GI Bleeding in the Hospital Setting

Gastrointestinal (GI) bleeding is a common and potentially life-threatening condition in the hospitalized patient, requiring prompt evaluation and management. This pamphlet provides students with a guide to diagnose, evaluate, and manage GI bleeding in the hospital setting, including when to consult gastroenterology, with clinical scenarios to apply the knowledge.

Clinical Presentation

• Definition:

- GI bleeding is classified as upper GI bleeding (UGIB, proximal to the ligament of Treitz) or lower GI bleeding (LGIB, distal to the ligament of Treitz).
- Severity ranges from occult (detected by fecal occult blood test) to overt (visible bleeding) to massive (hemodynamic instability).

• Symptoms:

- Upper GI Bleeding:
  - **Hematemesis:** Vomiting bright red blood (active bleeding) or coffee-ground emesis (partially digested blood).
  - **Melena:** Black, tarry stools (digested blood, typically UGIB).
  - Epigastric pain, nausea, early satiety (if PUD or gastritis).
- Lower GI Bleeding:
  - **Hematochezia:** Bright red blood per rectum (LGIB, or massive UGIB with rapid transit).
  - Abdominal pain (if ischemic colitis, IBD), tenesmus (rectal bleeding, e.g., hemorrhoids).
- General Symptoms:
  - Dizziness, syncope, fatigue (hypovolemia, anemia).
  - Chest pain, dyspnea (if severe anemia or ACS triggered by bleeding).

• Vital Signs/Exams:

o BP: Hypotension (SBP <90 mmHg), orthostatic changes (SBP drop >20 mmHg or HR increase >20 bpm on standing).

o HR: Tachycardia (HR >100 bpm, hypovolemia), relative bradycardia (if on beta-blockers).

o RR: Tachypnea (hypoxia, anemia), hypoxia (SpO2 <90%).

o Skin: Pallor (anemia), cool/clammy (shock), jaundice (liver disease).

o Abdomen: Epigastric tenderness (PUD, gastritis), rebound tenderness (perforation), masses (malignancy).

o Rectal Exam: Melena, hematochezia, hemorrhoids, masses (rectal cancer).

Causes and Differential Diagnosis

• Upper GI Bleeding (UGIB):

o Peptic Ulcer Disease (PUD): Most common (40-50% of UGIB), epigastric pain, history of NSAIDs, H. pylori, smoking, or alcohol use.

o Esophageal Varices: 10-20% of UGIB, associated with cirrhosis, portal hypertension, history of liver disease, or alcohol use; often massive bleeding.

o Gastritis/Esophagitis: NSAID use, alcohol, H. pylori, or GERD; often with epigastric pain, nausea.

o Mallory-Weiss Tear: 5-10% of UGIB, associated with vomiting (e.g., alcohol binges), typically self-limited.

o GI Malignancy: Gastric/esophageal cancer, often with weight loss, early satiety, or dysphagia.

o Dieulafoy Lesion: Rare, large submucosal artery erodes, causing massive bleeding; no ulcer, often intermittent.

o Aortoenteric Fistula: Rare, history of aortic aneurysm repair, presents with "herald bleed" followed by massive hemorrhage.

• Lower GI Bleeding (LGIB):

o Diverticular Bleeding: Most common (30-50% of LGIB), painless hematochezia, often in elderly, stops spontaneously in 75-80%.

o Angiodysplasia (AVM): 10-20% of LGIB, painless hematochezia, often in elderly or CKD patients.

o Hemorrhoids/Anorectal Disease: Bright red blood per rectum, tenesmus, history of constipation, often self-limited.

o Colonic Ischemia: 10-15% of LGIB, abdominal pain, bloody diarrhea, often in elderly with vascular disease.

o Inflammatory Bowel Disease (IBD): Crohn's or ulcerative colitis, bloody diarrhea, abdominal pain, history of IBD.

o Colorectal Cancer: Painless hematochezia, weight loss, change in bowel habits, often in patients >50.

o Infectious Colitis: Bloody diarrhea, fever, recent antibiotics (C. difficile), or travel (e.g., Shigella, E. coli).

• Other Causes:

o Small Bowel Bleeding: Obscure bleeding (5-10% of GI bleeds), often angiodysplasia, small bowel tumors, or Meckel's diverticulum.

o Massive UGIB with Rapid Transit: Can present as hematochezia, often variceal or PUD-related.

Differential Diagnosis Table

Category	Condition	Key Features	Diagnostic Clues
Upper GI	Peptic Ulcer Disease	Epigastric pain, hematemesis, melena	EGD shows ulcer, H. pylori positive.
Upper GI	Esophageal Varices	Massive bleeding, cirrhosis history	EGD shows varices, liver disease labs.
Lower GI	Diverticular Bleeding	Painless hematochezia, elderly	Colonoscopy shows diverticula.
Lower GI	Hemorrhoids	Bright red blood, tenesmus	Anoscopy, rectal exam.

Diagnosis and Labs

• Initial Assessment:

o History: Timing (acute vs. chronic), volume (hematochezia vs. melena), associated symptoms (pain, weight loss), risk factors (NSAIDs, alcohol, liver disease, anticoagulation), history of GI disease or procedures (e.g., polypectomy, aortic graft).

o Physical Exam: Assess hemodynamic stability (BP, HR), volume status (dry mucous membranes, skin turgor), abdominal tenderness (PUD, ischemic colitis), rectal exam (melena, hematochezia, masses).

• Labs:

- CBC:
  - **Hemoglobin/Hematocrit:** Anemia (Hgb <10 g/dL, acute bleed), Hgb drop >2 g/dL (significant bleed).
  - **Leukocytosis:** Infection (C. difficile, ischemic colitis), inflammation (IBD).
- Coagulation:
  - **PT/INR:** Elevated in liver disease (varices), anticoagulation (warfarin, DOACs), or coagulopathy (DIC).
  - **aPTT:** Elevated if on heparin or hemophilia.
- CMP:
  - **BUN/Cr Ratio:** >20 suggests UGIB (digested blood increases BUN).
  - **Liver Function Tests:** Elevated bilirubin, low albumin (liver disease, varices).
  - **Creatinine:** Elevated Cr (hypoperfusion, shock).
  - **Lactate:** Elevated (>2 mmol/L) in shock (hypovolemia, sepsis), ischemic colitis.
- **Type and Cross:** Prepare for transfusion (PRBCs, FFP if coagulopathy).
- **Stool Studies:** C. difficile toxin (if recent antibiotics), culture (Shigella, E. coli), fecal occult blood (if occult bleed suspected).
- **H. pylori Testing:** Stool antigen or urea breath test (if PUD suspected).

• Imaging/Diagnostic Tests:

o Esophagogastroduodenoscopy (EGD): Gold standard for UGIB; identifies PUD, varices, gastritis, malignancy; allows intervention (e.g., banding, epinephrine injection).

o Colonoscopy: Gold standard for LGIB; identifies diverticula, angiodysplasia, cancer, colitis; allows intervention (e.g., polypectomy, cautery).

o CT Angiography: For obscure or massive bleeding; identifies active bleeding, AVMs, ischemic colitis, or aortoenteric fistula.

o Tagged RBC Scan: Detects slow bleeding (0.1-0.5 mL/min) not seen on CT; useful for obscure bleeding.

o Capsule Endoscopy: Small bowel bleeding (e.g., angiodysplasia, Meckel's diverticulum) if EGD/colonoscopy negative.

o Nasogastric (NG) Lavage: Positive for blood/coffee-ground material in UGIB; negative does not rule out UGIB.

o Chest X-ray/Abdominal X-ray: Rule out perforation (free air under diaphragm) in PUD, ischemic colitis.

Diagnostic Workup Table

Test	Indication	Expected Findings	Notes
Hgb/Hct	Assess Bleeding Severity	Hgb <10 g/dL, drop >2 g/dL	Transfuse if Hgb <7 g/dL or unstable.
BUN/Cr Ratio	UGIB vs. LGIB	>20 (UGIB)	Due to digested blood absorption.
EGD	UGIB Diagnosis	Ulcer, varices, gastritis	Gold standard, allows intervention.
CT Angiography	Obscure/Massive Bleeding	Active bleeding, AVM, fistula	Use if EGD/colonoscopy inconclusive.

Treatment and Management

• General Principles:

o Stabilize: ABCs (airway, breathing, circulation), IV access (two large-bore IVs), telemetry, oxygen if SpO2 <90%.

o Resuscitate: Fluids, blood products, correct coagulopathy.

o Localize and treat: Endoscopy for diagnosis and intervention, address underlying cause.

• Initial Resuscitation:

- **Fluids:** NS or LR 1-2 L IV bolus (20-30 mL/kg), reassess (HR, BP, urine output >0.5 mL/kg/h).
- Blood Products:
  - **PRBCs:** Transfuse if Hgb <7 g/dL (or <8 g/dL in ACS, elderly); target Hgb 7-9 g/dL.
  - **FFP:** If INR >1.5 or active bleeding on anticoagulation (e.g., 4 units IV for warfarin reversal).

- **Platelets:** If <50,000/µL and active bleeding (1 unit IV, target >50,000/µL).
- Reverse Anticoagulation:
  - **Warfarin:** Vitamin K 10 mg IV slow infusion + FFP (or PCC 25-50 units/kg IV if available).
  - **DOACs:** Idarucizumab 5 g IV (dabigatran), andexanet alfa (apixaban/rivaroxaban, dosing per protocol).
  - **Heparin:** Protamine sulfate 1 mg IV per 100 units of heparin (max 50 mg).

• Upper GI Bleeding (UGIB):

- Variceal Bleeding:
  - **Octreotide:** 50 mcg IV bolus, then 50 mcg/h infusion x 3-5 days (reduces portal pressure).
  - **Antibiotics:** Ceftriaxone 1 g IV daily x 5-7 days (prophylaxis for SBP in cirrhosis).
  - **PPI:** Pantoprazole 80 mg IV bolus, then 8 mg/h infusion
  - **EGD:** Band ligation or sclerotherapy (urgent, within 12h).
- Non-Variceal UGIB:
  - **EGD:** Epinephrine injection, thermal coagulation, or clipping for active bleeding (PUD, Dieulafoy lesion).
  - **H. pylori:** Test and treat if positive (e.g., clarithromycin 500 mg PO BID + amoxicillin 1 g PO BID + PPI x 14 days).
  - **PPI:** Pantoprazole 80 mg IV bolus, then 8 mg/h infusion (reduces rebleeding in PUD, gastritis).
- **Supportive:** Stop NSAIDs, alcohol; manage liver disease (e.g., TIPS for refractory varices).

• Lower GI Bleeding (LGIB):

- **Colonoscopy:** Cautery, epinephrine injection, or polypectomy for active bleeding (diverticula, angiodysplasia).
  - **Hemorrhoids:** Sitz baths, fiber, topical hydrocortisone (if mild); anoscopy, banding, or surgery if severe.
  - **Ischemic Colitis/IBD:** IV fluids, bowel rest, antibiotics (e.g., metronidazole 500 mg IV q8h for ischemic colitis), steroids (prednisone 40 mg PO daily for IBD flare).
  - **Infectious Colitis:** Antibiotics (e.g., vancomycin 125 mg PO QID for C. difficile), supportive care.

• Obscure/Massive Bleeding:

o Interventional Radiology: Angiography with embolization (if active bleeding on CT, EGD/colonoscopy negative).

o Surgery: Last resort (e.g., colectomy for uncontrolled diverticular bleeding, aortoenteric fistula repair).

• Monitoring:

o Telemetry: For arrhythmias (hypovolemia, anemia-induced ischemia).

o Hgb: Q4-6h until stable (ensure no ongoing bleed).

o Lactate: Q2-4h if shock (target clearance).

o Endoscopy Timing: UGIB (within 12-24h), LGIB (within 24-48h if stable).

When to Consult GI

• Indications:

- **Active/Ongoing Bleeding:** Hematemesis, melena, hematochezia with hemodynamic instability (SBP <90 mmHg, HR >100 bpm), Hgb drop >2 g/dL.
- High-Risk Features:
  - **UGIB:** Variceal bleeding (cirrhosis), suspected PUD with high-risk stigmata (active bleeding, visible vessel on EGD).
  - **LGIB:** Diverticular bleeding (persistent, massive), angiodysplasia (recurrent), suspected malignancy.
  - **Obscure Bleeding:** Negative EGD/colonoscopy, persistent anemia, or occult blood loss (capsule endoscopy, push enteroscopy).
- **Complications:** Suspected perforation (free air on X-ray), aortoenteric fistula (history of aortic graft), ischemic colitis (severe pain, bloody diarrhea).
- **Refractory Bleeding:** Ongoing bleeding despite initial resuscitation (e.g., >4 units PRBCs in 24h).

• Timing:

o Emergent: Massive bleeding (hemodynamic instability, >4 units PRBCs), variceal bleeding, aortoenteric fistula (within 1-2h).

o Urgent: Active bleeding with high-risk features, obscure bleeding (within 12-24h).

o Routine: Stable LGIB (e.g., hemorrhoids, mild diverticular bleed) for elective colonoscopy.

Key Pearls

• **Resuscitate First:** Fluids (NS/LR 20-30 mL/kg), PRBCs (Hgb <7 g/dL), reverse anticoagulation before endoscopy.

• **UGIB vs. LGIB:** Melena = UGIB, hematochezia = LGIB (unless massive UGIB); BUN/Cr >20 suggests UGIB.

• **Endoscopy:** EGD for UGIB (within 12-24h), colonoscopy for LGIB (within 24-48h if stable); urgent for massive bleeding.

• **Variceal Bleeding:** Octreotide, antibiotics, and EGD (banding) within 12h; high mortality (20-30%) if untreated.

• **High-Risk PUD:** Active bleeding, visible vessel on EGD requires intervention (epinephrine, cautery); PPI infusion reduces rebleeding.

• **GI Consult:** Emergent for massive bleeding, variceal bleed; urgent for high-risk features, obscure bleeding.

• **Massive Bleeding:** If EGD/colonoscopy negative, consider CT angiography, tagged RBC scan, or surgery.

References

• UpToDate: “Diagnosis and Management of Gastrointestinal Bleeding in the Hospitalized Patient” (2025).

• NEJM: “Upper Gastrointestinal Bleeding: A Review” (2024).

• Am J Gastroenterol: “Lower Gastrointestinal Bleeding: Diagnosis and Treatment” (2023).

• Gastrointest Endosc: “Endoscopic Management of Acute GI Bleeding” (2024).

Clinical Scenarios

Case 1: A 65-Year-Old Male with Melena

- **Presentation:** A 65-year-old male with HTN, on aspirin and ibuprofen, presents with melena and dizziness for 2 days. Exam: BP 90/60 mmHg, HR 110 bpm, pale conjunctiva, epigastric tenderness.
- **Labs:** Hgb 6.5 g/dL, BUN/Cr ratio 25, INR 1.2, Cr 1.5 mg/dL, lactate 3.0 mmol/L.
- **Diagnosis:** Upper GI Bleeding (PUD, NSAID-Induced) → Melena, hypotension, anemia, epigastric tenderness.
- **Management:** NS 2 L IV bolus, PRBCs 2 units IV (target Hgb >7 g/dL). Pantoprazole 80 mg IV bolus, then 8 mg/h infusion. Stop aspirin/ibuprofen. Urgent GI consult for EGD (within 12h, shows bleeding duodenal ulcer, epinephrine injection performed). H. pylori stool antigen (treat if positive). Monitor telemetry, Hgb q4-6h, and lactate. ICU admission for shock.

Case 2: A 50-Year-Old Female with Hematochezia

- **Presentation:** A 50-year-old female with cirrhosis and alcohol use presents with massive hematochezia and syncope. Exam: BP 80/50 mmHg, HR 120 bpm, jaundice, spider angiomata, no abdominal tenderness.
- **Labs:** Hgb 7.0 g/dL, INR 2.0, albumin 2.5 g/dL, bilirubin 3.5 mg/dL, lactate 4.0 mmol/L.
- **Diagnosis:** Upper GI Bleeding (Variceal, Rapid Transit) → Hematochezia, cirrhosis, hemodynamic instability, liver disease labs.
- **Management:** NS 2 L IV bolus, PRBCs 2 units IV, FFP 4 units IV (INR 2.0). Octreotide 50 mcg IV bolus, then 50 mcg/h infusion. Ceftriaxone 1 g IV daily (SBP prophylaxis). Emergent GI consult for EGD (within 12h, shows esophageal varices, banding performed). Monitor telemetry, Hgb, and lactate. ICU admission for massive bleeding.

Case 3: A 75-Year-Old Male with Bloody Diarrhea

- **Presentation:** A 75-year-old male with HTN, CKD presents with bloody diarrhea and abdominal pain for 1 day. Exam: BP 110/70 mmHg, HR 90 bpm, LLQ tenderness, no rebound.
- **Labs:** Hgb 9.0 g/dL, Cr 2.0 mg/dL, lactate 1.5 mmol/L, C. difficile toxin negative.
- **CT Abdomen:** Thickened sigmoid colon, no active bleeding.
- **Diagnosis:** Lower GI Bleeding (Ischemic Colitis) → Bloody diarrhea, LLQ pain, elderly, CT findings.

- **Management:** NS 1 L IV bolus, bowel rest, metronidazole 500 mg IV q8h (ischemic colitis). PRBCs if Hgb <8 g/dL (CKD). Routine GI consult for colonoscopy (within 24-48h, confirms ischemic colitis). Monitor Hgb, lactate, and abdominal exam (rule out perforation). Avoid NSAIDs, monitor for recurrence.

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