HemocCult Classics: The Hospitalist's Management of Acute GI Bleeding

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Disclosures

- No relevant commercial relationships to disclose.

Learning Objectives

- At the conclusion of this session, participants should be able to:
  - Develop differential diagnosis for a patient presenting with hematemesis, hematochezia or melena
  - Discuss initial stabilization and resuscitative measures for a patient presenting with a GI bleed
  - Recognize indications for different endoscopic and radiologic diagnostic studies for localizing and treating source of GI bleeding
  - Discuss pharmacologic management of acute GI bleeds as well as secondary prophylaxis

Case #1: Mr. O'Hara

67 y/o male presents with 3-day history of melena and several weeks of intermittent dull epigastric pain and nausea.

- PMH/PSH: HTN, HLD, OA
- Medications: lisinopril, simvastatin, meloxicam, baby ASA
- Vitals: T 36.8C, HR 102, BP 97/62, RR 22, SpO2 99%
- Exam: Pale, no jaundice, tachycardic, mild epigastric tenderness without guarding, black stool in rectal vault, guaiac (+)
- Labs: Hgb 8.3, HCT 24.8, WBC 8.0, PLT 299, INR 1.0, BUN 39, Cr 1.1, remainder of CMP WNL, lipase 29

Which of the following is recommended as part of this patient's pre-endoscopic management?

A. Transfuse 1 unit PRBCs
B. Octreotide 50 mcg bolus + 50 mcg/hr drip
C. Erythromycin 250 mg IV
D. Nasogastric lavage

Upper Gastrointestinal Bleeding (UGIB)

- Bleeding from the esophagus, stomach or duodenum
  - Proximal to the Ligament of Treitz
- Typical presentation with hematemesis (bloody or coffee ground) and/or melena
  - Hematochezia in major/brisk bleeds, usually associated with hemodynamic instability
- Accounts for over half a million hospital admissions in the US annually

Initial Evaluation and Resuscitation in UGIB

- ABCs, Close monitoring – Be aware of potential for rapid decompensation
  - Tracheal intubation for airway protection if severe hematemesis or AMS
- Focused H&P
- Labs including CBC, serial H&H, BUN/Cr, coagulation studies, type & screen
- Adequate venous access
- Fluid resuscitation, transfusion
  - Lack of clear guidelines regarding colloid vs crystalloids and rate of resuscitation
- Gastroenterology consult
- Nasogastric lavage not routinely recommended

Transfusion

- Guidelines recommend restrictive PRBC transfusion policy
  - Transfuse for hemoglobin < 7 g/dL
  - Higher for hypotensive patients due to expected equilibration after volume repletion with crystalloids
  - Threshold of hemoglobin < 8 g/dL is reasonable in patients with pre-existing cardiovascular disease

Pre-Endoscopic Medical Therapy

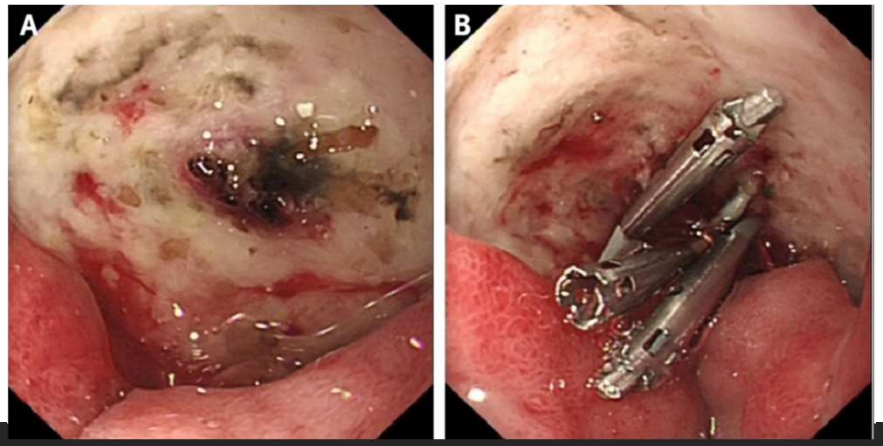
- Proton pump inhibitors
  - Pantoprazole or Esomeprazole 80 mg IV followed by 8mg/hr infusion, or 40 mg IV Q12 hours
  - Should be considered to reduce higher risk stigmata of hemorrhage requiring endoscopic therapy
  - Recommended if endoscopy will be delayed
  - Discontinue after endoscopy unless ulcer or erosion identified
- Prokinetics
  - Erythromycin 250 mg IV over 20-30 min; 30-90 minutes pre-endoscopy
  - May improve visualization at endoscopy → increased diagnostic yield
- Vasoactive medications if variceal bleed suspected

Management of Coagulopathy and Antithrombotic Medications in UGIB

- Anticoagulation status should not delay endoscopic intervention!
- Coagulopathy due to comorbid condition
  - Platelet transfusion thresholds not clear in guidelines – consider for PLT <50 $x10^9/L$
  - Correction of INR with FFP for coagulopathy of liver disease not recommended
- Antiplatelet agents
  - Reinstate once hemostasis achieved – may require multidisciplinary decision regarding timing of resumption
  - Consider uninterrupted continuation of aspirin if indication is secondary prevention
- Anticoagulants
  - Consider reversal – Prothrombin Complex Concentrates (PCC), Fresh frozen plasma (FFP), Vitamin K
  - Risk/Benefit analysis for timing of resumption – reason for anticoagulation, etiology of bleed
- Tranexamic acid not recommended

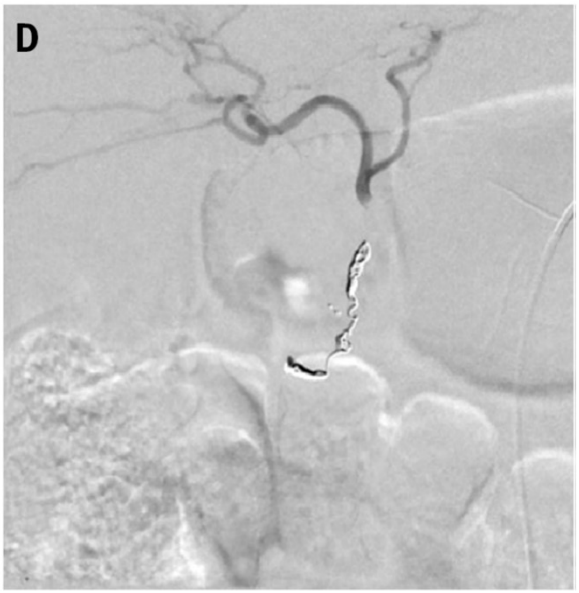
Upper Endoscopy

- Gold standard for diagnosis and treatment of upper GI bleed.
- Recommended within 24 hours of presentation, after hemodynamic resuscitation
- Endoscopic treatment modalities – choice depends on lesion characteristics, operator experience, availability
  - Hemostatic clip
  - Sclerosant injection (absolute ethanol)
  - Thermal coagulation
    - Argon Plasma coagulation (APC) – non-contact
  - Epinephrine as combination therapy
  - Hemospray powder

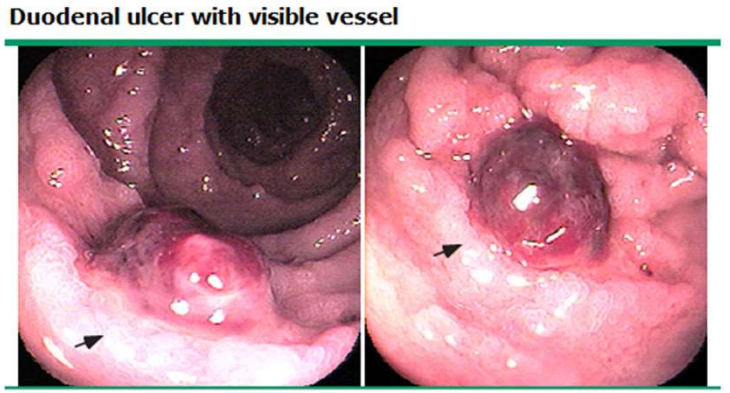


Non-Endoscopic Diagnostics and Interventions for UGIB

- CT Angiography to detect active bleeding
- Transcatheter arterial embolization
  - Generally performed by IR after failure of endoscopic therapy & medical management
  - Access via common femoral artery, identification of active bleeding by contrast extravasation and selective embolization
  - Clips may be placed during EGD to help with localization
- Surgery
  - Rarely required, usually reserved for perforation or malignancy



Differential for UGIB: Peptic Ulcer Disease

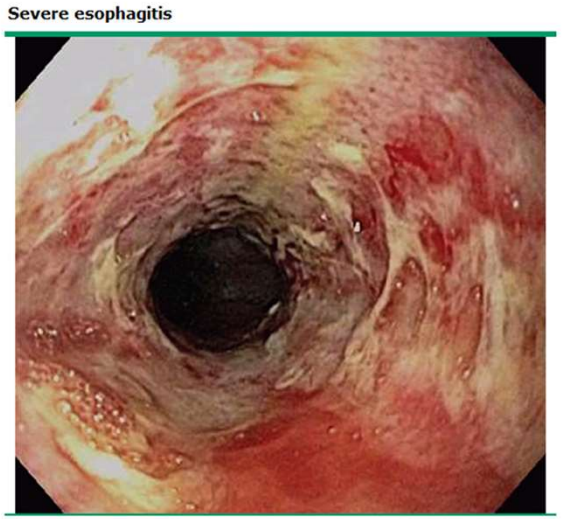


- Peptic Ulcer Disease is the most common cause of UGIB
- Findings on endoscopy graded based on Forrest classification: guides endoscopic therapy & intensity of post-endoscopic PPI
- H. Pylori testing should be performed & treatment initiated if (+)
- NSAIDs should be discontinued

Stigmata of hemorrhage	Forrest Classification
Active spurting bleeding	IA
Active oozing bleeding	IB
Non-bleeding visible vessel	IIA
Adherent clot	IIB
Flat pigmented spot	IIC
Clean base	III

Differential for UGIB: Inflammatory/Erosive Processes

- Esophagitis
  - Risk factors: GERD, medications (NSAIDs, PO bisphosphonates, tetracyclines), infections (*Candida*, HSV)
  - Rarely requires endoscopic treatment
- Gastritis/Duodenitis
  - Risk factors: similar to PUD, alcohol consumption, bariatric surgery, certain autoimmune diseases
  - Treatment with acid suppression, occasionally endoscopic therapy with APC
- Cameron Lesions
  - Acute bleeding treated endoscopically
  - Consider surgical repair of hiatal hernia if recurrent bleeding

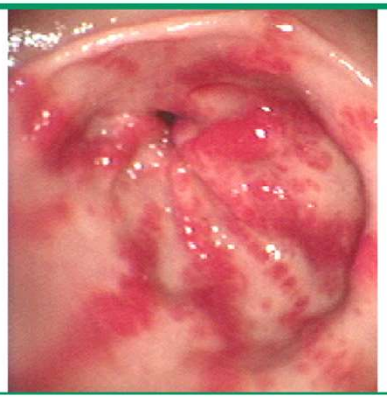


Endoscopic view of severe reflux esophagitis in a patient who presented with upper gastrointestinal bleeding.

Differential for UGIB: Vascular Lesions

- Angiodysplasia
  - More common in >60 y/o; Increased incidence in ESRD, von Willebrand disease, aortic sten
  - Can be found throughout the GI tract
  - Bleeding tends to be recurrent/chronic, can usually be treated endoscopically
- Gastric antral vascular ectasia (GAVE)
  - Can be isolated or associated with portal hypertension or systemic sclerosis
  - Endoscopic coagulation may be used
- Dieulafoy's lesion
  - Bleeding episodes often self-limited, but can be recurrent and profuse
  - Endoscopy best performed during acute bleeding, variety of hemostatic techniques used

Gastric antral vascular ectasia (watermelon stomach)



Endoscopy in a patient with gastric antral vascular ectasia (GAVE) shows the antrum and the pylorus (center) with erythematous radial stripes resembling the rind of a watermelon. The patient presented with iron deficiency anemia.
Courtesy of Laurence Bailen, MD.

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Differential for Upper GI Bleed: Neoplasms

- Benign or malignant
  - Esophageal
  - Gastric
- Irregular ulcer margins may suggest malignancy
- Bleeding from diffuse mucosal ulceration or from erosion into vessel
- Severe bleeding indicates poor prognosis
- Endoscopic treatments including standard hemostatic techniques, Hemospray powder may be effective

Differential for Upper GI Bleed: Traumatic/Iatrogenic Causes

- Mallory-Weiss syndrome
  - Usually self-limited but may see massive hemorrhage
  - Endoscopy with various hemostatic techniques used
- Foreign Body
- Post-surgical, Post-polypectomy, Post-ERCP
- Aortoenteric Fistula
  - Rare, usually iatrogenic, most common in duodenum
  - Presents with “herald bleed” followed by massive bleeding
  - CTA for diagnosis, emergent surgical repair

Mr. O'Hara

- Mr. A received IV fluid resuscitation with improvement in HR & BP
- Hemoglobin nadired at 7.5, did not require transfusion
- ASA held since indication was primary prophylaxis
- Started on IV PPI, received erythromycin, EGD that afternoon showed ulcer with non-bleeding visible vessel in the gastric fundus treated with hemostatic clip
- Continued on IV PPI x 72 hours, d/c home with PO PPI BID
- Instructed to avoid NSAIDs

American College of Gastroenterology Clinical Guideline 2021

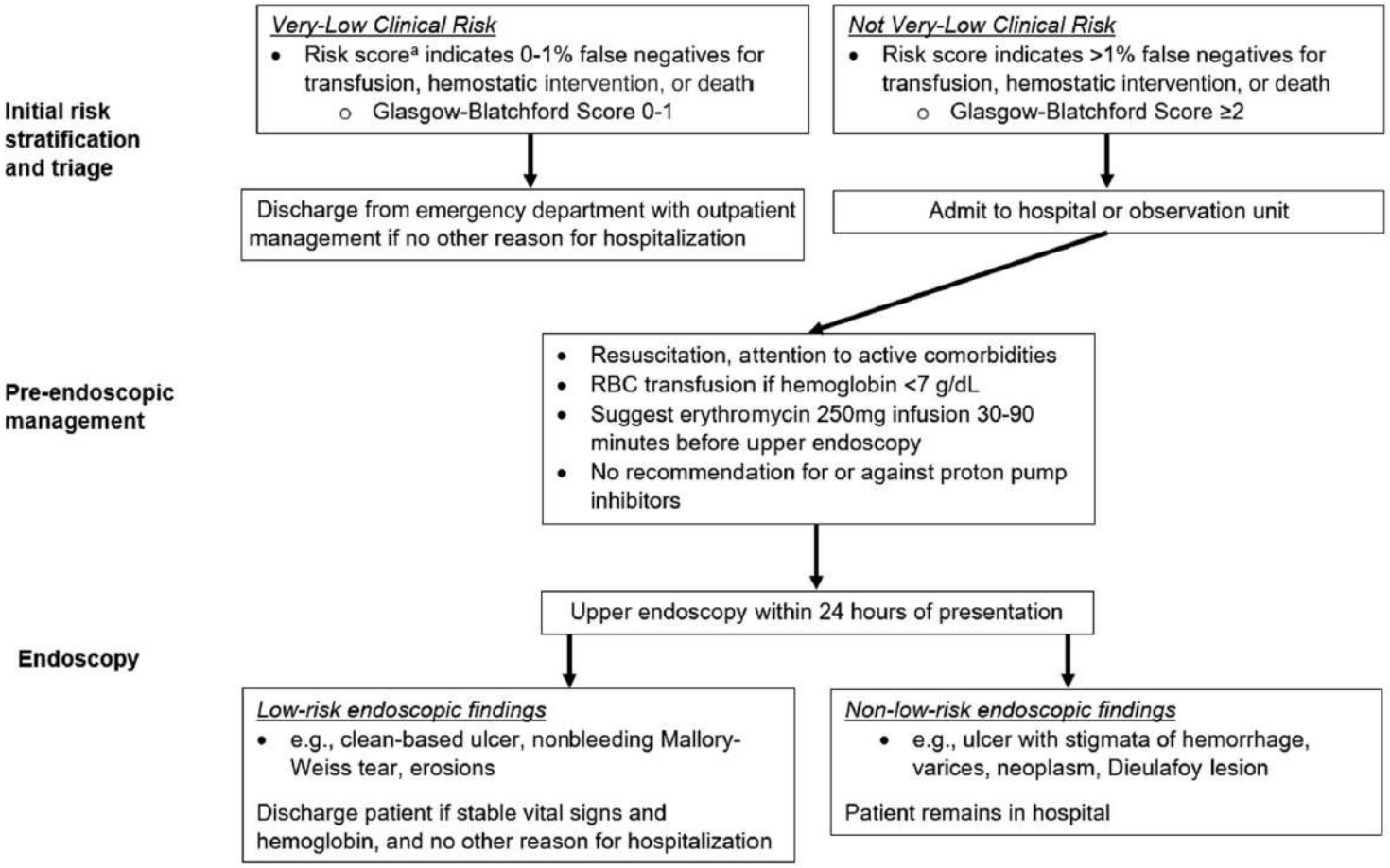


Figure 2. Initial management of patients presenting with overt upper gastrointestinal bleeding. [a]Future risk assessment tools may be used if score discriminates risk of transfusion, hemostatic intervention or death with 99–100% sensitivity (0%–1% false negatives). RBC, red blood cell.

Case #2:
Ms. Thomas

53 y/o female presents with 2 episodes of coffee-ground emesis followed by 1 episode of bright red hematemesis after arrival to the ED

- PMH/PSH: T2DM, Alcohol use disorder, Cirrhosis, grade 1 varices on EGD 2 years ago, has not followed up since
- Medications: Metformin BID, Can't remember the rest, hasn't filled prescriptions recently
- Vitals: T 37.1 C, HR 115, BP 91/58, RR 27, SpO2 95%
- Exam: Mildly jaundiced, tachycardic, distended abdomen with fluid wave, slightly tremulous, no asterixis
- Labs: Hgb 7.1, HCT 21.8, WBC 11.4, PLT 94, INR 1.7, BUN 41, Cr 0.8, Na 131, K 3.2, CO2 18, Tbili 3.1, AST 311, ALT 210, lipase 137

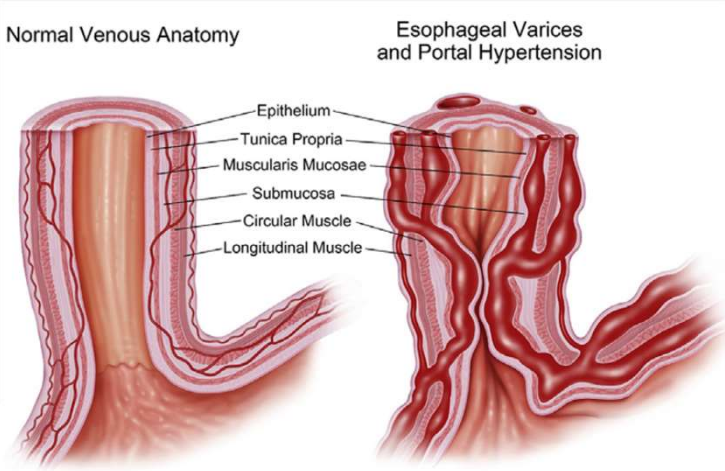
Which medication is this patient missing that is indicated for primary prophylaxis of hemorrhage in her case?

A. Pantoprazole
B. Metoprolol
C. Spironolactone
D. Nadolol

Pre-Endoscopic Management of Suspected Variceal UGIB

- Resuscitative measures including IV access, IVF, transfusion, airway protection, correction of coagulopathy as in any UGIB
  - Avoid volume overload
- Antibiotic prophylaxis
  - Ceftriaxone 1g IV daily x 7 days, can transition to PO quinolone if discharged before 7 days
  - Patients with cirrhosis & bleed should continue antibiotics for up to 7 days regardless of bleeding source
- Vasoactive medications – Octreotide 50 mcg bolus followed by 50 mcg/hr x 2-5 days
  - Splanchnic vasoconstriction → decrease portal pressure
- Hepatic encephalopathy management if present concurrently
- Prokinetics, EGD within 12 hours of presentation for suspected acute variceal hemorrhage

Differentials for UGIB in Patients with Cirrhosis



- Esophageal Varices
  - EGD gold standard for diagnosis & grading
  - Non-selective beta blockers & endoscopic band ligation for bleeding prevention
  - Active bleeding: Band ligation treatment of choice, possible sclerotherapy; Stents for tamponade of uncontrolled bleeding
  - Surveillance endoscopy 1-2 weeks after EV hemorrhage
  - TIPS for recurrent bleeding
- Gastric Varices
  - Less prevalent & bleed less often than esophageal, but often more severe & less responsive to therapy
  - Endoscopic band ligation, consider early TIPS, may require surgery
- Portal Hypertensive Gastropathy
  - Often diagnosed incidentally on endoscopy; bleeding typically chronic
  - Limited effective endoscopic options – APC or Hemospray
  - Nonselective beta blocker, Consider TIPS

Ms. Thomas

- Received hemodynamic resuscitation with IVF, required 2 units PRBCs
- Started on Ceftriaxone and Octreotide drip
- Urgent endoscopy showed 1 large esophageal varix with stigmata of recent bleeding, 2 other medium-sized nonbleeding varices – band ligation performed
- US showed mild ascites, not enough fluid for paracentesis
- Continued on IV antibiotics & octreotide drip x3 days,
  Discharged on ciprofloxacin to complete 1 week,
  New beta blocker prescription
- Social work provided resources for IOP
- Follow up scheduled with Hepatology in 1 week

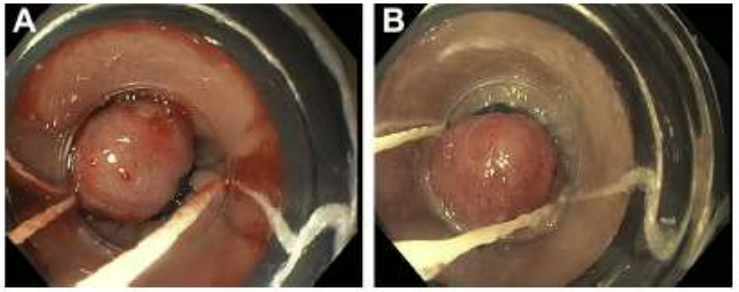


Fig. 7. Band ligation of a distal EV. (*A*) Acutely. (*B*) Follow-up band ligation.

Case #3: Mr. Myers

73 y/o male presents with 4 episodes of red/maroon hematochezia this week, similar episodes last month that resolved after a couple days, no pain

- PMH/PSH: Atrial fibrillation, HTN, T2DM, diastolic heart failure, CKD 3 GERD, s/p segmental resection for diverticulitis 20 years ago
- Medications: apixaban, furosemide, metoprolol, insulin, p.r.n. famotidine
- Vitals: T 36.5 C, HR 82, BP 110/84, RR 18, SpO2 98%
- Exam: No acute distress, heart irregularly irregular, no abdominal tenderness, bright red blood on rectal exam
- Labs: Hgb 9.8, HCT 32.1, WBC 7.1, PLT 180, INR 1.4, BUN 28, Cr 1.8, remainder of CMP WNL

What is an appropriate next step in management?

A. Administer prothrombin complex concentrate (PCC)
B. Nasogastric lavage to rule out brisk upper GI bleed
C. Start antibiotics
D. Order bowel prep to start tonight

Lower Gastrointestinal Bleeding (LGIB)

- Bleeding from the colon or rectum
- Accounts for approximately 20% of GI bleed cases
- Typical presentation with hematochezia
  - Rarely, right-sided colonic bleeding can present with melena
- Most stop spontaneously and have favorable outcomes

Initial Stabilization and Resuscitation

- Focused H&P and lab evaluation
- Pre-colonoscopy medical management
  - Hemodynamic resuscitation, transfusion and management of coagulopathy/antithrombotic medications as in upper GI bleeds
- Gastroenterology consult
- Exclusion of massive UGIB with EGD if hematochezia with hemodynamic instability
  - Consider nasogastric lavage if moderate suspicion for upper GI source

Colonoscopy and Flexible Sigmoidoscopy

- Colonoscopy should be initial diagnostic procedure for most patients with LGIB
  - Within 24 hours for patients with high-risk clinical features, evidence of ongoing bleeding
  - Examine entirety of colon, may intubate terminal ileum to rule out proximal blood suggestive of small bowel source
  - Bowel preparation – 4-6L PEG-based solution administered over 3-4 hours until clear rectal output
  - Endoscopic hemostasis if high-risk stigmata of bleeding
    - Options include clips, APC, thermal endotherapy +/- epinephrine injection
- Flexible Sigmoidoscopy
  - Examines distal 60 cm of colon, does not require full prep
  - Occasionally used as first investigation in patients with minimal bright red blood per rectum

Non-Endoscopic Diagnostics and Interventions for LGIB

- CT Angiography
  - Highly accurate at localizing site if active bleeding
  - Reasonable screening test before angiography or emergent surgery
- Tagged RBC scintigraphy
  - More sensitive for bleeding than CTA but less expedient & less accurate at localizing site
  - Can perform repeated scans after initial injection of tagged cells
- Angiography for selective embolization
  - Requires bleeding rate of 0.5-1.0 mL/min for site to be visualized
  - Typically reserved for cases when endoscopic treatment not feasible
- Surgical consultation for patients with high-risk clinical features and ongoing brisk bleeding

Differential for Lower GI Bleed: Diverticular

- Most common cause of LGIB
  - Prevalence increases with age
  - Most frequently located in descending and sigmoid colon, but ascending colon diverticula have higher tendency to bleed
  - Self-limited in 70-80% of cases, may be massive and life-threatening
  - Usually painless
- Endoscopic treatment for identified bleeding source generally effective with low risk of rebleeding

Differential for Lower GI Bleed: Vascular Lesions

- Angiodysplasia/Angiectasias
  - Common in right colon, prevalence increases with age
  - Can occur secondary to radiation proctitis
  - Usually present with occult bleeding
    - Usually episodic and self limited if overt
    - Venous in origin so not likely to be massive
  - Thermal endoscopic therapies (usually APC) effective, but rebleeding may occur

Endoscopic image of colonic angiodysplasia

Angiodysplasia appears endoscopically as peripherally expanding dilated capillaries with a central origin measuring between 0.1 to 1.0 cm in diameter.

Courtesy of Rome Jutabha, MD.

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Differential for Lower GI Bleed: Inflammatory

- Inflammatory Bowel Disease
  - Hematochezia more common in UC than Crohn's
  - Flexible sigmoidoscopy may be indicated in active UC to assess severity & exclude infection but full colonoscopy avoided due to risk of perforation
- Infectious Colitis
  - Can generally be distinguished from other sources of bleeding by history
- Ischemic Colitis
  - More common in older adults, tends to be continuous and left-sided
  - Mucosal friability, often clear demarcation between involved and normal mucosa
  - Bleeding generally self limited

Differential for Lower GI Bleed: Malignancy

- Colorectal Cancer
  - Responsible for approximately 10% of cases of rectal bleeding in patients >50 y/o
  - Bleeding typically low grade, recurrent, often occult
  - Endoscopic therapy limited due to friability of lesions
    - Hemospray sometimes effective

Differential for Lower GI Bleed: Anorectal Disorders

- Hemorrhoids
  - Painless hematochezia from rupture of internal hemorrhoids
  - Significant bleeding uncommon
- Anal Fissures
- Rectal Varices
  - Prevalence varies between 40-55% in cirrhotic patients
  - Clinically severe bleeding uncommon
  - Endoscopic band ligation recommended
- Dieulafoy's lesion

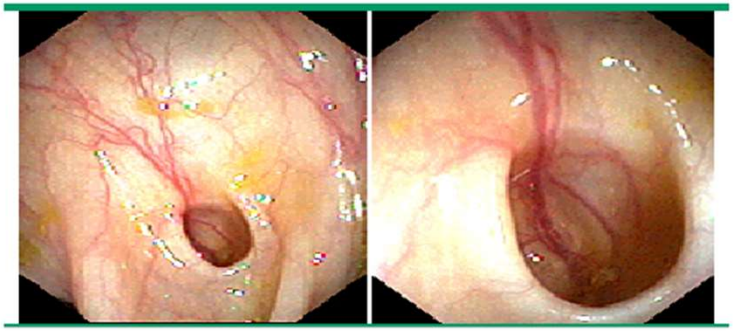
Differential for Lower GI Bleed: Iatrogenic

- Post-surgical
- Post-polypectomy
  - Often self-limited – if no evidence of ongoing bleeding, generally safe to defer repeat colonoscopy and monitor
  - Can usually be managed with endoscopic therapy (clips or thermal hemostasis)
- Radiation Proctitis
  - Sucralfate enemas can be helpful
  - Endoscopic therapy with APC for severe symptoms not responsive to conservative management

Mr. Myers

- Apixaban and diuretic held
- Serial H&H remained stable
- Completed bowel prep, colonoscopy revealed diverticulum in the ascending colon with visible vessel, treated with thermal coagulation + epinephrine injection
- Discharged that afternoon, home medications resumed

Blood vessel within a colonic diverticulum



Endoscopy showing a blood vessel within a diverticulum. The blood vessel is separated from the bowel lumen only by mucosa. Over time, the vessel wall is exposed to injury along its luminal aspect, possibly leading to segmental weakness which predisposes to rupture into the lumen.

Courtesy of James B McGee, MD.

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American College of Gastroenterology Clinical Guideline 2016

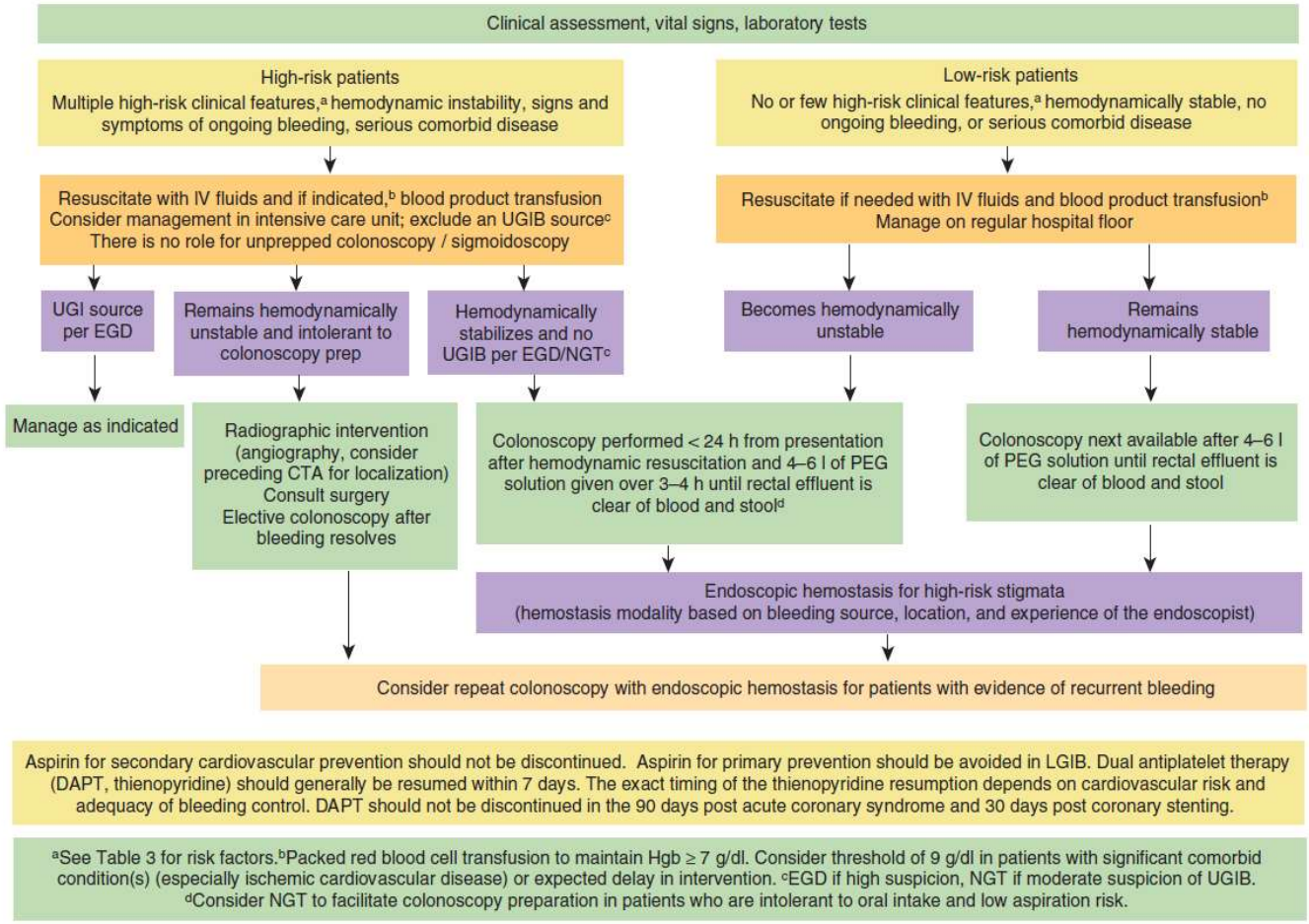


Figure 1. Algorithm for the management of patients presenting with acute LGIB stratified by bleeding severity. CTA, computed tomographic angiography; DAPT, dual antiplatelet therapy; EGD, esophagogastroduodenoscopy; LGIB, lower gastrointestinal bleeding; NGT, nasogastric tube; PEG, polyethylene glycol; UGIB, upper gastrointestinal bleeding.

Case #4: Mrs. Hall

68 y/o female presents with dyspnea on exertion and near-syncope, intermittent melena, had a negative EGD and colonoscopy last month

- PMH/PSH: HTN, moderate aortic stenosis, CAD without intervention, iron deficiency anemia, CKD 4
- Medications: amlodipine, ezetimibe, iron supplements (ASA on hold recently)
- Vitals: T 36.7 C, HR 91, BP 115/82, RR 18, SpO2 98%
- Exam: Pale, no acute distress, systolic murmur, no abdominal tenderness, dark stool guaiac positive stool on rectal exam
- Labs: Hgb 7.1, HCT 23.1, WBC 4.1, PLT 180, INR 1.0, BUN 31, Cr 2.0, Tbili 0.3, remainder of CMP WNL

What is the recommended next step in evaluation for suspected small bowel bleeding?

A. Video Capsule Endoscopy
B. Second look EGD
C. CT Angiogram
D. Tagged RBC Scintigraphy

Suspected Small Bowel Bleeding

- Uncommon, 5-10% of patients presenting with GI bleed
- Obscure GI bleed
  - Terminology previously used for bleed with no source identified on upper and lower endoscopic evaluation, now proposed to only be used after thorough examination of small bowel as well
  - “Suspected small bowel bleeding” used instead
- Overt (hematemesis, hematochezia or melena) versus Occult (positive fecal occult blood test +/- iron deficiency anemia)

Small Bowel Diagnostics

- Repeat endoscopy or colonoscopy
  - Second look examinations should be for recurrent overt bleeding, or if initial exam incomplete
  - Can include push enteroscopy on EGD or intubation of terminal ileum on colonoscopy
- Video capsule endoscopy (VCE)
  - First-line procedure for small bowel evaluation
  - Lack of therapeutic capabilities, but can direct interventions
- Deep enteroscopy (double-balloon or single-balloon enteroscopy, spiral enteroscopy)
  - Availability and endoscopist experience varies
  - Allow for both evaluation and therapeutic intervention
- Intraoperative Enteroscopy – evaluation of small bowel at laparotomy
  - Reserved for recurrent severe bleeds with negative comprehensive evaluation, or when deep enteroscopy not feasible

Small Bowel Diagnostics

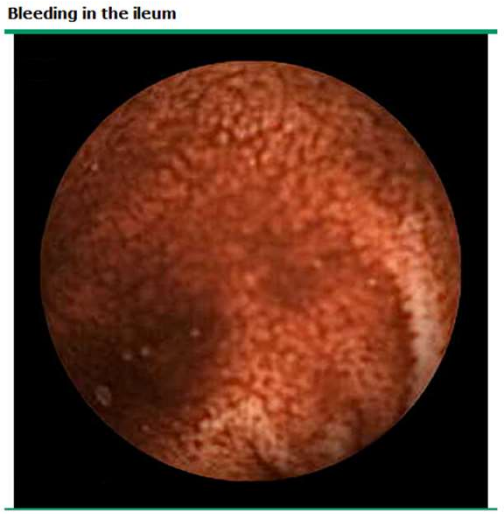
- Radiographic imaging
  - CT enterography
    - Higher sensitivity for detection of small bowel masses including mural-based masses
    - Consider before VCE if established IBD diagnosis, prior radiation, small bowel surgery or suspected stenosis
  - CT angiography
    - May be used for overt bleeding, can detect bleeding rates as slow as 0.3 mL/min
  - MR enterography
    - Consider if contraindication to CT or to avoid radiation exposure
  - Radionuclide scanning
    - Can detect lower rates of bleeding, can perform delayed imaging after injection, but less accurate localization
    - Meckel's scan – specifically for detection of Meckel's diverticulum, used in young patients
- Angiography - Not usually helpful unless significant active bleeding (requires rate of 0.5-1.0 mL/min)

Differential for Small Bowel Bleeding

- Prevalence of different causes is age dependent
- Vascular Lesions (angiectasias)
  - Most common cause of small bowel bleeding
  - Risk factors include advanced age, chronic renal failure, aortic stenosis, hereditary disorders
  - Endoscopic therapy
- Inflammatory bowel disease
- Meckel's diverticulum – most common congenital abnormality of GI tract
  - Meckel's scan and/or endoscopic evaluation, refer to surgery for consideration of resection
- Erosive Lesions (Dieulafoy, NSAID ulcers)
- Neoplasm – GIST, lymphoma, adenocarcinoma, carcinoid
- Small bowel varices or portal hypertensive enteropathy

Mrs. Hall

- Underwent VCE with findings of angiodysplasia in the ileum with evidence of bleeding
- Subsequent double-balloon enteroscopy with thermal coagulation
- Received 1 unit PRBCs given Hgb <8 with symptoms and h/o CAD
- ASA resumed
- Discharged home, follow up with GI and Cardiology to evaluate for need for aortic stenosis



Take-Home Points

- Initial ABCs and hemodynamic resuscitation for any GI bleed includes adequate venous access and conservative transfusion threshold unless massive active bleeding
- Management of anticoagulation and antiplatelets on case-by-case basis, should resume once hemostasis achieved as soon as safe
- Medical management may include PPI for UGIB, octreotide and antibiotics in setting of cirrhosis
- Endoscopic management generally preferred, variety of therapy techniques available
- Multiple options for radiologic evaluation
- Consider angiography with selective embolization for brisk active bleeds
- Obscure GI bleeding terminology only used after comprehensive small bowel evaluation

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Questions?

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