Approach to acute upper gastrointestinal bleeding in adults



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KHOY- 1404/3/9

INTRODUCTION



- Gastrointestinal (GI) bleeding is the most common GI diagnosis necessitating hospitalization in the United States, accounting for over half a million admissions annually .
- Upper GI bleeding (UGIB) refers to bleeding originating from sites in the esophagus, stomach, or duodenum.
- Nearly 80% of patients visiting emergency departments for UGIB are admitted to the hospital with that principal diagnosis .

Gastrointestinal Bleeding

PERSPECTIVE

Epidemiology

- relatively common problem
- requires early consultation and hospital admission.
- Mortality rate for GI bleeding is approximately 10%.
- Diagnostic modalities have improved much more than therapeutic techniques.

GI bleeding

Symptoms and signs: Abdominal pain, hematemesis or "coffee ground" emesis, passing melena/tarry stool (stool may be frankly bloody or maroon with massive or brisk upper GI bleeding

- is often easy to identify

.....when there is clear evidence of vomiting blood or passing blood in the stool.

- may be subtle,

.....with signs and symptoms of hypovolemia, such as dizziness, weakness, or syncope.

History

In 50%

- Patients typically complain of vomiting red blood or coffee grounds–like material, or passing black or bloody stool.
- Hematemesis (vomiting blood) occurs with bleeding of the esophagus, stomach, or proximal small bowel.
- Hematemesis may be bright red or darker (i.e., coffee grounds–like) as a result of the conversion of hemoglobin to hematin or other pigments by hydrochloric acid in the stomach

History

- Melena, or black tarry stool, will result from the presence of approximately 60 to 150mL of blood in the GI tract for a prolonged period.
- ***Melena*** is seen in approximately
  - 70% of patients with UGIB
  - one third of patients with LGIB.
- Blood from the duodenum or jejunum must remain in the GI tract for approximately 8 hours before turning black.
- *Stool may remain black and tarry for several days, even though bleeding has stopped.*

History

Hematochezia, or bloody stool (bright red or maroon)

- most often signifies LGIB
- Could be due to a brisk UGIB with rapid transit time through the bowel in 10 to 15% of patients.
- a more proximal source of significant bleeding must be excluded before assuming the bleeding is from the lower GI tract.
- Approximately two thirds of patients with LGIB present with red blood from bleeding per rectum.

History

Important qs

- duration and quantity of bleeding
- associated symptoms
- previous history of bleeding
- current medications,
- alcohol
- NSAID ASA
- allergies
- associated medical illnesses
- previous surgery

Examination

- Tachycardia; orthostatic blood pressure changes suggest moderate to severe blood loss; hypotension suggests life-threatening blood loss (hypotension may be late finding in healthy younger adults and older adults with hypertension at baseline may be normotensive but have evidence of hypoperfusion)
- Examination of stool color (melena versus hematochezia versus brown) may provide a clue to the location of the bleeding, but is not a reliable indicator
- Significant abdominal tenderness accompanied by signs of peritoneal irritation (eg, involuntary guarding) suggests perforation.
- Rarely an elderly patient may present with ischemic chest pain precipitated by significant anemia due to a GI bleed.

BOX 22-1 Etiology of Significant Gastrointestinal (GI) Bleeding in Adults*

Upper	Lower
Peptic ulcer disease	Diverticulosis
Gastric erosions	Angiodysplasia
Varices	Upper GI bleeding
Mallory-Weiss tear	Cancer/polyps
Esophagitis	Rectal disease
Duodenitis	Inflammatory bowel disease

BOX 22-2 ETIOLOGY OF GASTROINTESTINAL BLEEDING IN CHILDREN*

Upper	Lower
Esophagitis	Anal fissure
Gastritis	Infectious colitis
Ulcer	Inflammatory bowel
Esophageal varices	Polyps
Mallory-Weiss tear	Intussusception

Risk stratification

- 1. We suggest that patients presenting to the emergency department with UGIB who are classified as very low risk, defined as a risk assessment score with #1% false negative rate for the outcome of hospital-based intervention or death (e.g., Glasgow-Blatchford score 5 0–1), be discharged with outpatient follow-up rather than admitted to hospital (conditional recommendation, very-low-quality evidence).

Glasgow-Blatchford score

Risk factors at presentation	Threshold	Score
Blood urea nitrogen (mmol/l)	6.5–7.9	2
	8.0–9.9	3
	10.0–24.9	4
	≥25.0	6
Hemoglobin for men (g/l)	120–130	1
	100–119	3
	<100	6
Hemoglobin for women (g/l)	100–120	1
	<100	6
Systolic blood pressure (mmHg)	100–109	1
	90–99	2
	<90	3
Heart rate (bpm)	>100	1
Melena	Present	1
Syncope	Present	2
Hepatic disease	Present	2
Cardiac failure	Present	2

Total score (0–23). Patients with scores >0 are considered to be at high risk. Permission obtained from Elsevier Ltd © Blatchford, O. *et al*. *Lancet* **356**, 1318–1321 (2000).

MANAGEMENT

- Quick identification
- Aggressive resuscitation
- Prompt consultation



- **Diagnostic testing**
- Obtain type and crossmatch for hemodynamic instability, severe bleeding, or high-risk patient; obtain type and screen for hemodynamically stable patient without signs of severe bleeding
- Obtain hemoglobin (note that measurement may be inaccurate with acute severe hemorrhage), platelet count, coagulation studies (prothrombin time with INR), liver enzymes (AST, ALT), albumin, BUN, and creatinine

Rapid Assessment and Stabilization

- If hemodynamically unstable should undergo rapid evaluation and resuscitation.
- should be undressed quickly with placement of cardiac and oxygen saturation monitors.
- supplemental oxygen should be given as needed.
- At least two large-bore (minimum 16-gauge);
- Send samples for
  - CBC, for hg, plat, hematoc.
  - Coagulation profile
  - type and screen or type and crossmatch
- crystalloid resuscitation should be initiated.
- NS 2-L bolus in adults or 20 mL/kg in children until the patient's vital signs have stabilized or the patient has received 40 mL/kg of crystalloid in an adult or 60 mL/kg as a child.

Transfusion:

- For severe, ongoing bleeding, immediately transfuse blood products in 1:1:1 ratio of RBCs, plasma, and platelets, as for trauma patients

- For hemodynamic instability despite crystalloid resuscitation, transfuse 1 to 2 units RBCs

- For hemoglobin <9 to 10 g/dL (90 to 100 g/L) in patients with acute coronary syndrome and evidence of hypovolemia and/or ongoing cardiac ischemia, transfuse 1 unit RBCs and reassess the patient's clinical condition

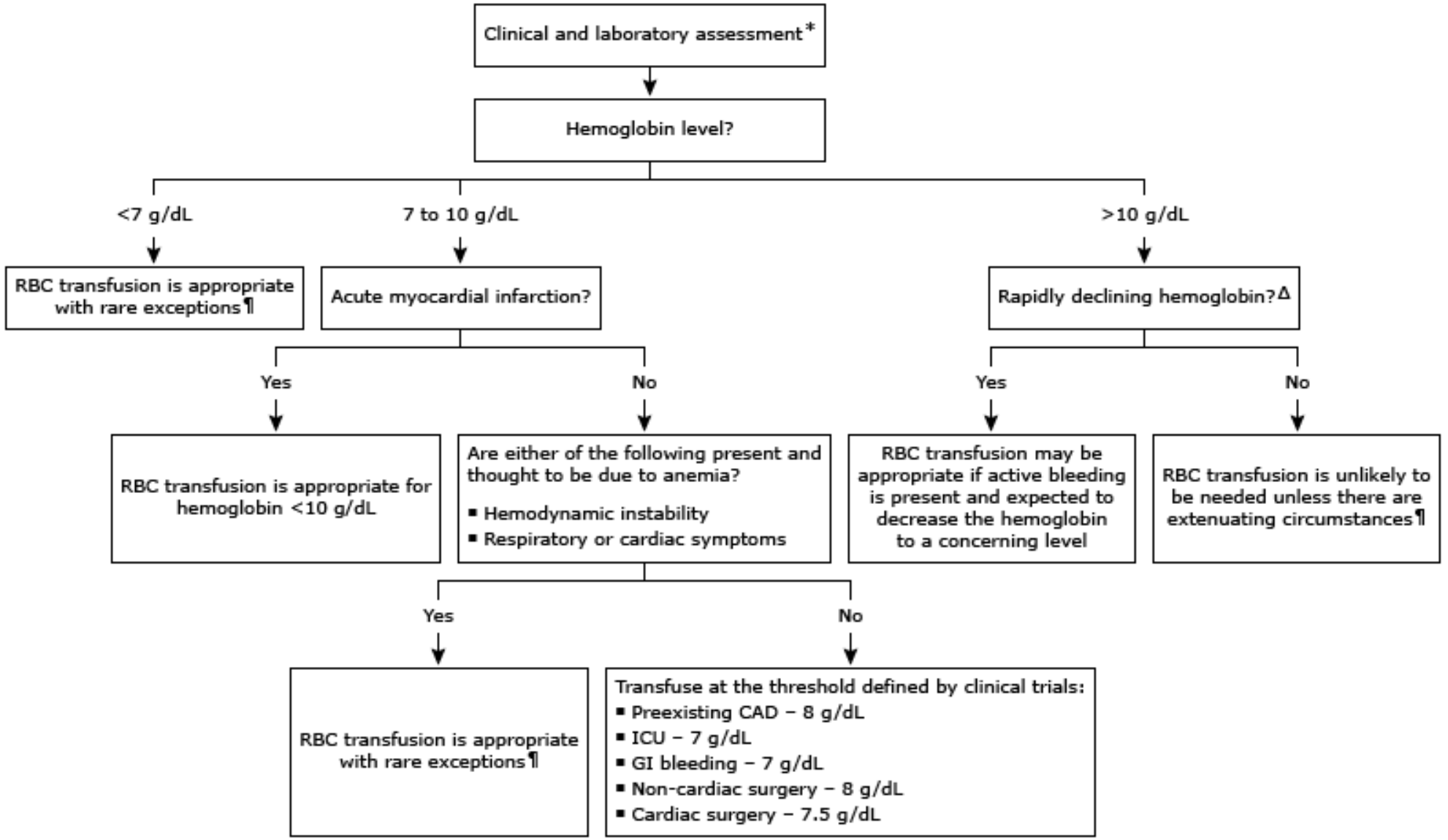
Transfusion:

- For hemoglobin <8 g/dL (80 g/L) in patients with pre-existing or acute coronary artery disease without active bleeding or ongoing ischemia¶, transfuse 1 unit RBCs and reassess the patient's clinical condition

- For hemoglobin <7 g/dL (70 g/L) in all other patients, transfuse 1 units RBCs and reassess the patient's clinical condition

- Avoid over-transfusion with possible upper GI bleeding

- Give platelets for thrombocytopenia (platelets <50,000)


Clinical and laboratory assessment*
Hemoglobin level?
<7 g/dL
7 to 10 g/dL
>10 g/dL
RBC transfusion is appropriate with rare exceptions¶
Acute myocardial infarction?
Rapidly declining hemoglobin?Δ
Yes
No
Yes
No
RBC transfusion is appropriate for hemoglobin <10 g/dL
Are either of the following present and thought to be due to anemia?
Hemodynamic instability
Respiratory or cardiac symptoms
RBC transfusion may be appropriate if active bleeding is present and expected to decrease the hemoglobin to a concerning level
RBC transfusion is unlikely to be needed unless there are extenuating circumstances¶
Yes
No
RBC transfusion is appropriate with rare exceptions¶
Transfuse at the threshold defined by clinical trials:
Preexisting CAD – 8 g/dL
ICU – 7 g/dL
GI bleeding – 7 g/dL
Non-cardiac surgery – 8 g/dL
Cardiac surgery – 7.5 g/dL

●Anticoagulants, antiplatelet agents, and coagulopathies

- – The approach to management of anticoagulants and antiplatelet agents depends on the specific medications being used, the reason they are being used, and how quickly reversal of anticoagulation is needed.
- Management of coagulopathy depends on the underlying etiology.
- Hematology input may be advisable.
- Reversal of anticoagulation may be appropriate for some patients:
- For patients taking warfarin, prothrombin complex concentrate may be appropriate if serious bleeding or markedly supratherapeutic INR
- For patients taking a DOAC, a specific reversal agent (ie, andexanet alfa or idarucizumab) or prothrombin complex concentrate may be appropriate, but only for life-threatening bleeding

After initial resuscitation of the patient

- It is important to identify whether the hemorrhage is proximal or distal to the ligament of Treitz (i.e., UGIB or LGIB).
- If the patient's vomitus demonstrates blood, then the diagnosis of UGIB is confirmed.
- If a patient reports bloody or "coffee grounds" emesis or if melenic stool is present, an upper GI bleed is more likely.

Endoscopy

- Endoscopy is the most accurate diagnostic tool available for the evaluation of UGIB.

- It identifies a lesion in 78% to 95% of patients with UGIB if it is performed within 12 to 24 hours of the hemorrhage.

Pre-endoscopic medical therapy

- Prior to endoscopy, patients should receive general supportive measures, including:
- •Provision of supplemental oxygen by nasal cannula
- •Nothing per mouth
- •Two large caliber (18 gauge or larger) peripheral catheters or a central venous line
- Nasogastric lavage is **NOT** a routine part of the management of acute upper GI bleeding.

Pharmacotherapy for all patients with severe bleeding:

- Pre-endoscopic proton pump inhibitor therapy may be started empirically:
- •We suggest that patients admitted to the hospital with acute upper GI bleeding receive an IV proton pump inhibitor (PPI) .
- The optimal approach to PPI administration prior to endoscopy is unclear. Our approach is to give a high-dose bolus (eg, esomeprazole 80 mg) to patients with signs of active bleeding (eg, hematemesis, hemodynamic instability).
- If endoscopy is performed beyond 12 hours, a second dose of an IV PPI should be given (eg, esomeprazole 40 mg).

Pharmacotherapy for all patients with severe bleeding:



- For patients who may have stopped bleeding (eg, patients who are hemodynamically stable with melena), we give an IV PPI every 12 hours (eg, esomeprazole 40 mg).
- Subsequent dosing will then depend on the endoscopic findings.
- •**If IV PPIs are not available** – We recommend that an oral PPI be given when IV formulations are not available .
- When used for acute GI bleeding, oral PPIs should be given twice daily at high doses.

Pharmacotherapy for all patients with severe bleeding:

- We suggest that erythromycin be given prior to endoscopy to help improve visualization .
- A reasonable dose is 250 mg intravenously over 20 to 30 minutes.
- Endoscopy is performed 20 to 90 minutes following completion of the erythromycin infusion.
- Patients receiving erythromycin need to be monitored for QTc prolongation.
- In addition, drug-drug interactions should be evaluated before giving erythromycin because it is a cytochrome P450 3A inhibitor .

Pharmacotherapy for known or suspected esophagogastric variceal bleeding and/or cirrhosis:

- Give somatostatin, an analogue (eg, octreotide 50 mcg IV bolus followed by 50 mcg/hour continuous IV infusion), or terlipressin (2 mg IV every 4 hours until bleeding is controlled, then decrease to 1 mg IV every 4 hours)
- Give an IV antibiotic (eg, ceftriaxone)
- Balloon tamponade (eg, Sengstaken-Blakemore tube, Minnesota tube, Linton-Nachlas tube) or esophageal stenting (in centers with appropriate expertise) may be performed as a temporizing measure for patients with uncontrollable hemorrhage very likely due to varices; tracheal intubation is necessary if balloon tamponade is employed; ensure proper device placement prior to inflation of the gastric balloon to avoid esophageal rupture (hemostasis is often achieved with inflation of the gastric balloon alone, in which case inflation of the esophageal balloon, if present, is not required)

●Endoscopy

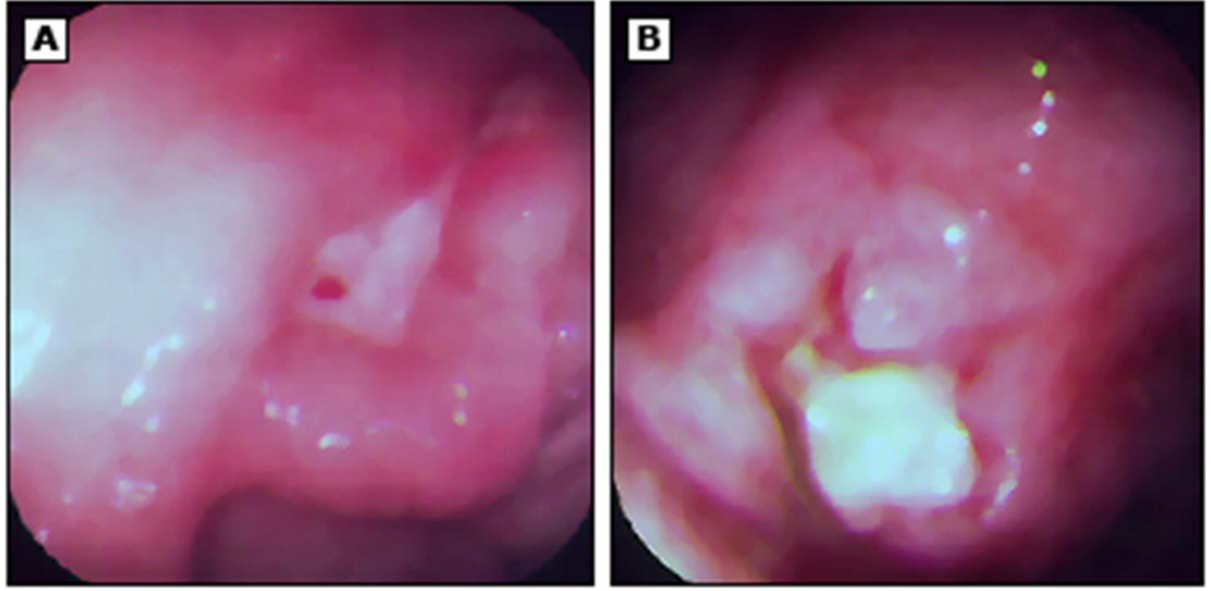
- – We recommend upper endoscopy within 24 hours for the evaluation and management of patients admitted with acute upper GI bleeding.

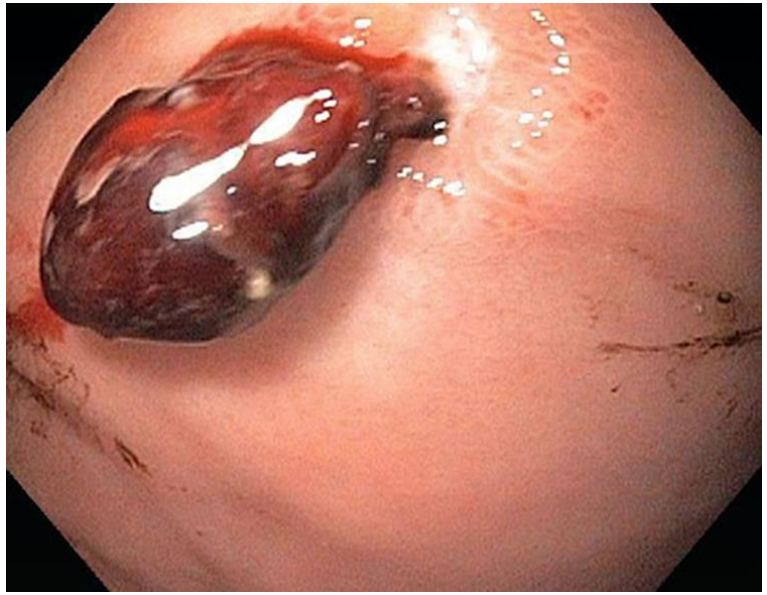
- For patients with suspected variceal bleeding, we perform endoscopy within 12 to 24 hours of presentation.

- Additional diagnostic tests may be required for some patients.

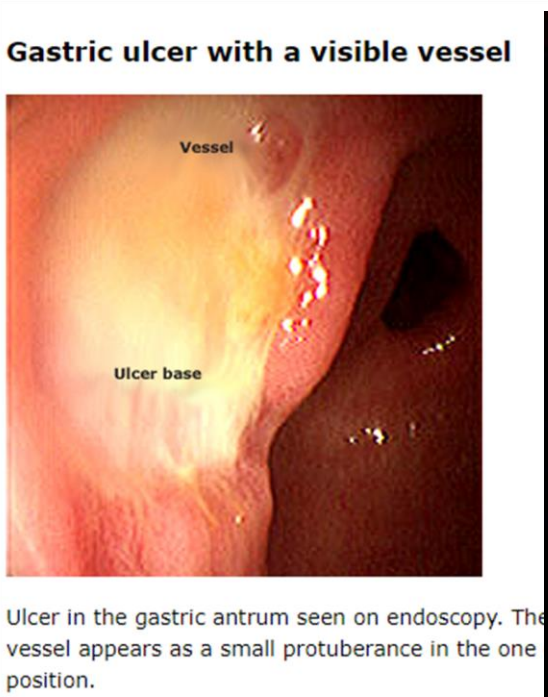
●Endoscopy

- •We recommend that patients with active bleeding (oozing or spurting) or a visible vessel receive endoscopic therapy and acid suppressive therapy rather than acid suppressive therapy alone.
- Endoscopic therapy decreases the risk of recurrent bleeding in patients with these high-risk stigmata.
- Patients may be treated with thermal coagulation or endoscopic clips (with or without epinephrine injection) but should not be treated with epinephrine monotherapy due to an increased risk of recurrent bleeding.
- Application of hemostatic sprays can be used if traditional techniques fail to achieve hemostasis and over-the-scope clips may be an option for patients with recurrent bleeding.
- Whether to treat patients with adherent clots will depend on the location of the ulcer, the availability of surgical or interventional radiologic backup should bleeding start, and the experience of the endoscopist.
- Our approach is to make gentle attempts to remove the clot so that endoscopic treatment can be applied if needed, provided the ulcer is in a location that is amenable to endoscopic therapy should bleeding start as appropriate.





Ulcers with a flat pigmented spot (Forrest classification IIc; panel A) or a clean base (Forrest classification III, panel B) are at low risk for rebleeding and do not need to be treated endoscopically.





Endoscopy shows an actively bleeding gastric ulcer (Forrest classification Ia) along the lesser curvature.

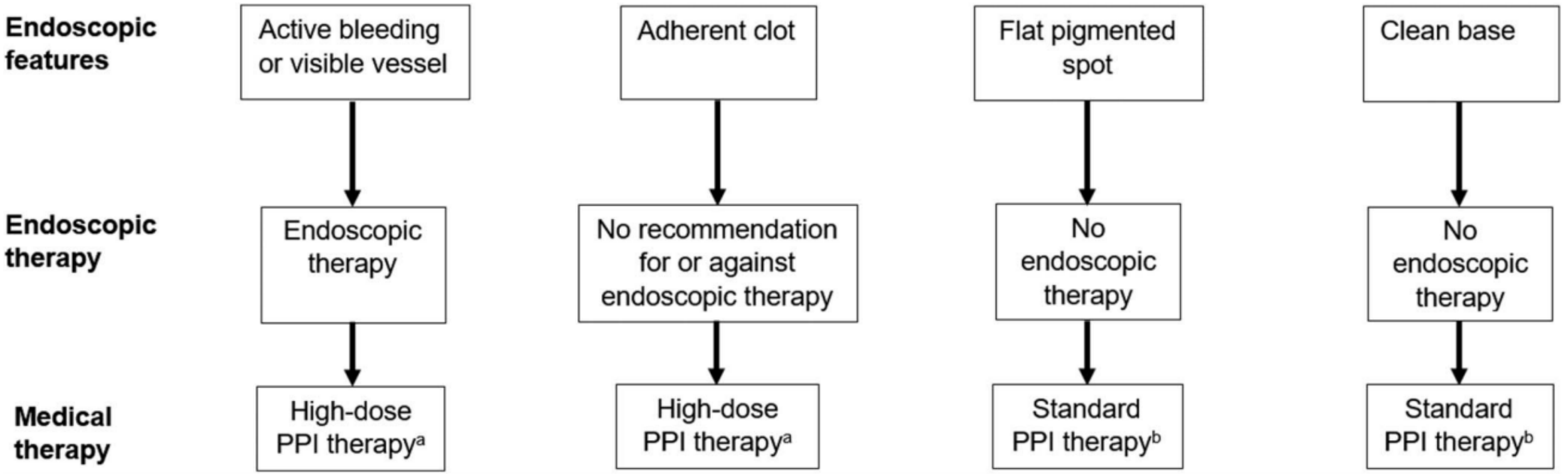
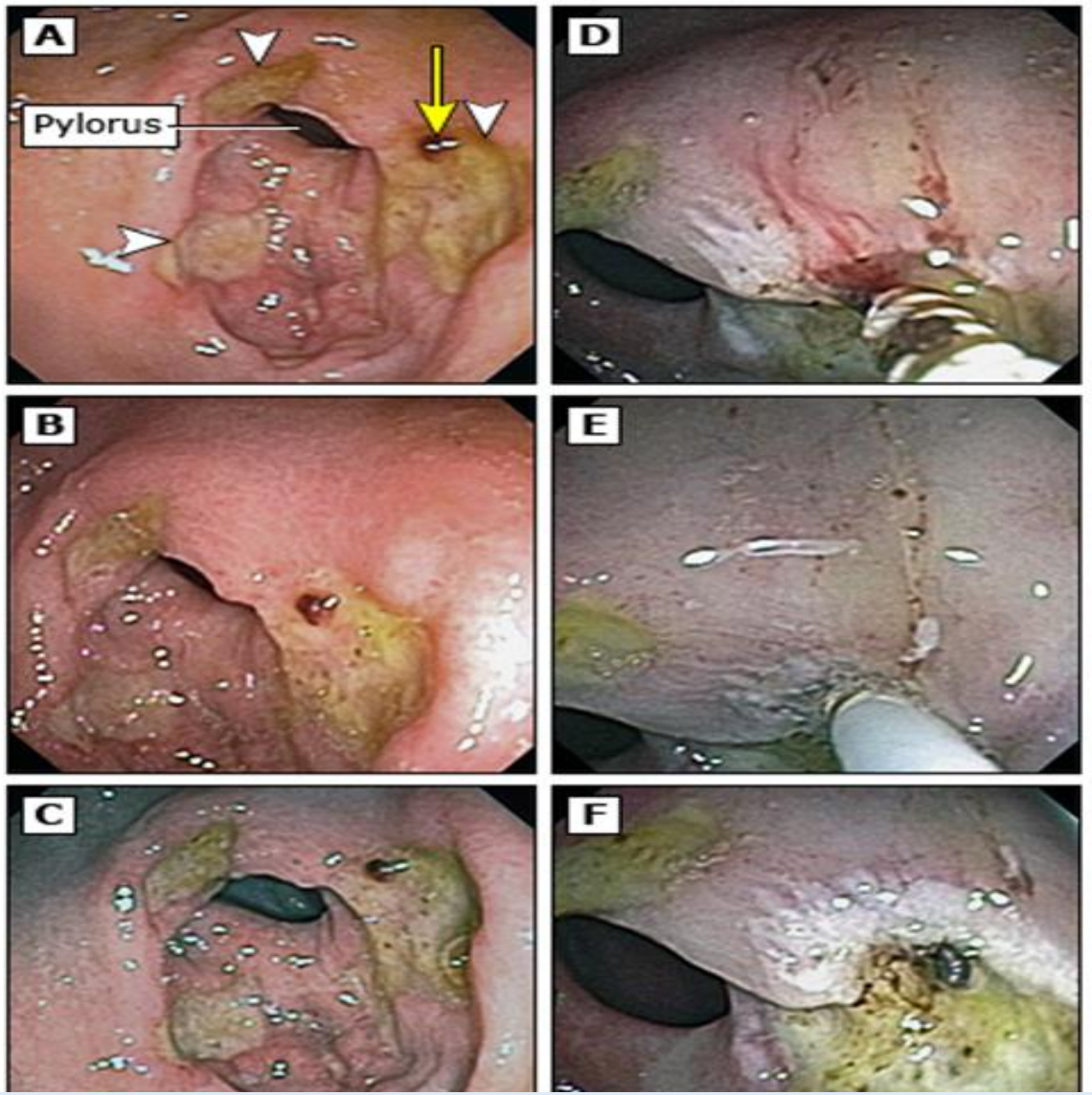


Figure 3. Endoscopic and medical therapy for ulcer bleeding based on endoscopic features of ulcer. [a]For continuous regimen, 80-mg bolus followed by 8-mg/min infusion for 3 days is recommended. For intermittent regimens, doses of 40 mg 2 to 4 times daily for 3 days are suggested, given orally if feasible, and an initial bolus of 80 mg may be appropriate. [b]Standard PPI therapy (e.g., oral PPI once-daily) has been recommended by previous guidelines (1,37) but is not assessed in the current document. PPI, proton pump inhibitor.

Combination therapy for a nonbleeding visible vessel



Endoscopic predictors of recurrent peptic ulcer hemorrhage[1,2]

Endoscopic stigmata of recent hemorrhage	Prevalence, percent	Risk of rebleeding on medical management, percent
Active arterial bleeding (Forrest Ia)	12% (arterial bleeding + oozing)	55 (arterial bleeding + oozing)
Oozing without visible vessel (Forrest Ib)		
Non-bleeding visible vessel (Forrest IIa)	8	43
Adherent clot (Forrest IIb)	8	22
Flat spot (Forrest IIc)	16	10
Clean ulcer base (Forrest III)	55	5

References:

1. *Katschinski B, Logan R, Davies J, et al. Prognostic factors in upper gastrointestinal bleeding. Dig Dis Sci 1994; 39:706.*
2. *Laine L, Jensen DM. Management of patients with ulcer bleeding. Am*

●Persistent or recurrent bleeding

- •We suggest that most patients who fail endoscopic therapy first undergo attempted transarterial angiographic embolization (TAE) rather than surgery .
- We suggest angiography rather than surgery because it is less invasive and because surgery is still an option in patients who fail angiographic therapy.
- However, surgery is a reasonable alternative if an interventional radiologist with expertise in TAE is not available, if the lesion is deemed unlikely to respond to angiographic therapy, or if the patient has underlying conditions that may complicate the ability to perform angiography or TAE (eg, renal insufficiency).
- •The majority of patients with UGI bleeding due to peptic ulcer disease will stop bleeding spontaneously, and most will not rebleed during hospitalization.
- However, a subgroup of patients is at high risk for recurrent hemorrhage.
- The major endoscopic predictors of persistent or recurrent bleeding include active bleeding at endoscopy, a nonbleeding visible vessel, and an adherent clot .

●Discharge and follow-up

- •We suggest that otherwise healthy patients without severe bleeding or high-risk stigmata be discharged following endoscopy on a standard-dose PPI rather than being admitted to the hospital for observation .

- Such patients are at low risk for recurrent bleeding.

- •All patients with bleeding peptic ulcers need to be evaluated for factors that predispose to ulcer formation (eg, *H. pylori*) and treated as appropriate.

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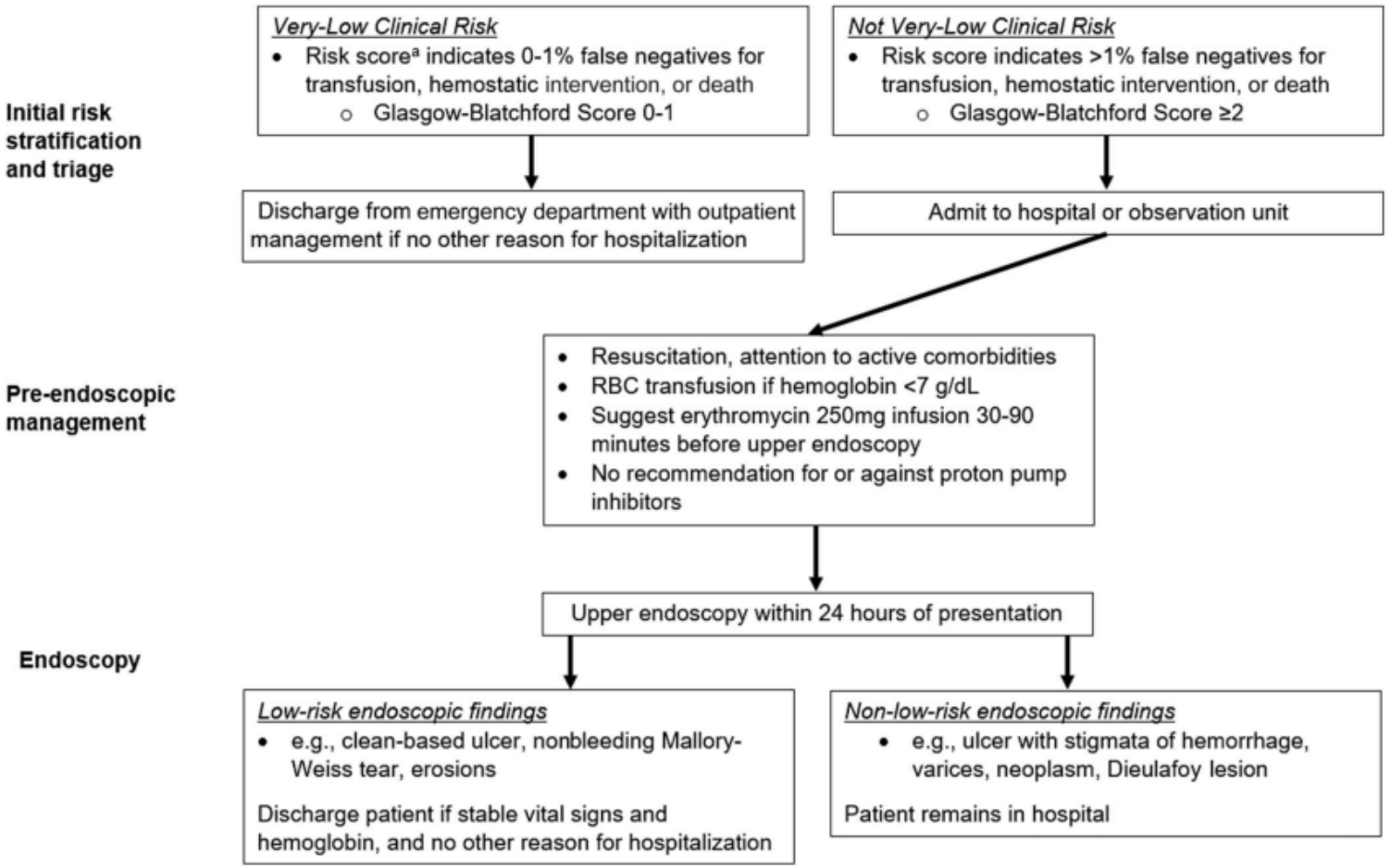
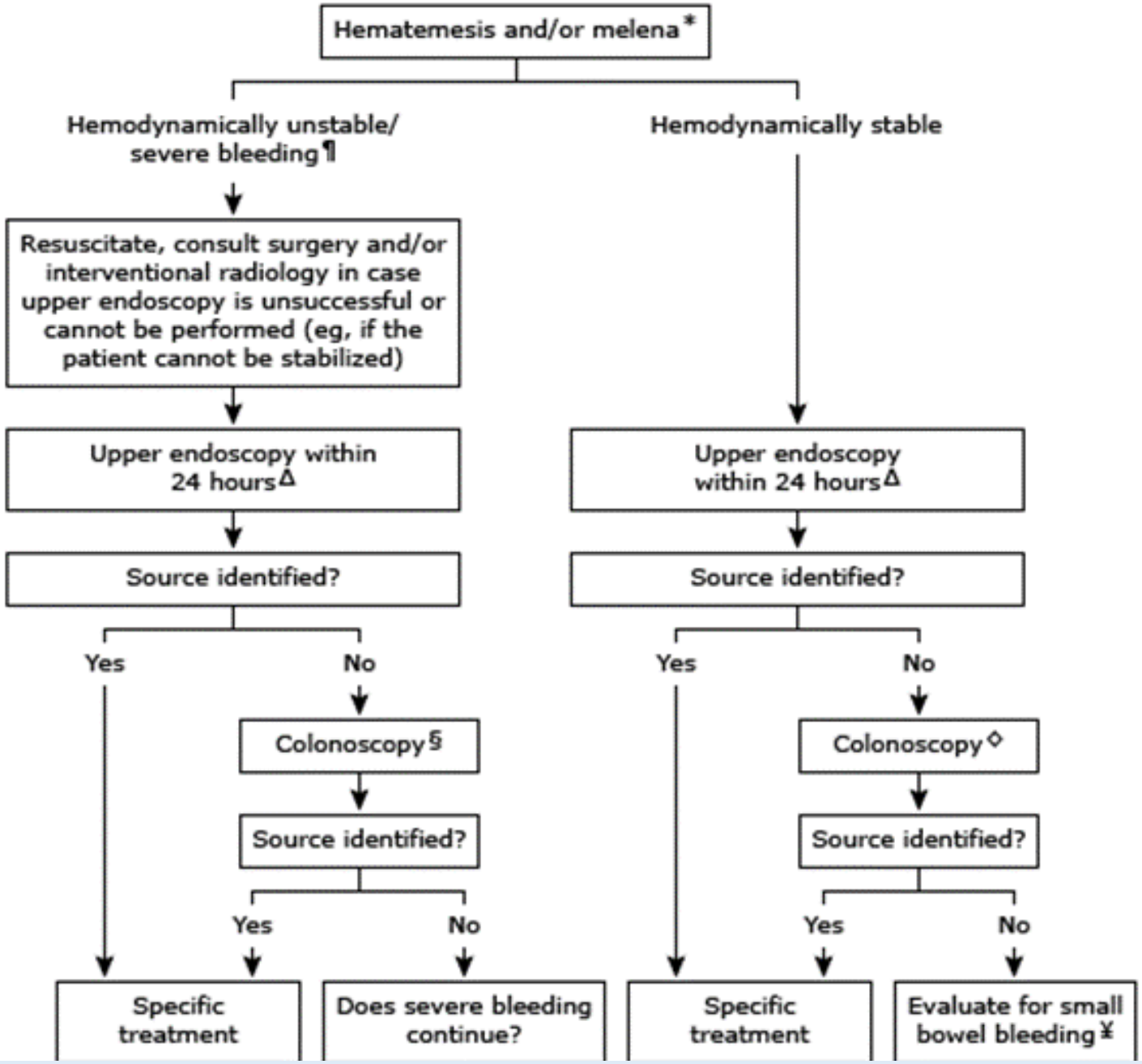
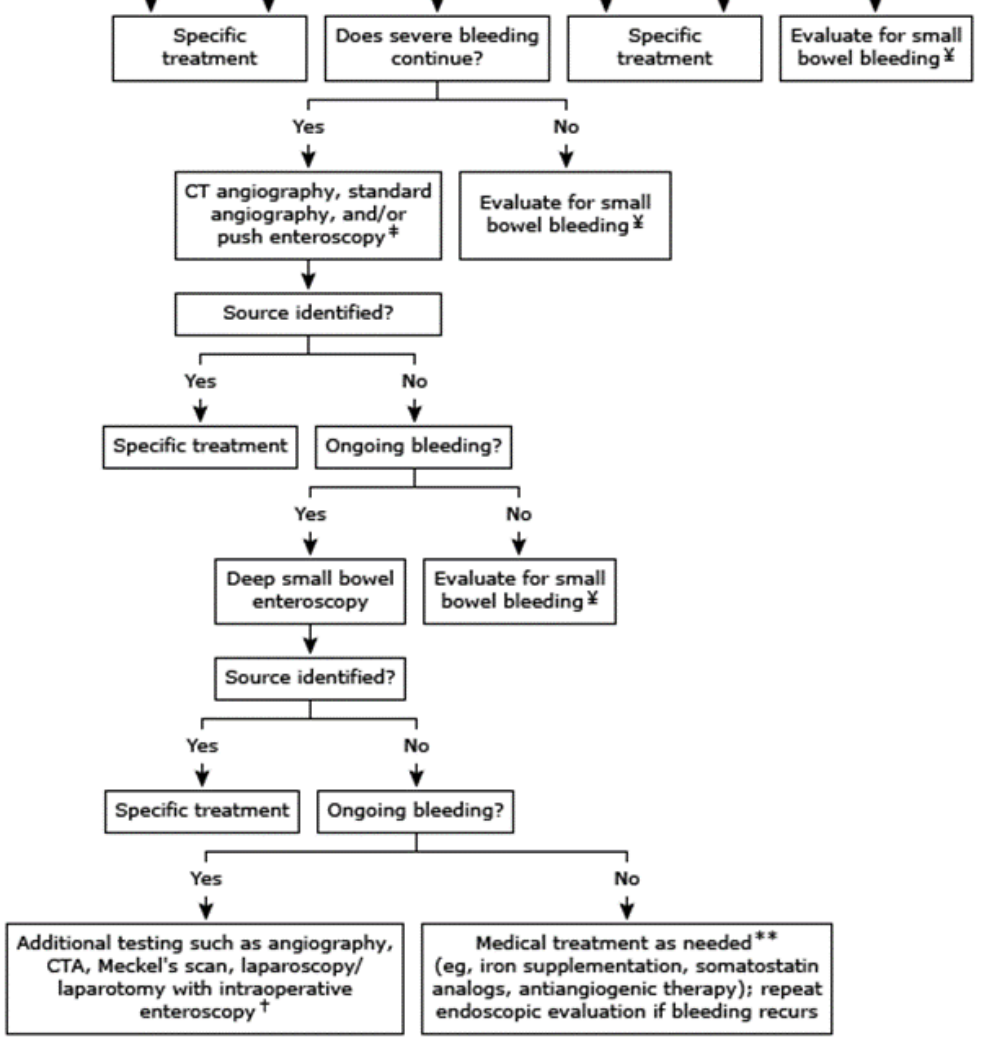


Figure 2. Initial management of patients presenting with overt upper gastrointestinal bleeding. [a]Future risk assessment tools may be used if score discriminates risk of transfusion, hemostatic intervention or death with 99–100% sensitivity (0%–1% false negatives). RBC, red blood cell.

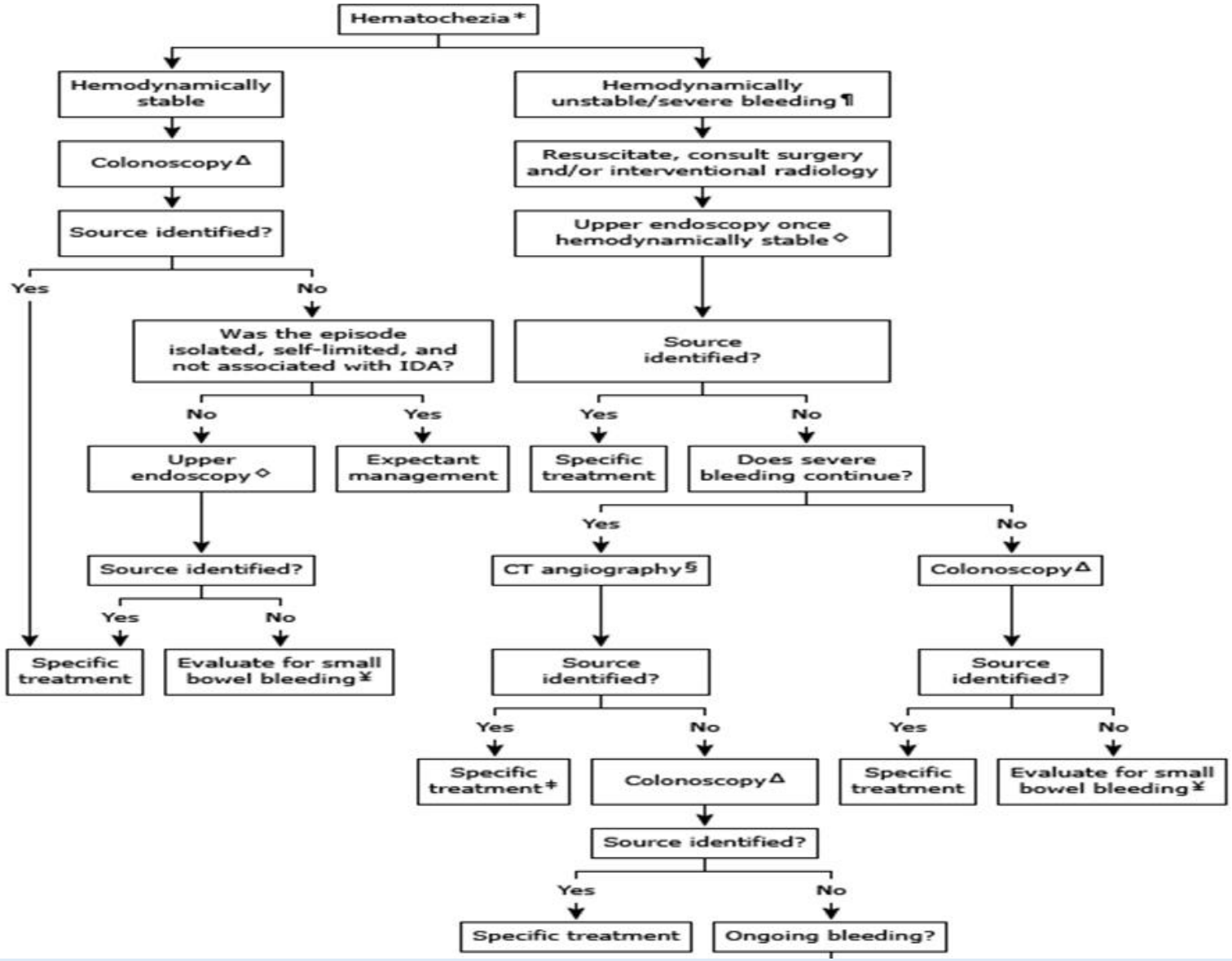
Evaluation of suspected upper gastrointestinal bleeding

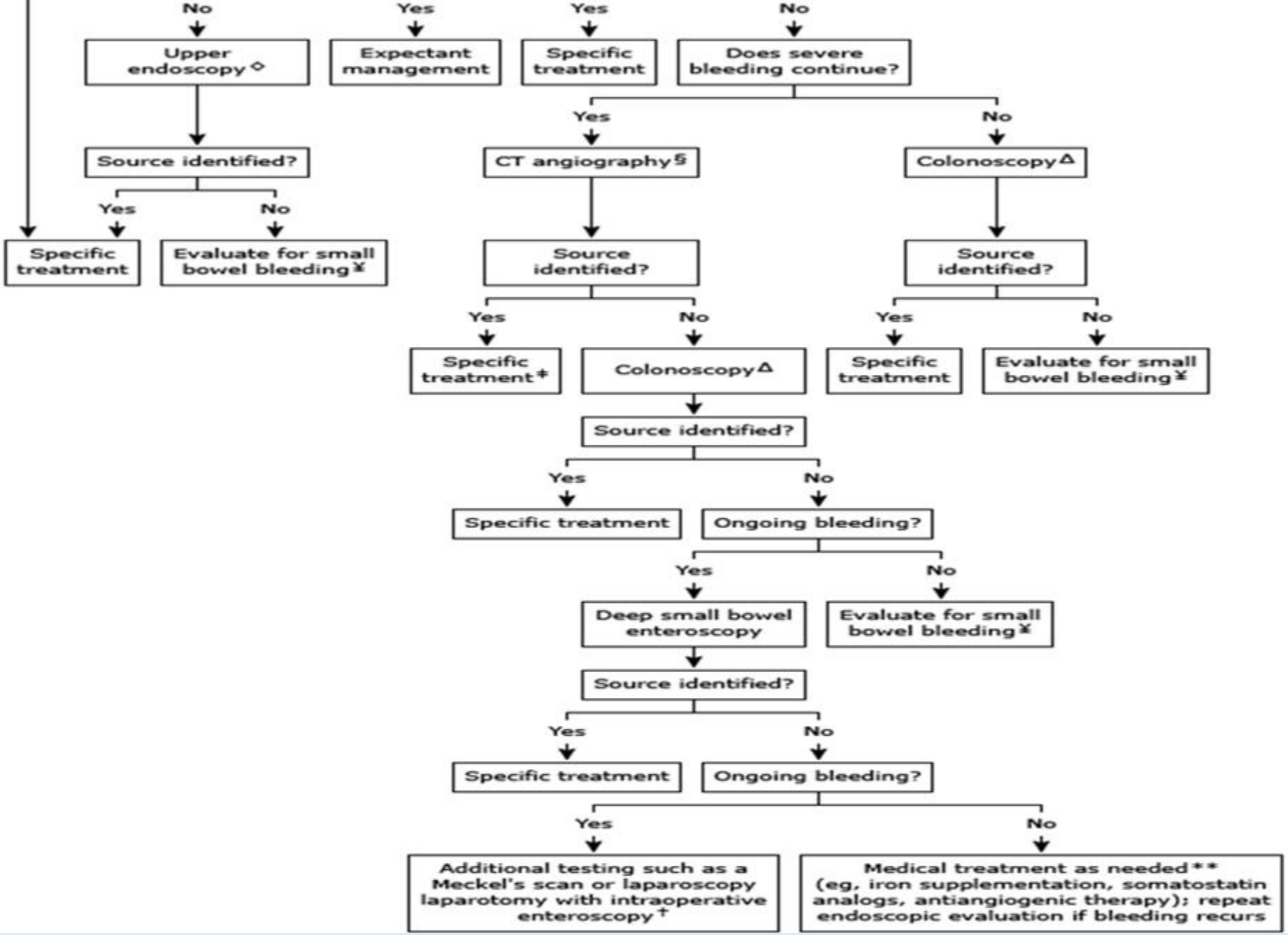


Evaluation of suspected upper gastrointestinal bleeding



Evaluation of patients presenting with hematochezia (excluding those with minimal rectal bleeding)




No
Upper endoscopy ◇
Source identified?
Yes
No
Specific treatment
Evaluate for small bowel bleeding ¥
Yes
Expectant management
Yes
Specific treatment
No
Does severe bleeding continue?
Yes
CT angiography §
Source identified?
Yes
Specific treatment ǂ
No
Colonoscopy Δ
Source identified?
Yes
Specific treatment
Ongoing bleeding?
Yes
Deep small bowel enteroscopy
Source identified?
Yes
Specific treatment
Ongoing bleeding?
Yes
Additional testing such as a Meckel's scan or laparoscopy laparotomy with intraoperative enteroscopy †
No
Medical treatment as needed ** (eg, iron supplementation, somatostatin analogs, antiangiogenic therapy); repeat endoscopic evaluation if bleeding recurs
No
Colonoscopy Δ
Source identified?
Yes
Specific treatment
No
Evaluate for small bowel bleeding ¥
No
Evaluate for small bowel bleeding ¥

Acute management of severe upper gastrointestinal bleeding

1. Resuscitation and stabilization, initiation of medical therapy with an intravenous proton pump inhibitor
2. Assessment of onset and severity of bleeding
3. Pre-endoscopic administration of erythromycin
4. Diagnostic endoscopy
   - Preparation for emergent upper endoscopy
   - Localization and identification of the bleeding site
   - Identification of stigmata of recent hemorrhage
   - Stratification of the risk for rebleeding
5. Therapeutic endoscopy
   - Control of active bleeding or high-risk lesions
   - Minimization of treatment-related complications
   - Treatment of persistent or recurrent bleeding

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