Guidelines

for the Management of

Upper gastrointestinal bleeding

By

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Setting Clinical and Professional Excellence

Upper gastrointestinal bleeding is defined as bleeding from a source proximal to the ligament of Treitz. It is a common medical emergency that has a 10% hospital mortality rate.
Endoscopy is the primary diagnostic investigation in patients with acute upper gastrointestinal bleeding as it aids diagnosis, yields information that helps predict outcome and most importantly allows treatments to be delivered that can stop bleeding and reduce the risk of re-bleeding.
Drugs may have a complementary role in reducing gastric acid secretion and portal vein pressure. Not every patient responds to endoscopic and drug treatments; emergency surgery and a range of radiological procedures may be needed to control bleeding.

INITIAL EVALUATION

The initial evaluation of a patient with a suspected clinically significant acute upper GI bleed includes a history, physical examination, laboratory tests, and in some cases, nasogastric lavage.

The goal of the initial evaluation

- assess the severity of the bleed
- identify potential sources of the bleed
- determine if there are conditions present that may affect subsequent management.

Past medical history — Patient should be asked about:

▪ prior episodes of upper GI bleeding (as may re-bleeding from the same lesion)
▪ co-morbid conditions that may lead to upper GI bleeding (history of liver disease , alcohol, smoking & medications).
▪ co-morbid conditions that may influence the patient's subsequent management & resuscitation (cardiac, pulmonary, renal, coagulopathies)
▪ conditions alter the clinical presentation (bismuth and iron can turn the stool black)
▪ the severity of the bleed and as a part of the evaluation for potential bleeding sources.

Physical examination — assessment of hemodynamic stability & evidence of co-morbidity:

▪ Mild to moderate hypovolemia: Resting tachycardia
▪ Blood volume loss of ≥15 %: Orthostatic hypotension (a decrease in the systolic blood pressure of > 20 mmHg and/or an increase in heart rate of 20 beats/ minute when moving from recumbency to standing)
▪ Blood volume loss of ≥ 40%: Supine hypotension

The presence of abdominal pain, especially if severe and associated with rebound tenderness or involuntary guarding, raises concern for perforation. If any signs of an acute abdomen are present, further evaluation to exclude a perforation is required prior to endoscopy. Nasogastric lavage may be carried out if there is doubt as to whether a bleed originates from the upper GI tract & is used when it is unclear if a patient has ongoing bleeding and thus might benefit from an early endoscopy or be used to remove particulate matter, fresh blood, and clots from the stomach to facilitate endoscopy. The presence of non-bloody bilious fluid suggests that the pylorus is open and that there is no active upper GI bleeding distal to the pylorus

Examination of the stool color may provide a clue to the location of the bleeding.
Hematemesis (either red blood or coffee-ground emesis) suggests bleeding proximal to the ligament of Treitz. The presence of frankly bloody emesis suggests moderate to severe bleeding that may be ongoing, whereas coffee-ground emesis suggests more limited bleeding.
Melena (black, tarry stool) originates proximal to the ligament of Treitz , though it may also originate from the small bowel or right colon. Melena may be seen with variable degrees of blood loss, being seen with as little as 50 mL of blood.
Hematochezia (red or maroon blood in the stool) is due to lower GI bleeding but, it can occur with massive upper GI bleeding, which is typically associated with orthostatic hypotension.

Laboratory data — include a complete blood count, serum chemistries, liver function tests, and coagulation studies. Serial electrocardiograms and cardiac enzymes may be indicated in patients who are at risk for a myocardial infarction, such as the elderly, patients with a history of coronary artery disease, or patients with symptoms such as chest pain or dyspnea.
The initial hemoglobin will often be at the patient's baseline because the patient is losing whole blood. With time (typically after 24 hours or more) the hemoglobin will decline. The initial hemoglobin level is monitored every 2-8 hours, depending upon the severity of the bleed. Patients with acute bleeding should have normocytic red blood cells. Microcytic red blood cells or iron deficiency anemia suggest chronic bleeding.
Patients with acute upper GI bleeding typically have an elevated blood urea nitrogen (BUN) to creatinine or urea to creatinine ratio (>20:1 or >100:1, respectively); the higher the ratio, the more likely the bleeding is from an upper GI source.

DIAGNOSTIC STUDIES

♦Upper endoscopy has a high sensitivity and specificity for locating and identifying bleeding lesions in the upper GI tract, besides, it can achieve acute hemostasis and prevent recurrent bleeding in most patients.
Timing of endoscopy Offer endoscopy to unstable patients with severe acute upper GI bleeding immediately after resuscitation.
Offer endoscopy within 24 hours of admission to all other patients with upper GI bleeding.
In patients in whom blood obscures the source of bleeding, a second endoscopy may be required to establish a diagnosis and to potentially apply therapy, but routine second-look endoscopy is not recommended.
Risks of endoscopy — Risks of upper endoscopy include aspiration, adverse reactions to sedation, perforation, and increasing bleeding while attempting therapeutic intervention.
Patients need to be hemodynamically stable prior to undergoing endoscopy.
♦Other diagnostic tests — include angiography and a tagged red blood cell scan, which can detect active bleeding and wireless capsule endoscopy.
♦Upper GI barium studies are **contraindicated** in the setting of acute upper GI bleeding because they will interfere with subsequent endoscopy, angiography, or surgery.

RISK STRATIFICATION
The results of clinical, laboratory & endoscopic findings are used for risk stratification:

Risk assessment
▪The Rockall score after endoscopy is based upon age, the presence of shock, co-morbidity, diagnosis, and endoscopic stigmata of recent hemorrhage.
▪The Blatchford score (also known as the Glasgow Blatchford score) used at first assessment on presentation. The score is based upon the blood urea nitrogen, hemoglobin, systolic blood pressure, pulse, and the presence of melena, syncope, hepatic disease, and/or cardiac failure. The score ranges from 0-23 and the risk of requiring endoscopic intervention increases with increasing score.
▪A simpler version of the score, known as the modified Glasgow Blatchford score, is calculated using only the blood urea nitrogen, hemoglobin, systolic blood pressure, and pulse. This score ranges from 0 -16.

Patients can be discharged if have:
▪Pre-endoscopy Blatchford score of 0
▪No co-morbidities
▪Stable vital signs
▪Normal hemoglobin
▪ Bleeding source identified on upper endoscopy
▪Source of bleeding not associated with a high risk of re-bleeding (variceal bleeding, active bleeding, bleeding from a Dieulafoy's lesion, ulcer bleeding with high-risk stigmata)
▪Reliability for follow-up and confidence in the diagnosis; in some cases

Otherwise; patient should be admitted to a monitored setting or intensive care unit (depending upon the severity of bleeding, co-morbidities, and stability of vital signs). Patients who have received endoscopic treatment for high-risk stigmata should be hospitalized for 72 hours to monitor for re-bleeding, which mostly occurs during this time.

Factors associated with re-bleeding:
▪Hemodynamic instability (systolic blood pressure < 100 mmHg, heart rate > 100 beats/ min)
▪Hemoglobin <10 g/L
▪Active bleeding at the time of endoscopy
▪Large ulcer size (greater than 1 - 3 cm in various studies)
▪Ulcer location (posterior duodenal bulb or high lesser gastric curvature)

Five factors were associated with increased inpatient mortality:
▪Altered Mental status (Glasgow coma score < 14)
▪Systolic blood pressure ≤ 90 mmHg
▪Age > 65 years
▪Albumin <3.0 g/dL (30 g/L)
▪INR >1.5

GENERAL MANAGEMENT

♦ **Triage**: all patients with hemodynamic instability or active bleeding should be admitted to an intensive care unit for resuscitation and close observation with automated blood pressure monitoring, ECG monitoring, and pulse oximetry. Other patients can be admitted to a regular medical ward. Outpatient management may be appropriate for some low-risk patients.

♦ **General support**: *Initial Rockall score of ≥ 3 then***:**

▪ Assess whether patient is hypovolaemic (lying and standing BP), encephalopathic or septic.
▪ Supplemental oxygen by nasal cannula
▪ Consider central venous line & should receive nothing per mouth
▪ Give haemaccel/gelofusine whilst waiting for blood if shocked
▪ Consider insertion of urinary catheter
▪ Consider elective endotracheal intubation in patients with (ongoing hematemesis or altered respiratory or mental status) as it may facilitate endoscopy and decrease the risk of aspiration. Inform on-call surgical team

Resuscitation — Adequate resuscitation is essential prior to endoscopy to minimize treatment-associated complications. Patients with active bleeding should receive IV fluids (500 mL of normal saline or lactated Ringer's solution over 30 minutes & not 5% dextrose) while being typed and cross-matched for blood transfusion.

▪ Blood transfusions: initiate blood transfusions if the hemoglobin is <7 g/dL (70 g/L) (including those with stable coronary artery disease), with a goal of maintaining the hemoglobin at a level ≥7 g/dL (70 g/L), *BUT* maintain the hemoglobin at a level of ≥9 g/dL (90 g/L) for patients at increased risk of suffering adverse events in the setting of significant anemia, such as those with unstable coronary artery disease.

Avoid over-transfusion >10 g/dL (100 g/L) in patients with suspected variceal bleeding, as it can precipitate worsening of the bleeding.

▪ Platelet transfusions: should be considered in patients with low platelet count (<50,000/μL) or life-threatening bleeding who have received anti-platelet agents.

If the patient is taking the medications because of a recent (<1 year) vascular stent placement or acute coronary syndrome, a cardiologist should be consulted prior to stopping the agent or giving a platelet transfusion.

▪ Fresh frozen plasma (FFP): patients with active bleeding and a coagulopathy (fibrinogen level of <1 g/L, or a prothrombin time (INR) or activated partial thromboplastin time >1.5 times normal should be transfused with fresh frozen plasma.

Provided the patient is hemodynamically stable, urgent endoscopy can usually proceed simultaneously with transfusion and should not be postponed until the coagulopathy is corrected. However, in patients with an INR ≥3: try to correct it to <3 prior to starting an endoscopy, with additional FFP given after the endoscopy if high-risk stigmata for recurrent bleeding were found or if endoscopic therapy was performed & the INR is still >1.5.

Because packed red blood cells do not contain coagulation factors, transfusion of a unit of FFP should be considered after every four units of packed red blood cells.

▪ Offer prothrombin complex concentrate to patients who are taking warfarin and actively bleeding; do not use recombinant factor Vlla except when all other methods have failed.

♦ **Medications**:
Acid suppression — patient with acute upper GI bleeding be started empirically on an intravenous PPI and continued until confirmation of the cause of bleeding as PPIs may also promote hemostasis in patients with lesions other than ulcers. This likely occurs because neutralization of gastric acid leads to the stabilization of blood clots.
Omeprazole and esomeprazole used as 80 mg boluses followed by 8 mg/hr infusions.
The infusion is usually continued for 72 hours. If there is no re-bleeding the patient may be switched to oral PPI. If intravenous formulations are not available; then twice daily dosing of an oral PPI may be a reasonable alternative.

Prokinetics (erythromycin, metoclopramide) — the goal is to improve gastric visualization at the time of endoscopy by clearing the stomach of blood, clots, and food residue.
Erythromycin is considered in patients who are likely to have a large amount of blood in their stomach at a dose of 3 mg/kg IV over 20-30 minutes, 30-90 minutes prior to endoscopy.

Somatostatin & its analogs octreotide— are used in the treatment of variceal bleeding.
Octreotide is not recommended for routine use in patients with acute non-variceal upper GI bleeding, but it can be used as adjunctive therapy. Its role is limited to settings in which endoscopy is unavailable or as a means to stabilize patients before definitive therapy can be performed.
Octreotide given as IV bolus of 20-50 mcg, followed by infusion at a rate of 25-50 mcg/hr

Antibiotics — patients with cirrhosis who present with acute upper GI bleeding (from varices or other causes) should be given prophylactic antibiotics, preferably before endoscopy.

Tranexamic acid—no role for tranexamic acid in the treatment of upper GI bleeding, since the current standard is to treat patients with proton pump inhibitors and endoscopic therapy

Management of non-variceal bleeding
Endoscopic treatment
Do not use adrenaline as monotherapy for the endoscopic treatment of non-variceal upper GI bleeding; but rather; use one of the following:
mechanical method -clips with or without adrenaline or
thermal coagulation with adrenaline or fibrin or thrombin with adrenaline.
Offer interventional radiology to unstable patients who re-bleed after endoscopic treatment.
Refer urgently for surgery if interventional radiology is not promptly available.
Treatment after first or failed endoscopic treatment
Consider a repeat endoscopy, with treatment as appropriate, for all patients at high risk of re-bleeding, particularly if there is doubt about adequate haemostasis at the first endoscopy.
Offer a repeat endoscopy to patients who re-bleed with a view to further endoscopic treatment or emergency surgery.
Offer interventional radiology to unstable patients who re-bleed after endoscopic treatment.
Refer urgently for surgery if interventional radiology is not promptly available.

Management of variceal bleeding

♦ Offer prophylactic antibiotic therapy at presentation to patients with suspected or confirmed variceal bleeding with CXR & culture screening.

♦ Offer terlipressin to patients with known or suspected variceal bleeding at presentation after a degree of fluid resuscitation if possible

- 2 mg iv stat bolus, and then 4 hourly iv injection (dose based on body weight):

<50kg: 1mg 50-70kg: 1.5mg >70kg: 2mg

-Continue until clinically certain haemostasis achieved or after 5 days unless there is another indication for its use such as renal failure.

♦ Request early abdominal ultrasound to assess patency of portal vein

♦ Discuss need for further hepatic imaging and Hepatic Vein Pressure Gradient measurements

♦ Consider starting a non-selective B blockers (Carvedilol 6.25 mg od or Propanolol 40mg tds) as long as haemodynamic stability has been achieved and in the absence of contraindications and terlipressin withdrawn

♦ Continue low-dose aspirin for secondary prevention of vascular events in patients with upper GI bleeding in whom haemostasis has been achieved.

Oesophageal varices

Use band ligation in patients with upper gastrointestinal bleeding from oesophageal varices. Consider transjugular intrahepatic portosystemic shunts (TIPS) if bleeding from oesophageal varices is not controlled by band ligation.

Gastric varices

Offer endoscopic injection of N-butyl-2-cyanoacrylate to patients with bleeding from gastric varices. Offer TIPS if bleeding from gastric varices is not controlled by endoscopic injection of N-butyl-2-cyanoacrylate.

Control of bleeding & prevention of re-bleeding inpatients on NSAIDs, aspirin or clopidogrel Continue low-dose aspirin for secondary prevention of vascular events in patients with upper gastrointestinal bleeding in whom haemostasis has been achieved.
Stop other non-steroidal anti-inflammatory drugs (including COX-2 inhibitors) during the acute phase in patients presenting with upper GI bleeding.
Discuss the risks and benefits of continuing clopidogrel (or any other thienopyridine antiplatelet agents) in patients with upper GI bleeding with the appropriate specialist and with the patient.

Primary prophylaxis for acutely ill patients in critical care

Offer acid-suppression therapy (H2-receptor antagonists or proton pump inhibitors) for primary prevention of upper gastrointestinal bleeding in acutely ill patients admitted to critical care. If possible, use the oral form of the drug.

♦ **Surgical & interventional radiology consultation is indicated with**:

▪ All patients with severe acute upper GI bleeding
▪ Endoscopic therapy is unlikely to be successful
▪ Patient is deemed to be at high risk for re-bleeding
▪Complications associated with endoscopy
▪Concern that the patient may have an aorto-enteric fistula

Indications for Surgery for *Age under 60 years*

Transfusion requirements >8 units in 24 hours or
Two re-bleeds or
Spurting vessel at OGD not controlled by injection therapy or
Continued bleeding

Indications for Surgery for *Age over 60 years*

Transfusion requirements >4 units in 24 hours or
One re-bleed or
Spurting vessel at OGD not controlled by injection therapy or
Continued bleeding

Rockall Score

Variable	Score 0	Score 1	Score 2	Score 3
Age	<60	60- 79	>80	
Shock	No shock	Pulse >100 BP >100 Systolic	SBP <100	
Co-morbidity	Nil major		CHF, IHD, major morbidity	Renal failure, liver failure, metastatic cancer
Diagnosis	Mallory-Weiss	All other diagnoses	GI malignancy	
Evidence of bleeding	None		Blood, adherent clot, spurting vessel	

Score: ≤2 Low risk **2-7 Moderate risk** **≥ 8 Hight risk**

Glasgow-Blatchford Score

Admission risk marker	Score component value
Blood Urea (mmol/L)	
≥6·5 - <8·0	2
≥8·0 - <10·0	3
≥10·0 - <25·0	4
≥25	6
Haemoglobin (g/L) for men	
≥12.0 - <13.0	1
≥10.0 - <12.0	3
<10.0	6
Haemoglobin (g/L) for women	
≥10.0 - <12.0	1
<10.0	6

Admission risk marker	Score component value
Systolic blood pressure (mm Hg)	
100 –109	1
90 – 99	2
<90	3
Other markers	
Pulse ≥100 (per min)	1
Presentation with melaena	1
Presentation with syncope	2
Hepatic disease	2
Cardiac failure	2

In the validation group, *scores of 6 or more* were associated with a greater than 50% risk of needing an intervention.

*Score is equal to "0" (*Low risk criteria) *if the following are all present:*
Hemoglobin level >12.9 g/dL (men) or >11.9 g/dL (women)
Systolic blood pressure >109 mm Hg
Pulse <100/minute
Blood urea nitrogen level <6.5 mmol/L
No melena or syncope
No past or present liver disease or heart failure

References

1. John R Saltzman, Mark Feldman Approach to acute upper gastrointestinal bleeding in adults: Dec 3, 2013
www.uptodate.com/contents/approach-to-acute-upper-gastrointestinal-bleeding-in-adults
2. Acute upper gastrointestinal bleedingIssued: June 2012. NICE clinical guideline 141
guidance.nice.org.uk/cg141
3. Laine L, Jensen DM. Management of patients with ulcer bleeding.
Am J Gastroenterol 2012; 107:345.
4. Pallin DJ, Saltzman JR. Is nasogastric tube lavage in patients with acute upper GI bleeding indicated or antiquated? Gastrointest Endosc 2011; 74:981.
5. Villanueva C, Colomo A, Bosch A, et al. Transfusion strategies for acute upper gastrointestinal bleeding. N Engl J Med 2013; 368:11.
6. Restellini S, Kherad O, Jairath V, et al. Red blood cell transfusion is associated with increased rebleeding in patients with nonvariceal upper gastrointestinal bleeding.
Aliment Pharmacol Ther; 2013; 37:316.
7. Stanley AJ, Ashley D, Dalton HR, Mowat C, Gaya DR, Thompson E et al. Outpatient management of patients with low-risk upper-gastrointestinal haemorrhage: multicentre validation and prospective evaluation. Lancet. 2009 Jan 3; 373(9657):42-7
8. Katharina Dworzynski, Vicki Pollit, Amy Kelsey, Bernard Higgins, Kelvin Palmer. Management of acute upper gastrointestinal bleeding: summary of NICE guidance.
BMJ 2012; 344: e3412
9. Altraif I, Handoo FA, Aljumah A, et al. Effect of erythromycin before endoscopy in patients presenting with variceal bleeding: a prospective, randomized, double-blind, placebo-controlled trial. Gastrointest Endosc; 2011; 73:245.
10. Joo Hwang Deborah A. Fisher, Tamir Ben-Menachem, et al The role of endoscopy in the management of acute non-variceal upper GI bleeding.
GASTROINTESTINAL ENDOSCOPY; Volume 75, No. 6 : 2012
11. Cinical guidelines for management of upper gastrointestinal bleeding due to gastro-oesophageal varices . Aug 7, 2013
www.rcht.nhs.uk/Clinical/Gastroenterology/BleedingVarices.pdf
12. David Osman, Michel Djibré, Daniel Da Silva. Management by the intensivist of gastrointestinal bleeding in adults and children. Annals of Intensive Care 2012, 2:46
13. Pang SH, Ching JY, Lau JY, et al. Comparing the Blatchford and pre-endoscopic Rockall score in predicting the need for endoscopic therapy in patients with upper GI hemorrhage. Gastrointest Endosc 2010; 71:1134.
14. Wysocki JD, Srivastav S, Winstead NS. A nationwide analysis of risk factors for mortality and time to endoscopy in upper gastrointestinal haemorrhage.
Aliment Pharmacol Ther 2012; 36:30.