Treatment Guidelines of Upper GIT Bleeding

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Definition

Upper-GI (UGI) bleeding is generally defined as bleeding that occurs in the digestive tract proximal to the ligament of Treitz; in practice from the oesophagus, stomach and duodenum.
Epidemiology:

- Upper : Lower GI bleeding  5:1
- Incidence: 50-100 per 100,000 hospital admission.
- 30% pts are older than 65 years.
- 80% are self-limited.
- 20% of pts who have recurrent bleeding (within 48-72 hrs) have poor prognosis.
Fig. 4.18 Causes of upper gastrointestinal haemorrhage. The approximate frequency is also given.
Upper GI Bleed: Symptoms

- Acute Sx:
  - Hematemesis - 40-50%
  - Hematochezia - 15-20%
  - Melena - 70-80%
  - Syncope - 14.4%, Presyncope - 43.2%

- Sx 30 days prior:
  - Dyspepsia - 18%
  - Epigastric pain - 41%
  - Heartburn - 21%
  - Diffuse abd. pain - 10%
  - Dysphagia - 5%
  - Weight loss - 12%
  - Jaundice - 5.2%

### Clinical Indicator | Prob. of Upper GI Source | Prob. of Lower GI Source
--- | --- | ---
Hematemesis | Almost certain | Rare
Melena | Probable | Possible
Hematochezia | Possible | Probable
Blood-streaked stool | Rare | Almost certain
Occult blood in stool | Possible | Possible
Assessment and triage

**Triage**
- Admit to hospital versus discharge from emergency room
- Admit to ICU versus monitored bed versus unmonitored hospital bed
- Emergency versus routine gastroenterology consult
- Surgical consult or not

**Intensive Monitoring**
- Nasogastric tube insertion or not
- Central venous line or not
- Foley insertion or not

**General Supportive Therapy**
- Endotracheal intubation or not
- Transfuse packed erythrocytes or not
- Transfuse other blood products or not
- PPI therapy or not
- Octreotide therapy or not

**Endoscopy**
- Emergency versus elective endoscopy
- EGD versus colonoscopy
- Endoscopic therapy or not
### Table 2

**Rockall score for the prognostication of upper gastrointestinal bleeding**

<table>
<thead>
<tr>
<th>Score</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-upper gastrointestinal endoscopy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>&lt;60 years</td>
<td>60-79 years</td>
<td>≥80 years</td>
<td></td>
</tr>
<tr>
<td>Shock</td>
<td>No shock</td>
<td>Tachycardia</td>
<td>Hypotension</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BP &gt;100 mmHg and pulse &lt;100</td>
<td>BP &gt;100 mmHg and pulse &gt;100</td>
<td>BP &lt;100 mmHg</td>
<td></td>
</tr>
<tr>
<td>Comorbidity</td>
<td>No major comorbidity</td>
<td>Ischaemic heart disease, cardiac failure, any major comorbidity</td>
<td>Renal or liver failure, Disseminated malignancy</td>
<td></td>
</tr>
<tr>
<td><strong>Post-upper gastrointestinal endoscopy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnosis</td>
<td>Mallory-Weiss or no lesion found, and no major stigmata of recent haemorrhage</td>
<td>All other diagnoses</td>
<td>Gastrointestinal malignancy</td>
<td></td>
</tr>
<tr>
<td>Major stigmata of recent haemorrhage</td>
<td>None or dark spot only</td>
<td>Blood in upper gastrointestinal tract, non-bleeding visible vessel, spurring vessel or adherent clot</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

BP  systolic blood pressure

Patients with a score of 0, 1 or 2 have a lower risk of haemorrhage, whereas approximately 50% of patients with a post-endoscopy score of 8 or more will re-bleed.
Consider for discharge or non-admission with outpatient follow up if:

- age < 60 years, and;
- no evidence of haemodynamic disturbance (systolic blood pressure ≥ 100 mm Hg,
- pulse < 100 beats per minute), and;
- no significant comorbidity (especially liver disease, cardiac disease, malignancy), and;
- not a current inpatient (or transfer), and;
- no witnessed haematemesis or haematochezia
Consider for admission and early endoscopy (and calculation of full Rockall score) if:

- age $\geq 60$ years (all patients who are aged $>70$ years should be admitted), or;
- witnessed haematemesis or haematochezia (suspected continued bleeding), or;
- haemodynamic disturbance (systolic blood pressure $<100$ mm Hg, pulse $\geq 100$ beats per minute), or;
- liver disease or known varices.
Acute Gastrointestinal Bleeding Management: Resuscitation

- **ABC Management**
  - Oxygen
  - Intravenous Access
    - Two large bore IV (18 gauge)
    - Start with isotonic saline (NS or LR)
  - Intravenous fluid Resuscitation
    - Crystalloid 10 cc/kg boluses until stable
    - Reassess after 3 boluses (30 cc/kg)
    - Consider transfusion for unstable after 3 boluses
  - Endotracheal Intubation indications (aspiration risk)
    - Altered mental status
    - Massive Upper GI Bleeding
### Estimated Fluid and Blood Losses in Shock

<table>
<thead>
<tr>
<th></th>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blood Loss, mL</strong></td>
<td>Up to 750</td>
<td>750-1500</td>
<td>1500-2000</td>
<td>&gt;2000</td>
</tr>
<tr>
<td><strong>Blood Loss, % blood volume</strong></td>
<td>Up to 15%</td>
<td>15-30%</td>
<td>30-40%</td>
<td>&gt;40%</td>
</tr>
<tr>
<td><strong>Pulse Rate, bpm</strong></td>
<td>&lt;100</td>
<td>&gt;100</td>
<td>&gt;120</td>
<td>&gt;140</td>
</tr>
<tr>
<td><strong>Blood Pressure</strong></td>
<td>Normal</td>
<td>Normal</td>
<td>Decreased</td>
<td>Decreased</td>
</tr>
<tr>
<td><strong>Respiratory Rate</strong></td>
<td>Normal or Increased</td>
<td>Decreased</td>
<td>Decreased</td>
<td>Decreased</td>
</tr>
<tr>
<td><strong>Urine Output, mL/h</strong></td>
<td>14-20</td>
<td>20-30</td>
<td>30-40</td>
<td>&gt;35</td>
</tr>
<tr>
<td><strong>CNS/Mental Status</strong></td>
<td>Slightly anxious</td>
<td>Mildly anxious</td>
<td>Anxious, confused</td>
<td>Confused, lethargic</td>
</tr>
<tr>
<td><strong>Fluid Replacement, 3-for-1 rule</strong></td>
<td>Crystalloid</td>
<td>Crystalloid</td>
<td>Crystalloid and blood</td>
<td>Crystalloid and blood</td>
</tr>
</tbody>
</table>

Intensive Care Unit Admission Indications

- Significant bleeding
- Hemodynamically unstable

Transfusion packed Red Blood Cells

- Indications
  - Hemoglobin 8 g/dl or Hematocrit 25%
  - Brisk active bleeding
  - Cardiopulmonary symptoms
  - Cardiopulmonary comorbidity
Management of non-variceal upper gastrointestinal bleeding

- Peptic ulcer: 40%
- No obvious cause: 24%
- Varices: 5%
- Oesophagitis: 10%
- Mallory-Weiss tear: 6%
- Erosive disease: 5%
- Neoplasm: 6%
- Other: 4%
Bleeding Peptic Ulcer
Natural History

- Approximately 80-85% bleeding stops spontaneously

- Remaining 15-20% recurrent or continuous bleeding

- Early risk-stratification facilitates appropriate level of care

- Multidisciplinary approach
Outline

- Triage & timing of endoscopy
- Optimal endoscopic management
- Adequate pharmacologic therapy
Timing of Endoscopy

- Early endoscopy is recommended for safe & prompt discharge for low-risk patients & improve outcomes for high-risk patients.

- Several studies & a systematic review support use of early endoscopy.

- Timing varies from 1-24 hours, but 24 hours is the most commonly used cutoff point.


Dulai GS. Gastrointest Endosc 2006; 64:310-2
# Endoscopic risk stratification

<table>
<thead>
<tr>
<th>Ulcer Characteristics</th>
<th>Prevalence Rate, %</th>
<th>Rebleeding Rate, %</th>
<th>Surgery Rate, %</th>
<th>Mortality Rate, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean base</td>
<td>42</td>
<td>5</td>
<td>0.5</td>
<td>2</td>
</tr>
<tr>
<td>Flat spot</td>
<td>20</td>
<td>10</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Adherent clot</td>
<td>17</td>
<td>22</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Visible vessel</td>
<td>17</td>
<td>43</td>
<td>34</td>
<td>11</td>
</tr>
<tr>
<td>Active bleeding</td>
<td>18</td>
<td>55</td>
<td>35</td>
<td>11</td>
</tr>
</tbody>
</table>

Laine et al. NEJM 1994; 331:717
Blatchford Upper GI Bleeding Score

- **Indication**
  - Upper Gastrointestinal Bleeding
  - Replaces Rockall scoring system

- **Criteria**
  - Blood Urea Nitrogen (BUN)
    - BUN 18.2 to 22.4 mg/dl: Score 2
    - BUN 22.4 to 28 mg/dl: Score 3
    - BUN 28 to 70 mg/dl: Score 4
    - BUN >70 mg/dl: Score 6
Cont.

■ **Hemoglobin**
  ■ **Men**
    ■ Hemoglobin 12 to 13 g/dl: Score 1
    ■ Hemoglobin 10 to 12 g/dl: Score 3
    ■ Hemoglobin <10 g/dl: Score 6
  ■ **Women**
    ■ Hemoglobin 10 to 12 g/dl: Score 1
    ■ Hemoglobin <10 g/dl: Score 6

■ **Systolic Blood Pressure (SBP)**
  ■ SBP 100 to 109 mmHg: Score 1
  ■ SBP 90 to 99 mmHg: Score 2
  ■ SBP <90 mmHg: Score 3

■ **Miscellaneous Markers**
  ■ Pulse >100 per minute: 1
  ■ Presentation with Melena: 1
  ■ Presentation with Syncope: 2
  ■ Hepatic disease: 2
  ■ Cardiac function: 2
Endoscopic therapy

- **Indication**: Ulcers that demonstrate arterial spurting or a "Visible vessel.

- **Hemostatic techniques**:
  1. Laser therapy.
  2. Thermal coagulation by mono-or bipolar electrocautery and heater probes.
  3. Injection therapy with epinephrine (1:10,000 dilution).
  4. Thermal coagulation and Injection therapy have both been shown to achieve hemostasis and decrease rebleeding rates.
Outcome of Endoscopic Management

- Hemostasis >95%
- Recurrent bleeding <15%
- Death 6-8% (irrespective of any optimal endoscopic & medical treatment)

Treat the patient and Not just the source of bleeding

Barkun A et al. Ann Intern Med 2003; 139:843-5,
Cipolletta L et al. Endoscopy 2007; 39:7-10
Surgery is reserved for patients with intractable hemorrhage, recurrent bleeding despite repeated attempts at endoscopic therapy, or blood types that are difficult to crossmatch. **Arterial embolization** by selective arterial catheterization is an alternative for patients too unstable to undergo surgery.
Spurting bleeding
Ulcer

Active bleeding or visible vessel

Endoscopic intervention for homeostasis

- Successful
  - ICU >/= 1 day hospital for 3 days
  - Angiogram surgery
  - Rebleeding

- No successful

No replay

Overlying clot

irrigate

Adherent clot

- No endoscopic therapy

- Epinephrine injection/clot removal

Clean base

Ulcer Rx

Observe under controlled setting

Ulcer Rx

Thermal contact therapy

Dark pigmented red spot

Clot removed

Surgery
Mallory-Weiss Tear

Endoscopic treatment is only employed when tears involve active and ongoing bleeding. Epinephrine injection and thermal coagulation are both efficacious in controlling hemorrhage. Sclerosants should be avoided due to risk of further tearing or perforation. PPIs can promote healing after the acute episode.
Potential Triage for UGI Bleeding

UGIB (Non-variceal)
Stable Hemodynamics

Blatchford score <2 (10%)
Outpatient care
Elective Endoscopy PPI
Definitive Care based on endoscopic findings
High Risk Stigmata
Endoscopic Therapy
No High Risk Stigmata
Endoscopic Therapy

Blatchford score ≥2 (90%)
Urgent Endoscopy
Rockall score <3 (20-30%)
Outpatient Care
PPI
H. Pylori Treatment

Rockall Score ≥3
High Risk Stigmata
Endoscopic Therapy Hospital Admission ICU
Care based on comorbidity
## UGI bleeding

### Predictors of Rebleeding

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Older age</td>
</tr>
<tr>
<td>2.</td>
<td>Shock/hemodynamic instability/orthostasis</td>
</tr>
<tr>
<td>3.</td>
<td>Comorbid disease states (e.g., coronary artery disease, congestive heart failure, renal and hepatic diseases, cancer)</td>
</tr>
<tr>
<td>4.</td>
<td>Specific endoscopic diagnosis (e.g., GI malignancy)</td>
</tr>
<tr>
<td>5.</td>
<td>Use of anticoagulants/coagulopathy</td>
</tr>
<tr>
<td>6.</td>
<td>Presence of a high-risk lesion (e.g., arterial bleeding, nonbleeding, visible vessel and clot)</td>
</tr>
</tbody>
</table>
Acute variceal bleeding

Conservative treatment:

- **Octreotide** (sandostatin) 100 ug IV bolus, then 50 ug/hour
  - Long-acting somatostatin analog.
  - Preferred vasoactive agent in Upper GI Bleed.

- **Intravenous Vasopressin** 20 units over 20 minutes.
  - Used with Nitroglycerin (Risk of coronary ischemia)

- **Terlipressin** (Glypressin) 1-2 mg IV bolus q 4-6 h (maximum 120 ug/kg)
Endoscopic therapy

- Endoscopic sclerotherapy
- Endoscopic variceal ligation (EVL):
  - banding
Endoscopic sclerotherapy

- **Sclerosants:** sodium tetradeyl sulfate, E.O., polidocanol and alcohol.

- **Tissue adhesive agents:**
  - Cyanoacrylate (histoacryl).
  - Fibrin glue.
  - Thrombin.
Endoscopic band ligation of esophageal varices has proved to be a useful tool in the control of acute variceal bleeding and the prevention of recurrent bleeding. This endoscopic technique is faster than sclerotherapy in obliterating esophageal varices, and is associated with significantly fewer complications.
Balloon tamponade

Tamponade varices in refractory cases (80% effective)
- Esophageal varices
- Gastric fundus varices

Rebleeding occurs in up to 50% of cases
- More definitive therapy needed after bleeding stops

High complication rate (15%)
- Perforation
- Aspiration
- Pressure-induced Ulceration

Balloon types
- Sengstaken-Blakemore tube
- Linton-Nachlas tube
- Minnesota tube
Transjugular intrahepatic Portosystemic Shunt (TIPS)

- Shunt from hepatic vein to intrahepatic portal vein
- Commonly effective measure in variceal bleeding
- Preventive of future rebleeding events

Emergency Surgical portacaval shunts

- Rarely effective and high mortality rate.
Prevention of variceal bleeding

Primary prevention

- **Indications (Endoscopic criteria)**
  - Large esophageal varices
  - Small esophageal varices
  - High Child-Pugh Score
  - Varices with red wale markings

- **Efficacy**
  - Reduce risk of bleeding from 45% to 22%

- **Agents (target Heart Rate reduction 20 to 25%)**
  - Propranolol start at 10 mg PO tid
  - Nadolol 20 mg PO qd

- **Esophageal banding (Variceal band ligation)**
  - As effective as Propranolol in bleeding prevention
  - Fewer adverse effects than medication management
Secondary prevention (prior episode of bleeding)

- **Isosorbide** mononitrate 20 mg PO bid
- Esophageal banding (Variceal band ligation)
- Sclerotherapy to varices
Prognosis

- Predictors of mortality with variceal bleeding
  - Active bleeding during endoscopy
  - Encephalopathy
  - Ascites
  - Serum Bilirubin increased
  - Aspartate Aminotransferase increased
  - Prothrombin Time increased

*Graham (1981) Gastroenterology 80:800-9*

- Risk of bleeding from large varices: 40 to 45% per year
  - Higher risk with varices with red wale markings.
  - Higher risk with advanced Child-Pugh Score.

- Risk of death from each bleeding episode: 50%.
Management of UGI bleeding

Upper Gastrointestinal Bleeding

Clinically significant

- If stigmata of liver disease, add intravenous octreotide or terlipressin

Clinically trivial

- Elective endoscopy, UGI series or empiric therapy

Urgent or Emergent Endoscopy

Ulcer

- Flat spot, Clean base
- Adherent clot
- Active bleeding, Visible vessel

- No Endoscopic Therapy
- No Rebleed
  - Ulcer therapy and f/u as needed
  - Endoscopic therapy or Surgery
- Endoscopic Therapy + IV PPI
- Rebleed
  - Secondary Prophylaxis (EBL +/β-blocker)

Esophageal Varices

- Continue intravenous octreotide or terlipressin for 24-48 hours

- Endoscopic Therapy (EBL or ES)
  - No Rebleed
  - Endoscopic therapy or TIPS
  - Rebleed
    - Antisecretory therapy and f/u as needed
    - Endoscopic therapy or Surgery

Other (e.g., Mallory-Weiss tear, Dieulafoy lesion)

- Active bleeding
  - Endoscopic Therapy
  - No Endoscopic Therapy
  - Rebleed
  - Endoscopic therapy or Surgery
Thank You!