



Chapter 27 - Gastrointestinal Bleeding

EPISODE CONTENT BASED ON ROSEN'S EMERGENCY MEDICINE (9TH ED.)

Italicized text is quoted directly from Rosen's.

Key Concepts:

- Several risk scoring systems, including the Blatchford and Rockall scoring systems, can help emergency clinicians stratify UGIB patients into low-and high-risk groups for adverse outcomes, with high-risk patients defined as those who require a blood transfusion or endoscopic or surgical intervention during their admission.*
- Patients who are not high risk and are without comorbid diseases, have normal vital signs, normal or trace positive results on stool guaiac testing, normal hemoglobin and hematocrit levels, good support systems, proper understanding of signs and symptoms of significant bleeding, and access to emergent care and 24-hour follow up may be discharged.*
- Nasogastric lavage is an uncomfortable procedure that has low sensitivity and is not indicated in the acute management of UGI bleeding.*
- IV administration of proton pump inhibitors, such as pantoprazole, 40 mg IV BID, should be initiated in the emergent setting for patients with significant UGIB. Alternatively, in patients with significant acute GIB, we recommend an 80 mg IV bolus of omeprazole followed by 8 mg/hr continuous infusion for 3 days.*
- A BUN-to-creatinine ratio greater than 36 in the setting of no renal failure can be highly suggestive of UGIB.*
- Electrocardiography should be performed in older adults or those with known coronary artery disease who are at higher risk for demand ischemia in the setting of hypotension or anemia due to GIB.*

Core Questions

- Define upper gastrointestinal versus lower gastrointestinal bleeding and differentiate between the two based on anatomic location
- Outline an approach to the history and physical examination for the patient with complaints consistent with GIB.- Box 27.3
- List 5 causes of UGI bleeding and 5 causes of LGI bleeding- Table 27.1
- Outline six alternative diagnoses or mimics of GI bleeding - Box 27.1
- List five characteristics of patients with high-risk GI bleeds - Box 27.2
- Describe an approach to ancillary testing in the patient with GI bleeding.
- List five substances that when ingested, can result in a falsely-positive stool guaiac study
- Outline an approach to the management of the patient with GI bleeding - Fig 27.3
- Detail the Blatchford and Clinical Rockall Risk Scores - Tables 27.3/27.4



Wisecracks

1. Outline the three most common causes of UGIB in pediatric and adult patients.
2. Outline the three most common causes of LGIB in pediatric and adult patients.
3. What percentage of patients presenting with hematochezia actually have an UGIB?
4. What volume of blood loss is needed to produce symptoms of anemia in the patient with an acute/subacute GI bleed?

Rosen's in Perspective

Ahhhhh, the GI bleed; a problem that is as old as time. Some of medicine's most interesting stories stem from discoveries around this pathology. And while we have all met the patient with black stools, we may have not all experienced the full spectrum of illness that this pathology can create. If you are still junior (or just verrrrrry lucky), you may have not yet seen how "down with the sickness" these patients can be. In fact, the mortality rate for UGI bleeds is not insignificant, weighing in at a whopping 15%. The scary thing is, despite the myriad of advancements made in intensive care, endoscopy, and surgery, the mortality rate for UGI bleeds has not budged for decades. LGI bleeds, while less lethal, still carry significant risk for death (4%). I know, yikes.

For those of you who worry that the next hypotensive GI bleed to walk through your ED doors will strain your knowledge, have no fear - CRACKCast is here. Today's episode will give you all of the information you will need to handle that case like the boss you are! First, we will go about speaking to the anatomic definitions you need to know to differentiate between UGI and LGI bleeds. After that, we will cover an approach to the history, physical exam, and ancillary testing strategies that you can use on your next shift. We will next review Rosen's algorithm on the initial stabilization of these patients. Last, we end the episode with those classic quick snappers you have all come to love that you can stow away in the back of your mind until it comes time to crush your next on-shift quiz.

Core Questions:

[1] Define upper gastrointestinal versus lower gastrointestinal bleeding and differentiate between the two based on anatomic location

Alright, everyone. We are strapping on our medical school hats today with this one.

Upper GI bleeding is defined as bleeding from a source within the GIT that is located above the ligament of Treitz. What is the ligament of Treitz, you ask? Well, perhaps it is more helpful to know the name that anatomists actually call it - the suspensory muscle of the duodenum. This structure connects the duodenum, jejunum, and duodenojejunal flexure to the connective tissues surrounding the superior mesenteric artery and celiac artery. It marks the transition zone



between the upper and lower GI tracts. Conversely, lower GI bleeding is defined as bleeding from a source within the GIT that is located below the ligament of Treitz.

This anatomic distinction is important as it affects the clinical signs and symptoms associated with upper and lower GI bleeds. Upper GI bleeds typically present with the patient reporting either frank red or coffee-ground emesis, upper abdominal pain, and melena. The characteristic black colour of the stool is secondary to the presence of hemoglobin that has been altered by digestive enzymes and intestinal bacteria. Alternatively, lower GI bleeds typically present with frank blood per rectum and/or bloody or maroon stools (i.e., hematochezia). The blood released from the lower tract does not experience the degree of exposure to the digestive enzymes we mentioned earlier, so it remains red (...ish).

[2] Outline an approach to the history and physical examination for the patient with complaints consistent with GIB.- Box 27.3

This figure is modelled after Box 27.3 - Key Historical Information for Patients With Gastrointestinal Bleeds (GIB's) in Rosen's 9th Edition. Please refer to the text for further details.

Key Historical Information for Patients With Gastrointestinal Bleeds

1. Events prior to or leading up to the bleeding episode
2. Severity, frequency, and quantity of the bleeding episode
3. Appearance and colour of the blood
4. Medical history, including risk factors for GIB:
 - Prior bleeding episodes and any identified source
 - Medication use that may increase the risk of GIB
 - Social factors that may increase the risk of GIB
5. Symptoms patient is experiencing with the bleeding episode in question

Key Systems to Examine for Patients With Gastrointestinal Bleeds

1. HEENT
2. CVS
3. RESP
4. ABDO
5. GU
6. NEURO
7. PVS



[3] List 5 causes of UGI bleeding and 5 causes of LGI bleeding. (Table 27.1)

This figure is modelled after Table 27.1 - Common Causes of Gastrointestinal (GI) Bleeding in Adults and Children in Rosen's 9th Edition. Please refer to the text for further details.

Common Causes of Gastrointestinal (GI) Bleeding in Adults and Children		
Cause	Adults	Children
UGI Bleeds	PUD (gastric >duodenal) Gastric Erosion Esophagogastric Varices MW Tear Esophagitis Gastric Cancer	Duodenal Ulcers Gastric Ulcers Esophagitis Gastric Erosion Esophageal Varices MW Tear
LGI Bleeds	Diverticular Disease Angiodysplasia Colitis (inflammatory, infectious, ischemic) Anorectal Sources Neoplasm UGI Bleeds	Anorectal Fissure Infectious Colitis IBD Juvenile Polyps Intussusception Meckel's Diverticulum

[4] Outline six alternative diagnoses or mimics of GI bleeding - Box 27.1

This figure is modelled after Box 27.1 - Alternative Diagnoses or Mimics of Gastrointestinal Bleeding in Rosen's 9th Edition. Please refer to the text for further details.

Alternative Diagnoses or Mimics of Gastrointestinal Bleeding
Melena
<ul style="list-style-type: none"> ● Ingestion of bismuth medications ● Ingestion of activated charcoal
Hematemesis
<ul style="list-style-type: none"> ● Nasopharyngeal bleeding (e.g., epistaxis, dental bleeding) <ul style="list-style-type: none"> ● Ingestion of red drinks or food
Hematochezia
<ul style="list-style-type: none"> ● Vaginal bleeding ● Gross hematuria ● Partially digested red foods (e.g., red beets, red grapes)



[5] List five characteristics of patients with high-risk GI bleeds. (Box 27.2)

This figure is modelled after Box 27.2 - Characteristics of Patients With High-Risk Gastrointestinal Bleeds in Rosen's 9th Edition. Please refer to the text for further details.

Characteristics of Patients With High-Risk Gastrointestinal Bleeds
Medication Use
<ul style="list-style-type: none">• ASA• NSAID's• Steroids• Anticoagulants• Chemotherapeutic Agents
Hx of PUD
Known Liver Disease or Cirrhosis
Age >60Y
Alcoholism
Current Smoker
Chronic Medical Comorbidities
<ul style="list-style-type: none">• CHF• DM• CKD• Malignancy• CAD
History of AAA Graft



[6] Describe an approach to ancillary testing in the patient with GI bleeding.

Ancillary Tests to Consider in Patients with GI Bleeding
<ul style="list-style-type: none">• FOB or Guaiac Bedside Testing<ul style="list-style-type: none">• CBC• Electrolytes• Extended Electrolytes<ul style="list-style-type: none">• BUN• Creatinine• VBG with Lactate<ul style="list-style-type: none">• INR• aPTT• EKG (for all patients >40Y, those with symptoms of ischemia, and those with CAD)<ul style="list-style-type: none">• Blood type and screen +/- crossmatch• Imaging (limited utility in most cases, can consider CTA of the abdomen depending on clinical context)<ul style="list-style-type: none">• Endoscopy

[7] List five substances that when ingested, can result in a falsely-positive stool guaiac study

This is one of Rosen’s hidden lists, so we hooked you up with a 10/10 DDL (Dillan’s Distilled List) situation. So, sit back, strap in and get ready.

Substances Causing False-Positive Stool Guaiac Results
<ul style="list-style-type: none">• Red Meat• Turnips• Horseradish• Vitamin C• Methylene Blue• Bromide Preparations

[8] Outline an approach to the management of the patient with GI bleeding - Fig 27.3

This question is modelled after Figure 27.3 - Diagnostic and Management Strategies for Gastrointestinal Bleeding.

Step One: Stable or Unstable

- If unstable:
 - Resuscitate, obtain two points of access with large-bore IV’s
 - Initiate crystalloid infusion



- Consider transfusion
- If stable, progress to Step Two

Step Two: History, Physical Examination, Ancillary Stories

- If hematemesis, coffee-ground emesis, melena, and other features on exam/testing, treat as UGI bleed
- If hematochezia and other features on exam/testing consistent with LGI bleed, treat as such

Management of Massive UGI Bleed:

- Summary of Management
 - Intubate as needed to protect the airway from aspiration of hematemesis
 - Emergent GI consult for ED endoscopy
 - IV PPI
 - If variceal bleed considered:
 - Somatostatin analogue
 - Ceftriaxone
 - Sengstaken-Blakemore Tube placement PRN
 - Massive transfusion protocol PRN

Management of Non-massive UGI Bleed

- Summary of Management
 - If young (age <60Y), no comorbidities, normal vital signs, no evidence of orthostasis, normal laboratory studies, and reliable patient with prompt outpatient follow-up, consider PPI and discharge following ED observation period
 - If risk factors present or previously stable patient becomes unstable, admit to floor versus ICU and get an inpatient GI consult for urgent inpatient endoscopy

Management of Lower GI Bleed

- Summary of Management
 - Perform anoscopy
 - If the patient has a bleeding source visualized, normal and stable vital signs, no comorbidities, no coagulopathies, and is young (<60Y), discharge from the ED after observation and outpatient follow up is arranged
 - If risk factors present or stability changes during observation period, admit to the floor versus ICU and get an inpatient GI consult for urgent inpatient colonoscopy
 - Angiography and scintigraphy can be considered by admitting team

[9] Detail the Blatchford and Clinical Rockall Risk Scores. (Tables 27.3/27.4)

This figure is modeled after Tables 27.3 and 27.4 - Blatchford Score and Clinical Rockall Score in Rosen's 9th Edition. Please refer to the text for further details.



Blatchford Score	
Admission Risk Marker	Score Component Value
BUN (mg/dL)	
>/18.2 to <22.4	2
>22.4 to <28	3
>28 to <70	4
>70	6
HgB (g/dL) for Men	
>12 to <13	1
>/10 to <12	3
< 10	6
HgB (g/dL) for Women	
>/10 to <12	1
< 10	6
SBP	
>/100 to <109	1
>90 to <99	2
<90	3
Other Markers	
HR >/100 BPM	1
Melena	1
Syncope	2
Hepatic Disease	2
Heart Failure	2



Interpretation of Blatchford Score:

Score 0 = low risk for adverse outcomes, safe for discharge home

Score >1 = high risk for adverse outcomes and need for blood transfusion, endoscopic evaluation, or surgical intervention

Clinical Rockall Risk Score				
Variable	Score 0	Score 1	Score 2	Score 3
Age	<60	60-79	>80	
Shock	No shock	HR > 100 SBP >100	SBP <100	
Comorbidity			CHF IHD Major Morbidity	Renal Failure Liver Failure Metastatic Cancer

NOTE: This is the pre-endoscopy Rockall Score; there is an expanded scoring system that incorporates endoscopic findings to predict mortality risk

Interpretation of Rockall Score:

- Score 0** = 0.2% chance of mortality
- Score 1** = 2.4% chance of mortality
- Score 2** = 5.6% chance of mortality
- Score 3** = 11% chance of mortality
- Score 4** = 24.6% chance of mortality
- Score 5** = 39.6% chance of mortality
- Score 6** = 48.9% chance of mortality
- Score 7** = 50% chance of mortality

Wisecracks:

[1] Outline the three most common causes of UGIB in pediatric and adult patients.



Answer:

See Table 27.1 in Rosen's 9th Edition for more information

Pediatric UGI Bleeds: Duodenal ulcers, gastric ulcers, esophagitis, gastric erosion, esophageal varices, MW tear

Adult UGI Bleeds: Peptic ulcers (gastric > duodenal), gastric erosion, esophagogastric varices, MW tear, esophagitis, gastric cancer

[2] Outline the three most common causes of LGIB in pediatric and adult patients.

Answer:

See Table 27.1 in Rosen's 9th Edition for more information

Pediatric LGI Bleeds: Anorectal fissure, infectious colitis, IBD, juvenile polyps, intussusception, Meckel's diverticulum

Adult LGI Bleeds: Diverticular disease, angiodysplasia, colitis (infectious, inflammatory, ischemic), anorectal sources, neoplasms, and UGI bleeding

[3] What percentage of patients presenting with hematochezia actually have an UGIB?

Answer:

Up to 14% of bleeds associated with hematochezia are actually secondary to an UGI source. These bleeds are typically quite profound and are associated with higher transfusion rates, surgical interventions, and overall mortality.

[4] What volume of blood loss is needed to produce symptoms of anemia in the patient with an acute/subacute GI bleed?

Answer:

According to Rosen's 9th Edition, blood loss more than 800 ml will usually result in the onset of weakness, SOB, angina, orthostatic presyncope, confusion, palpitations, and reports of cool extremities. These symptoms become pronounced and severe with greater than 1500 ml of blood loss.