



# Gastrointestinal Bleeding

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## Objectives

Upon completion of this module, you should be able to:

1. Discuss the initial assessment, management and disposition of a patient presenting to the emergency department with a gastrointestinal (GI) bleed
2. Discuss the decision making process for blood transfusion in a patient with a GI bleed, including packed red blood cells and administration clotting factors
3. Understand the management of abnormal vital signs in a patient with a GI bleed
4. List common causes of a GI bleed

## Introduction

GI bleeding is a common cause of emergency department visits. In the United States, it is estimated that about 540,000 hospitalizations occur each year due to GI bleeding. A patient can be hemodynamically stable with hemeoccult positive stool or hemodynamically unstable and at significant risk of mortality with large volume blood loss. Generally, GI bleeding is categorized into upper and lower GI bleeds. The ligament of Treitz crosses the small intestine at the duodenal-jejunal junction and is the anatomic dividing line between upper and lower GI bleeds. Proximal to the ligament of Treitz is considered an upper GI bleed (UGIB) while distal is considered a lower GI bleed (LGIB). GI bleeding can also be categorized as acute or subacute. Acute GI bleeding often results in the need for more urgent intervention and stabilization than subacute bleeding. Initial management regardless of the source or acuity is stabilization of the patient, and then attempting to manage the source of bleeding depending on the etiology.

## Initial Actions and Primary Survey

The initial management of a patient with a GI bleed is to perform a primary survey and initiate stabilizing care. Adequacy of the airway, breathing and circulation must be the initial concern for any patient with an acute GI bleed and/or hemodynamic instability. Some patients, particularly those with hematemesis, may require intubation for airway protection. A patient may have altered mental status due to blood loss (hypovolemia) and may require intubation due to a decreased level of consciousness and respiratory effort. In addition, intubation in severely ill patients may be necessary to facilitate urgent endoscopy in the emergency department or the intensive care unit (ICU).

Intravenous (IV) access should be obtained during your initial evaluation of the patient. A minimum of 2 large bore IVs should be placed. If this is not possible, a trauma line or cordis (8.5 French line) should be considered if rapid resuscitation with fluids or blood products is required. This will allow for more rapid resuscitation and volume repletion than a standard single or triple lumen central line. If a patient is acutely unstable, consider transfusing un-crossmatched blood and IV fluids while a type and cross is being performed. If your hospital has a massive transfusion protocol and you think it may be needed due to large volume blood loss, activation of this protocol after the initial evaluation should be considered as well.

Signs and symptoms of massive blood loss on arrival are the same as in an acutely injured trauma patient or any other acute diagnosis of blood loss. Tachycardia, hypotension, or active bleeding indicates the need for IV fluids, and consideration of a blood transfusion if vital signs remain abnormal despite administration of isotonic saline.

## Esophageal Tamponade

In patients with a severe UGIB that cannot be controlled, unstable vital signs, and no ability for emergent endoscopy, esophageal tamponade can be considered. A Sengstaken-Blakemore tube is inserted in a manner similar to an NG tube, and then the two balloons are inflated. The first balloon sits in the stomach and the second in the esophagus. There are significant risks to this procedure, including esophageal rupture. A more detailed review of the use of this device can be found at: <http://emedicine.medscape.com/article/81020-overview> (<http://emedicine.medscape.com/article/81020-overview>).

## Laboratory Evaluation

Labs should be drawn and sent for STAT assessment of the patient's blood count, renal function, and coagulation profile. Generally, a complete blood count, chemistry (including BUN and creatinine), PT, PTT, and type and cross should be sent. The laboratory studies often serve as a baseline for future comparison. In the setting of hemodynamic instability, blood should be transfused and further blood should be cross-matched and held until the patient's bleeding has resolved.

## Blood Transfusion

The primary indication for blood transfusion is hemorrhagic shock despite IV fluid resuscitation. Also, in patients with subacute bleeding and a hemoglobin of 7, or symptomatic anemia (including dyspnea, lightheadedness, and chest pain) at a hemoglobin of 8 or 9, transfusion should be considered. If a patient is actively bleeding, particularly with abnormal vital signs, earlier transfusion may be indicated despite a higher hemoglobin as the blood volume may not have had time to equilibrate. In addition, the hemoglobin concentration always needs to be viewed in context to the clinical condition of the patient. If the GI bleed is acute, the hemoglobin may be relatively normal despite significant blood loss. If the GI bleed is sub acute / chronic a lower hemoglobin may be seen in a hemodynamically stable patient. In addition, keep in mind the possibility of a post resuscitation dilutional anemia that can occur after administration of a large volume of IV fluids. Indications to consider immediate transfusion include:

- Massive upper or lower GI bleed (e.g. passing 1000 mL maroon-colored thin liquid stools every 20-30 minutes or an NG tube with a constant output of blood )
- Hemoglobin dropping at a rate of 3g/dL over 2-4 hours in the setting of active bleeding
- Hemoglobin less than 9 in the setting of active bleeding
- Anemia induced end-organ injury (i.e. EKG changes or lab results indicating cardiac ischemia)

## Reversal of Anticoagulation

If a patient is taking an anticoagulant or antiplatelet agent (Warfarin, clopidogrel, aspirin, or other blood thinner) transfusion of the appropriate reversal product should be considered. Fresh frozen plasma (FFP) or cryoprecipitate should be given to reverse Warfarin, and platelets can be considered for reversal of aspirin or clopidogrel. However, the reason for anticoagulation should be considered and the risks and benefits of reversal should be weighed to determine if the patient needs to remain anticoagulated. Often this decision is not always clear cut. For example, in a patient with a mechanical heart valve on Warfarin, the risk of reversal may be greater than the risk of bleeding, particularly if the source of GI bleed can be identified and treated. Conversely, if a patient had a prior DVT and is on Warfarin, it would be reasonable to reverse the coagulopathy immediately regardless of the source of bleeding. The newer oral anticoagulants like dabigatran, rivaroxaban and apixaban are more difficult to reverse than Warfarin. Dabigatran can be dialyzed if necessary, and prothrombin complex concentrate (PCC) may be effective with all three medications at variable levels. There are antibodies to these medications being developed that may be helpful in the future.

In patients with cirrhosis and likely variceal bleeding, FFP or clotting factor replacement should be considered, as these patients may not be synthesizing enough intrinsic clotting factors to allow for proper coagulation. Blood pressure should also be monitored in the patients so as to not over-correct hypotension as hypertension may decrease clot stability during the process of clot formation.

### Location of Bleeding

The patient history may help you identify the source of bleeding. Hematemesis (red blood in emesis) or coffee ground emesis usually indicates upper GI bleed. Melena (dark or tarry stools) occurs in about 70% of patients with upper GI bleed and 30% of lower GI bleed. Hematochezia (blood in the stool) can be due to LGIB or an UGIB with significant bleeding and increased GI motility. In one meta-analysis, Srygley et al reported that a patient report of melena had a likelihood ratio of UGIB of 5.1-5.9, melanotic stools on exam had a likelihood ratio of 25.

An NG tube can be placed if a patient has intractable emesis or if there is still a question about if the patient has an upper GI bleed. This may also help assess the rate of an UGIB. If the patient has blood clots in the stomach, they may need irrigation with 100-200 mL aliquots of room temperature water or saline to help maintain flow in the NG tube. There is some controversy regarding the utility of an NG tube for diagnostic assistance in the differentiation of GI bleed source. Remember, inserting an NG tube is often uncomfortable and can result in epistaxis. In the hemodynamically unstable patient with an UGIB, it is unclear that NG tube insertion is helpful as these patients require urgent endoscopy after resuscitation. However, in the stable patient without ongoing hematemesis, aspiration of fresh red blood can be indicative of a high-risk lesion.

A bleeding scan can be considered for patients with moderate lower GI bleeding (stable vital signs with or without administration of blood products). In particular, this test can be useful in a patient with recurrent GI bleed, with a negative colonoscopy and endoscopy in the past for similar bleeding episode. A positive scan can guide surgical or interventional radiology management of a chronic, recurrent GI bleed.

### Pharmacologic Management

#### Proton Pump Inhibitors (PPI)

Generally, PPIs are first line for acid suppression in patients with upper GI bleed. In a low-risk patient who is likely to be admitted to the hospital, an empiric IV PPI can be started (i.e. 40 mg IV BID) and continued until the source of bleeding is found. In a patient with more severe, active bleeding, or in the case of a patient with comorbidities that make them higher risk, an IV bolus followed by a continuous infusion of protonix (80 mg bolus followed by 8 mg/ hour drip) can be considered as well, particularly in the case of concern for peptic ulcer disease as the source of GI bleed.

#### H2 blockers

Histamine H2 blockers are often second line and used to reduce acid production in an outpatient setting as a PO medication. Except when a PPI is contraindicated, H2 blockers are seldom used in the emergency setting for management of an acute GI bleed. H2 blockers have failed to keep gastric pH above 6 as compared to PPIs. This class of medication is more appropriate for management of gastritis or GERD.

#### Somatostatins

In patients with known or highly suspected variceal bleeding, octreotide (synthetic somatostatin) causes vasoconstriction of splanchnic blood flow resulting in decreased secretion of gastric acid and pepsin and can be administered as a IV bolus followed by an IV drip. There is no evidence to support its use in non-variceal upper GI bleeds.

#### Antibiotics

When a patient with a GI bleed has a history of Cirrhosis, it is recommended that antibiotics be considered as administration of antibiotics has been shown to reduce mortality by about 20%. In some studies, up to 20% of patients with cirrhosis and GI bleed have an underlying bacterial infection. The American Association for the Study of Liver Diseases recommends considering ceftriaxone as first line management and ciprofloxacin as second line treatment if ceftriaxone is contraindicated.

#### Disposition

Some patients with a mild GI bleed can be dispositioned to home. In general, these patients will have no more than a mild anemia, no active bleeding besides a positive stool guaiac or blood streaked emesis (presumably from Mallory Weiss tears). They should have prompt follow-up identified for monitoring of their hemoglobin and referral to gastroenterology for endoscopy or colonoscopy as appropriate.

Patients with more severe or acute GI bleeding will require admission. The decision for admission to the floor versus the ICU depends on several factors including

- Unstable vital signs
- Rate of bleeding
- Need for blood transfusion
- Potential for decompensation
- Comorbidities
- Need for procedures/ sedation only available in the ICU or OR

Many patients who go to the ICU will need emergent endoscopy. This may be performed in the operating room or in the ICU, or occasionally in the ED. If a perforated ulcer is suspected, for example, the patient might benefit from endoscopy in the operating room so that if resection/ repair is needed, this can be rapidly performed. Similarly, if there is concern for massive lower GI bleeding, the patient may go to the operating room for partial small bowel resection or colostomy.

## Differential Diagnosis

The differential diagnosis of GI bleed is relatively broad and generally categorized as either UGIB or LGIB. The list of potential causes include:

### Upper GI Bleeding

- Gastric ulcer
- Duodenal ulcer
- Gastritis
- Esophagitis
- Gastroesophageal varices
- Mallory-Weiss tear
- Aortoenteric fistula
- Malignancy

### Lower GI Bleeding

- Diverticulosis
- Meckels diverticulum
- Angiodysplasia
- Malignancy
- Colitis (due to infection , ischemia, inflammatory bowel disease)
- Anorectal (hemorrhoids, fissures)

## References

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### Free Open-Access Medical Education (FOAMed) Resources

- Life In The Fast Lane, Upper GI Bleed (<http://lifeinthefastlane.com/collections/ebm-lecture-notes/upper-gi-haemorrhage/>) and Lower GI Bleed (<http://lifeinthefastlane.com/lower-gi-bleeding/>)
- YouTube Video, Upper GI Bleed (<https://youtu.be/IP7jRGHWrVw>) and Lower GI Bleed (<https://youtu.be/anivrOGw0mk>)