EC is a 60 yo female admitted to the hospital 5 days ago with multiple traumatic injuries secondary to a motor vehicle accident.
HPI: Upon arrival to the ED she was hypotensive and tachycardic (BP 90/56 mmHg HR 110) due to internal hemorrhaging from multiple broken bones including her hip. The EMTs report she was hypotentive and tachycardic the whole helicopter flight (>1 hour). She was stabilized and taken to the OR where the orthopedic surgeons repaired her injuries. The patient was placed on a ventilator 3 days ago in the surgical-trauma unit. She is currently being treated for pneumonia that is likely due to losing consciousness after the accident. Also to note, patient has had little to none urine output since admission to the ICU.

Allergies: NKDA

PMH: Type II Diabetes Mellitus
Hypertension
Hyperlipidemia

PSH: None

FH: Father died at 60 from MI
Mother has HTN, OA (age 64)
No siblings

SH: Tob: 20 year pack history (quit ½ year ago)
ETOH: Drinks 12 beers and a fifth of whiskey daily

All: NKDA

Meds PTA: Metformin/glyuride 500/2.5mg po bid
Lisinopril 20mg po qday

Current Meds: NS at 125mL/hr
Sliding scale insulin / q 6 hour finger sticks
Enoxaparin 40mg sq q24 hours
Lisinopril 40mg po qday
Piperacillin/tazobactam 2.25g IV q6 hours
Pantoprazole 40 mg IV q12 hours
Enteral feeds (Novasource 2.0 @ 45 mL/hr) via NG tube

***Vitals***
BP 84/48 mmHg  HR 130 bpm  RR 24 breaths/min  Temp 98°F  CVP 1 mmHg

***Weight*** 72 kg

***Labs***

| | | | |
|---|---|---|---|
| 149 | 109 | 46 | |
| 4.1 | 21 | 2.0 | 102 |

| | | |
|---|---|---|
| | 14.0 | |
| 15.6 | 44.6 | 238 |

Alb 3.8 g/dL
AST 48
ALT 20
ALP 74

ABG 7.35 / 30 / 98 / 22.8 / 92% / + 0.6 (60% $FiO_2$)

1. Please list this patient's risk factors for stress ulceration? (2 points)
    a. **Polytrauma (multiple traumatic injuries) (½ point)**
    b. **SBP <100mm Hg for >1 hour (BP 90/56 mmHg) (1/2 point)**
    c. **Ventilator x 24-48 hours (1/2 point)**
    d. **renal failure (1/2 point)**

2. Evaluate this patient's current regimen for stress ulcer prophylaxis. Include a statement of appropriateness for dose, route, frequency, and duration. **2 points**

Pantoprazole 40mg IV q 12 hours

Dose: appropriate. (0.5 pt)
Route: not preferred method of prophylaxis in patients able to take oral meds via feeding tube (1 pt)
Frequency: Not appropriate – typically give 40mg IV q 24 hours (0.5pt)
**We will accept appropriate for frequency of q12 – in notes; freq is qd-bid (give full credit 0.5pt)**

ADR; none
DI; none
Compliance : assumed

3. Select and recommend any needed changes to patients stress ulcer prophylaxis regimen. Be sure to include plan for existing therapy, any new therapy, and justification. (4 points)
    a. **D/C IV pantoprazole (1 pt)**
    b. **New regimen (1 point drug, ½ point dose, ½ point frequency, 1 administration)**
        i. **Lansoprazole 30 mg per tube qday**
        ii. **Omeprazole 40 mg per tube qday**
            1. **Administration → 1) Empty pellets into 40mL of an acidic beverage (fruit juice) - NOT plain water - and administer immediately**

**or**

**2) Empty pellets into 10mL of 8.4% sodium bicarbonate - NOT plain water – and allow suspension to form (~15 minutes) or crush. Refrigerate and administer within 14 days**

**FOR ½ CREDIT(aka 2 points) : you may accept continuing IV pantoprazole (qd or Q 12h) – its not recommended first line due to cost, in a pt with a feeding tube and able to take "po" meds as above**

**For ½ credit (2 points) : you may accept sulcralfate**
**If, and only if, they justified with rationale of pt already has pneumonia (lower risk of gastric bacterial colonization during therapy)**

**No credit for h2 blockers - less effective than ppi**

4. Explain why your recommendation above was chosen over at **least two** other methods that may be used for stress ulcer prophylaxis. Provide one statement/reason for each regimen not used (2 points)

    (Student may list two drugs and provide one statement/reason for each drug – each statement/reason is worth 1 points)
    a. **Sucralfate**
        i. **Lower rate of clinically significant bleeding from stress ulcers with acid suppression therapy vs. sucralfate**
        ii. **Increases in gastric pH decrease efficacy, preventing the use of sucralfate in combination with drugs that ↑ gastric pH**
        iii. **Aluminum toxicity, especially seen with prolonged therapy in patients with severe renal dysfunction**
        iv. **Difficult to administer via feeding tubes with small lumens**
    b. **Antacids**
        i. **Requires frequent administration of large doses to obtain optimal acid suppression**
        ii. **Electrolyte abnormalities**
        iii. **Constipation / diarrhea**
    c. **$H_2$ – antagonists**

i. **Tolerance**
ii. **Less effective vs. PPIs at increasing gastric pH and maintaining elevated gastric pHs**