Gastrointestinal bleeding is a very common problem in emergency medicine. Between 50 to 150 people per 100,000 in a population present with this problem per year. It also attributes to 250,000 annual admissions. In addition, approximately one billion dollars are spent a year in health care costs alone for problems related to gastrointestinal bleeding. Another major issue related to gastrointestinal bleeding, which definitely makes it pertinent to emergency medicine, is the mortality rate is approximately 5 - 10% and has decreased in the past 15 years. Gastrointestinal bleeding can occur at any place along the gastrointestinal tract and we'll be classifying it as either upper or lower tract bleeding depending on whether the bleeding is proximal or distal to the ligament of Treitz. The ligament of Treitz is the duodenal suspensory ligament that attaches to the junction of the duodenum and jejunum.

Gastrointestinal bleeding can occur at any age. The most common age is 50 to 80 years old. Upper gastrointestinal bleeding is more common in adult males in comparison to females by a 2:1 ratio. Lower gastrointestinal bleeding, on the other hand, is more common in females. Upper gastrointestinal bleeding and lower gastrointestinal bleeding stops spontaneously in 80% of the cases.

**Upper GI Bleeds**

Upper GI (UGI) bleeding can be classified into several broad categories based upon anatomic and pathophysiologic factors. Several studies have described the most common causes. Results have varied, possibly reflecting trends over time or difference in study design, population and definitions. We will discuss the two most common causes:

1. Peptic Ulcer Disease
2. Esophageal Varicose
Peptic Ulcer Disease

Gastroduodenal ulcer disease remains a common cause of UGI bleeding. There are four major risk factors for bleeding peptic ulcers:

1. Helicobacter pylori infection
2. Nonsteroidal anti-inflammatory drugs (NSAIDs)
3. Stress
4. Gastric acid

Reduction or elimination of these risk factors reduces ulcer recurrence and rebleeding rates.

*Helicobacter pylori*: Helicobacter pylori is a spiral bacterium that infects the superficial gastric mucosa and appears to be transmitted by the fecal–oral route.
*Nonsteroidal Anti-inflammatory Drugs (NSAIDs):* NSAIDs, including aspirin, are a common cause of gastrointestinal ulceration. NSAID-induced injury results from both local effects and systemic prostaglandin inhibition. The majority of these ulcers are asymptomatic and uncomplicated. However, elderly patients with a prior history of bleeding ulcer disease are at increased risk for recurrent ulcer and complications. NSAIDs also have been implicated as an important factor for non-healing ulcers.

*Stress:* Stress related ulcers are a common cause of acute UGI bleeding in patients who are hospitalized for life-threatening non-bleeding illnesses. Patients with these secondary episodes of bleeding have a higher mortality than those admitted to the hospital with primary UGI bleeding. The risk of stress ulcer-related bleeding is increased in patients with respiratory failure and those with a coagulopathy.

*Gastric acid:* Gastric acid and pepsin are essential cofactors in the pathogenesis of peptic ulcers. Impairment of mucosal integrity by factors such as H. pylori, NSAIDs or physiologic stress leads to increased cell membrane permeability to back diffusion of hydrogen ions, resulting in intramural acidosis, cell death and ulcerations.

**Esophageal Varicies:**

Esophageal varicies develop as a consequence of systemic or segmental portal hypertension. The most common causes of systemic portal hypertension in the United States are alcoholic liver disease and chronic active hepatitis.

**Clinical presentation:**

Upper GI bleeds may be obvious or subtle depending on the briskness of bleeding the patient is having. Symptoms may range from having mild abdominal discomfort to severe pain. Bleeding may present as hematemeses (vomiting of blood or coffee-ground like material) and/or melena (black tarry stools).
Lower GI Bleeds

Lower gastrointestinal bleeding (LGIB) refers to blood loss of recent onset originating from a site distal to the ligament of Treitz. It usually suspected when patients complain of hematochezia (passage of maroon or bright red blood or blood clots per rectum). This is different from the clinical presentation of upper GI bleeding, which includes hematemesis (vomiting blood or coffee-ground like material) and/or melena (black, tarry stools). Although helpful, the distinctions based upon stool color are not absolute since melena can be seen with GI bleeding from the right colon (or small intestine), and Hematochezia can be seen with massive upper GI bleeding.

As you can see on the chart there are many causes of lower GI bleeding. We will discuss the most common cause which is diverticulosis.

**Diverticulosis**

A diverticulum is a sac-like protrusion of the colonic wall. The prevalence of diverticulism disease is age-dependent, increasing from less than 5% at age 40 to 30% by the age of 60 and than to 65% by the age of 85%. The high prevalence of the disease explains why diverticulosis is the most common cause of LGI bleeding even though fewer than 15% of patients with diverticulosis develop significant bleeding. Diverticular bleeding typically occurs in the absence of diverticulitis ( ), and the risk of bleeding is not further increased if diverticulitis is present.

As a diverticulum herniates, the penetrating vessel responsible for the wall weakness at that point becomes draped over the dome of the diverticulum, separated from the bowel lumen by just mucosa.
Over time, the vessel wall is exposed to injury along its luminal aspect, leading to segmental weakness which predisposes the vessel to rupture into the lumen. Diverticulum bleeding may be massive and life-threatening since diverticula often form at the site of arterial vascular penetration. The bleeding is usually painless except for mild crampy abdominal discomfort due to colonic spasm from intra-luminal blood.

Risk factors for diverticular bleeding include:

⇒ Lack of dietary fiber
⇒ Constipation
⇒ Aspirin and NSAIDs
⇒ Advanced age.

**Assessment and Treatment**

Pre-hospital treatment and evaluation starts with an initial survey to include airway, breathing, circulation, and mechanism of injury. Gastrointestinal bleeding is no different from any other emergency and requires the ABC's initially. Unresponsive patients and those unable to protect their airways will need to be intubated and given 100% oxygen. Patients that cannot be intubated in the field due to excessive bleeding, vomiting, or anatomy can be managed safely and effectively by the KING tube (unless you suspect esophageal varices). Pre-hospital treatment and evaluation is based on a patient's hemodynamic status. If there are any signs of any shock or unstable gastrointestinal bleeding, the priority is rapid transport.

The pre-hospital provider is going to be looking for signs of hemorrhagic shock.

For those patients who are unstable, no extra time should be taken at the scene establishing intravenous access. Large bore, intravenous line, should be placed enroute.

If there are objective findings of bleeding, document the quantity of blood. If time permits, utilize friends, family, or neighbors for a brief history. Also transport any medical records or medications if available. And all patients with active gastrointestinal bleeding, or those patients who are older than 40 years old, are potentially unstable and if possible should be transported on cardiac monitor and again with at least one large bore, 14 or 16 gauge peripheral intravenous catheter line in place if time permits.
1. Gastrointestinal bleeding is classified as either upper or lower tract bleeding depending on whether the bleeding is proximal or distal to the:
   A. Stomach
   B. Duodenum
   C. Ligament of Treitz
   D. Bile Duct

2. The two most common causes of UGI bleeding are ________________ and ____________________.

3. Four major risk factors for bleeding peptic ulcers are:
   A. ________________
   B. ________________
   C. ________________
   D. ________________

4. Esophageal varices develop as a consequence of systemic or segmental:
   A. Left sided heart failure
   B. Portal hypertension
   C. Esophageal Obstruction
   D. Pancreatitis

5. Common presenting symptoms of an UGI bleed include:
   A. Vomiting bright red blood or coffee ground material
   B. Pale Stools
   C. Bright red stools
   D. Fever

6. Lower GI bleed is suspected when the patient complains of:
   A. Melena (Black tarry stools)
   B. Hematochezia (maroon stools or bright red blood from rectum)
   C. Hematemesis
   D. Fever

7. The chance of developing diverticulosis increases with age:
   A. True
   B. False
8. Risk factors for developing diverticular bleeding include
   A. __________________
   B. __________________
   C. __________________
   D. __________________

9. The location of a GI bleed (upper or lower) can always be decided by the color of the patients stool
   A. True
   B. False

10. You were called to the scene of a patient not feeling well. Upon arrival you find an approximately 56 year old gentleman. He is sitting at a kitchen table. He states he has not been feeling well and has been vomiting. He is pale and cool to the touch. You not there to be dried red blood in the garbage can sitting next to him. He states he has been to weak to get up to go to the bathroom when he is sick. He tells you he has been vomiting for about 8 hours. The last several times have seemed very bloody to him. He denies passing any stool. VS BP 102/60, P 118, RR 20. Pulse Ox 96% on room air. He states he is dizzy when he tries to walk. Discuss in detail you plan of care, including important elements of your history and assessment you want to include in your documentation.