THE NORTHERN HOSPITAL

# GASTROINTESTINAL BLEEDING (UPPER)

*Cedar Mountain, Civil War Period, c. 1863.*

*"On the evening of the 9th instant, God blessed our arms with another victory"*

*Stonewall Jackson, August 1862*

*"It appeared to me that there was a dead Yankee on every ten square feet of that field"*

*Lieutenant John Monroe Blue, Virginia Cavalry,*
*Cedar Mountain,, August 1862.*

*"Thanks to a merciful Providence, I breathe & have all my limbs. I have had enough of the "glory" of war. I am sick of seeing dead men & men's limbs torn from their bodies"*

*James Marshall Binford, 21st Virginia, August 1862*

*After the disaster of the Seven Days, Lincoln removed George B. McClellan from overall command of the Union armies now putting put his faith into a western commander, tall bombastic John Pope. Pope so often bragged that his headquarters were in the saddle, people sniggered that he had his headquarters where his hindquarters should be. After some successes in the west, Pope had come to the east, he claimed, to teach easterners how to fight.*

*Lincoln had been warned that Pope was an out and out liar, nonetheless, desperate for a commander that would show some fight in Virginia he was prepared to see what he could do. "I've known the Popes back in Illinois, known all of them. There're all liars and braggarts" Lincoln exclaimed, "But I don't know of any particular reason why a liar and braggart shouldn't make a good general!"*

*The plan was simple, McClellan, to his total disgust and humiliation, was to withdraw his massive but defeated army from the Virginia Peninsula, where it was cowering behind the James River, and was to be sent to reinforce a new army under Pope, termed the Army of Virginia (not to be confused with Lee's Army of Northern Virginia). Pope's army of 50,000, largely an amalgam of the remnants of the three armies Stonewall Jackson had shattered in the Shenandoah would be reinforced with the bulk of McClellan's army. Pope would move into Northern Virginia following McDowell's old route through Bull Run, and take the vital rail works at Gordonsville, then when reinforced with McClellan, would at last move on Richmond.*

*Pope's first act of the newly designated Army of Virginia however did not endear him to eastern commanders nor did it do anything to diminish his reputation as an inveterate braggart. "I have come to you out of the West", he announced, "where we have always seen the backs of our enemies. I am sorry to find so much in vogue amongst you….certain phrases (like)… "lines of retreat, and "bases of supplies"…let us study the lines of retreat of our opponents, and leave our own to take care of themselves. Let us look before us and not behind. Success and glory are in the advance, disaster and shame lurk in the rear!"*

*Eastern commanders were not impressed.*

*Opposing Pope would be Stonewall Jackson and Robert E. Lee. Pope would have been far better served studying the contingency his own lines of retreat, rather than those of his enemies.*

*Pope, unlike McClellan, was more than willing to take the initiative. Immediately upon receiving his command he moved into northern Virginia making straight for vitally strategic point of the great Gordonsville rail junction. Robert E. Lee now saw the extreme danger that Richmond faced. If he moved at this time on Gordonsville to meet Pope, this would leave Richmond exposed to McClelland's Army of the Potomac on the James. But when he learned of the Union plan to withdraw McClellan from the Peninsula and link up with Pope, he knew then that he had only one chance. Against all military convention he would have to divide his much*

*smaller army in the face of a superior enemy, and attack Pope and defeat him before he could be reinforced by McClellan. Counting on the glacial speed with which McClellan usually moved, he sent Stonewall Jackson with just 14,000 men to Gordonsville, then waited to see what McClelland would do. Jackson then, incredibly, chose to go on the offensive, attacking Pope's vanguard under his old Shenandoah adversary, Nathaniel Banks. It was an extremely risky move, but the alternative was simply to await the arrival of the entire Army of Virginia bearing down on his position at Gordonsville.*

*On the 9th of August the vanguard of Jackson's force, Ewell's division, clashed with Federal cavalry and artillery occupying a ridge above Cedar Run, just to the north-west of Cedar Mountain. The Federals though outnumbered fought back courageously, and actually managed to outflank the Confederates. The Confederate commander of the action, General Winder was killed by an artillery shell, sending confusion and disarray through the Confederate ranks. It looked as though the Stonewall Brigade itself was about to be obliterated. Word was sent back urgently to Lee; "Jackson was under attack and was falling back!" With McClellan still sulking in his tent, not looking like making any move at all, either on Richmond or to reinforce Pope, Lee sent 13,000 troops under A.P Hill to Jackson's assistance. At this critical juncture Jackson's blood was up, his blue eyes alight. He screamed at his men to hold firm, and for the first and only time in the war drew his sword. He also grabbed a Confederate flag then personally led a counter-attack. His men would follow him anywhere and so they did. After a somewhat sluggish performance during the Seven days, here once again was the old Stonewall Jackson of Bull Run!*

*Though it would make for heroic reading, this time rather than Jackson's men, as at Bull Run it would in reality be A.P Hill who came to the rescue in the proverbial nick of time. Hill's men came crashing down on the Federals with terrifying rebel yells and soon had them in full retreat. Though Cedar Mountain was one of the few times in the war Jackson would be caught off guard, his astonishing courage rallied his troops to hold the line until the arrival of Hill. Banks once again was in full retreat, and would not stop still he rejoined the main Army under Pope. Jackson had held Gordonsville and thwarted the first part of Pope's grand plan.*

*Robert E. Lee now saw his chance. Learning that McClellan had finally begun to move off the Peninsula, he left just 20,000 troops in defense of Richmond, and rushed to join Jackson at Gordonsville. Now there would be roughly equal odds, Lee with 50,000 thousand Confederates, facing Pope with 50,000 Unionists - the best odds Lee would ever have. He did not hesitate - he moved toward the old battle ground of Manassas, where he routed Pope, sending him and the entire Army of Virginia fleeing back to the Potomac. It was a stunning victory. The South had been saved by Jackson and Lee for the third time - but the Second Battle of Bull Run as Northerners would come to refer to it, cost five times the number of casualties, that had so shocked the nation following the First Battle there.*

*When we have patients who present with hematemesis, we face the potential for an impending disaster! We need recall the pre-emptive strike of the great Confederate General, Robert E. Lee at the Battle of Cedar Mountain. Lee had an unsurpassed ability to read any situation in battle, and so many of his great victories were consequent upon this ability. When faced with patients with hematemesis we must appreciate the fearful potential for bloody disaster, and so we must go immediately onto the offensive, before any catastrophic deterioration of the situation.*

# GASTROINTESTINAL BLEEDING (UPPER)

## Introduction

**Acute upper Gastro-Intestinal Bleeding** is characterized by **hematemesis** (i.e the vomiting of blood) and may be accompanied by **melaena** (i.e the passage of black altered blood from the upper GIT)

**All cases of actual or suspected hematemesis and melaena must be assessed in a timely manner within the Emergency Department.**

**All cases of actual or suspected hematemesis and melaena must be considered potentially life-threatening in the first instance.**

The **Glasgow-Blatchford Bleeding score (GBS)** is a useful scoring system used in the assessment of patients who present with upper GIT bleeding and has now largely replaced the Rockall score.

One particular advantage of the Glasgow-Blatchford Bleeding score is that it may be used to identify those patients who may be safely discharged from the ED, for outpatient management.

The Glasgow-Blatchford score is **not** applicable for **variceal bleeding.**

**The mortality from an acute *variceal* bleed ranges from 10 - 20%.**

**Haematochezia (red or maroon blood in the stool) with shock or an unclear source of bleeding (i.e upper vs lower) should be managed as per an upper GI bleed until proven otherwise**

**See also separate documents on:**

- **Glasgow-Blatchford Score (in GIT folder)**
- **Octreotide (in Drugs folder)**
- **Terlipressin (in Drugs folder)**

## Pathophysiology

Upper GIT bleeding is manifested by frank hematemesis or "coffee ground" vomitus.

"Upper has traditionally been defined as bleeding of the GIT proximal to the ligament of trietz, at the distal end of the duodenum.

*The four commonest causes are:*

1. Peptic ulceration.
2. Erosions:

- Gastritis/ esophagitis / duodenitis.

3. Esophageal / gastric varices.

4. Mallory Weiss tear.

*Other less common causes include:*

5. Tumour.

6. A-V malformations.

7. Aorto-enteric fistulae:

   - Suspect in any patient who has had an aortic graft
   - Produces massive bleeding

8. Bleeding disorders.

## Clinical Assessment

*Important Points of History:*

1. Estimate of blood loss

2. Nature of blood loss

   "Coffee grounds" indicates slower rates of bleeding

   Bright blood indicates faster rates of bleeding

2. Did syncope occur? (used in the GBS score)

3. Drugs, especially:

   - Warfarin, aspirin, NSAID or DOAC use.

4. Past history, in particular:

   - Alcohol abuse
   - Any previous GIT bleeds and diagnosis given for these, particularly variceal bleeding.
   - Liver disease (in particular cirrhosis - suspect varices).
   - Aortic graft surgery.

- Any other significant co-morbidities n particular:
  - ♥ Heart failure (used in the GBS score)
  - ♥ Renal impairment

*Important Points of Examination:*

1. ABC assessment:
   - Look for signs of shock
   - In apparently more stable patients; postural drop (>20 mmHg)
2. GCS assessment:
   - Confusion suggests the possibility of **hepatic encephalopathy**, in patients with known chronic liver disease.
3. Signs of anemia:
   - Suggests a **chronic** blood loss - conjunctival pallor generally indicates a Hb of less than 10 gms/dl)
4. Abdominal examination:

   Especially for signs suggesting the possibility of **variceal** bleeding:
   - Chronic liver disease, (jaundice, spider nevi, gynecomastia)
   - Portal hypertension, (splenomegaly, ascites)
5. PR for the detection of melaena.
   - It is important to recognize that a negative PR exam for melaena does not necessarily rule out a GIT bleed, especially if bleeding is recent.

     Similarly a lack of overt hematemesis does not necessarily rule out a GIT bleed.
   - If uncertainty remains and clinical suspicion is high, then a NG tube may be considered to look for the presence of fresh upper GIT blood if there is no suspicion of varices / portal hypertension, though a negative aspirate does not necessarily exclude a significant bleed.

## Investigations

*Blood tests:*

1. FBE.

2. U&ES / glucose.

3. LFTs.

4. Clotting profile

5. X-matching of blood (2-4 units according to the clinical picture).

    - FFP and platelets should also be ordered if bleeding is severe or the patient has a coagulopathy.

6. VBGs/lactate:

    - Gauge severity of illness.

7. Ammonia levels (if hepatic encephalopathy suspected).

Others as clinically indicated.

*ECG:*

As for any significantly unwell patient.

*CT scan*

If aortic-enteric fistula is suspected, then an urgent CT angiogram scan will be required.

*CXR*

May be considered as part of general workup, especially in the elderly with chronic cardiac or respiratory disease, however if there is no specific indication this should not delay other more critical investigations/ interventions.

*Occult blood testing:*

If there is doubt over whether "coffee grounds" represents blood, or if a patient is taking iron tablets causing uncertainty regarding the presence of melaena, then samples may be sent to pathology to be tested for the presence of blood.

## Management

1. ABC measures:

    Resuscitation as required:

For *actual*, *suspected* or *anticipated*, large bleeds:

- Two large bore (i.e 16 or 18 G) IV cannulae placed and appropriate fluid resuscitation commenced.

  Both lines should be of the "pump" set type, so that fluid can be pumped through by hand if necessary.

- Initial IV **crystalloid fluid resuscitation**, 10-20 mls/kg initial bolus, then as clinically required.

- Commence **blood products**, as the clinical situation dictates.

  **Activate hospital Massive Transfusion Protocol if required.**

  *In general terms:*

  Packed cells:

  **Transfuse if haemoglobin < 7.0 and aim for a Hb of around 70-90)**

  Patients should always be resuscitated to restore and maintain hemodynamic stability.

  Avoid *over-transfusion* however because this can cause further increases in portal pressure - for most patients, aim for a haemoglobin concentration of 70 - 90 g/L.

  **If the patient has a concurrent Acute Coronary Syndrome (aim for a Hb of 100)**

  It is important to give blood products, packed cells, FFP and platelets early in any patient at high risk from coagulopathy.

  At risk patients include:

  ♥ Chronic liver disease.

  ♥ Uremic patients

  ♥ Blood dyscrasias, including thrombocytopenia.

  ♥ Patients on anticoagulants

  ♥ **Any patient with significant GI bleeding who is on warfarin should receive Prothrombinex-HT as early as possible, even without waiting for results of investigations.**

♥ **Any patient with significant GI bleeding who is on dabigatran, should have this reversed with idarucizumab.**

Platelets:

Do not give platelet transfusions to a non-bleeding, haemodynamically stable patient.

Consider platelet transfusion to an actively bleeding patient with a platelet count $< 50 \times 10^9$/L

FFP or cryoprecipitate:

Consider FFP or cryoprecipitate according to INR (> 1.5 x normal) and fibrinogen levels (< 1.5 grams/L)

2. Establish monitoring:

Hemodynamic monitoring is important in the compromised patient. The degree of monitoring initiated will depend generally on how unwell the patient is.

**It should be noted that attempts at invasive monitoring should never be allowed to delay time to definitive treatment.**

The following will need consideration.

- ECG monitoring, (in all cases).
- Urinary catheter.
- Arterial line.
- CVC may be placed if the patient's clinical condition allows time for this. This procedure however should not delay endoscopy / ICU admission or other more urgent measures.

3. **Proton pump inhibitors:**

In cases of **bleeding peptic ulcers** intravenous proton pump inhibitor *infusions* have been shown to reduce the risk of ulcer re-bleeding in patients at high risk:

- Those with endoscopic stigmata of recent haemorrhage (i.e visible vessel or clot on ulcer base)
- Those with active bleeding even after endoscopic therapy

Initial studies used a PPI bolus followed by a continuous infusion; more recent evidence suggests **intermittent PPI** boluses have **similar efficacy**

Options include:

Pantoprazole, (Somac):

- **Pantoprazole 80 mg IV, as a bolus over 15-30 minutes, then pantoprazole 8 mg/hour by IV infusion, for up to 3 days.**

*Or*

- **Pantoprazole 40 mg intravenously, 12 hourly for up to 3 days**

Esomeprazole, (Nexium):

- **Esomeprazole 80 mg IV, as a bolus over 15-30 minutes, then esomeprazole 8 mg/hour by IV infusion, for up to 3 days.**

*Or*

- **Esomeprazole 40 mg intravenously, 12-hourly for up to 3 days**

Omeprazole:

- **Omeprazole 80 mg IV over 15-30 minutes, then 8 mg/hour by IV infusion, for up to 3 days**

*Or*

- **Omeprazole 40 mg intravenously, 12 hourly for up to 3 days**

4. **For known or suspected gastro-esophageal varices**:

In patients with portal hypertension and gastrointestinal bleeding, splanchnic blood flow and portal pressure can be reduced by **octreotide** and **terlipressin.**

Treatment should be started as soon as possible, give:

Terlipressin:

- **Terlipressin 2.0 mg intravenously, 6 hourly for 2 - 3 days**

*Or*

Octreotide:

- **Octreotide 50 micrograms IV, immediately, then 25 to 50 micrograms per hour by IV infusion for 2 to 3 days.** [1]

5. Antibiotics: [1]

Antibiotic prophylaxis is recommended for all inpatients who have cirrhosis with upper gastrointestinal bleeding because it reduces the rate of subsequent bacterial infections (bacteraemia, pneumonia, spontaneous bacterial peritonitis, urinary tract infection) and may reduce mortality.

The optimal timing, method of administration and duration of prophylaxis have not been determined. Although many guidelines recommend a 7 day course, there is no strong evidence to support this duration. To reduce the emergence of antibiotic resistance, a short duration of prophylaxis is recommended as a minimum standard.

There is no proven advantage of IV therapy, though it may be most appropriate when the patient is actively bleeding, with a switch to oral therapy once oral intake has resumed.

Give:

- **Ceftriaxone 1gram IV 12 hourly for 2 days.**

*Or*

- **Ciprofloxacin 400 mg IV, 12 hourly for 2 days.**

6. Metoclopramide:

- Metoclopramide should not be used routinely but *may be useful* in patients who are suspected to have substantial amounts of blood or clot in their upper gastrointestinal tract or those who have recently eaten.

  Give metoclopramide 10 mg IV around 30 - 60 minutes before endoscopy, to enhance endoscopic visibility

7. **Sengstaken-Blackmore tube:**

- Patients with esophageal varices who become severely compromised before they can be transferred to theater may need to have a **Sengstaken-Blackmore tube** (or similar) placed.

- Ideally, this will need to be preceded by intubation.

- This is only a temporizing measure and can only be used for 48 - 72 hours.

- Up to 50% of patients will re-bleed when the device is deflated, and so further definitive measures will need to be performed.

8. **Endoscopic management :**

Most ulcers/varices can now be managed endoscopically.

Haemostatic techniques include:

In general terms:

- Non-variceal bleeding:
  - ♥ Adrenaline injection alone is not sufficient to control bleeding. Mechanical (clips) or thermal therapy should be used when haemostasis is required.
- Oesophageal varices:
  - ♥ Should be treated with band ligation when appropriate
- Gastric varices:
  - ♥ It is technically very difficult to perform endovascular variceal ligation for gastric varices and so patients with evidence of recent bleeding from gastric varices should be managed with **cyanoacrylate** (or **"**glue") injection by an experienced endoscopist

The *urgency* of the endoscopy in **non-variceal bleeding** may be guided by the **Glasgow-Blatchford Score.**

One strategy is as follows:

| **Endoscopy within:** | **Criteria** |
|---|---|
| **May be treated as an outpatient.** | **GBS 0** |
| **Should have a gastroscopy within 24 hours** | **GBS 1 - 6** |
| **Must have an endoscopy within 24 hours (higher chance of requiring endoscopic intervention, re-bleeding and death)** | **GBS ≥ 7 < 12** |

| | |
|---|---|
| **Must have an endoscopy within 12 hours (possible mortality benefit)** | **GBS ≥ 12** |
| **Must have an endoscopy within < 6 hours**<br><br>**Urgent/immediate** | Suspected **variceal** bleeding (The Blatchford score is not applicable for suspected variceal bleeding)<br><br>If the risk of clinical deterioration is considered high by the responsible endoscopist, irrespective of any scoring system<br><br>Immediate endoscopy after resuscitation should occur in **severe large volume** upper GI bleeding |

Note however that **clinical judgment** must ultimately take precedence over any scoring system. **Severe/ongoing** bleeding may require **more urgent** gastroscopy, than quoted above.

9. Surgery:

Occasionally surgery will be required if

- There is a visible large vessel that is bleeding
- The patient remains hemodynamically unstable, despite more conservative management.

10. Rescue Therapies:

Non-variceal bleeding:

Patients with failed endoscopic therapy for non-variceal bleeding may undergo:

- Surgery
- Radiological embolization

Variceal bleeding:

Patients with failed endoscopic therapy for variceal bleeding should have a Sengstaken-Blakemore Tube inserted and a plan for definitive management made following repeat endoscopy within 24 hours to decide on:

- **Transjugular intrahepatic portosystemic shunt (TIPS)**

  This involves the insertion of a stent under radiological guidance via the jugular vein and forming a porto-systemic shunt between the hepatic and portal veins.

The technique is effective in up to 95 % of cases and is less invasive and faster (30 minutes - 3 hours) to perform than other open surgical shunt procedures

It acts as a bridging procedure, in suitable patients, until other definitive surgical procedures can be undertaken, such as shunt surgery, liver transplantation or rarely esophageal transection.

*Or*

- **Balloon-occluded retrograde transvenous obliteration (BRTO)**

  This is an endovascular technique used as a therapeutic adjunct or alternative to transjugular intrahepatic shunts (TIPS) in the management of gastric varices.

11. Follow-up management

Important follow-up management will include:

- **H. pylori eradication,** (in cases of peptic ulcer disease).
- Proton pump inhibitors.
- Attention to any underlying causative factors, (such as alcohol or NSAID use)
- Ongoing surveillance:
  - ♥ In patients with cirrhosis, the risk of re-bleeding from gastro-oesophageal varices within 12 months is approximately 60%.

    Combined endoscopic and long-term drug therapy is the most effective strategy to reduce this risk.

    Endoscopic band ligation of oesophageal varices should be repeated regularly until varices have been obliterated.

    Regular surveillance (every 6 - 12 months) is indicated to check for variceal recurrence.

*Disposition:*

Gastroenterology:

All cases of upper GIT bleeding are referred to the **Gastroenterology Unit.**

Surgery:

Surgical refer should also occur for:

- All patients with significant non-variceal upper GI bleeding (frank ongoing haematemesis, shock, Blatchford score $\geq 12$)
- Patients with re-bleeding following earlier endoscopic therapy
- Patients with variceal bleeding

Referral should be prior to endoscopy in case endoscopic therapy is not successful

## Anesthetics/ ICU:

All patients who are likely to require urgent endoscopy also need to be discussed with Anesthetists and ICU

## Hematology:

Patients taking antiplatelet agents, warfarin or DOACs need a careful risk-benefit analysis of their treatment and should be discussed with the Hematology Unit.

*The Cedar Mountain Battlefield today. On August 9th, 1862 Confederate General Stonewall Jackson defeated Union General Nathaniel Banks. The Confederates suffered around 3,000 casualties, the Unionists, around 6,000.*

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