no appropriate indication found)

EVIDENCE:

- There is only weak evidence that PPIs possibly reduce the risk of clinically important bleeding in high risk patients compared to H2-blockers, but the confidence interval includes no difference (OR 0.58; 95% CI 0.29 - 1.17).[3]
- Clinical trials and meta-analysis show only weak evidence that GI prophylaxis may be associated with hospital acquired pneumonia and/or *C. diff* infection[3,6,7]
- H2-blockers are associated with less pneumonia development than PPIs.[3]
- PPIs did not improve mortality in a multicenter, parallel-group, blinded trial with 3298 comparing pantoprazole to saline placebo (relative risk 1.02; 95% CI 0.91-1.13; p 0.76).[8]
  - 90-day Kaplan-Meyer curves between PPI and placebo were identical.[8]
  - Subgroup analyses of shock, MV, coagulopathy, history of liver disease, and elevated SAPS II scores did not show any statistically significant reduction in GI bleed with PPIs.[8]
- A meta-analysis showed that GI prophylaxis reduces clinically important gastrointestinal bleeding (RR 0.73; 95% CI 0.57 - 0.92) with an absolute risk difference of -0.51 (95% CI -0.90 to -0.12; p 0.009)[1] and meta-analysis of multiple trials with an OR 0.61 (95% CI 0.42 - 0.89).[9]
- There is no evidence that the route of administration (IV or PO) alters effectiveness of PPIs or H2-blockers.[10]

References:

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