UPPER GASTROINTESTINAL BLEED

National Standard Treatment Guideline

Ministry of Health
Republic of Maldives

ADB

JFPR
Japan Fund for Prosperous and Resilient Asia and the Pacific

From the People of Japan

World Health Organization
Maldives

National Standard Treatment Guidelines

- Acid Peptic Disease
- Acute Anxiety
- Acute Pancreatitis
- Acute Psychosis
- Acute kidney Injury
- Arrhythmia
- Chronic Liver Disease
- Chronic Pancreatitis
- Chronic kidney disease
- Congenital Heart Diseases
- Dementia
- Depression
- Diabetes Mellitus Type 1
- Diabetes Mellitus Type 2
- Gestational Diabetes
- Epilepsy
- Heart Failure
- Hyponatremia
- Hypernatremia
- Hypokalemia
- Hyperkalemia
- Interstitial Lung Disease
- Liver Failure
- Obesity
- Obstructive Sleep Apnoea
- Osteoarthritis
- Ovarian Cancer
- Pneumonia
- Stroke
- Upper Gastrointestinal bleed
- Unstable Angina

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GUIDELINES DEVELOPMENT METHODOLOGY

The development of the Maldives Standard Treatment Guidelines (STGs) followed a structured, evidence-informed, and consensus-driven methodology adapted from internationally accepted guideline-development standards and the Delhi Society for Promotion of Rational Use of Drugs (DSPRUD) model. The process combined systematic evidence retrieval, critical appraisal, contextual adaptation, and multidisciplinary expert review to ensure feasibility, clinical relevance, and national ownership.

1. Determining Scope and Priority Conditions

Priority clinical conditions were identified through consultation with national programme managers, specialty clinicians, and health-system stakeholders. Selection criteria included: (i) major causes of morbidity and mortality, (ii) observed variation in clinical practice or prescribing patterns, (iii) potential to improve patient outcomes, and (iv) the feasibility of implementation across health-facility levels in Maldives. The final list of diseases reflected national epidemiology, service-delivery capacity, and essential-medicine availability.

2. Identification of Existing Evidence and Source Guidelines

A targeted search strategy was used to identify high-quality existing clinical guidelines. Searches were conducted across international guideline repositories (e.g., WHO, NICE, SIGN and other intergovernmental bodies, international and national guideline repositories, specialty societies and professional associations.

3. Quality Appraisal of Source Guidelines

Retrieved guidelines were screened for transparency of development, methodological rigour, clarity of recommendations, applicability to health-system reality, editorial independence. Guidelines were included if they met the Institute of Medicine (IOM) definition of a clinical guideline and addressed treatment or management of priority conditions. Guidelines that did not meet minimum quality standards, review articles, diagnostic criteria, or technical standards were excluded.

4. Adoption, Adaptation, and Contextualization

The guideline-development team employed an adopt–adapt–contextualize model:

- **Adoption**: High-quality recommendations that aligned with Maldivian health-system realities were retained without modification.
- **Adaptation**: Recommendations were modified when local considerations such as diagnostic capacity, medicine availability, workforce skills, referral pathways, or cost constraints affected feasibility.

- **Contextualization**: Where evidence was absent or inconclusive, conditional recommendations were formulated based on expert consensus, with explicit consideration of pragmatism, safety, and local workflows.
  Medicines were selected in alignment with the Maldives National Essential Medicines List (NEML), based on suitability, efficacy, safety, and availability.

5. Expert Consensus and Multidisciplinary Input

Draft recommendations were initially prepared by experts from the DSPRUD, India, providing a strong methodological foundation for the process. Building on this, a collaborative and participatory process brought together clinicians from internal medicine, paediatrics, obstetrics-gynaecology, surgery, emergency medicine, endocrinology, cardiology, general practitioners, and public health representing different levels of healthcare. Consensus was achieved through moderated discussions, iterative revisions, and resolution of divergent views. For topics lacking strong evidence, recommendations were derived from expert clinical judgment grounded in extensive practice experience.

6. Drafting, Peer Review, and Validation

Each guideline section was organized in a standard format including key clinical features, essential investigations, non-pharmacological management, pharmacological therapy (with step-up/step-down options where relevant), referral criteria, paediatric considerations, and follow-up requirements. Drafts were peer-reviewed by senior clinicians and national experts. Reviewer comments were systematically integrated to strengthen clarity, accuracy, and applicability.

7. Addressing Conflicts of Interest

All contributors declared the absence of conflicts of interest. Individuals with potential or perceived conflicts were excluded from authorship or decision-making roles.

8. Updating and Future Revisions

The STGs were conceptualized as a living document. Future updates will incorporate new scientific evidence, changes in essential-medicine availability, national programme priorities, and user feedback from clinicians. Periodic review cycles will ensure the continued relevance and reliability of recommendations.

9. Distinctive Features of the Guidelines

Developed through a collaborative process involving a large group of multidisciplinary experts from different levels of healthcare, the guidelines incorporate the following distinctive features:

- **Diagnostic Assumption and Confirmation**: While assuming that an initial diagnosis has been established by the healthcare provider, the guidelines provide essential information for confirming diagnoses. This includes a comprehensive overview of major signs and symptoms, descriptions of confirmatory tests, and clear guidance on practices that are prohibited, discouraged, or unreliable—promoting evidence-based medicine supported by relevant references.
- **Comprehensive Treatment Approach**: The guidelines offer a systematic, up-to-date framework for managing medical conditions across the continuum of care. They begin at the primary care level and extend to secondary and tertiary care, incorporating protocols for treatment response assessment and referral criteria as integral components.
- **Diverse Treatment Modalities**: Recommendations encompass both non-pharmacological and pharmacological interventions and surgical intervention where applicable, providing flexibility for individualized treatment plans. Cautionary notes are included where necessary to ensure safe and effective use of therapies.
- **Assessment and Referral Criteria**: Clear criteria and goals for evaluating patient response to treatment are provided, along with guidance on when referral to higher levels of care is warranted ensuring continuity and comprehensiveness in patient management.

ACKNOWLEDGEMENTS

The Government of the Republic of Maldives is committed to ensuring universal access to quality health services for all citizens. The Constitution of Maldives mandates the progressive realization of rights, including the right to good standards of health care for the population. In line with this national commitment, standardized quality health services are regarded as the foundation of a strong and equitable healthcare system.

This important work would not have been possible without the cooperation and support of many individuals and institutions. We express our sincere appreciation to the Honourable Minister of Health, Abdullah Nazim Ibrahim, for his leadership, commitment, and continuous guidance throughout the development process. We are grateful to WHO and ADB for their significant contribution, support, and technical assistance.

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It is important to acknowledge the immense efforts, involvement, timely coordination, collaboration, and dedication of the Quality Assurance and Regulation Division team who made it possible for these Clinical Treatment Guidelines to come into existence.

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UPPER GASTROINTESTINAL BLEED

UPPER GASTROINTESTINAL BLEEDING

QUICK REFERENCE GUIDE

Upper gastrointestinal bleeding (UGIB) is a common medical emergency that occurs across all adult populations but is more frequent and severe in older individuals and those with multiple comorbidities. It is associated with significant morbidity, often requiring hospitalization, transfusion, and endoscopic intervention. Despite advances in care, mortality remains considerable, particularly in patients with variceal bleeding or advanced age, underscoring the importance of early recognition, prompt resuscitation, and timely endoscopic management for better outcomes.

Definition

Gastrointestinal bleeding is blood loss anywhere in the digestive tract and is classified as upper (before the ligament of Treitz) or lower (after it). Clinically it appears as: overt bleeding - hematemesis (fresh blood or coffee-ground vomit), melena (black, tarry stool usually requiring ≥60 mL of gastric blood; distinguish from black stools due to iron, charcoal, or bismuth), or hematochezia (fresh or altered blood per rectum); occult bleeding - microscopic loss detected by a positive fecal occult blood test, with or without iron-deficiency anemia; and obscure bleeding - recurrent bleeding with no source found after both upper endoscopy and colonoscopy, most often arising from the small intestine.

By etiology

- **Non-variceal:** Peptic ulcer (gastric/duodenal), erosive esophagitis/gastritis/duodenitis, Mallory-Weiss tear, vascular lesions (Dieulafoy, angiodysplasia, Cameron lesions), neoplasms.
- **Variceal:** Esophageal/gastric varices; portal-hypertensive gastropathy; gastric antral vascular ectasia (GAVE).

Causes, Risk factors & Triggers

- *H. pylori,* non-steroidal anti-inflammatory drugs (NSAIDs), aspirin/antiplatelets, anticoagulants (warfarin, direct oral anticoagulants - DOACs), alcohol, smoking, stress ulcers (critical illness), large hiatal hernia (Cameron), liver cirrhosis/portal hypertension, chronic kidney disease (CKD), older age.

Evaluation for Diagnosis

- **Clinical features:** *Hematemesis, coffee-ground emesis, melena; brisk bleeds may cause hematochezia with shock. Dizziness/syncope, weakness, chest discomfort.*
- **Physical examination:** Airway/breathing/circulation (ABC); vitals, orthostasis, pallor; abdominal tenderness; signs of chronic liver disease (ascites, spider angiomas); mental status.

- **Laboratory investigations:** Complete blood count (CBC), urea/creatinine (BUN/Cr), electrolytes, liver function tests (LFTs), prothrombin time (PT)/ international normalized ratio (INR)/ activated partial thromboplastin time (aPTT), type & screen/cross-match. BUN/Cr >30 suggests an upper source
- **Imaging/endoscopy:** Upper endoscopy (esophagogastroduodenoscopy -EGD) for localization and therapy once stabilized.
- **If endoscopy unavailable/non-diagnostic:** computed tomography angiography (CTA) to localize active bleeding (diagnostic only).
- **Confirmation**
  - Clinical + labs + endoscopic findings (or CTA if no endoscopy).

Classification / severity assessment criteria

- **Glasgow-Blatchford Score (GBS):** pre-endoscopic triage (0-1 low risk).
- **Rockall score:** pre- and post-endoscopy rebleed/mortality risk.
- **AIMS65:** in-hospital mortality/length of stay (Albumin <3 g/dL, INR >1.5, Mental status altered, Systolic blood pressure ≤90 mmHg, Age ≥65).

Differential Diagnosis

- Lower gastrointestinal bleed swallowed oropharyngeal blood, hemoptysis; non-GI causes of anemia/shock; aortoenteric fistula, hemobilia, hemosuccus pancreaticus.

Management goals & principles

- Stabilize **ABC**, control bleeding, prevent rebleeding, treat the cause, correct coagulopathy, avoid complications, reduce mortality with timely endoscopy.

Approach to management (stepwise, risk-based)

1. Immediate resuscitation

- Two large-bore IVs; isotonic crystalloid; oxygen; keep nil orally (NPO); active warming.
- Transfuse packed red blood cells (PRBCs) if unstable or hemoglobin (Hb) ≤7-8 g/dL (higher threshold if ischemia).
- Send labs; type & screen/cross-match; consider major hemorrhage activation if ongoing shock.

2. Risk stratification

- Calculate GBS (discharge possible if 0-1 and reliable follow-up), AIMS65, Rockall.

3. Early pharmacotherapy (before endoscopy)

- Suspected non-variceal: high-dose proton-pump inhibitor (PPI).
- Suspected variceal/cirrhosis: start vasoactive agent + antibiotics immediately (details below).

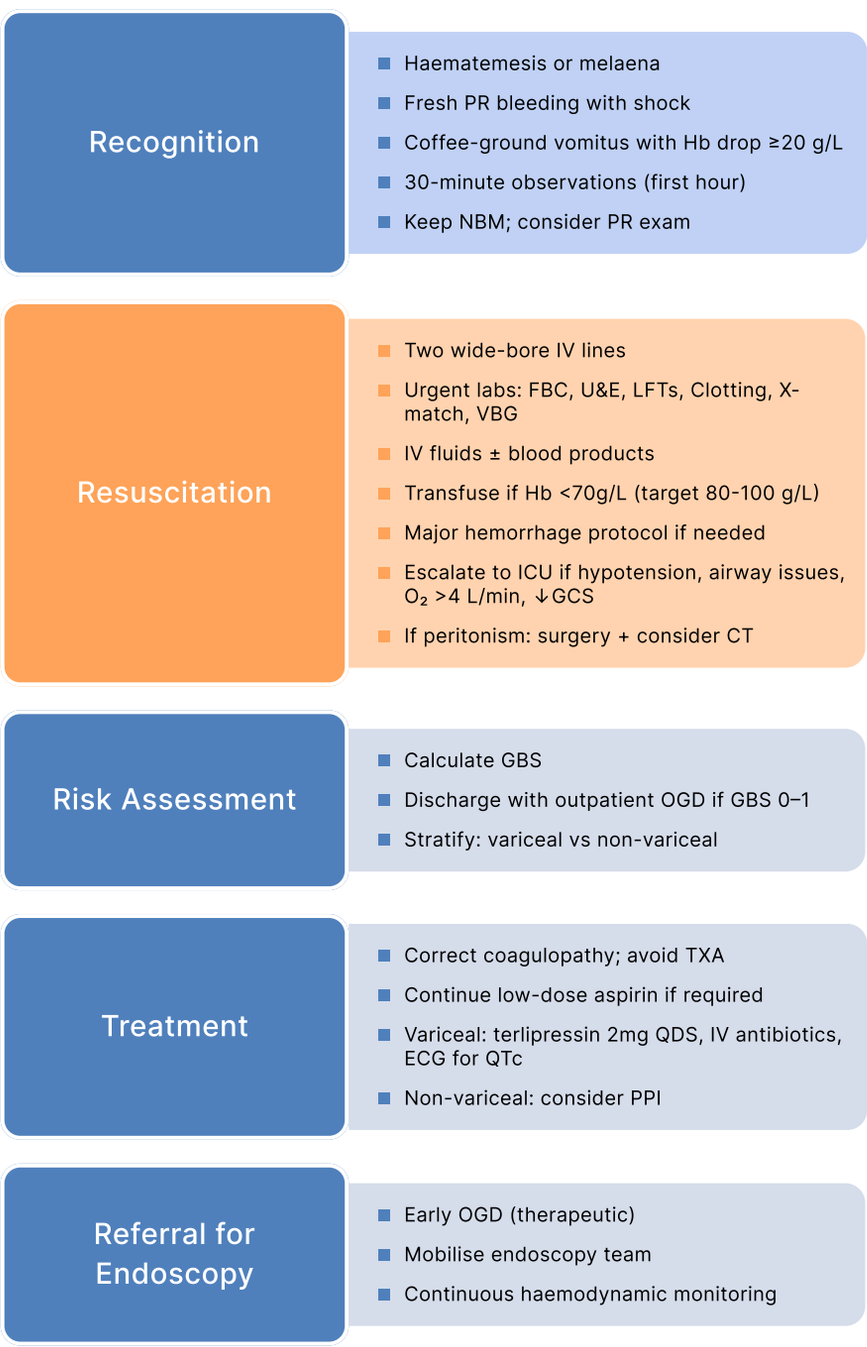
4. Endoscopy timing

- Urgent ≤12 h if variceal suspected or ongoing instability after resuscitation.
- Early ≤24 h for others once stabilized.

5. Definitive hemostasis

- Endoscopic therapy (clips/thermal/injection; variceal banding/glue).
- If endoscopy fails/unavailable: interventional radiology embolization or surgery.

Acute Upper GI Bleeding – Early Care Bundle (within 24 hours)



Non-Pharmacological interventions

- **Diet:** NPO during active bleeding → clear liquids → soft diet when stable.
- **Risk modification:** stop NSAIDs; review antithrombotics; alcohol abstinence; smoking cessation.
- **Low-resource priorities:** rapid IV access/fluids, PPI, risk scoring, restrictive transfusion, early referral to endoscopy-capable center; document all treatments to avoid duplicate testing.

Pharmacological therapy

1. **PPI for non-variceal bleed:** Pantoprazole 80 mg IV bolus → 8 mg/h infusion or 40 mg IV every 12 h; continue 72 h high dose, then switch to oral; reassess need.
2. **Vasoactive for suspected variceal bleed:**
   - **Octreotide:** 50 µg IV bolus → 50 µg/h infusion; continue 2-5 days.
   - **Terlipressin:** 2 mg IV every 4-6 h, then 1 mg every 4-6 h after control; monitor for ischemia/hyponatremia.
3. **Antibiotics in cirrhosis/variceal bleed:** Ceftriaxone 1 g IV daily up to 7 days; if immediate beta-lactam allergy: ciprofloxacin 400 mg IV q12h or levofloxacin 500 mg IV q24h (adjust to local resistance and renal function).
4. **Reversal of anticoagulation (life-threatening bleed):**
   - **Warfarin:** 4-factor prothrombin complex concentrate (PCC) 25-50 IU/kg + vitamin K 10 mg IV; fresh frozen plasma (FFP) only if PCC is unavailable.
   - **DOACs:** Idarucizumab (dabigatran) or andexanet alfa (factor Xa agents) where available; otherwise consider PCC if recent ingestion.
5. **Platelets/coagulation targets:** Transfuse platelets if <50 $\times 10^9$/L with active bleeding; aim **INR <1.5-1.8, fibrinogen >1.5-2.0 g/L.**

Note: Avoid routine tranexamic acid in AUGIB (no outcome benefit; venous thromboembolism risk).

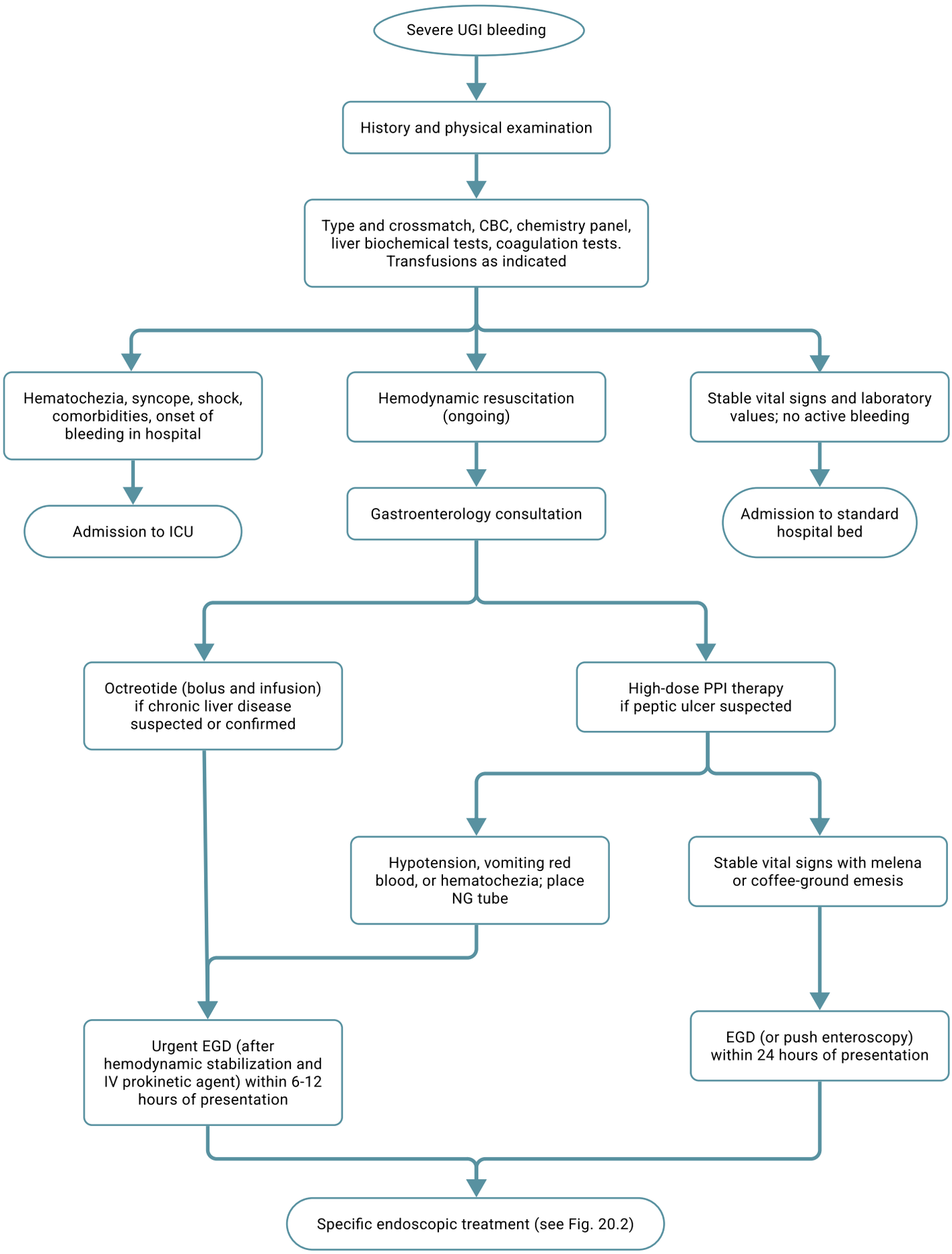


Fig. 20.1: Algorithm for the initial management of severe UGI bleeding. Some steps may take place simultaneously or in varying order and in the emergency department, depending on the clinical situation

Assessment of response, review; follow-up and adjustment

- **Hemodynamics:** SBP >100 mmHg, heart rate <100/min, lactate down, urine output >0.5 mL/kg/h.
- **Bleeding control:** no fresh blood, stool color normalizing, Hb stable (7-9 g/dL unless ischemia)**.**
- **Labs**: platelets >50 $\times 10^9$/L; INR <1.5-1.8; fibrinogen >1.5-2.0 g/L.
- **If inadequate response:** repeat resuscitation; urgent repeat endoscopy; consider interventional radiology/surgery.
- **24-48 h review:** switch IV to oral PPI when stable; test and eradicate Helicobacter pylori; plan follow-up endoscopy.
- **Variceal secondary prevention (once stable):** start nonselective beta-blocker (e.g., Carvedilol 3.125 mg orally twice daily or Propranolol 20 mg orally twice daily) and enroll in band ligation program; titrate to heart rate 55-60/min if tolerated.

Referral (tiered, based on infrastructure)

- **Primary/secondary → tertiary:** persistent shock; ongoing hematemesis/melena with Hb drop ≥2 g/dL in 6 h; transfusion need ≥4 units/24 h; suspected varices; obstructive jaundice; coagulopathy not corrected (INR >2.5; platelets <50 $\times 10^9$/L); recurrent bleeding.
- **Send with patient:** vitals trend, GBS/AIMS65/Rockall, labs, treatments and times (fluids/blood/PPI/vasoactives/antibiotics), comorbidities/antithrombotics, blood group, contact details.

Complications

- **Rebleeding;** hypovolemic shock; aspiration pneumonia; spontaneous bacterial peritonitis (cirrhosis); hepatic encephalopathy/hepatorenal syndrome; transfusion reactions (transfusion-associated circulatory overload (TACO), transfusion-related acute lung injury (TRALI); electrolyte/thermal issues (hypocalcemia, hypothermia); perforation; mortality.

Objectives of Patient education & Instructions to the patient/caregiver

- **Do:** take PPI as prescribed (30-60 min before breakfast), finish H. pylori therapy and confirm cure, avoid NSAIDs/alcohol/smoking, bring medication list to visits, keep follow-ups and endoscopy appointments.
- **Don't:** restart or stop antiplatelet/anticoagulant drugs without medical advice; ignore black stools, hematemesis, syncope, new dizziness.
- **Red flags (seek urgent care):** fresh blood vomit, black tarry stools, bright red blood per rectum with dizziness/fainting, jaundice/fever in cirrhosis.
- **Cirrhosis/varices:** adhere to beta-blocker and banding schedule; complete antibiotic course during acute bleed.

UPPER GASTROINTESTINAL BLEEDING

INTRODUCTION

Upper gastrointestinal bleeding (UGIB) is bleeding proximal to the ligament of Treitz. It may be overt (hematemesis, melena, occasionally hematochezia) or occult; acute or chronic. Acute UGIB demands rapid recognition and resuscitation.

Incidence is ~80-150 per 100,000 adults yearly, with 2-10% case fatality; rates climb with age and comorbidities. UGIB drives a large share of emergency admissions, transfusions, and endoscopies, especially in patients on anticoagulants or with liver disease or peptic ulcer. Early, standardized care improves outcomes.

Most cases are controllable with modern care, but mortality remains highest in older, multimorbid patients making swift assessment and escalation critical.

SCOPE OF THIS GUIDELINE

This document offers a structured approach to any adult patient presenting with gastrointestinal bleeding covering initial assessment, stabilization, risk stratification, medical management, follow-up, and referral. It does not include endoscopic, radiologic, or surgical procedures.

Intended users

- Physicians, nurses, emergency staff, and administrators in the Maldives working in primary, secondary, and tertiary care.

Applicability at various levels of care

- **Primary care:** Identify bleeding early, secure IV access, start fluids, basic labs, start proton-pump inhibitor (PPI), apply risk score, arrange urgent referral.
- **Secondary care:** All primary tasks plus transfusion per local thresholds, manage comorbidities, stabilize for transfer; endoscopy not expected.
- **Tertiary care:** Full diagnostics and definitive therapy (endoscopy/interventional radiology/surgery) with multidisciplinary oversight.

In resource-limited settings, endoscopy and advanced imaging such as CT angiography are not unavailable. Blood-bank support may be restricted to type and screen without immediate crossmatch capability, and laboratory testing often limited to basic panels only (CBC, coagulation profile, and biochemistry). Under these constraints, management should prioritize rapid recognition of bleeding, aggressive resuscitation, early initiation of proton-pump inhibitor therapy, blood transfusion within local thresholds, risk stratification using validated scores, and timely referral to higher-level facilities for definitive endoscopic or interventional care.

DEFINITION

Gastrointestinal bleeding refers to blood loss anywhere along the digestive tract. It is broadly classified as upper (proximal to the ligament of Treitz) or lower (distal), and clinically in three patterns:

- Overt (visible) bleeding is visible, presenting as hematemesis (fresh blood or "coffee-ground" emesis), melena (a black, tarry stool requiring at least 60 mL of gastric blood - not to be confused with black stools from iron, charcoal, or bismuth) or hematochezia, the passage of fresh or altered blood per rectum.
- Occult (hidden) bleeding stems from microscopic hemorrhage, detected by a positive fecal occult blood test, with or without iron-deficiency anemia.
- Obscure (persistent/recurrent) bleeding refers to recurrent bleeding when the source remains unidentified after both upper endoscopy and colonoscopy, usually originating in the small intestine.

Anatomical site

Upper GI bleeding (UGIB) spans from the pharynx to the duodenojejunal flexure (ligament of Treitz) and most often arises from peptic ulcers, erosive gastritis, varices, or Mallory-Weiss tears. UGIB presents as hematemesis (bright red or "coffee grounds"), melena, or acute anemia with hemodynamic signs

Lower GI bleeding (LGIB) occurs distal to the duodenojejunal flexure and is commonly due to diverticulosis, angiodysplasia, inflammatory bowel disease, or neoplasms. Clinically, significant blood loss may lead to dizziness, weakness, syncope, tachycardia, hypotension, and orthostatic changes.

CAUSES, RISK FACTORS & TRIGGERS

Upper GI bleeding arises from a mix of non-variceal and variceal sources.

Category	Cause / examples	Approx. share*	Setting / risk factors	Initial clues / tests
Non-variceal	**Peptic ulcer disease** (H. pylori, NSAIDs)	~33%	*H. pylori* infection; NSAID/ antiplatelet use; older age; stress ulcers in critical illness	Hematemesis/melena; fall in Hb; rise in urea; FOBT+
	Erosive esophagitis	~24%	Reflux, pills (bisphosphonates, doxycycline), alcohol/ tobacco	Odynophagia, heartburn

	Gastritis	18-22%	H. pylori, NSAIDs, alcohol, severe illness	Epigastric pain, anemia
	Duodenitis	~13%	Similar to gastritis; H. pylori/NSAIDs	Melena, epigastric pain
	Mallory-Weiss tear	5-15%	Forceful retching/vomiting, alcohol binges	Hematemesis after vomiting
	Vascular lesions (angiodysplasia, Dieulafoy)	~5%	Older age, CKD, atherosclerosis	Intermittent overt bleed; anemia
	Neoplasms (esophageal/gastric)	<5%	Weight loss, anemia, dysphagia	Iron-deficiency anemia, FOBT+
	Rare: aortoenteric fistula, hemobilia, hemosuccus pancreaticus	Rare	Vascular grafts; hepatobiliary/ pancreatic disease	Sentinel bleed, pain out of proportion
Variceal	**Portal-hypertensive varices** (cirrhosis, non-cirrhotic portal HTN)	~11%	Chronic liver disease, portal vein thrombosis, schistosomiasis (local epidemiology)	Hematemesis, shock; stigmata of CLD
Non-GI sources	Oropharyngeal bleed, hemoptysis	-	Epistaxis, bronchiectasis, TB	Blood with cough; normal NG aspirate
Obscure GI bleeding	Small-bowel tumor, ectopic varices, diverticula	-	Ongoing anemia/FOBT+ with negative EGD/colonoscopy	Occult/occult-overt pattern

EVALUATION FOR DIAGNOSIS

Table 1. Description, Likely Source, Clues, and History Suggesting the Diagnosis

Patient description / Presentation	What it looks like	Usual or Suspected Source	Helpful Clues (Exam/ Labs)	History Suggesting the Source
Hematemesis (fresh blood / clots)	Bright red or maroon vomitus, sometimes with clots	Esophagus, stomach, proximal duodenum	Often after retching; NSAID use; varices if cirrhosis	■ Esophageal ulceration: GERD, alcohol, odynophagia, pills, NG tube trauma. ■ Esophageal cancer: dysphagia, weight loss ■ Mallory–Weiss tear: alcohol binge, forceful vomiting ■ Varices/portal HTN gastropathy: cirrhosis, portal hypertension

Coffee-ground emesis	Dark, granular vomitus	Same upper-GI sources; slower/ older bleed	Suggests bleed slowed or stayed in stomach	■ Peptic ulcer disease: NSAIDs, H. pylori, epigastric pain ■ Gastritis/duodenitis: NSAIDs, alcohol, severe illness
Melena	Black, tarry, foul-smelling stool (≥60 mL blood)	Usually upper GI	Elevated BUN/Cr; NSAID history; epigastric pain	■ Peptic ulcers, erosive gastritis/duodenitis ■ Vascular lesions (angiodysplasia, Dieulafoy): older age, CKD ■ Gastric or duodenal neoplasms: weight loss, anemia, dysphagia
Hematochezia from brisk UGIB	Bright red blood per rectum with shock ± hematemesis	Massive upper GI bleed	Melena may coexist; hemodynamic instability	■ Same causes as above for severe UGIB: varices, peptic ulcer, MW tear, malignancy
Bleeding from nasopharynx misinterpreted as GI	Blood swallowed then vomited	Nasopharynx	Epistaxis signs	■ Nasopharyngeal malignancy or radiation; recurrent epistaxis
Bleeding that appears GI but originates from lungs	Blood in sputum or mixed with oral secretions	Lungs	Coughing blood; frothy appearance	■ Hemoptysis history
Rare or unusual presentations	May be intermittent or mixed	Hemobilia, hemosuccus pancreaticus, aortoenteric fistula	Bleeding with abdominal pain; jaundice; graft history	■ Hepatobiliary/ pancreatic disease; prior vascular grafts

Table 2. UGIB rapid assessment checklist (history → exam → labs)

Step	What to capture	Examples / specifics
Differentiate source	Upper vs lower by history and stool color	Hematemesis/coffee-grounds/melena → UGIB; isolated hematochezia → consider lower GI unless unstable (then brisk UGIB possible)
Comorbidities	Liver, renal, cardiac, pulmonary disease	Cirrhosis → variceal risk; CKD → platelet dysfunction
Medications/substances	NSAIDs, aspirin, antiplatelets, anticoagulants (warfarin, DOACs), herbal agents; alcohol/illicit drugs	Many herbals affect clotting (e.g., ginkgo, garlic); alcohol raises variceal risk
Prior procedures	Past endoscopy, abdominal surgery	Guides likelihood of ulcer/stricture/varices
Family history	GI malignancy, bleeding disorders	Raises suspicion for neoplasm or coagulopathy
Describe bleeding	Use Table 1 terms	Document onset, quantity, color, clots
Physical exam	Vitals, pallor, orthostasis, abdominal tenderness, stigmata of chronic liver disease; chest exam	Spider angiomas, ascites suggest portal hypertension; listen for crepts/decreased breath sounds
Rectal exam	Confirm stool color/character	Melena vs red blood; avoid delay
IV access & resuscitation	Two large-bore IVs; fluids	Start while history and labs proceed
Laboratory tests	CBC, basic biochemistry, renal function (BUN, creatinine), liver biochemical tests, PT/INR, aPTT; type & screen / crossmatch; chest X-ray if indicated	BUN/Cr >30 suggests an upper GI source; repeat Hgb per protocol

CONFIRMATION OF DIAGNOSIS

- Endoscopy is the gold standard to localize and treat bleeding (procedure details not covered here).
- Upper endoscopy for UGIB; colonoscopy for lower GI bleeding.
- If both are negative and bleeding persists, use capsule endoscopy or deep enteroscopy for small-bowel sources (obscure GI bleed).
- If endoscopy is not possible or non-diagnostic, CT angiography (CTA) can detect active bleeding (~0.1 mL/min) but cannot treat it.
- A positive CTA should prompt definitive therapy: repeat endoscopy if feasible, interventional radiology embolization, or surgery.
- Primary care: make a clinical diagnosis, stabilize, calculate Glasgow-Blatchford Score (GBS), and refer for endoscopy once stable.

DIFFERENTIAL DIAGNOSIS

When assessing upper GI bleeding, distinguish between variceal and non-variceal causes.

Category	Examples	Context / risk factors	Clues at presentation	First diagnostic/ management step
Non-variceal UGIB	Peptic ulcers (gastric/duodenal), erosive gastritis/ duodenitis, Mallory-Weiss tear, esophageal/gastric neoplasm	H. pylori, NSAIDs/ aspirin, antiplatelets, reflux, severe retching, older age	Hematemesis or melena; epigastric pain; post-retching bleed	Resuscitate; start PPI; test/treat H. pylori later; urgent endoscopy when feasible
Vascular lesions	Dieulafoy's lesion, angiodysplasia, Cameron erosions (hiatal hernia)	Older age, CKD, large hiatal hernia	Intermittent overt bleed or iron-deficiency anemia	Stabilize; PPI; plan endoscopic therapy at higher center
Variceal bleeding	Esophageal/gastric varices; portal-hypertensive gastropathy; GAVE (gastric antral vascular ectasia)	Cirrhosis; non-cirrhotic portal hypertension	Massive hematemesis, shock; stigmata of liver disease	Start antibiotics + vasoactive (octreotide/ terlipressin) + PPI; urgent transfer for endoscopy
Rare causes	Aortoenteric fistula, hemobilia, hemosuccus pancreaticus	Vascular grafts; hepatobiliary/ pancreatic disease	Sentinel bleed, RUQ/ epigastric pain out of proportion	High-suspicion pathway; urgent CT angiography and tertiary referral
Mimics / non-GI sources	Swallowed oropharyngeal bleed, hemoptysis; coagulopathy without GI source; foreign-body-induced emesis	Epistaxis, lung disease; anticoagulation disorders; ingestion history	Blood with cough; nasal/ oral source; clear NG aspirate	Examine ENT/chest; correct coagulopathy; avoid unnecessary GI work-up
When EGD is negative but bleeding persists	Small-bowel sources (tumor, angiodysplasia, ectopic varices, diverticula)	Ongoing anemia/ FOBT+ with negative upper/lower endoscopy	Occult or overt-occult pattern	Capsule endoscopy or deep enteroscopy; manage per findings

Notes: Always differentiate upper vs lower source (stool color, NG aspirate). Endoscopy confirms diagnosis and often treats the cause; use it early when available.

MANAGEMENT GOALS

- Stabilize the patient's airway, breathing, and circulation.
- Control active bleeding and prevent rebleeding.
- Identify and treat the underlying cause (e.g., peptic ulcer, variceal bleed, Mallory-Weiss tear).
- Correct coagulopathy and optimize hemodynamic status.
- Prevent complications, including aspiration, shock, and infection.
- Reduce mortality through early diagnosis and timely intervention.

MANAGEMENT PRINCIPLES

1. **Immediate resuscitation:** Airway protection, oxygen, two large-bore IVs; isotonic crystalloids. Transfuse if unstable or Hb ≤7 g/dL (≤8 g/dL if high-risk).
2. **Assess & monitor:** Vitals, mental status, urine output; send CBC, coagulation profile, liver/renal tests, type & screen/cross-match.
3. **Start pharmacotherapy early:**
   - **Non-variceal:** high-dose IV proton-pump inhibitor.
   - **Suspected variceal:** vasoactive agent (octreotide/terlipressin) + prophylactic antibiotics.
4. **Early endoscopy after stabilization:** within 24 h (≤12 h if variceal suspected).
5. **Cause-specific hemostasis:** injection, thermal therapy, clips; variceal band ligation as indicated.
6. **Adjuncts:** Reverse coagulopathy (vitamin K, PCC/FFP, platelets as indicated); manage comorbidities; hold NSAIDs and anticoagulants until hemostasis.
7. **Prevent recurrence / follow-through:** continue appropriate PPI or vasoactive course; eradicate Helicobacter pylori when present; start secondary prophylaxis for varices (nonselective beta-blocker, plus banding program).

Management of Acute upper gastrointestinal bleeding (AUGIB)

1. **Recognition (at triage)**
   - Suspect AUGIB with hematemesis or melaena; fresh PR bleeding with shock; coffee-ground vomit with Hb drop ≥2 g/dL (≥20 g/L).
   - Observations every 30 min for the first hour.
   - Keep nil by mouth.
   - Consider PR exam to confirm stool color.
2. **Resuscitation (immediately)**
   - **Airway and breathing:** If ongoing massive hematemesis or airway compromise is anticipated, arrange elective endotracheal intubation before endoscopy. Supplemental oxygen should be administered to achieve target saturations and maintain end organ oxygenation,
   - Two wide-bore IV cannulas.
   - Urgent bloods: FBC, U&E, LFTs, coagulation, group & save/cross-match, venous blood gas.
   - Empirical fluids and/or blood as needed. Give 500 mL crystalloid in less than 15 minutes to patients who are hemodynamically unstable, with regular review to determine ongoing requirement (Br Soc Gastroenterology Bundle). Patients with persisting hypotension, despite fluid resuscitation, should be transferred to high dependency or intensive care.
   - Transfuse if unstable or Hb <7 g/dL (target 8-10 g/dL once stable). Stabilize SBP>100mmHg, PR <100bpm.
   - Activate major hemorrhage protocol if required.
   - Escalate to ICU if persistent hypotension, airway compromise, oxygen need ≥4 L/min, or reduced GCS.
   - If peritonism, involve surgery and consider CT.
3. **Risk assessment (before/alongside resuscitation)**
   - Calculate Glasgow-Blatchford Score (GBS).
   - Possible discharge with outpatient OGD only if GBS 0-1 and safe follow-up.
   - Stratify likely variceal vs non-variceal from history, exam, and liver disease risk.

4. Immediate medications

A) Suspected VARICEAL bleed

- Vasoactive: Terlipressin 2 mg IV every 6 hours (then reduce per response/locals).
- Antibiotics: e.g., ceftriaxone 1 g IV daily (5-7 days) in cirrhosis.
- PPI: may co-administer until endoscopic diagnosis.
- Coagulopathy: correct when indicated (vitamin K; platelets/PCC/FFP per labs).

Notes: avoid tranexamic acid; continue low-dose aspirin if essential for secondary prevention after risk-benefit check.

B) Suspected NON-VARICEAL bleed

- High-dose PPI: e.g., pantoprazole 80 mg IV bolus then infusion 8 mg/h (or 40 mg IV 12-hourly).
- Coagulopathy: correct as above.
- Stop NSAIDs/adjust antithrombotics until hemostasis; plan restart timing after endoscopy.

5 Endoscopy and timing

- Book urgent upper GI endoscopy (therapeutic).
- Variceal or ongoing instability: aim within 12 hours after initial stabilization.
- Non-variceal/stable: aim within 24 hours.

6. Endoscopic therapy (at receiving unit)

- Variceal: band ligation (± gastric variceal glue/other per unit protocol).
- Non-variceal: injection, thermal therapy, and/or clips; treat visible vessels; manage high-risk stigmata.

7. After endoscopy (early ward plan)

- Non-variceal: continue PPI (high-dose 72 h then oral); test/eradicate H. pylori if ulcer.
- Variceal: continue vasoactive 2-5 days and antibiotics; start non-selective beta-blocker when stable and arrange banding program.
- Antithrombotics: restart per indication and rebleed risk.
- Ongoing monitoring: vitals, Hb trend, urine output.

8. Disposition and documentation

- Record GBS, treatments with times/doses, fluids/blood given, transfusion targets, comorbidities, and anticoagulant/antiplatelet status.
- Include contact details and clear handover if transferring.

TOOLS USED TO STRATIFY PATIENTS BASED ON SEVERITY

Glasgow-Blatchford Score - Risk Factors at Admission

Parameter	Category	Score	Interpretation	Applicability (what to do now)
Blood urea nitrogen (mg/dL)	18.2-22.4	2	Mild rise; suggests upper source if BUN/Cr high	Prioritize IV access, labs; plan early OGD if other risks present
	22.4-28.0	3	Moderate rise; ongoing blood catabolism	Admit; expedite OGD (<24 h)
	28.0-70.0	4	Significant rise; higher bleed risk	Admit; transfusion likely; OGD urgent
	≥70.0	6	Severe elevation	Resuscitate; ICU/HD bed if unstable; urgent OGD
Hemoglobin (g/dL)	12.0-<13.0 (men) / 10.0-<12.0 (women)	1	Borderline anemia	Observe; repeat Hb; plan early OGD
	10.0-<12.0 (men)	3	Moderate anemia	Admit/observe; consider transfusion if symptomatic/comorbid
	<10.0	6	Marked anemia	Transfuse per threshold; urgent OGD
Systolic BP (mmHg)	100-109	1	Early hypotension	IV fluids; close monitoring
	90-99	2	Hypotension	Aggressive resuscitation; fast-track OGD
	<90	3	Shock	Major hemorrhage protocol; ICU; urgent OGD (<12 h if variceal suspected)
Heart rate (beats/min)	≥100	1	Tachycardia from hypovolemia	Fluids, repeat vitals; risk not low
Melena	Present	1	Points to upper source	Treat as UGIB; start PPI; plan OGD
Syncope	Present	2	Significant volume loss	Admit; continuous monitoring
Hepatic disease	Present	2	Variceal risk	Start antibiotics + vasoactive; urgent OGD
Cardiac failure	Present	2	Poor reserve; higher mortality	Cautious fluids; early senior review; admit

Notes:

- **Score 0** - Very low risk; outpatient management generally safe if stable and reliable follow-up is available. Endoscopy not urgent; may be arranged electively as outpatient.
- **Score 1-5** - Low to moderate risk; consider early endoscopy (≤24 hours from presentation for most patients) and short observation.
- **Score ≥6** - High risk; requires hospital admission, urgent endoscopy (≤12 hours for unstable or suspected variceal bleeds), and intensive monitoring.

Rockall Score (pre- and post-endoscopy)

Version	Components	Scoring range	Key thresholds	Interpretation	Applicability (what to do)
Pre-endoscopic Rockall	Age, shock (HR/BP), comorbidity	0-7	**≤2** low risk	Rebleed ~4.3%, mortality ~0.1%	If stable and support at home, consider early discharge with outpatient OGD; give PPI, safety netting
			≥3-5 intermediate	Rising risk of rebleed/ death	Admit/observe; OGD within 24 h; optimize comorbidities
			≥6 high risk	Rebleed ~15%, mortality ~39%	Admit; senior/ICU review; urgent OGD (≤12 h if unstable/ variceal); transfusion/ correction protocols
Full Rockall (post-OGD)	Pre-endoscopic items **plus** endoscopic diagnosis and stigmata (active bleed, visible vessel, clot)	0-11	Higher totals = higher rebleed and mortality	Refines prognosis after OGD	Guides level of care, length of stay, need for repeat endoscopy, and timing of antithrombotic restart

AIMS65

Score	Variables (1 point each)	Total range	Interpretation	Applicability (what to do)
0-1	Albumin <3 g/dL; INR >1.5; altered Mental status; Systolic BP ≤90 mmHg; Age ≥65	**0-5**	**Low risk** (score <2): lower mortality, shorter LOS, lower cost	Ward-level care if otherwise stable; OGD within 24 h; standard monitoring
≥2	Same as above		**Higher risk** (score ≥2): increased in-hospital mortality, longer LOS	Admit with higher acuity; early senior review; consider HDU/ICU; correct coagulopathy; expedite OGD (≤12-24 h by stability)

Notes:

- Use pre-endoscopic Rockall at presentation; update to full Rockall after OGD to refine prognosis.
- AIMS65 is quick for mortality/acuity prediction and complements Rockall; use both with clinical judgment.

MASSIVE BLOOD TRANSFUSION (BT) PROTOCOL

Massive BT Protocol

1. **Recognize & activate**
   - **Triggers (anyone):** anticipated ≥10 units packed RBC (PRBC) in 24 h; ≥4 units in first hour with ongoing bleed; SBP <90 with active bleeding; failure to respond to 2 L crystalloid; clinician concern.
   - **Who activates:** ED/ICU/anesthesia/surgical/GI consultant. One call to blood bank: patient ID, diagnosis, weight (if known), anticoagulants on board.
   - **Assign roles:** team lead, airway, access/fluids, meds, labs/runner, documentation.
2. **Immediate actions (run in parallel)**
   - **Airway/Breathing/Circulation.** Two large-bore IVs or rapid infuser/central line. Keep patient warm (forced-air warmer; warm fluids).
   - **Send stat labs:** CBC, PT/INR, aPTT, fibrinogen, ionized Ca, Mg, K, lactate, ABG/VBG, type & screen/cross-match.
   - **BP strategy:** avoid hypotension; target MAP ≥65 once bleeding controlled (no "permissive hypotension" in UGIB shock).
   - **Do NOT give tranexamic acid routinely in UGIB** (no mortality benefit; increased VTE risk). Use only if another indication (e.g., trauma, PPH).
3. **Product delivery (balanced packs)**
   - **First cycle (example "Pack 1"):**

- PRBC 4 units
- FFP 4 units (~15-20 mL/kg total over cycles)
- Platelets 1 adult dose (~1 apheresis or 4-6 pooled)
- Cryoprecipitate 2 pools or fibrinogen concentrate 2-4 g if fibrinogen <1.5-2.0 g/L.

- **Subsequent cycles:** repeat 1:1:1 (PRBC: FFP: Platelets) until hemorrhage controlled; add cryo/fibrinogen guided by labs.
- **Whole blood option (if available):** low-titre group O whole blood as per local policy.

4. Compatibility & special situations

- If uncross-matched:
  - **Group O-negative** for females of child-bearing potential.
  - **Group O-positive** acceptable for adult males/post-menopausal females if O-neg scarce.
- If on anticoagulants:
  - **Warfarin:** PCC 25-50 IU/kg + vitamin K 10 mg IV.
  - **Dabigatran:** Idarucizumab 5 g IV (if available).
  - **Factor Xa DOACs:** Andexanet alfa per label, or PCC 50 IU/kg if not available.
  - **Antiplatelets/uremia:** give platelets if recent irreversible agent or DDAVP 0.3 µg/kg IV for uremic dysfunction.
- **Variceal bleed:** continue ceftriaxone and vasoactive (octreotide/terlipressin) per protocol alongside MTP.

5. Electrolytes, calcium, and physiology

- **Calcium:** give Calcium chloride 1 g IV (central) or Calcium gluconate 3 g IV (peripheral) after each 4 units of blood products; recheck ionized Ca (goal 1.1-1.3 mmol/L).

- **Potassium, magnesium, acid-base, temperature:** monitor and correct; keep Temperature ≥36°C.
- Use pressure infuser/rapid warmer to avoid hypothermia and coagulopathy.

6. Lab-guided targets (switch to goal-directed as soon as feasible)

- **Hb:** 7-9 g/dL (higher if ischemia).
- **Platelets:** >50 $\times 10^9$/L (>100 $\times 10^9$/L if CNS/ongoing uncontrolled bleeding).
- **INR:** <1.5-1.8.
- **Fibrinogen:** >1.5-2.0 g/L (150-200 mg/dL).
- **pH ≥7.2, lactate declining, Temperature ≥36°C, ionized Ca ≥1.1 mmol/L.**

7. Imaging/hemostasis in parallel

- Secure definitive hemostasis (endoscopy ± IR embolization ± surgery).
- Communicate product pack arrival times with blood bank; anticipate next pack if bleeding persists.

8. Deactivation & post-MTP care

- Stop MTP when surgical/endoscopic/IR control achieved and labs within targets. Notify blood bank; return unused products.
- Transition to individualized transfusion; continue PPI (non-variceal) or vasoactive + antibiotics (variceal) per pathway.
- **Document** start/stop times, products and lots, meds/doses, complications.

9. Monitor for complications

- Hypocalcemia, hypothermia, acidosis, hyperkalemia, hypomagnesemia, transfusion-associated circulatory overload (TACO), transfusion-related acute lung injury (TRALI), disseminated intravascular coagulation (DIC).
- Daily thrombo-prophylaxis plan once bleeding controlled and safe.

10. Resource-limited notes

- If FFP/platelets scarce: aim PRBC:FFP ~2:1 and give platelets as soon as available; prioritize fibrinogen replacement early.
- If labs delayed: give empiric cryo/fibrinogen after first pack; reassess clinically every 15-30 min.

Note: Platelets in active UGIB: endoscopic hemostasis can succeed with counts 20-50 $\times 10^9$/L. Transfuse if active bleed and platelets <50 $\times 10^9$/L. Life-threatening hemorrhage or procedure planned: target >50 $\times 10^9$/L (higher if CNS bleed). Coagulopathy or platelet dysfunction (warfarin/DOACs, antiplatelets, uremia): discuss with transfusion/hematology for reversal and adjuncts (e.g., PCC, DDAVP). Avoid routine platelet transfusion when >50 $\times 10^9$/L and no high-risk procedure.

Anticoagulant and Antiplatelet Management:

- Aspirin (secondary prevention): continue during UGIB. If held, restart in 3-5 days once hemostasis is secure.
- Dual antiplatelet therapy: keep aspirin, hold the P2Y12 inhibitor, and plan to resume within 5 days; involve cardiology for high-risk cardiac history.
- Platelets: transfuse if active bleed and platelets <50 $\times 10^9$/L; avoid routine platelet transfusion above this threshold.
- Vitamin K antagonists (warfarin): in life-threatening bleed, hold anticoagulant and give 4-factor prothrombin complex concentrate (PCC); use fresh frozen plasma only if PCC unavailable. (Vitamin K alone is too slow for acute reversal.)
- Direct oral anticoagulants (DOACs): in severe bleed, hold drug; use idarucizumab for dabigatran, andexanet alfa for apixaban/rivaroxaban/edoxaban where available; otherwise consider PCC if ingestion ≤24 h.
- Non-life-threatening bleed: usually hold anticoagulant without reversal and reassess.

Monitor & refer: All high risk patients with UGI bleed should be referred for endoscopy after discussion with on call gastroenterologist/Physician.

ICU Admission Criteria in UGIB

1. Hemodynamic instability (Persistent shock (systolic blood pressure <90 mmHg) despite Two large-bore IV cannulas, and At least 20 mL/kg crystalloid bolus. Need for vasopressors to maintain blood pressure.
2. Ongoing or severe bleeding: Active hematemesis or melena with:
3. Hemoglobin drop ≥2 g/dL within 6 hours, or
4. Requirement for ≥4 units packed red blood cells (PRBCs) within 24 hours.
    - High-risk prognostic scores: Glasgow-Blatchford Score (GBS) ≥8; Rockall Score ≥5
    - End-organ dysfunction: Acute kidney injury (AKI), Altered mental status, Respiratory failure requiring ventilatory support.

5. Coagulopathy not corrected by initial measures: INR >2.5 despite reversal therapy, or Platelet count <50,000/µL with ongoing bleeding.
6. Need for continuous advanced support: Continuous vasoactive infusions (e.g., terlipressin, octreotide).
7. Anticipated airway protection due to massive hematemesis or risk of aspiration.

PHARMACOLOGICAL THERAPY

1. **IV crystalloids**: Bolus 20 mL/kg; adjust to maintain systolic BP ≥ 100 mm Hg and urine output ≥ 0.5 mL/kg/h. Reassess hemodynamics and urine output every hour, adjusting the fluid rate to correct hypovolemia without causing overload.
2. **IV proton-pump inhibitor:** After initial Pantoprazole 80 mg bolus, then infusion 8 mg/h for 72 h (or equivalent). Once the acute phase is over, switch to oral PPI 40 mg twice daily for 14 days, then 40 mg once daily to complete the course and ensure full ulcer resolution. In case of variceal bleeding PPI if started before endoscopy should be stopped, as long term PPI use is deleterious for patients with cirrhosis; unless there is a strict indication to continue them.

   In case of variceal bleeding PPI if started before endoscopy should be stopped, as long term PPI use is deleterious for patients with cirrhosis, unless there is strict indication to continue them.
3. **Vasoactive agents (if variceal bleed suspected)**: In suspected variceal bleeding, vasoactive drugs (terlipressin, somatostatin, octreotide) should be started as soon as possible and continued for 2-5 days. Octreotide has the most favorable safety profile.

   Octreotide as a 50 mcg IV bolus followed by a 25-50 mcg/hour infusion,
   Or
   Terlipressin: Initial 24-48 hours: 2 mg IV every 4-6 hours and then 1 mg IV every 4-6 hours. Continue vasoactive agents for two to five days to maintain hemostasis.
4. **Antibiotics (variceal bleed):** In cirrhotic patients with acute bleeding, add antibiotic prophylaxis - ceftriaxone 1 g IV daily to prevent bacterial translocation, aspiration pneumonia, and spontaneous bacterial peritonitis; If immediate beta-lactam allergy (penicillin/cephalosporin): Ciprofloxacin 400 mg IV q12h or Levofloxacin 500 mg IV q24h (prefer IV during active bleed). If fluoroquinolone resistance is high or prior exposure: Aztreonam 2 g IV q8h (gram-negative coverage) after discussing with microbiology/infectious diseases. Notes: adjust doses for renal function; watch QT prolongation and tendinopathy with fluoroquinolones; oral norfloxacin 400 mg BID is a fallback only if IV access is limited and bleeding is controlled.

Stop antibiotics once bleeding is controlled and no infection is present. The choice of antibiotics should be determined by local resistance patterns.

5. **Prokinetic therapy prior to endoscopy:** It enhances gastric emptying, improving mucosal visualization and reducing the need for repeat procedures; give metoclopramide 10mg IV or Domperidone in case erythromycin (IV infusion of 250 mg erythromycin given 20-90 minutes before endoscopy to clear clots and optimize the view during the procedure, is not available.

Non-Pharmacological Interventions

Diet/Nutrition:

- Keep the patient nil orally (NPO) during active bleeding or resuscitation.
- Once hemodynamically stable and no further bleeding, start with clear liquids, then progress to soft diet as tolerated.

Risk modification:

- Stop NSAIDs and review need for anticoagulants/antiplatelets (restart based on risk-benefit after hemostasis).
- Counsel for smoking cessation.
- Enforce complete alcohol abstinence to reduce recurrence risk.

Lifestyle & education:

- Educate patient/caregivers on recognizing early warning signs (hematemesis, melena, syncope).
- Stress adherence to follow-up and monitoring plans.

ASSESSMENT OF RESPONSE

Domain	What to assess	Tools / parameters	Target / desired response	Action if inadequate
Hemodynamics	Blood pressure, heart rate, perfusion	Vitals, urine output, lactate	Stable BP (SBP >100 mmHg), HR <100/min, urine output >0.5 mL/kg/hour, lactate trending down	Repeat resuscitation, transfuse, escalate to ICU, urgent endoscopy
Bleeding control	Ongoing hematemesis/melena, nasogastric aspirate	Clinical observation, stool color, NG tube aspirate (if used)	No fresh blood; stools return to brown	If bleeding persists, urgent endoscopy ± radiology/surgery
Hemoglobin / transfusion needs	Hb trends, transfusion requirement	Serial Hb/hematocrit (every 6-8h until stable)	Hb stable (7-9 g/dL; higher if comorbid ischemia); transfusion requirement tapering	Continue transfusion per protocol, consider repeat endoscopy if Hb falling

Endoscopy outcome	Lesion treated, hemostasis achieved, stigmata	Endoscopy report	Successful hemostasis; no rebleed within 72h	Repeat therapy, consider alternative modality (clips, injection, thermal, TIPS for varices)
Laboratory correction	INR, platelets, fibrinogen	PT/INR, CBC, fibrinogen levels	INR <1.5-1.8; platelets >50 $\times 10^9$/L; fibrinogen >1.5-2.0 g/L	Give PCC/FFP/platelets/ cryoprecipitate as indicated
Complications	Aspiration, encephalopathy, AKI, infection	Clinical exam, labs (renal, LFTs), chest X-ray if suspected aspiration	No new organ dysfunction	Supportive care, antibiotics escalate to ICU if worsening
Secondary prevention	Risk of rebleed addressed	PPI continuation (non-variceal), vasoactive + banding + antibiotics (variceal), H. pylori eradication, stop NSAIDs/alcohol	Plan in place for recurrence prevention	Optimize long-term management; specialist follow-up

Review (24-48-hour), Follow-Up & Adjustment

1. Reassess vitals, urine output, hemoglobin/hematocrit, urea/creatinine, INR; recalculate GBS/AIMS65/Rockall as needed.
2. If stable and no further bleed: switch IV PPI to oral, start H. pylori testing (stool antigen or urea breath test) and plan eradication if positive.
3. Arrange outpatient endoscopy/follow-up if low risk and reliable return.
4. If bleeding recurs or status worsens
   - Escalate monitoring (HDU/ICU), repeat labs, activate transfusion pathway as indicated.
   - **Urgent repeat endoscopy;** consider interventional radiology or surgery if endoscopy fails.
   - Adjust fluids, transfusions, and medications to targets (Hb 7-9 g/dL; platelets >50×10^9/L; INR <1.5-1.8; fibrinogen >1.5-2.0 g/L).
5. Variceal bleed secondary prevention (start when hemodynamically stable)
   - **Nonselective beta-blocker:** Carvedilol 3.125 mg PO twice daily (or Propranolol 20 mg PO twice daily). Titrate every 2-3 days to HR 55-60/min as tolerated; hold/ titrate down if SBP <90-100 mmHg, dizziness, or AKI.
6. Enroll in band ligation program until variceal eradication; continue antibiotic course as per protocol.

Referral for Specialist Consultation

Level of care	Services available	Management focus	Referral triggers
Primary care / health post to secondary hospital	Basic clinical exam, vital signs, IV access, crystalloids, hemoglobin test	Early recognition, stabilization, IV fluids, stop NSAIDs/ anticoagulants, keep NPO	Persistent hematemesis/melena, SBP <90 mmHg, Hb <10 g/dL, recurrent syncope
Secondary care (Atoll/regional) to tertiary center with endoscopy/ IR	Labs (CBC, LFT, renal, coagulation), ultrasound, blood transfusion (limited), IV PPI, antibiotics, vasopressors, basic ICU/ HDU	Stabilization, transfusion, initiate vasoactive therapy (if variceal suspected), prophylactic antibiotics, risk scoring (GBS, Rockall, AIMS65)	Refractory shock, transfusion need >4 units/24 h, INR >2.5 uncorrected, variceal bleed needing banding, recurrent bleeding
Tertiary care (specialist hospital)	Endoscopy (diagnostic/ therapeutic), band ligation, variceal glue therapy, interventional radiology, surgery, ICU	Definitive diagnosis and hemostasis; advanced resuscitation and multidisciplinary care	Failure of first endoscopy, rebleeding despite therapy, massive bleed needing IR or surgery
Regional / national referral center to link with transplant centers / quaternary care	Advanced endoscopy (ERCP, double-balloon), transplant evaluation, IR embolization, surgical expertise	Complex/rare causes, refractory bleeding, portal hypertension surgery/TIPS, liver transplant work-up	End-stage liver disease with recurrent UGIB, suspected malignancy, transplant candidates

COMPLICATIONS

Category	Specific complications	Mechanism / risk factors	Prevention	Immediate management	Referral triggers
Hemodynamic	Hypovolemic shock; multi-organ failure	Massive blood loss; delayed resuscitation	Early ABCs, large-bore IVs, restrictive but timely transfusion	Crystalloid + PRBCs, activate MTP, vasopressors if needed	Persistent hypotension, escalating transfusion to ICU
Hematologic / transfusion	Severe anemia; TACO; TRALI; alloimmunization	Ongoing bleed; large volume transfusion	Use thresholds; product warming; monitor input/ output	Stop transfusion if reaction, diuretics for TACO, oxygen/ ventilation for TRALI	Suspected TRALI/ TACO, refractory anemia to ICU/ hematology
Infectious	Aspiration pneumonia; spontaneous bacterial peritonitis (cirrhosis)	Hematemesis, altered sensorium; bacterial translocation	Airway protection; antibiotics in variceal bleed	Broad-spectrum antibiotics (e.g., ceftriaxone in cirrhosis), respiratory support	Hypoxia, sepsis, SBP suspicion to ICU/hepatology
Gastrointestinal	Rebleeding; ulcer perforation; gastric outlet obstruction; post-therapy ulcers	High-risk stigmata; NSAIDs; delayed hemostasis	Early endoscopy; PPI; stop NSAIDs	Repeat endoscopy; high-dose PPI; surgical consult if perforation	Rebleed after therapy, peritonitis signs to IR/surgery

Hepatic / variceal	Hepatic encephalopathy; hepatorenal syndrome; worsening portal HTN	Cirrhosis, infection, hypovolemia	Lactulose plan; antibiotics; careful volume	Vasoactives, antibiotics, albumin (per protocol), lactulose	Encephalopathy grade ≥3, renal failure to ICU/ hepatology
Metabolic / thermal	Hypocalcemia; hyperkalemia; metabolic acidosis; hypothermia	Citrate load; stored blood; shock	Warm all fluids/ products; monitor electrolytes/ABG	IV calcium, correct K+/pH, active rewarming	Arrhythmias, refractory acidosis to ICU
Airway / respiratory	Aspiration; respiratory failure	Massive hematemesis; sedation	Early airway assessment; head-up position	Suction, oxygen, intubate if needed	Ongoing aspiration or hypoxia to ICU
Thrombotic	Venous thromboembol ism (VTE) post-bleed	Immobilization; prothrombotic rebound	Start prophylaxis once hemostasis secure	Mechanical → pharmacologic when safe	Suspected PE/ DVT to imaging/ ICU if unstable
Long-term	Recurrence; mortality	Continued NSAIDs/ antiplatelets; alcohol/tobacco; uncontrolled portal HTN	Eradicate H. pylori; PPI maintenance where indicated; variceal secondary prophylaxis	Beta-blocker + banding (variceal); medication review; counseling	Recurrent admissions; refractory varices to tertiary/ hepatology

Note: Referral should always include documentation of vitals, transfusion given, labs, medications, and risk scores to prevent duplication and delays.

Patients stable after successful hemostasis can be stepped down to secondary or primary care with a clear follow-up plan.

Prognosis

1. Prognosis depends on cause, bleed severity, comorbidities, and speed of intervention.
2. Overall mortality ~5-10%; higher in older patients, those with major comorbidities, and with variceal bleeding.
3. Non-variceal (e.g., peptic ulcer): best outcomes with early endoscopic hemostasis, proton-pump inhibitor therapy, and Helicobacter pylori eradication.
4. Variceal bleeding: higher early rebleed and death risk especially with advanced liver disease (Child-Pugh B/C) and portal hypertension; needs vasoactive drugs, antibiotics, and banding, plus secondary prophylaxis.
5. Early resuscitation, timely endoscopy (≤24 h; ≤12 h if high-risk), and targeted prevention are the strongest modifiers of outcome.

PREVENTION & HEALTH PROMOTION

Preventing recurrence of UGIB depends on addressing the underlying cause.

- Patient education on recognition of early warning signs (hematemesis, melena, dizziness, syncope) and importance of adherence to PPIs, beta-blockers, and follow-up endoscopies.
- Lifestyle advice encouraging balanced nutrition, avoidance of irritants (alcohol, tobacco, excessive caffeine). Promote vaccination in chronic liver disease (HAV, HBV, pneumococcal, influenza).
- Community awareness: Programs on risks of NSAID misuse and alcohol-related liver disease. Culturally appropriate counseling in high-prevalence regions.
- Health system strengthening: Ensure access to endoscopy, transfusion services, and trained personnel. Establish referral networks for timely transfer of unstable patients.

Patient Education

- Complete H. pylori eradication and confirm cure (stool antigen or urea breath test).
- Take proton-pump inhibitor (PPI) exactly as prescribed (daily, 30-60 min before food).
- Avoid NSAIDs; if NSAID/aspirin is essential, use the lowest dose with PPI cover and restart antiplatelets after hemostasis per clinician advice.
- For cirrhosis/variceal bleed: start nonselective beta-blocker (e.g., carvedilol/propranolol), attend surveillance/band ligation, and abstain from alcohol.
- Stop smoking; correct reversible coagulopathies as directed.
- Know red flags (hematemesis, melena, syncope, new dizziness) and seek urgent care; keep scheduled follow-ups.

Instructions to patients/caregivers

Do's	Don'ts
Finish H. pylori treatment exactly as prescribed; confirm cure with stool antigen or urea breath test.	Don't take NSAIDs (ibuprofen, diclofenac, naproxen) unless your clinician says they're unavoidable and then only with PPI.
Take your proton-pump inhibitor (PPI) every morning, 30-60 min before food; don't skip doses.	Don't stop or restart antiplatelets/anticoagulants on your own.
Use paracetamol (acetaminophen) for pain; discuss any need for NSAIDs or aspirin with your clinician.	Don't drink alcohol or smoke.
If aspirin/antiplatelet therapy is essential, restart after hemostasis with ongoing PPI cover only on medical advice.	Don't ignore persistent black stools, weakness, or new dizziness.
For variceal bleeding/cirrhosis: start and titrate nonselective beta-blocker (e.g., carvedilol/propranolol); attend scheduled band ligation sessions.	
Absolute alcohol abstinence and smoking cessation.	
Correct reversible coagulopathies (per medical plan) and keep an updated medication list.	
Diet: small, frequent, bland meals. In ascites/edema due to cirrhosis, salt <2 g/day (≈5 g table salt).	
Know red flags and seek care early (see below).	
Keep follow-ups: lab checks, H. pylori test-of-cure, and endoscopy appointments.	
Warning signs (go to emergency now)	
Vomiting fresh blood or coffee-ground material. Black, tarry stools or bright red blood per rectum. New dizziness, fainting, chest pain, or breathlessness. For liver disease/cirrhosis: any bleeding episode warrants urgent assessment.	
Caregiver/patient checklist	
PPI timing correct (taken 30-60 minutes before breakfast).	
Beta-blocker (if prescribed) taken and blood pressure/heart rate monitored as advised.	
No NSAIDs; paracetamol only for pain.	
Alcohol/tobacco abstinence maintained.	
All reports and medication list carried to appointments.	
Next follow-up and endoscopy dates noted.	

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