Clinical Management Protocol: Gastrointestinal Bleeding Prophylaxis in the Intensive Care Unit (ICU)

Pharmacy and Therapeutics Committee / Critical Care Unit

April 20, 2026

Abstract

Critically ill patients present an intrinsic vulnerability to the development of stress-related mucosal disease (SRMD). This pathophysiological process is triggered by splanchnic hypoperfusion followed by reperfusion injury, compromising mucosal barrier integrity and predisposing to clinically important upper gastrointestinal bleeding (UGIB). Based on the 2024 SCCM/ASHP guidelines, this protocol establishes precision guidelines to reduce UGIB incidence through pharmacological acid suppression in selected populations.

1 CLINICAL RATIONALE AND OBJECTIVES

The implementation of this protocol is not a routine measure but a strategy designed to balance preventive benefits against potential risks of infection and mortality. The primary objectives are:

- Identify evidence-based patients at real risk of clinically important UGIB.
- Differentiate independent risk factors from variables inherent to critical illness that do not justify stress ulcer prophylaxis (SUP).
- Select the optimal pharmacological agent by evaluating comparative efficacy and safety profiles.
- Standardize "low-dose" regimens to minimize adverse effects.
- Manage the interaction between enteral nutrition and SUP, prioritizing pneumonia prevention.
- Ensure timely therapy cessation during care transitions.

2 RISK STRATIFICATION

The cornerstone is avoiding overprescription. SUP should not be initiated based solely on mechanical ventilation (MV) if other risk factors are not present.

2.1 Primary Risk Factors

Patients are considered "high risk" if they present one or more of the following conditions (Recommendations 1 and 3):

1. **Coagulopathy:** Increases the absolute risk (AR) of clinically important UGIB by 4.8%.
2. **Shock:** Increases the AR of UGIB by 2.6%.
3. **Chronic Liver Disease:** Increases the AR of clinically important UGIB by 7.6%.

3 PHARMACOLOGICAL INTERVENTIONS

Agent selection responds to a risk-benefit assessment. Proton Pump Inhibitors (PPIs) show superior UGIB reduction compared to H2-Receptor Antagonists (H2RAs) ($RR0.53$), but with important safety nuances.

Table 1: Therapeutic Comparison and Safety

Agent	Effect on UGIB	Mortality	Infection Risk
PPI	Superior reduction	Uncertainty ($RR1.05$ in high severity)	Uncertain risk
H2RA	Effective reduction	Reference	Uncertain risk
Sucralfate	Less effective	No impact	Lower pneumonia risk

Note: The mortality increase with PPIs is a specific observation in critically ill patients with high severity scores (Recommendation 8).

4 DOSAGE AND ADMINISTRATION

The standard is the use of low doses to maximize protection while reducing alterations to the gastric microbiota.

Table 2: Dosage Standards (GPS 1)

Class	Drug	Max Daily Dose
PPI	Pantoprazole/Omeprazole	≤ 40 mg
PPI	Lansoprazole	≤ 30 mg
H2RA	Famotidine	≤ 40 mg
H2RA	Ranitidine*	≤ 150 mg IV
Sucralfate	Sucralfate	≤ 4 g

4.1 Route of Administration

Enteral and intravenous (IV) routes can be used interchangeably. Current evidence does not show clinical superiority of one route over the other (Recommendation 9).

5 SPECIAL POPULATIONS AND NUTRITION

5.1 Enteral Nutrition (EN) as a Protective Factor

EN likely reduces the risk of UGIB ($ARR 0.3\%$). However, combining EN and pharmacological SUP increases the risk of healthcare-associated pneumonia ($RR 1.55$).

- **High Risk + EN:** Administer pharmacological SUP (Recommendation 6).
- **Low Risk + EN:** Do not use SUP (Recommendation 7).

5.2 Neurocritical Patients

Subgroups such as TBI or intracranial hemorrhage present high risk (11-33%) due to neurologically mediated gastric acid hypersecretion. The use of SUP is strongly suggested (Recommendation 5).

6 CESSATION AND PRE-ADMISSION MANAGEMENT

6.1 Discontinuation Criteria

Suspend SUP immediately when the patient is no longer in a critical state or risk factors are resolved. SUP cessation is mandatory before transfer to general wards to avoid polypharmacy.

6.2 Pre-Admission Therapy Management

1. **Review original indication:** Assess for underlying conditions (erosive esophagitis, *H. pylori*).
2. **Reconcile:** If ICU risk factors are present, evaluate switching to the protocol's preferred agent.
3. **Discontinue:** If no clear or critical pre-admission indication exists, stop the drug.