Gastrointestinal Bleeding

Objectives: **No objectives**

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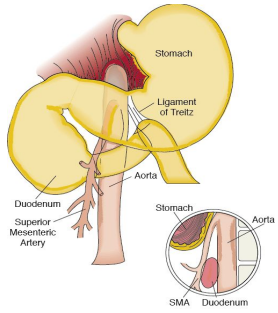
- Editing file
- Feedback

Upper Vs. Lower GI Bleeding

❖ Anatomical landmarks and location of gastrointestinal bleeding:



- Upper GI bleeding : a source of bleeding above the **ligament of Treitz** (suspensory muscle of duodenum).
- Lower GI bleeding : bleeding below the **ligament of Treitz**

❖ Acute upper gastrointestinal bleeding :

(Acute UGIB is a common medical emergency that has 11% hospital mortality rate)
The cardinal features are **haematemesis** (the vomiting of blood) and **melaena** (the passage of black tarry stools, the black colour being due to blood altered by passage through the gut). Melaena can occur with bleeding from any lesion proximal to the right colon. Rarely, melaena can also result from bleeding from the right colon. Following a bleed from the upper gastrointestinal tract, unaltered blood can appear per rectum, but **the bleeding must be massive** and is almost always accompanied by shock. The passage of dark blood and clots without shock is always due to lower gastrointestinal bleeding.

❖ Acute lower gastrointestinal bleeding:

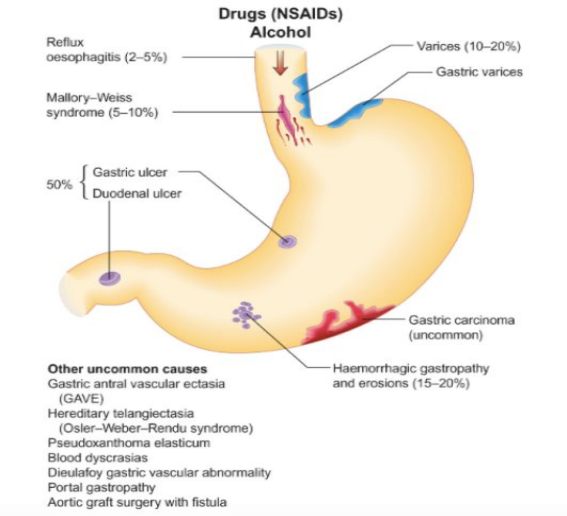
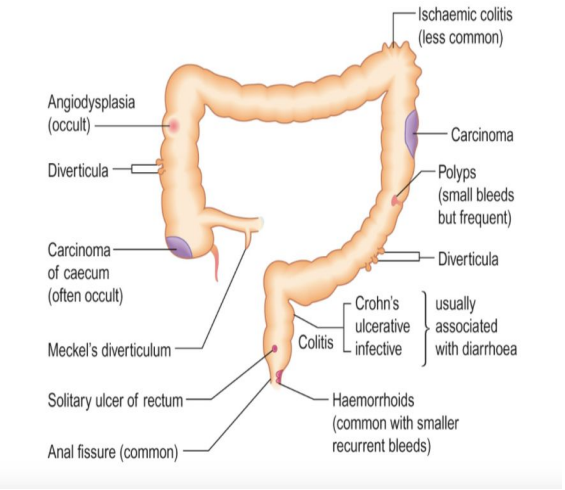
Massive bleeding from the lower gastrointestinal tract is rare and is usually due to **diverticular disease** or ischaemic colitis. Common causes of small bleeds are haemorrhoids and anal fissures.

❖ Etiology:

- The most common cause of **upper GI bleeding** is **peptic ulcer disease**
- The most common cause of **lower GI bleeding** is **Diverticulosis**[1]

Upper GI Bleeding	Lower GI Bleeding
1. **Peptic ulcer disease** (duodenal ulcers 25% and gastric ulcer 20%). Most common 2. Esophagitis / Gastritis / duodenitis 3. Variceal bleeding يعتمد أكثر على الموقع الجغرافي (مثلا في مصر تصير كثير وأيضا في المناطق اللي فيها الكحول كثير) 4. Mallory weiss tear and its severe form: Boerhaave syndrome (usually lethal) مثلا في بعض الحوامل لما تكون ترجع كثير فتنشق العضلة في المنطقة بين المريء و المعدة **Other uncommon causes:**	1. **Diverticular disease** (40%) most common source of GI bleeding in patients over age of 60, usually painless. 2. Angiodysplasia (AVM) (40%) second most common source in patients over age of 60. 3. IBD (UC, Crohn's disease) 4. Colorectal carcinoma 5. Colorectal adenomatous polyps 6. Ischemic colitis 7. Haemorrhoids, anal fissures 8. Small intestinal bleeding diagnosed by excluding

[1] Diverticulosis is the condition of having multiple pouches (diverticula) in the colon that are not inflamed. These are outpockets of the colonic mucosa and submucosa through weaknesses of muscle layers in the colon wall.They typically cause no symptoms.Diverticular disease occurs when diverticula become inflamed, known as diverticulitis, or bleed.

1. Arteriovenous malformation 2. Gastric antral vascular ectasia 3. Dieulafoy's lesion (vessel that bleed and disappear) 4. Haemobilia 5. Aortoenteric fistula after aortic surgery 6. Malignancy usually not an emergency  	upper GI and colonic bleeding 

Tests to Order in Patients With GI Bleeding: (Step up)

- Hematemesis: an upper GI endoscopy is the initial test.

- Hematochezia: First rule out an anorectal cause (e.g. hemorrhoids). Colonoscopy should be the initial test.

- Melena: Upper endoscopy is usually the initial test because the most likely bleeding site is in the upper GI tract. Order a colonoscopy if no bleeding site is identified from the endoscopy.

- Occult blood: colonoscopy is the initial test in most cases (colon cancer is the main concern). Order an upper endoscopy if no bleeding site is identified .

❖ Clinical features:

*GI bleeding could be painless

1. Type of Bleeding:	
Hematemesis	Vomiting fresh, red blood; suggests upper GI bleeding (bleeding proximal to ligament of Treitz). Indicates moderate to severe bleeding that may be ongoing.
"Coffee grounds" emesis (5-10 ml)	suggests upper GI bleeding as well as a lower rate of bleeding (enough time for vomitus to transform into "coffee grounds (حثال القهوة)
Melena black, tarry, liquid, foul-smelling stool	• Caused by degradation of hemoglobin by bacteria in the colon; presence of melena indicates that blood has remained in GI tract for several hours. • The further the bleeding site is from the rectum, the more likely melena will occur. • Note that dark stools can also result from bismuth, iron, spinach, charcoal, and licorice. • **Melena suggests upper GI bleeding 90% of the time**. Occasionally, the jejunum or ileum is the source. It is unusual for melena to be caused by a colonic lesion, but if it is, the ascending colon is the most likely site.
Hematochezia	• This usually represents a lower GI source (typically left colon or rectum). Consider diverticulosis, arteriovenous malformations, hemorrhoids, and colon cancers. • **It may result from massive upper GI bleeding** that is bleeding very briskly (so that blood does not remain in colon to turn into melena). This often indicates heavy bleeding, and patient often has some degree of hemodynamic instability. An upper GI source is present in about 5% to 10% of patients with hematochezia.
Occult blood in stool	Source of bleeding may be anywhere along GI tract.
2. Signs of volume depletion (depending on rate and severity of blood loss).	
Increased pulse rate (>100 per minute), decreased blood pressure (systolic blood pressure < 100 mmHg), Increased respiratory rate, decreased urine output, decreased men tal status.	
3. Symptoms and signs of anemia (e.g., fatigue, pallor, exertional dyspnea).	

Diagnosis

-For acute bleeding especially when the bleeding is severe it is far more important to replace fluids and check hematocrit, platelet count and coagulation tests as the prothrombin time or INR than it is to do an endoscopy .

Laboratory tests	• Stool guaiac for occult blood. • Hemoglobin/hematocrit level (may not be decreased in acute bleeds): A hemoglobin level >7 to 8 g/dL is generally acceptable in young, healthy patients without active bleeding. However, most elderly patients (especially those with cardiac disease) should have a hemoglobin level >10 g/dL. • A low mean corpuscular volume is suggestive of iron deficiency anemia (chronic blood loss). Patients with acute bleeding have normocytic red blood cells. • Coagulation profile (platelet count, PT, PTT, INR). • LFTs, renal function. • The BUN–creatinine ratio is elevated with upper GI bleeding. This is suggestive of upper GI bleeding if patient has no renal insufficiency. The higher the ratio, the more likely the bleeding is from an upper GI source.
Upper endoscopy	• Most accurate diagnostic test in evaluation of upper GI bleeding. • Both diagnostic and potentially therapeutic (coagulate bleeding vessel). • Most patients with upper GI bleeding should have upper endoscopy within 24 hours.
Nasogastric tube	➔ This is often the initial procedure for determining whether GI bleeding is from an upper or lower GI source. ➔ Use the nasogastric tube to empty the stomach to prevent aspiration. ➔ **False-negative findings**: possible if upper GI bleeding is intermittent or from a lesion in the duodenum. • Evaluation of aspirate. • Bile but no blood—upper GI bleeding unlikely; source is probably distal to ligament of Treitz. • Bright red blood or “coffee grounds” appearance—upper GI bleeding. • Non-bloody aspirate (clear gastric fluid)—upper GI bleeding unlikely, but cannot be ruled out definitively (source may possibly be in the duodenum).
Colonoscopy	Identifies the site of the lower GI bleed in >70% of cases, and can also be therapeutic.
Arteriography	Definitively locates the point of bleeding. • Mostly used in patients with lower GI bleeding. • Should be performed during active bleeding. • Potentially therapeutic (embolization or intra-arterial vasopressin infusion).

Clinical Approach to the Patient

A 69-year-old woman comes to the ER with multiple red/black stools over the last day. Her past medical history is significant for aortic stenosis. Her pulse is 115 per minute and her BP is 94/62 mm Hg. The physical examination is otherwise normal. What is the most appropriate next step in the management of this patient?

A. Colonoscopy
B. NGT
C. Upper endoscopy
D. Bolus of normal saline
E. CBC

Answer: D. The precise etiology of severe GI bleeding is not as important as a fluid resuscitation. There is no point in checking for orthostasis with the person's systolic BP under 100 mm Hg or when there is a tachycardia at rest. Endoscopy should be performed, but it is not as important to do first as fluid resuscitation. When BP is low, **normal saline or Ringer lactate** are better fluids to give than 5% dextrose in water (D5W). D5W does not stay in the vascular space to raise BP as well as NS.

Management:

Initial assessment: تعلمك اذا تخلي المريض في الطوارئ ولا ترجعه البيت وتقول تعال للعيادة بكرة ولا تدخله العناية

1. Risk assessment tools (Increased risk of further bleeding and death)

- ➔ Glasgow - blatchford score الأدق والأكثر استعمالا
- ➔ Rockall score (clinical + endoscopic) تسويه لما يجيك في العيادة
- ➔ **AIMS65 score**; (Albumin < 3.0, INR >1.5 , mental status, systolic BP < 90 and Age > 65) اسهلها و تتذكرها علطول \ كل مازادت القيم تكون معناتها انها أسوأ

AIMS65 Score

Risk Factor	Points
Albumin <3.0 g/dL	1
INR >1.5	1
Altered mental status	1
SBP ≤90 mm Hg	1
Age >65 y	1

Table 1 | Glasgow–Blatchford score assessment criteria

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).

B Rockall Score

	Variable	Points
Clinical Rockall Score	Age	
	<60 yr	0
	60–79 yr	1
	≥80 yr	2
	Shock	
	Heart rate >100 beats/min	1
	Systolic blood pressure <100 mm Hg	2
	Coexisting illness	
	Ischemic heart disease, congestive heart failure, other major illness	2
	Renal failure, hepatic failure, metastatic cancer	3
Complete Rockall Score	Endoscopic diagnosis	
	No lesion observed, Mallory–Weiss tear	0
	Peptic ulcer, erosive disease, esophagitis	1
	Cancer of upper GI tract	2
	Endoscopic stigmata of recent hemorrhage	
	Clean base ulcer, flat pigmented spot	0
	Blood in upper GI tract, active bleeding, visible vessel, clot	2

-Score Above 0 is considered high risk and has to be admitted .

Factors that increase mortality in GI bleeding:

- Age > 60 years
- Extensive comorbid illness
- Tachycardia (heart rate more than or equal to 100 beats/minute)
- Hypotension (Systolic BP less than or equal to 100 mmHg)
- Severity of initial bleed
- Onset or recurrence of bleeding while hospitalized for another condition
- Need for emergency surgery
- Significant transfusion requirements
- Diagnosis (Esophageal varices have a 30% mortality rate)
- Endoscopic stigmata of recent hemorrhage

2. Resuscitation (If patient is hemodynamically unstable resuscitation is always top priority. Once the patient is stabilized obtain a diagnosis)

a. **Supplemental oxygen**
b. **Hemodynamic status**

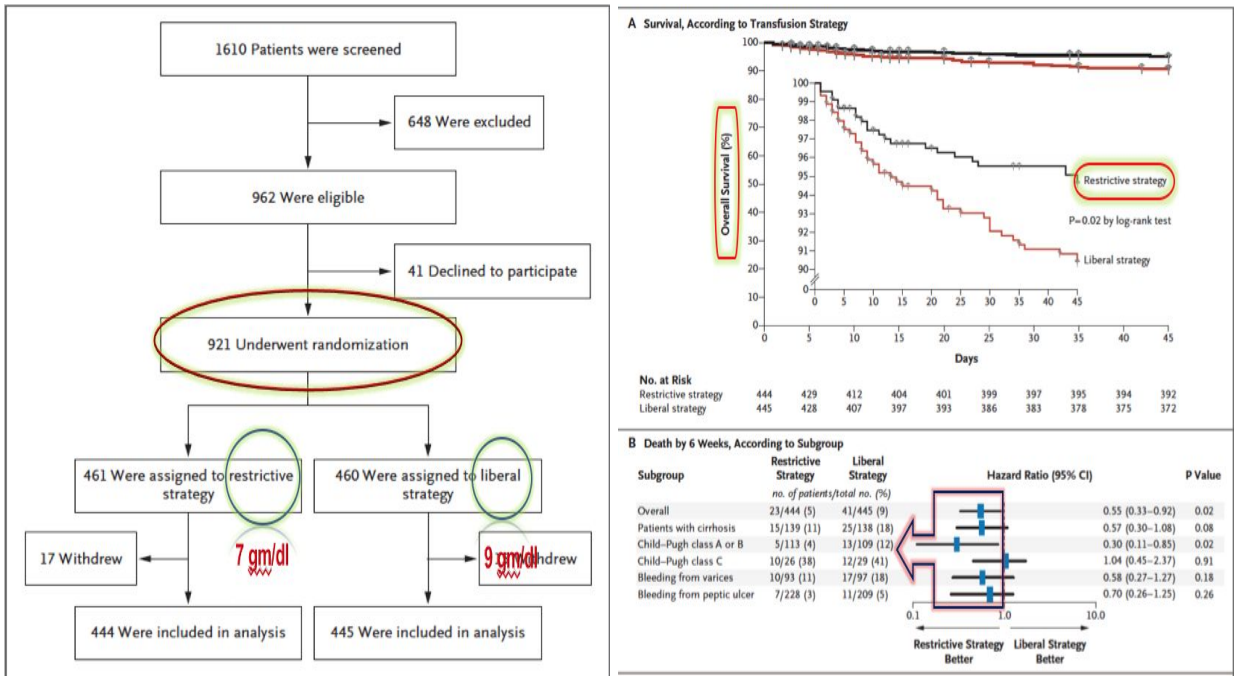
Adequate venous access, 2 large-bore peripheral venous lines (16 or 18 gauge). Isotonic intravenous fluids **(Normal saline solution)** for patients with evidence of hemodynamic instability. A bolus of 500 mL of IV isotonic fluid should be given and repeated as necessary to achieve hemodynamic stability. At the same time draw blood for hemoglobin and hematocrit, PT, PTT and platelet count.

- ➔ Packed red blood cells: If the hemoglobin level < 7 g/dL or If hemoglobin < 10 g/dL in patients with preexisting cardiovascular disease or patients with symptoms.
- ➔ Fresh frozen plasma: if PT or INR is elevated

-Patients receiving anticoagulants correction of coagulopathy is recommended , just temporarily.

-80% of GI bleeding will stop spontaneously if the fluid resuscitation is adequate and only need supportive therapy

- Blood Transfusions: The role of transfusion in clinically stable patients with mild GI bleeding remains controversial, with uncertainty at which hemoglobin level transfusion should be initiated. Literature suggesting poor outcomes in patients managed with a liberal transfusion
  The restrictive RBC transfusion had significantly improved survival and reduced rebleeding..



-As you can see in the graph patients who underwent restrictive transfusion (meaning only transfusion when their HB<7) had better outcomes and decreased mortality . while liberal(transfusing blood even if the hb is >7) transfusion didn't really help . more than 7 in a previously healthy patient and more than 10 in an old patient with comorbidities.

3.Endoscopy:

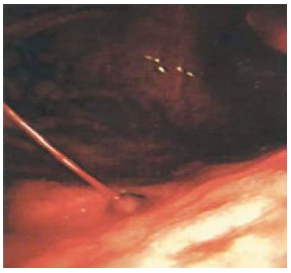
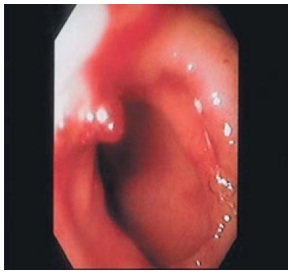
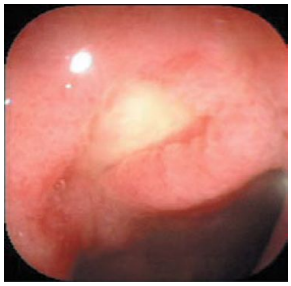
The time of endoscopy is not significant in decreasing the mortality. Most IMPORTANT thing is to stabilize the patient.

Definition of early endoscopy: ranges from 6 to 24 hours AFTER INITIAL PRESENTATION

Endoscopy should not be delayed for a high INR unless the INR is supratherapeutic

- Within 24 hours after appropriate resuscitation and transfusion as needed, to a hemoglobin level greater than 7 g/dL
- Endoscopy may need to be delayed or deferred :
  1. Active acute coronary syndrome
  2. Suspected perforation (X-ray to exclude perforation)
- In high-risk endoscopic findings > give IV PPI bolus (at a dose of 80 mg) followed by a continuous infusion (8 mg per hour) for 72 hours. This will reduce the risk of further bleeding and the need for surgery.
- If bleeding recurs after first scope repeat endoscopy if failed again Transarterial therapy (Injections, Clipping, Thermal therapy or powder spray) or surgery. Nobody knows about the mechanism of the powder. Also, it's not FDA approved drug.

*دوالي المريء اللي تكون مع الكحول الباثلوجي فيها في الأوردة أما هنا الباثلوجي في الشرايين

Spurting Blood زي الحوت لما يطلع من البحر Digestive enzymes will leak into the defective submucosa , which will cause the blood vesseles to spurt .	**Non-bleeding Visible Vessel** "There is protruding vessel" كأنه سلك طالع من الجدار	**Flat, Pigmented Spot** Low risk lesion	**Clean Base** Low risk lesion
			

-High-risks lesions are those that spurt blood (Forrest grade IA, Panel A),ooze blood (grade IB, Panel B), contain a non bleeding visible vessel (grade IIA,Panel C), or have an adherent clot (grade IIB, Panel D). Low-risk lesions are those that have a flat, pigmented spot (grade IIC, Panel E) or a clean base (grade III, Panel F).

Prevent recurrence:

- H pylori: **Commonest cause of GIB. prevalence is varying with different country. Depending on the hygiene. وهي سبب رئيسي لسرطان المعدة.**
- Patients with bleeding peptic ulcers should be tested for H. pylori
- Receive eradication therapy if present. Confirmation of eradication
- Negative H. pylori diagnostic tests obtained in the acute setting should be repeated
- Eradication of H.pylori infection and confirm eradication after therapy with breath test or stool test. Stop PPI for at least 2 weeks. Stop bismuth or antibiotics for at least 4 weeks. H2-receptor antagonists are permissible .
- Discontinue NSAIDs permanently if possible. If must be resumed a combination of COX-2 selective NSAID and PPI

Summary of GI Bleeding Approach : SUM UP

1- Initial assessment detailed history

2- Hemodynamic status and resuscitation physical examination 1/tachycardic 2/hypotensive

3- Blood transfusions

4- Risk assessment and stratification Anemia hb<7 transfer blood + Uremia .

5- Pre-endoscopic medical therapy PPI -will stop the bleeding ulcer- + Octreotide-vasocntrict the bleeding vessels (IV) , so we can see clearly while scoping .

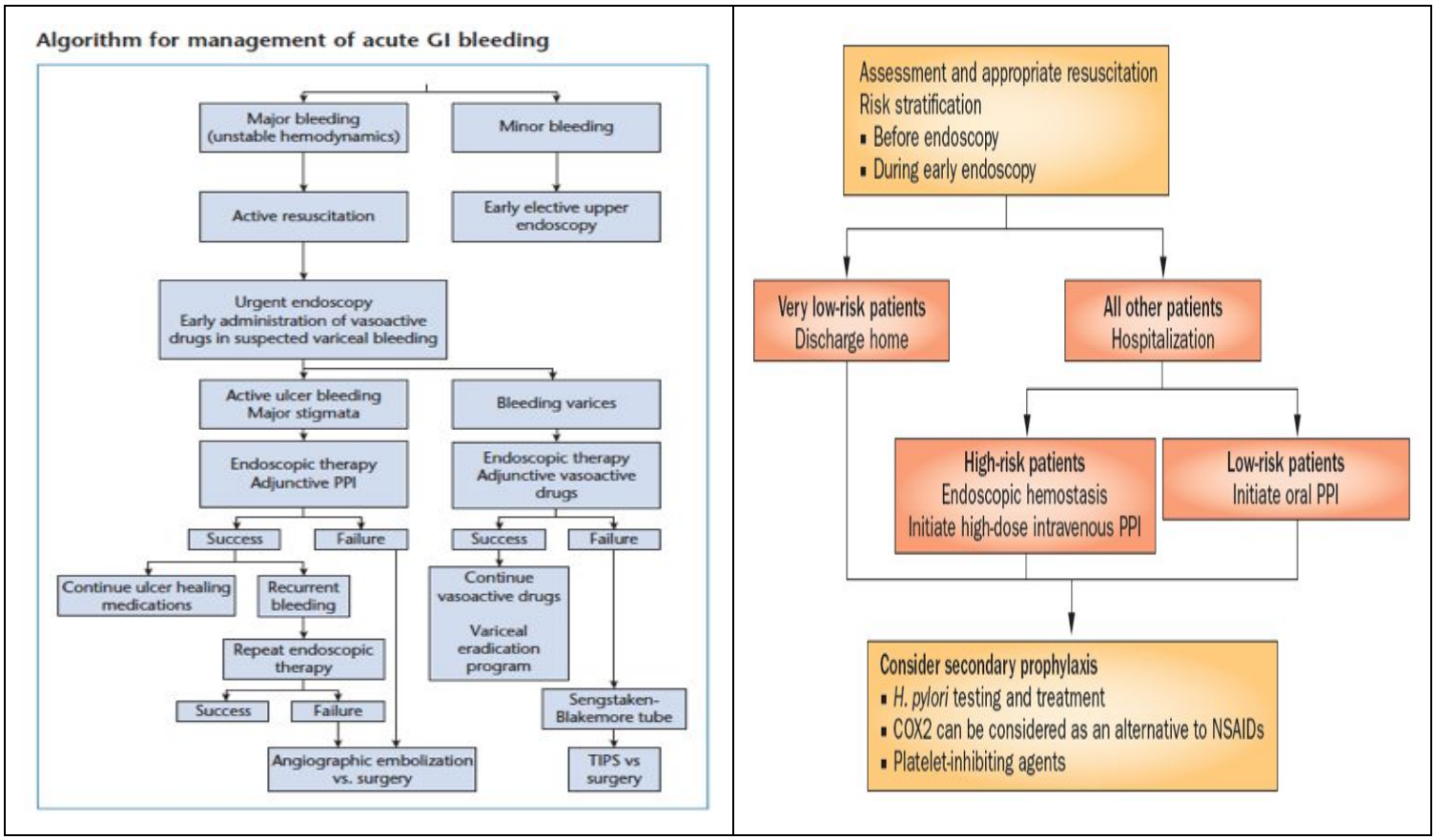
6- Timing of endoscopy

7- Endoscopic therapy clipping , banding , cauterizing .

8- Post-endoscopy

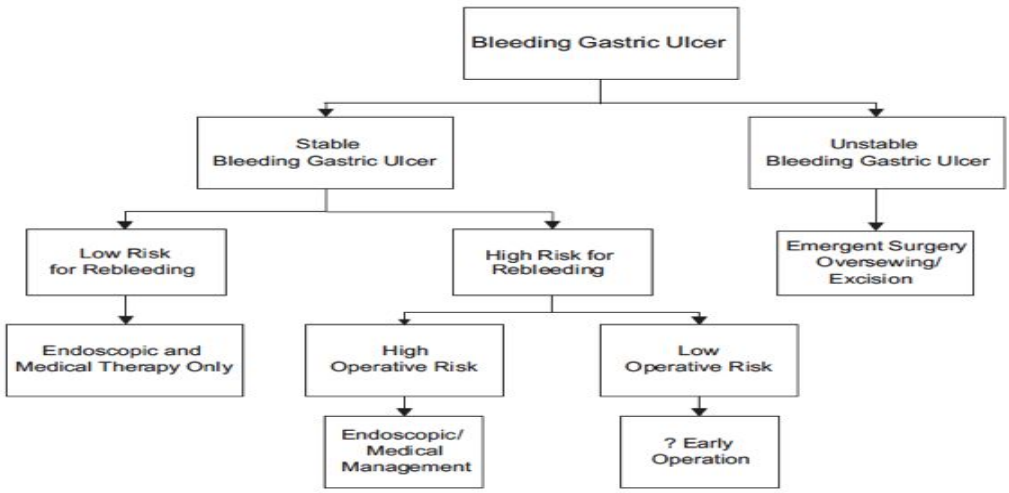
Algorithm for the Management of Acute GI Bleeding

DONT SKIP , READ IT !



-A young man who is known to have heart burn , with no comorbidities came with minor bleeding , book him and early elective endoscopy , you don't have to admit him !

When to go to Surgery



Conclusions

- Resuscitation should be initiated prior to any diagnostic procedure
- Gastrointestinal endoscopy allows visualization of the stigmata, accurate assessment of the level of risk and treatment of the underlying lesion
- Intravenous PPI therapy after endoscopy is crucial to decrease the risk of cardiovascular complications and to prevent recurrence of bleeding
- Helicobacter pylori testing should be performed in the acute setting

Cases

Case 1: A **65** years old male referred for evaluation of 4 months HX of weight loss, fatigue , and weakness. He also gave history of passing dark stool intermittently for the last 3 months. He is known DM on insulin , hyperlipidemia on statin and occasionally aspirin.

ESSENTIALS OF DIAGNOSIS

- Symptoms: Coffee ground vomiting, hematemesis, melena, hematochezia, anemic symptoms
- Past medical history: Liver cirrhosis, use of non-steroidal anti-inflammatory drugs
- Signs: Hypotension, tachycardia, pallor, altered mental status, melena or blood per rectum, decreased urine output
- Bloods: Anemia, raised urea, high urea to creatinine ratio
- Endoscopy: Ulcers, varices, Mallory-Weiss tear, erosive disease, neoplasms, vascular ectasia, and vascular malformations

What else you want to ask him? Trauma (abdominal aortic aneurysm) but not suitable with Hx of 3 months \ other symptoms like odynophagia or dysphagia (with solids or fluids) for esophageal pathology \ abdominal symptoms \ past medical "reflux" \ other GIB symptoms (^in the table)
Anemic symptoms: fatigue, SOB, dizziness, palpitation.
Hypotension: in severe presentation not like this case (3 months)
Raised urea: b\c of Hgb degraated in GIT then reabsorbed as urea. So high urea in relation to creatinine telling me that it's not AKI.

What is the likely diagnosis? Gastric cancer

What will be the next step? Scope

Case 2: A **42** years old male complaining of chronic recurrent epigastric pain which worsen recently especially when he is fasting(may indicate duodenal ulcer) For the last 2 days he started to have frequent vomiting associated with blood. He is not known to have any chronic medical problems and not on any medications.

What is the best next step in the approach of such patient?

-(its **acute** presentation so start with ABC)

- Detailed HX, Full Physical examination (vital sign, lock for clubbing, spider nevi, fluid thrill, splenomegaly, lymph nodes…)

How would you assess the bleeding severity?

By Risk Stratification

- Glasgow- Blatchford Score (GBS) the classical one and most commonly used and most accurate.
- Rockall Score
- Modified-GBS
- AIMS65 (A= albumin. I= INR, M= mental status, S=sBP, 65=age) , easiest to remember

What is the diagnosis and the associated risk factors? Peptic ulcer , "All these are consider risk factor"

Age >65
Previous peptic ulcer
Previous ulcer-related upper GI complication
High-dose NSAIDs
Multiple NSAID use
Selection of NSAID (e.g., COX-1 vs. COX-2 inhibition)
NSAID-related dyspepsia
Aspirin (including cardioprotective dosages)
Concomitant use of
NSAID plus low-dose aspirin
Oral bisphosphonates (e.g., alendronate)
Corticosteroids
Anticoagulant or coagulopathy
Antiplatelet drugs (e.g., clopidogrel)
Selective serotonin reuptake inhibitor
Chronic debilitating disorders (e.g., cardiovascular disease, rheumatoid arthritis)
Helicobacter pylori infection
Cigarette smoking
Alcohol consumption

[a]Combinations of risk factors are additive.

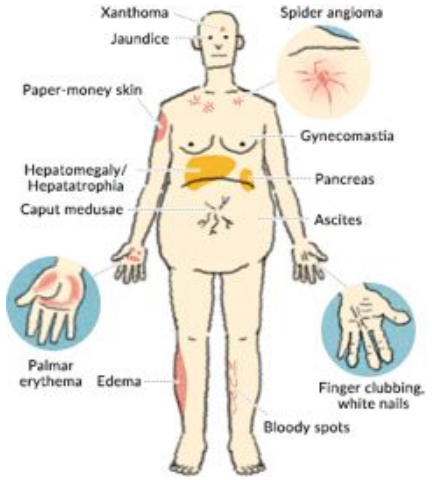
Data from references 1, 12–15, 20, and 29.

Case 3: A 52 years old lady presented to ER with one day history of vomiting of fresh blood (hematemesis). She also notices passing black tarry stool(melena). She is feeling **dizzy and unwell**(severity). Past HX of jaundice no other medical problems and not on any medications. Clinically jaundiced and pale. Vital signs BP 100/70 pulse **110/min**
Abdomen examination showed liver span of 7 cm and spleen felt 3 fingers below costal margin (enlarged, normal= not felt) with few spider nevi seen over chest. Clearly she has liver disease, which increases the risk of GI varices and eventually bleeding

-What is the likely diagnosis of this case and list 4 common aetiology ?
1-alcoholic liver disease (drug induced) 2-hepatitis C,B (autoimmune) 3-NASH 4-hemolysis disease (Sickle cell..)

-What is the priority in the management of this patient? IV Fluid Resuscitation

-What is the target Hb and INR prior to the endoscopy for this case? Check if she needs blood transfusion if HB<7 .



Symptoms of liver cirrhosis

- General malaise, fatigue
- Anorexia / weight loss
- Feeling of enlarged abdomen
- Swollen abdomen / legs
- Nose bleed / bleeding from lower limbs
- Jaundice / itch
- Hand tremors

Physical findings

- Skin pigmentation
- Xanthoma
- Spider angioma
- Palmar erythema
- Finger clubbing (hepatopulmonary syndrome)
- Caput medusae
- Gynecomastia
- Fever
- Hepatoceleoma
- Hepatic halitosis (dimethyls -ulphide, ketons in the expired breath)
- Jaundice
- Ascites, lower thigh edema
- Hepatic encephalopathy
- Bleeding plaque / purpura

Akuko Wakuta etc., Hepatobiliary and pancreas, 73(6), 979-984, 2016 (Partially modified)

Causes of liver cirrhosis:
1) Viral Hepatitis B, C.
2) Alcoholic liver disease.
3) Non-alcoholic fatty liver disease (NAFLD).
4) Autoimmune hepatitis
.5) Primary biliary cirrhosis.
6) Secondary biliary cirrhosis (associated with chronic extrahepatic bile duct obstruction).
7) Primary sclerosing cholangitis.
8) Hemochromatosis
9) Wilson disease.
10) Alpha-1 antitrypsin deficiency.
11) Granulomatous disease (eg, sarcoidosis).
12) Type IV glycogen storage disease.
13) Drug-induced liver disease (eg, methotrexate, alpha methyldopa, amiodarone).
14) Venous outflow obstruction (eg, Budd-Chiari syndrome, veno-occlusive disease).
15) Cardiac cirrhosis: chronic right-sided heart failure, tricuspid regurgitation

Case 4: A 47 years old male known to have alcoholic liver disease presented with hematemesis of large amount and dizziness after resuscitation an upper GI endoscopy done which showed multiple large oesophageal varix which was banded , however 12 hrs post endoscopy he continued to have melena with drop of Hb and hypotension.

What is the next step in the patient management?since it's persistent you can do surgery .

Summary

<table>
<tr><th colspan="3">GI Bleeding</th></tr>
<tr><td rowspan="2">Etiology</td><td>Upper GI Bleed</td><td>Lower GI Bleed</td></tr>
<tr><td>Peptic ulcer disease
Esophagitis, gastritis, duodenitis
Variceal bleeding
Mallory weiss tear
Dieulafoy's lesion (vessel that bleed and disappear)
Malignancy</td><td>Diverticular disease
Angiodysplasia
IBD
Colorectal carcinoma
Colorectal adenomatous polyps</td></tr>
<tr><td>Clinical features</td><td colspan="2">● Type of bleeding:
○ Hematemesis → vomiting fresh red blood
○ "Coffee grounds" emesis → upper GI bleed with low rate of bleeding
○ Melena → black, tarry,, foul smelling / suggest upper GI bleed 90% of time.
○ Hematochezia → usually a lower GI source, may result from massive upper GI bleed (5 - 10%).
● Sign of volume depletion (tachycardia, hypotension, low urine output, etc..)
● Symptoms and signs of anemia (fatigue, pallor, exertional dyspnea, etc..)</td></tr>
<tr><td>Diagnosis</td><td colspan="2">● Laboratory tests:
○ CBC → hemoglobin, hematocrit level.
○ Coagulation profile
○ LFTs and renal function
○ BUN-creatinine ratio
● Upper endoscopy
● Nasogastric tube
● Colonoscopy
● Arteriography</td></tr>
<tr><td>Management Approach</td><td colspan="2">1- Risk assessment (AIM65 score)
2- Resuscitation: Hemodynamic status (give Packed RBC if Hb < 7 g/dL)
3- Endoscopy (early endoscopy from 6 to 24 hrs after initial presentation) → may be delayed if pt has active ACS or suspected perforation (do x-ray to exclude)
4- Prevent recurrence</td></tr>
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