

# GASTROINTESTINAL BLEEDING

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## PERSPECTIVE

### Epidemiology

Gastrointestinal bleeding (GIB) accounts for more than 1 million hospitalizations annually in the United States, with significant morbidity, mortality, and economic burden.<sup>1</sup> GIB is traditionally classified by the bleeding source—upper GIB (UGIB) is proximal and lower GIB (LGIB) is distal to the ligament of Treitz in the terminal duodenum.

UGIB accounts for more than 500,000 U.S. hospital admissions annually, with approximately 165 incidents per 100,000 patients.<sup>1</sup> Mortality rates have remained consistent at 13 to 14% over the past two decades despite advances in medical therapy, intensive care unit (ICU) management, endoscopy, and surgery.<sup>2</sup> An increasing proportion of elderly patients, who may die owing to comorbid conditions, and increases in the number of cirrhotic and variceal patients may contribute to the lack of change in mortality rates. In the United States, hospitalized patients with and without complications of nonvariceal UGIB had a mean length of stay of 4.4 and 2.7 days and hospitalization costs of \$5632 and \$3402 (2004 U.S. dollars), respectively.<sup>3</sup>

The incidence of LGIB in the United States is approximately 20.5 per 100,000 patients, with a mortality rate of 4%. Age greater than 70 years, intestinal ischemia, comorbid illness, coagulation defects, transfusion of packed red blood cells (RBCs), and male gender are the predictors of increased LGIB mortality.

## DIAGNOSTIC APPROACH

### Differential Considerations

The characteristics of the bleed and the age of the patient can help determine the cause of the GIB. UGIB can routinely manifest as bloody or coffee-ground-like vomit known as *hematemesis* or as dark, tarry stools known as *melena*. In adults, peptic ulcer disease, erosive gastritis, and esophageal varices account for the majority of these cases<sup>4,5</sup> (Table 30-1). In fact, peptic ulcers make up more than half of all acute cases of UGIB seen in the emergency department (ED). However, in inner city populations, varices and gastritis are more prevalent. In pediatric patients, gastric and duodenal ulcers, esophagitis, gastritis, esophageal varices, and Mallory-Weiss tears account for most cases of UGIB, in descending order of frequency. Contrary to this, LGIB usually produces bright red or maroon blood per rectum, known as *hematochezia*. Anorectal sources, such as hemorrhoids, are the most common causes of LGIB in all age groups.<sup>6</sup> In adults, the most common sources of hematochezia are colonic diverticula and angiodysplasia.<sup>7</sup> Other noteworthy causes include colitis caused by ischemia, infection,

and inflammatory bowel disease. Major causes of LGIB in children include anorectal fissures and infectious colitis. Bleeding can also be caused by intussusception and Meckel's diverticulum in infants and toddlers. Despite diagnostic advances for all ages, the source of GIB is not identified in 8 to 14% of patients.<sup>2</sup>

Death from exsanguination resulting from GIB is rare. However, there are two causes of GIB that may rapidly cause death if not recognized and mitigated: esophageal varices and aortoenteric fistula. The former is the single most common source of massive UGIB and has a mortality rate of 30%. The latter is caused when an abdominal aortic aneurysm or, more commonly, an aortic graft adheres to and erodes through a bowel wall. Aortoenteric fistula is a rare but rapidly fatal cause of LGIB.<sup>7</sup> As is the case for any patient with acute massive hemorrhage, prompt consultation with a surgeon is warranted when aortoenteric fistula is a likely diagnosis.

Finally, in the differential considerations, one must determine if in fact the patient is having actual GIB. Epistaxis, dental bleeding, or red food coloring can mimic the appearance of hematemesis. Bismuth-containing medications and iron supplements can create melanotic-appearing (but guaiac-negative) stools. Vaginal bleeding, gross hematuria, and partially digested red foods (such as beets) can all be mistaken for hematochezia.<sup>8</sup> Unless an alternative diagnosis is clearly evident, the appropriate approach is to continue with the workup for GIB.

### Pivotal Findings

The approach to the GIB patient requires a thorough history centering on the gastrointestinal tract and on the timing, quantity, and appearance of the bleeding. Relevant comorbid conditions should be reviewed as well. The extent of the history will be dictated by the severity of the complaint and the hemodynamic stability of the patient on ED arrival. Reviewing the patient's vital signs, appearance of the stool, and basic laboratory studies will help in triaging and initiating the workup of the bleeding source.

### Medical History

A useful starting point for the clinician is to determine the time of onset, duration of symptoms, and relevant supporting historical facts.

1. *Context:* The context of the bleeding can help explain its cause. For instance, if a patient complains of bright red blood per rectum after several days of constipation and straining, that presentation suggests an anorectal source for the bleeding. Alternatively, a patient with hematemesis after several earlier episodes of retching would lead one to

**Table 30-1** Common Causes of Gastrointestinal (GI) Bleeding in Adults and Children

	ADULTS	CHILDREN
Common causes of upper GI bleeds	Peptic ulcers (gastric more than duodenal) Gastric erosion Esophagogastric varices Mallory-Weiss tears Esophagitis Gastric cancer	Duodenal ulcers Gastric ulcers Esophagitis Gastric erosion Esophageal varices Mallory-Weiss tears
Common causes of lower GI bleeds	Diverticular disease Angiodysplasia Colitis (inflammatory, infectious, ischemic) Anorectal sources Neoplasm Upper GI bleeding	Anorectal fissure Infectious colitis Inflammatory bowel disease Juvenile polyps Intussusception Meckel's diverticulum

suspect an esophageal tear. Finally, a patient with easy bruising and recurrent gingival bleeding might suggest a long-standing, underlying coagulopathy.

2. **Quantity:** Efforts should also be made to quantify the amount of blood lost during the bleeding event. Patients may describe the passage of large clots, blood changing the toilet bowl water red, or simply streaks of blood on the toilet paper. The patient's recollection of the bleed and its amount is usually poorly quantified and inaccurate. Often, the degree of bleeding is better gauged by assessing symptoms associated with significant intravascular loss such as dyspnea, lightheadedness, or chest pain.<sup>9</sup> These findings demonstrate signs of decreased oxygen-carrying capacity that often accompanies significant blood loss and should prompt a thorough and expeditious workup.
3. **Appearance:** Classifying the blood as hematemesis, melena, or hematochezia provides the initial clues to the source of bleeding. Vomiting of fresh blood or blood with the appearance of coffee grounds strongly suggests an upper GI (UGI) source. The passage of melena, dark digested stools, also suggests likely UGIB. In contrast, the presence of hematochezia, bright red or maroon stools, usually signifies LGIB. There are exceptions, however. In a hemodynamically unstable patient, bright red blood per rectum can represent brisk UGIB. Hematemesis rarely can arise from a source in the lower GI (LGI) tract that is proximal to an obstruction. Although the definitive cause and location of the bleed will usually be determined by the gastroenterologist, the emergency clinician uses the history to make a rough estimate of the source and help guide the initial workup.<sup>8</sup>
4. **Relevant medical history:** A review of the patient's relevant medical history and risk factors for bleeding should note whether a patient has had similar bleeding before and the location of the causative lesion (Table 30-2). This is especially important with UGIB, as the majority of these presentations are caused by rebleeding of previously identified sources. Next, identification of relevant comorbid diseases helps to risk stratify these patients in the context of their bleed. Patients with GIB and a history of coronary artery disease, congestive heart failure, liver disease, or diabetes have a higher mortality and therefore may require earlier or more extensive intervention.<sup>8</sup> A review of the patient's medications should pay particular attention to gastrototoxic substances, anticoagulants, and antiplatelet drugs. Medications such as nonsteroidal

**Table 30-2** Characteristics of Patients with High-Risk Gastrointestinal (GI) Bleeds

Medication use
• Aspirin
• Nonsteroidal anti-inflammatory drugs
• Steroids
• Anticoagulants (warfarin, heparin)
• Chemotherapeutic agents
History of peptic ulcer disease
Known liver disease, cirrhosis
Advanced age (older than 60 years)
Alcoholism
Current smoker
Chronic medical comorbidities
• Congestive heart failure
• Diabetes
• Chronic renal failure
• Malignancy
• Coronary artery disease
History of abdominal aortic aneurysm graft

anti-inflammatory drugs (NSAIDs), aspirin, warfarin, clopidogrel, corticosteroids, and certain chemotherapeutic agents are known to increase the risk of GIB.<sup>5,8</sup> In addition, reviewing the patient's social history can identify activities that increase risk for GIB. Alcohol abuse is associated with gastritis and peptic ulcer disease. It can also result in cirrhosis, portal hypertension, and ultimately esophageal variceal bleeding. Smoking cigarettes results in slower healing and greater recurrence of ulcers. These two social habits are also closely associated with gastrointestinal malignancy—another, albeit rare, risk factor for GIB.

### Physical Examination

**Vital Signs.** Hypotension and tachycardia can suggest moderate hypovolemia and can be the early indicators of impending shock.<sup>5,8</sup> Orthostatic vital signs, although frequently used, are of dubious value in determining volume status in the context of acute blood loss.

**General Examination.** Eye examination may show conjunctival pallor, suggesting blood loss anemia. In similar fashion, dermatologic changes can lend supporting evidence to the presence and cause of a GI bleed. Generalized pallor in a hemodynamically stable patient might indicate the anemia of a subacute or chronic GIB; in the unstable patient, pallor might reinforce the impression of massive blood loss. Cold, clammy skin on the extremities might signal significant volume loss consistent with hemorrhagic shock. Ecchymoses or petechiae suggest a coagulopathy. Finally, jaundice, palmar erythema, or spider angiomas suggests the possibility of UGIB from esophageal varices.<sup>5</sup>

The abdomen should be carefully examined for subtle findings that can help identify the source of bleeding. Hyperactive bowel sounds are a nonspecific finding, but might indicate UGIB, as intraluminal blood is a known cathartic that can stimulate peristalsis.<sup>5</sup> Tenderness to palpation can be seen in many cases of peptic ulcer disease. Severe, diffuse tenderness on examination warrants the consideration of bowel ischemia, mechanical obstruction, ileus, or bowel perforation. Evidence of peritonitis merits a rapid surgical consultation for possible operative management. The abdominal examination may also show further signs of portal hypertension with the presence of hepatomegaly, ascites, or caput medusae.<sup>5</sup> A rectal examination, with determination of the type of bleeding, should be performed in most patients with GIB. The examination should include evaluation of the external anus, a digital rectal examination, and anoscopy looking to

identify possible bleeding sources such as hemorrhoids, polyps, or fissures.<sup>5,7,8</sup>

## Emergency Department Studies

**Occult Blood and Guaiac Bedside Testing.** In patients with suspected UGIB, guaiac testing can be performed at the bedside to evaluate for occult blood even when stool appears normal. The test makes use of the pseudoperoxidase activity found in hemoglobin. When hydrogen peroxide is dripped onto the guaiac paper containing the stool sample, an oxidative reaction rapidly turns the paper blue. The test can actually be positive for up to 2 weeks after an acute bleed and thus is more useful at diagnosing chronic occult bleeding.<sup>8</sup> False positives can be triggered by ingestions of red meat, turnips, horseradish, vitamin C, methylene blue, and bromide preparations. Iron- and bismuth-containing medications can cause dark stools that will be guaiac negative. Similar testing is available for gastric contents but can be unreliable if minor trauma from the passage of a nasogastric (NG) tube or vomiting has caused occult bleeding.

## Clinical Laboratory Testing

Laboratory studies can assist in the risk stratification of GIB. Minimum testing should include evaluation of the patient's hemoglobin, blood urea nitrogen (BUN), coagulation studies, and platelets. Hemoglobin does not immediately decline in the setting of an acute bleed, as whole blood is initially lost. Declines are appreciated after dilution from shifting extravascular fluids and intravenous hydration with crystalloid. Nevertheless, hemoglobin levels less than 10 have been positively correlated with higher rates of rebleeding and mortality. If significantly depressed, the hemoglobin level may also guide whether transfusion is required for the patient's resuscitation. In general, a hemoglobin less than 8 to 10 g/dL in a patient with GIB should prompt strong consideration of blood transfusion, with greater attention and a much lower threshold to transfuse in elders and those with significant comorbidities such as coronary artery disease.

BUN levels can be elevated in the setting of UGIB owing to the absorption of digested blood into the circulatory system during intestinal transit. The BUN can also be elevated from prerenal azotemia in the setting of hypovolemia. A BUN-to-creatinine ratio greater than 36 in the setting of no renal failure can be highly suggestive of UGIB.<sup>5,8</sup>

Coagulation studies, particularly prothrombin time (PT), should be undertaken to ensure that coagulopathy is not worsening the patient's blood loss. This becomes especially important in patients with liver disease or those taking therapeutic anticoagulants such as warfarin.

Other laboratory tests may be useful in a small percentage of patients with GIB. Electrolyte abnormalities may be present in patients with repeated or prolonged episodes of vomiting or diarrhea. Leukocytosis may represent the stress of the acute bleed, but the possibility of underlying infection should also be considered. A lactate level may be elevated in the setting of bowel ischemia or secondary to shock from hypovolemia and the resultant hypoperfusion. Laboratory findings may help guide risk stratification, resuscitation, and ultimate disposition.

## Blood Bank

A blood bank sample should be sent for type and screen or type and crossmatch studies, depending on the severity of the patient's presentation. In cases of refractory shock or other unstable presentations, immediate transfusion can be provided with O-positive blood in most patients and with O-negative blood for women of childbearing age with an unknown Rh status. Type-specific blood should also be available within 15 minutes of the sample arriving

at the blood bank. These options may be used as adjuncts, with few resultant transfusion reactions, until appropriate cross-matched blood is available.

## Electrocardiogram

Because GIB and its subsequent anemia can reduce the oxygen-carrying capacity of blood, patients should be screened for signs of myocardial ischemia. An electrocardiogram (ECG) is recommended and is especially relevant in elders and those with known coronary artery disease who are at higher risk for ischemic events.<sup>5,8-10</sup> ECG findings consistent with myocardial ischemia should prompt immediate treatment according to current American College of Cardiology (ACC) guidelines; transfusion with packed RBCs will optimize oxygen delivery to the ischemic tissue.

## Radiographic Imaging

Emergent imaging of the chest and abdomen in the ED setting is rarely indicated in the patient with acute GIB.<sup>11</sup> Although an upright chest radiograph may show free air if hollow viscus perforation has occurred, it is insensitive and nonspecific, and abdominal computed tomography (CT) scan is the preferred imaging modality. Identification of subdiaphragmatic air and peritoneal findings on abdominal examination suggest the possibility of bowel perforation and the need for immediate surgical evaluation. Abdominal plain radiographs are of no value for patients with GIB, unless bowel obstruction is strongly suspected. Unless perforation or significant gut ischemia is suspected, CT imaging of the solid abdominal organs is not indicated and does not alter the acute management and disposition of the patient with a GIB. Multidetector CT may have a role in identifying angiodysplasia and other localized bleeding sites throughout the GI tract.<sup>4</sup> Scintigraphy and angiography can also be used to localize the source of bleeding, and angiography may allow for therapeutic options via embolization.<sup>4,12</sup> These imaging modalities are rarely used in the acute ED setting, and their use is often based on hospital availability and consultant preference.

## DIAGNOSTIC ALGORITHM

The diagnostic approach to the GIB patient involves a number of key decision points. First, the clinician should assess the patient's general appearance, vital signs, and volume status. This initial assessment can help triage the patient into a stable or unstable category. If the patient is unstable, resuscitation begins with the immediate placement of two large-bore intravenous catheters (18 gauge or larger) and crystalloid infusion with the aim of hemodynamic stabilization. Endpoints of adequate resuscitation would include appropriate vital signs, urine output greater than 1 mL/kg/hr, and appropriate mental status. Prompt blood transfusion is also considered.

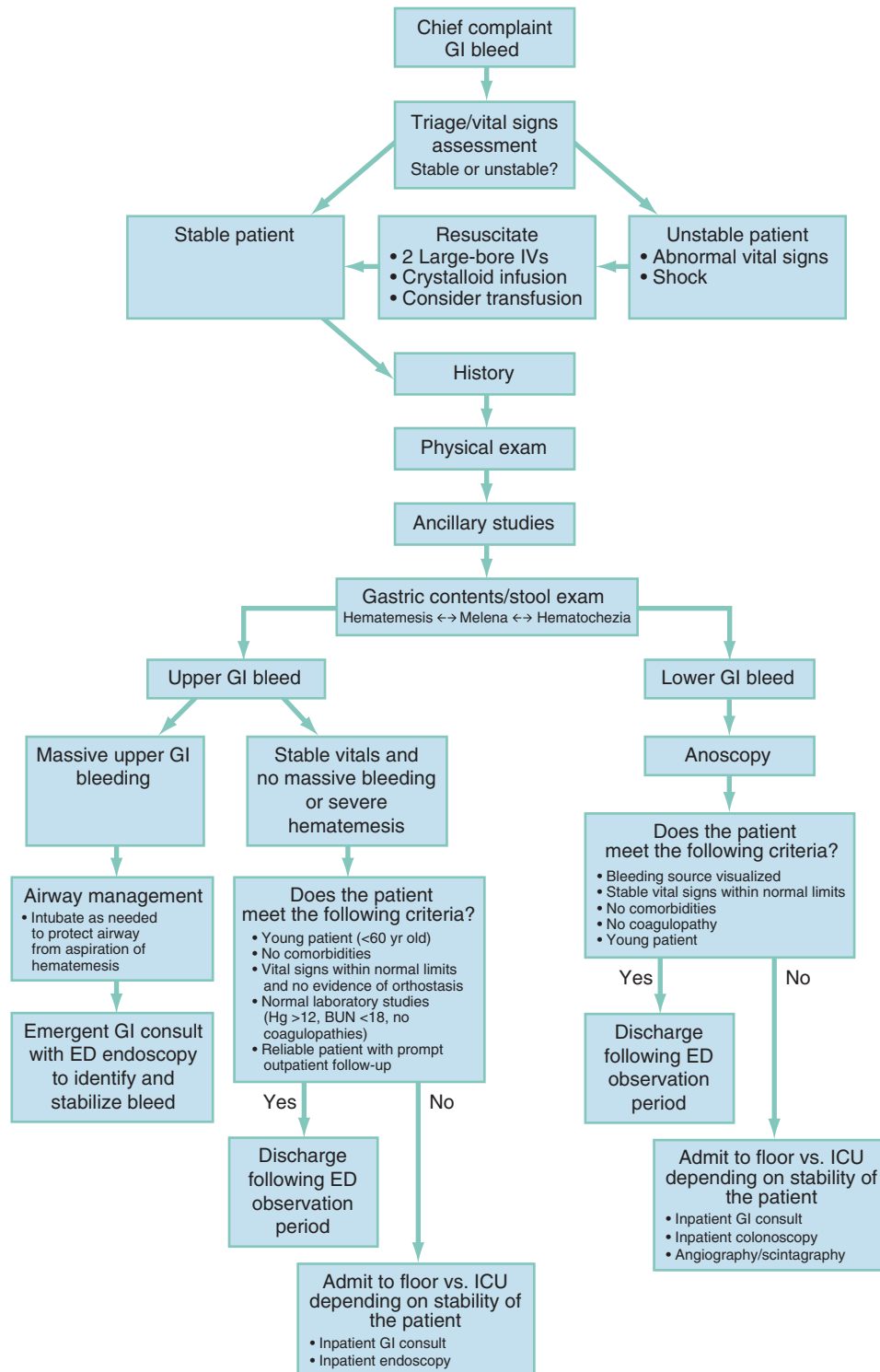
The second decision point involves use of the historical facts and physical examination findings to determine if the patient has UGIB or LGIB. These details will help further risk stratify the GIB patient and establish the differential diagnosis. Once the presumptive origin of the bleed has been determined, the clinician should consider the anticipated hospital course of the patient.

The third decision point relies on the severity of the UGIB or LGIB to determine the ED management and disposition. Unstable UGIB will require emergent gastroenterology consultation for early endoscopy, consideration of definitive airway management, and admission to an ICU for continued resuscitation. Alternatively, patients who are young, reliable, and hemodynamically stable after a minor bleed in a clear context of a Mallory-Weiss tear can be discharged after an observation period of 12 hours in

the ED or ED observation unit. Unstable LGIB patients require emergent surgical consultation. Management initially centers on proper resuscitation with fluids, blood products, and admission to the ICU. If the patient has been properly resuscitated in the ED and remains stable, admission to the medical floors for further workup and inpatient management is indicated. LGIB patients who are hemodynamically stable, are reliable, have no significant risk factors, and have a clearly visualized source of bleeding on examination can be safely discharged to follow up with their outpatient provider.

## EMPIRICAL MANAGEMENT

Rapid identification of the bleeding source (i.e., UGI versus LGI tract), risk stratification, resuscitation, consultation, and disposition are the integral elements of this process. Initial management includes an assessment of airway, breathing, and circulation. Massive bleeding, active hematemesis, hypoxia, severe tachypnea, or altered mental status may necessitate tracheal intubation for protection and to supplement tissue oxygenation. Figure 30-1 outlines both diagnostic and management guidelines.



**Figure 30-1.** Diagnostic and management strategies for gastrointestinal bleeding. *BUN*, blood urea nitrogen; *ED*, emergency department; *GI*, gastrointestinal; *Hg*, hemoglobin; *ICU*, intensive care unit; *IV*, intravenous.



## Resuscitation

Hemodynamic instability and estimated volume loss should guide initial resuscitation. Patients should be placed on pulse oximetry, be administered supplemental oxygen, and receive early aggressive crystalloid resuscitation with two peripheral large-bore intravenous catheters. Cardiac telemetry should be initiated because demand ischemia and myocardial infarctions may occur in patients with GIB.

## Blood Product Transfusion

Continued hemodynamic instability and/or ongoing hemorrhage dictates the need for blood transfusion. Factors such as age, comorbidities (ischemic heart disease, peripheral vascular disease, or heart failure), baseline hemoglobin and hematocrit levels, and evidence of cardiac, renal, or cerebral hypoperfusion should be considered in determining transfusion quantity. Blood transfusion side effects should be weighed against adverse outcomes of anemia. A recent meta-analysis of trauma, surgical, and intensive care observational studies found that massive transfusion was associated with a higher risk of death, nosocomial infection, multiorgan dysfunction, and acute respiratory distress.<sup>13</sup>

Coagulopathy, especially in patients with underlying liver disease or those requiring massive transfusions, should be corrected promptly. Correction of coagulopathy with fresh frozen plasma (FFP) or platelets is recommended but should not delay endoscopy.<sup>14</sup> Consensus guidelines call for the transfusion of one unit of FFP for every four units of packed RBCs transfused to replace coagulation factors.<sup>14</sup> Patients with fewer than 50,000 platelets/ $\mu\text{L}$  and active bleeding may need platelet transfusion.

## Nasogastric Aspiration and Lavage

Once considered a standard emergent intervention, NG aspiration with gastric lavage is generally not indicated for evaluation of GIB. The sensitivity of NG aspiration and lavage for predicting UGIB is low, and the negative likelihood ratio in patients with melena or hematochezia without hematemesis is poor.<sup>15</sup> Fifteen percent of patients without bloody or coffee-ground material in NG aspirates are found to have high-risk lesions on endoscopy.<sup>16</sup> NG tube placement has been associated with severe complications including aspiration, pneumothorax, perforation, and gastric lesions and is a painful procedure. On some occasions a consulting gastroenterologist may wish to place an NG tube in hopes of improving endoscopic visibility (and accuracy) by evacuating gastric blood, but absent such an indication, placement of an NG tube in patients with suspected UGIB is not recommended.

## Sengstaken-Blakemore Tube

Bedside balloon tamponade should be considered only in exsanguinating patients with likely variceal bleeding when endoscopy is not immediately available. Complications are common and significant, but intervention is indicated in the appropriate patient population owing to the high mortality associated with uncontrolled bleeding.

## Medications

Several medications improve GIB outcomes. Infusion of high-dose proton pump inhibitors (PPIs) before endoscopy accelerates the resolution of signs of bleeding in ulcers and reduces the need for endoscopic therapy.<sup>17</sup> The recommended dosage is an 80-mg bolus of omeprazole intravenously, followed by 8 mg/hr for 3 days. High-dose oral PPIs have been shown in Asian populations to reduce the risk of rebleeding, the need for surgery, and the risk of

death, but additional data are needed to determine whether those findings are generalizable to Western patient populations.<sup>16</sup>

Somatostatin and octreotide, synthetic analogues, are splanchnic vasoconstrictors that reduce portal hypertension and the risk of persistent bleeding, rebleeding, and transfusion requirements in patients with variceal bleeding.<sup>18</sup> Octreotide therapy should be empirically administered in patients with GIB and significant liver disease, a history of variceal bleeding, a history of alcoholism, or highly abnormal liver function tests. The recommended dose of octreotide is a 50- $\mu\text{g}$  bolus followed by 50  $\mu\text{g/hr}$  intravenously.

Vasopressin, administered by continuous intravenous infusion, also reduces splanchnic blood flow and portal hypertension. However, it has limited use owing to significant complications that include myocardial and mesenteric ischemia and infarction.

## DEFINITIVE MANAGEMENT

### Consultation

For patients with hemodynamic instability and severe bleeding, prompt gastroenterology consultation should be sought. Exsanguinating hemorrhage warrants emergent surgical consultation as well. Patients with severe LGIB warrant surgical consultation. Ongoing bleeding, severe anemia, or significant comorbidity (including advanced age, ischemic coronary disease, and so on) prompts consideration of admission to an ICU.

### Endoscopy

Upper endoscopy is the most effective diagnostic and therapeutic intervention for UGIB, achieving hemostasis in more than 90% of cases. Endoscopic hemostasis has been shown to decrease rates of rebleeding, mortality, and urgent surgery.<sup>19</sup> Endoscopic treatments include injection therapy (e.g., saline, vasoconstrictors, sclerosing agents, tissue adhesives, or a combination thereof), thermal therapy (with the use of contact methods, such as multipolar electrocoagulation and heater probe, or noncontact methods, such as argon plasma coagulation), and mechanical therapy (principally endoscopic clips). Endoscopy within 13 hours of bleeding reduces mortality in high-risk patients.<sup>20</sup>

### Colonoscopy

Urgent colonoscopy has variable diagnostic value for identification of a bleeding source in LGIB. Lesion visualization is maximized by bowel preparation with polyethylene glycol in brisk but not in severe hemorrhage.

### Angiography

Angiography is used in a very small proportion of cases of GIB and requires a hemorrhage rate of greater than 0.5 mL/min to optimize detection of acute bleed. Although also potentially therapeutic, angiography has a high rate of complications, including acute renal failure, contrast reactions, and bowel infarction. CT angiography also has variable sensitivities reported for the detection of acute GIB.

### Tagged Red Blood Cell Imaging

Tagged RBC imaging or nuclear scintigraphy involves erythrocyte injection to detect indolent or elusive bleeding and is primarily useful in the inpatient setting. Timing is essential—95 to 100% of scans performed within 2 hours of injection correctly localize bleeding sites, whereas substantially fewer scans performed after 2 hours localize bleeding accurately.

**Table 30-3 Blatchford Score\***

ADMISSION RISK MARKER	SCORE COMPONENT VALUE
Blood urea nitrogen level (mg/dL)	
≥18.2 to <22.4	2
>22.4 to <28	3
>28 to <70	4
>70	6
Hemoglobin level for men (g/dL)	
>12 to <13	1
≥10 to <12	3
<10	6
Hemoglobin level for women (g/dL)	
≥10 to <12	1
<10	6
Systolic blood pressure (mm Hg)	
≥100 to <109	1
>90 to <99	2
<90	3
Other markers	
Pulse rate ≥100 beats/min	1
Presentation with melena	1
Presentation with syncope	2
Hepatic disease	2
Heart failure	2

\*Range of scores is from 0 to 23 with high risk greater than 0.

## DISPOSITION

Traditionally, all patients with GIB were hospitalized, but the changing health care and economic landscape has refocused efforts on outpatient management guidelines.

Several scoring systems to risk stratify UGIB patients into low- and high-risk groups have been developed and have undergone trials. These groups are based on adverse outcomes that are usually defined as a risk of recurrent bleeding of greater than 5% and greater than 1% mortality. Unfortunately, many of these scores rely on both clinical and endoscopic variables.

A consensus panel of 34 multidisciplinary experts from 34 countries identified the following clinical predictors as high risk: age older than 65 years; shock; poor overall health status; comorbid illness; low initial hemoglobin levels; melena; transfusion requirement; fresh red blood on rectal examination, in the emesis, or in the NG aspirate; sepsis; and elevated urea, creatinine, or serum aminotransferase levels.<sup>14</sup>

The Blatchford score (Table 30-3) and clinical (or pre-endoscopic) Rockall score (Table 30-4) use only clinical and laboratory data to risk stratify patients. In a recent retrospective review

**Table 30-4 Clinical Rockall Risk Score\***

VARIABLE	Score			
	0	1	2	3
Age (years)	<60	60-79	≥80	
Shock		HR >100 beats/min	SBP <100 mm Hg, IHD, CHF, any major comorbidity	Renal failure, liver failure, metastatic malignancy

CHF, congestive heart failure; HR, heart rate; IHD, ischemic heart disease; SBP, systolic blood pressure.

\*Scores are calculated without endoscopic findings, and patients with scores greater than 0 are considered at high risk for developing adverse outcomes (recurrent bleeding, death).

of 354 patients, the Blatchford score was 99.6% sensitive and the clinical Rockall was 90.2% sensitive at identifying patients as high risk (high-risk patients were defined as those who required a blood transfusion or endoscopic or surgical intervention during their admission).<sup>21</sup>

Once identified, high-risk UGIB patients require admission for inpatient monitoring, assessment, and consultation for definitive diagnosis and treatment.

Through use of these scores and others, low-risk UGI bleed patients can be identified as those with no comorbid diseases, normal vital signs, normal or trace positive result on stool guaiac testing, negative findings on gastric aspiration, normal hemoglobin and hematocrit, good support systems, proper understanding of signs and symptoms of significant bleeding, immediate access to emergent care, and follow-up within 24 hours.

Low-risk patients deemed appropriate candidates for discharge should be given clear instructions reviewing the signs and symptoms of significant GIB and when to contact the primary care physician or return to the ED. Specific education should include information regarding the likely source of bleeding, medication side effects, alcohol abstinence, and discontinuation of the use of aspirin and NSAIDs. These patients require early follow-up for a specific evaluation.

There are no clear guidelines on risk stratification for outpatient management of LGIB patients; therefore most are hospitalized for inpatient workups. Patients with LGIB not clearly caused by hemorrhoids, fissure, or proctitis should be admitted for nuclear medicine imaging or colonoscopy.

The references for this chapter can be found online by accessing the accompanying Expert Consult website.

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