ACG Clinical Guideline: Management of Patients with Ulcer Bleeding

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Abstract

This guideline presents recommendations for the step-wise management of patients with overt upper gastrointestinal bleeding. Hemodynamic status is first assessed, and resuscitation initiated as needed. Patients are risk-stratified based on features such as hemodynamic status, comorbidities, age, and laboratory tests. Pre-endoscopic erythromycin is considered to increase diagnostic yield at first endoscopy. Pre-endoscopic proton pump inhibitor (PPI) may be considered to decrease the need for endoscopic therapy but does not improve clinical outcomes. Upper endoscopy is generally performed within 24 h. The endoscopic features of ulcers direct further management. Patients with active bleeding or non-bleeding visible vessels receive endoscopic therapy (e.g., bipolar electrocoagulation, heater probe, sclerosant, clips) and those with an adherent clot may receive endoscopic therapy; these patients then receive intravenous PPI with a bolus followed by continuous infusion. Patients with flat spots or clean-based ulcers do not require endoscopic therapy or intensive PPI therapy. Recurrent bleeding after endoscopic therapy is treated with a second endoscopic treatment; if bleeding persists or recurs, treatment with surgery or interventional radiology is undertaken. Prevention of recurrent bleeding is based on the etiology of the bleeding ulcer. *H. pylori* is eradicated and after cure is documented anti-ulcer therapy is generally not given. Nonsteroidal anti-inflammatory drugs (NSAIDs) are stopped; if they must be resumed low-dose COX-2-selective NSAID plus PPI is used. Patients with established cardiovascular disease who require aspirin should start PPI and generally re-institute aspirin soon after bleeding ceases (within 7 days and ideally 1–3 days). Patients with idiopathic ulcers receive long-term anti-ulcer therapy.

Introduction

Ulcers are the most common cause of hospitalization for upper gastrointestinal bleeding (UGIB), and the vast majority of clinical trials of therapy for nonvariceal UGIB focus on ulcer disease. This guideline provides recommendations for the management of patients with overt UGIB due to gastric or duodenal ulcers. "Overt" indicates that patients present with symptoms of hematemesis, melena, and/or hematochezia. We first discuss the initial management of UGIB in patients without known portal hypertension, including initial assessment and risk stratification, pre-endoscopic use of medications and gastric lavage, and timing of endoscopy. We then focus on the endoscopic and medical management of ulcer disease, including endoscopic findings and their prognostic implications, endoscopic hemostatic therapy, post-endoscopic medical therapy and disposition, and prevention of recurrent ulcer bleeding.

Each section of the document presents the key recommendations related to the section topic, followed by a summary of the supporting evidence. A summary of recommendations is provided in **Table 1**.
A search of MEDLINE via the OVID interface using the MeSH term "gastrointestinal hemorrhage" limited to "all clinical trials " and " meta-analysis " for years 1966–2010 without language restriction as

well as review of clinical trials and reviews known to the authors were performed for preparation of this document. The GRADE system was used to grade the strength of recommendations and the quality of evidence (1). The quality of evidence, which influences the strength of recommendation, ranges from "high" (further research is very unlikely to change our confidence in the estimate of effect) to "moderate" (further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate) to "low" (further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate), and "very low" (any estimate of effect is very uncertain). The strength of a recommendation is graded as strong when the desirable effects of an intervention clearly outweigh the undesirable effects and is graded as conditional when uncertainty exists about the trade-offs (1). In addition to quality of evidence and balance between desirable and undesirable effects, other factors affecting the strength of recommendation include variability in values and preferences of patients, and whether an intervention represents a wise use of resources (1).

Table 1. Summary and strength of recommendations
Initial assessment and risk stratification
1. Hemodynamic status should be assessed immediately upon presentation and resuscitative measures begun as needed (Strong recommendation).
2. Blood transfusions should target hemoglobin >= 7 g/dl, with higher hemoglobins targeted in patients with clinical evidence of intravascular volume depletion or comorbidities, such as coronary artery disease (Conditional recommendation).
3. Risk assessment should be performed to stratify patients into higher and lower risk categories and may assist in initial decisions such as timing of endoscopy, time of discharge, and level of care (Conditional recommendation).
4. Discharge from the emergency department without inpatient endoscopy may be considered in patients with urea nitrogen < 18.2 mg/dl; hemoglobin >= 13.0 g/dl for men (12.0 g/dl for women), systolic blood pressure >= 110 mm Hg; pulse < 100 beats / min; and absence of melena, syncope, cardiac failure, and liver disease, as they have < 1% chance of requiring intervention (Conditional recommendation).
Pre-endoscopic medical therapy
5. Intravenous infusion of erythromycin (250 mg ~30 min before endoscopy) should be considered to improve diagnostic yield and decrease the need for repeat endoscopy. However, erythromycin has not consistently been shown to improve clinical outcomes (Conditional recommendation).
6. Pre-endoscopic intravenous PPI (e.g., 80 mg bolus followed by 8 mg/h infusion) may be considered to decrease the proportion of patients who have higher risk stigmata of hemorrhage at endoscopy and who receive endoscopic therapy. However, PPIs do not improve clinical outcomes such as further bleeding, surgery, or death (Conditional recommendation).
7. If endoscopy will be delayed or cannot be performed, intravenous PPI is recommended to reduce further bleeding (Conditional recommendation).

Table 1. Summary and strength of recommendations *continued*
Gastric lavage
8. Nasogastric or orogastric lavage is not required in patients with UGIB for diagnosis, prognosis, visualization, or therapeutic effect (Conditional recommendation).
Timing of endoscopy
9. Patients with UGIB should generally undergo endoscopy within 24 h of admission, following resuscitative efforts to optimize hemodynamic parameters and other medical problems (Conditional recommendation).
10. In patients who are hemodynamically stable and without serious comorbidities endoscopy should be performed as soon as possible in a non-emergent setting to identify the substantial proportion of patients with low-risk endoscopic findings who can be safely discharged (Conditional recommendation).
11. In patients with higher risk clinical features (e.g., tachycardia, hypotension, bloody emesis or nasogastric aspirate in hospital) endoscopy within 12 h may be considered to potentially improve clinical outcomes (Conditional recommendation).
Endoscopic diagnosis
12. Stigmata of recent hemorrhage should be recorded as they predict risk of further bleeding and guide management decisions. The stigmata, in descending risk of further bleeding, are active spurting, non-bleeding visible vessel, active oozing, adherent clot, flat pigmented spot, and clean base (Strong recommendation).
Endoscopic therapy
13. Endoscopic therapy should be provided to patients with active spurting or oozing bleeding or a non-bleeding visible vessel (Strong recommendation).
14. Endoscopic therapy may be considered for patients with an adherent clot resistant to vigorous irrigation. Benefit may be greater in patients with clinical features potentially associated with a higher risk of rebleeding (e.g., older age, concurrent illness, inpatient at time bleeding began) (Conditional recommendation).
15. Endoscopic therapy should not be provided to patients who have an ulcer with a clean base or a flat pigmented spot (Strong recommendation).
16. Epinephrine therapy should not be used alone. If used, it should be combined with a second modality (Strong recommendation).
17. Thermal therapy with bipolar electrocoagulation or heater probe and injection of sclerosant (e.g., absolute alcohol) are recommended because they reduce further bleeding, need for surgery, and mortality (Strong recommendation).
18. Clips are recommended because they appear to decrease further bleeding and need for surgery. However, comparisons of clips vs. other therapies yield variable results and currently used clips have not been well studied (Conditional recommendation).
19. For the subset of patients with actively bleeding ulcers, thermal therapy or epinephrine plus a second modality may be preferred over clips or sclerosant alone to achieve initial hemostasis (Conditional recommendation).

Table 1. Summary and strength of recommendations *continued*
Medical therapy after endoscopy
20. After successful endoscopic hemostasis, intravenous PPI therapy with 80 mg bolus followed by 8 mg/h continuous infusion for 72 h should be given to patients who have an ulcer with active bleeding, a non-bleeding visible vessel, or an adherent clot (Strong recommendation).
21. Patients with ulcers that have flat pigmented spots or clean bases can receive standard PPI therapy (e.g., oral PPI once daily) (Strong recommendation).
Repeat endoscopy
22. Routine second-look endoscopy, in which repeat endoscopy is performed 24 h after initial endoscopic hemostatic therapy, is not recommended (Conditional recommendation).
23. Repeat endoscopy should be performed in patients with clinical evidence of recurrent bleeding and hemostatic therapy should be applied in those with higher risk stigmata of hemorrhage (Strong recommendation).
24. If further bleeding occurs after a second endoscopic therapeutic session, surgery or interventional radiology with transcathether arterial embolization is generally employed (Conditional recommendation).
Hospitalization
25. Patients with high-risk stigmata (active bleeding, visible vessels, clots) should generally be hospitalized for 3 days assuming no rebleeding and no other reason for hospitalization. They may be fed clear liquids soon after endoscopy (Conditional recommendation).
26. Patients with clean-based ulcers may receive a regular diet and be discharged after endoscopy assuming they are hemodynamically stable, their hemoglobin is stable, they have no other medical problems, and they have a residence where they can be observed by a responsible adult (Strong recommendation).
Long-term prevention of recurrent bleeding ulcers
27. Patients with *H. pylori*-associated bleeding ulcers should receive *H. pylori* therapy. After documentation of eradication, maintenance antisecretory therapy is not needed unless the patient also requires NSAIDs or antithrombotics (Strong recommendation).
28. In patients with NSAID-associated bleeding ulcers, the need for NSAIDs should be carefully assessed and NSAIDs should not be resumed if possible. In patients who must resume NSAIDs, a COX-2 selective NSAID at the lowest effective dose plus daily PPI is recommended (Strong recommendation).
29. In patients with low-dose aspirin-associated bleeding ulcers, the need for aspirin should be assessed. If given for secondary prevention (i.e., established cardiovascular disease) then aspirin should be resumed as soon as possible after bleeding ceases in most patients: ideally within 1–3 days and certainly within 7 days. Long-term daily PPI therapy should also be provided. If given for primary prevention (i.e., no established cardiovascular disease), anti-platelet therapy likely should not be resumed in most patients (Conditional recommendation).
30. In patients with idiopathic (non-*H. pylori*, non-NSAID) ulcers, long-term antiulcer therapy (e.g., daily PPI) is recommended (Conditional recommendation).
PPI, proton pump inhibitor; NSAID, non-steroidal anti-inflammatory drug; UGIB, upper gastrointestinal bleeding.

Table 2. Classification and prevalences of stigmata of recent hemorrhage in 2,401 patients hospitalized with bleeding ulcers at 72 US endoscopy centers (48)		
Stigmata of hemorrhage	**Forrest classification**	**Prevalence**
Active spurting bleeding	IA	12% (spurting+oozing)
Active oozing bleeding	IB	
Non-bleeding visible vessel	IIA	8%
Adherent clot	IIB	8%
Flat pigmented spot	IIC	16%
Clean base	III	55%

Table 3. Stigmata of recent hemorrhage and average rates (with ranges) of further bleeding, surgery, and mortality in prospective trials without endoscopic therapy (45)			
Stigmata	**Further bleeding (*N* =2,994)**	**Surgery for bleeding (*N* =1,499)**	**Mortality (*N*=1,387)**
Active bleeding	55% (17–100%)	35% (20–69%)	11% (0–23%)
Non-bleeding visible vessel	43% (0–81%)	34% (0–56%)	11% (0–21%)
Adherent clot	22% (14–36%)	10% (5–12%)	7% (0–10%)
Flat pigmented spot	10% (0–13%)	6% (0–10%)	3% (0–10%)
Clean ulcer base	5% (0–10%)	0.5% (0–3%)	2% (0–3%)

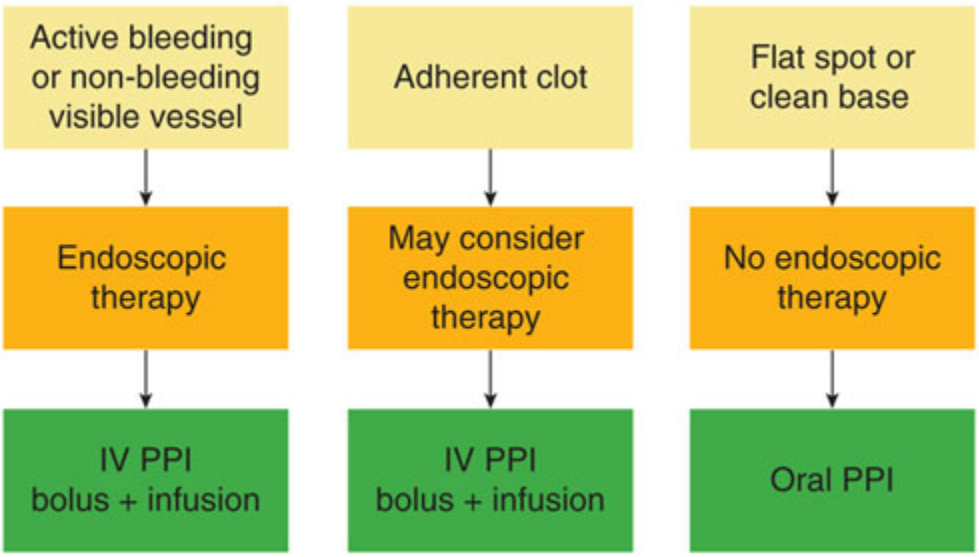

Figure 1. Recommended endoscopic and medical management based on stigmata of hemorrhage in ulcer base. IV, intravenous; PPI, proton pump inhibitor.

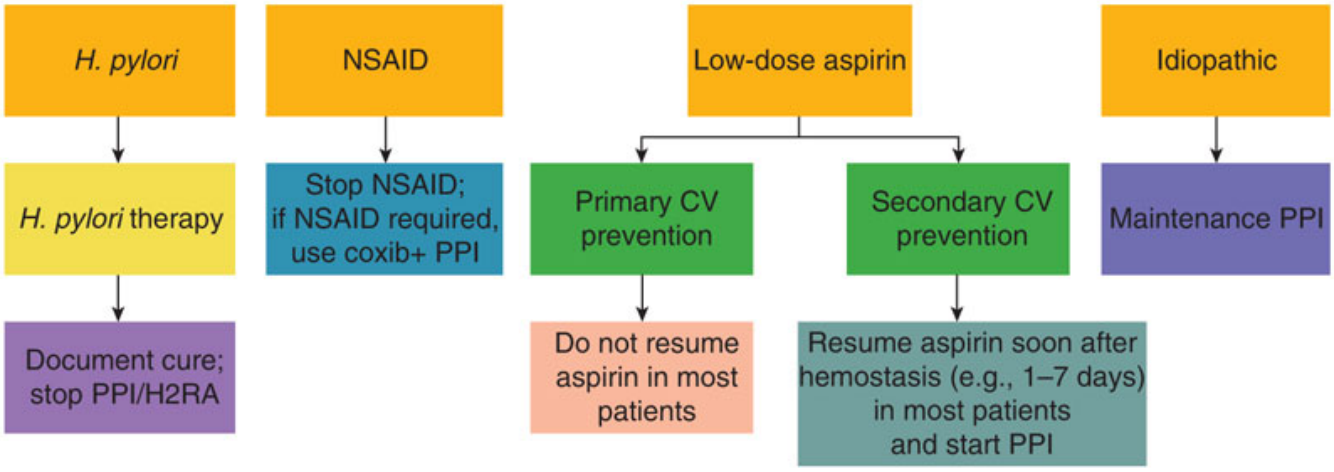

Figure 2. Recommended management to prevent recurrent ulcer bleeding based on etiology of ulcer bleeding. CV, cardiovascular; H2RA, histamine-2 receptor antagonist; NSAID, non-steroidal anti-inflammatory drug; PPI, proton pump inhibitor