

Gastrointestinal bleeding

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Objectives

- Approach for patient with upper GI bleeding
- Etiology of UGIB
- Identify the high risk patients
- Endoscopic management for UBIB
- Management of UGIB

Case of GIB

- 73-year-old woman
- Physically active
- She presented to the emergency department after falling in her bathroom.
- When standing up she felt dizzy and fell to the ground but did not lose consciousness.
- She was transported to the hospital by ambulance

Ms S

- Had been feeling epigastric discomfort that was difficult to describe
- It was episodic in nature and mild in intensity
- There were no provocative or palliative factors.
- A few hours prior to her fall she had been feeling lightheaded with some weakness.

ESSENTIALS OF DIAGNOSIS

- Symptoms: Coffee ground vomiting, hematemesis, melena, hematochezia, anemic symptoms
- Past medical history: Liver cirrhosis, use of non-steroidal anti-inflammatory drugs
- Signs: Hypotension, tachycardia, pallor, altered mental status, melena or blood per rectum, decreased urine output
- Bloods: Anemia, raised urea, high urea to creatinine ratio
- Endoscopy: Ulcers, varices, Mallory-Weiss tear, erosive disease, neoplasms, vascular ectasia, and vascular malformations

Ms S

- In 2008, she developed atrial fibrillation for which she was treated with warfarin.
- Hypertension
- Benign positional vertigo.

Her current medications

- Aspirin, 81 mg orally once daily
- Valsartan, 80 mg orally once daily
- Vitamin D, 10 000 IU orally once daily
- Warfarin, 7.5 mg orally once daily.

Family Hx

- Both of her parents had gastric ulcers.

O/E

- She was found to be diaphoretic, consiouse
- Pulse of 110/min and regular
- Blood pressure of 98/68 mm Hg.
- No orthostatic measurements were obtained on presentation.
- Her abdominal examination revealed no abnormalities
- But her rectal examination revealed melena.

ESSENTIALS OF DIAGNOSIS

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Epidemiology

- 48 to 160 cases per 100 000 adults per year
- Mortality generally from 10% to 14%

US	KSA
<ul style="list-style-type: none"> • Annual incidence: 100 per 100,000 adults • • Peptic ulcer was the most common cause 	<ul style="list-style-type: none"> • • Annual incidence: 31 per 100,000 • • The most common cause • • esophageal varices • duodenal ulcer

Longstreth GF. Am J Gastroenterol 1995; 90:206

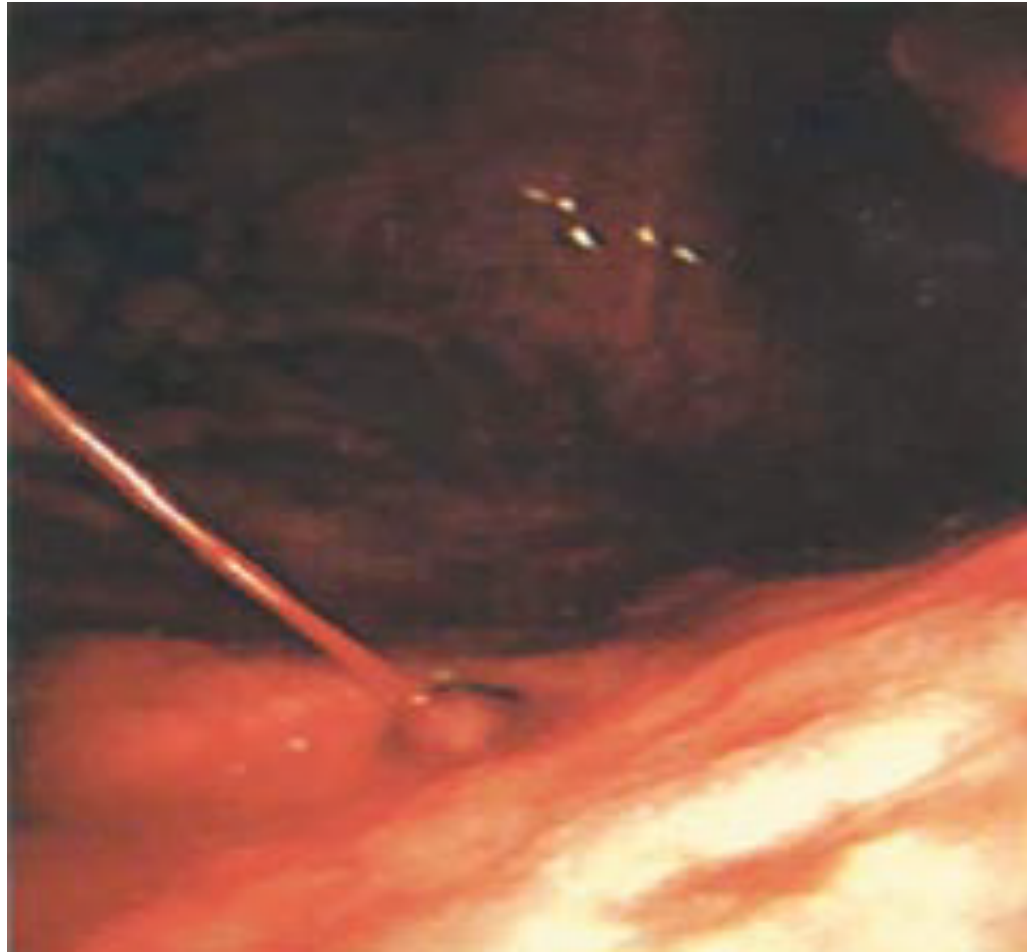
Ahmed ME et al. J R Coll Physicians Lond 1997; 31 (1):62-4
 Alam MK. Saudi J gastroenterol 2000;6:87-91
 Al Karawi MA et al. Ann Saudi Med 1995; 15(6):606-8

Causes of UGIB

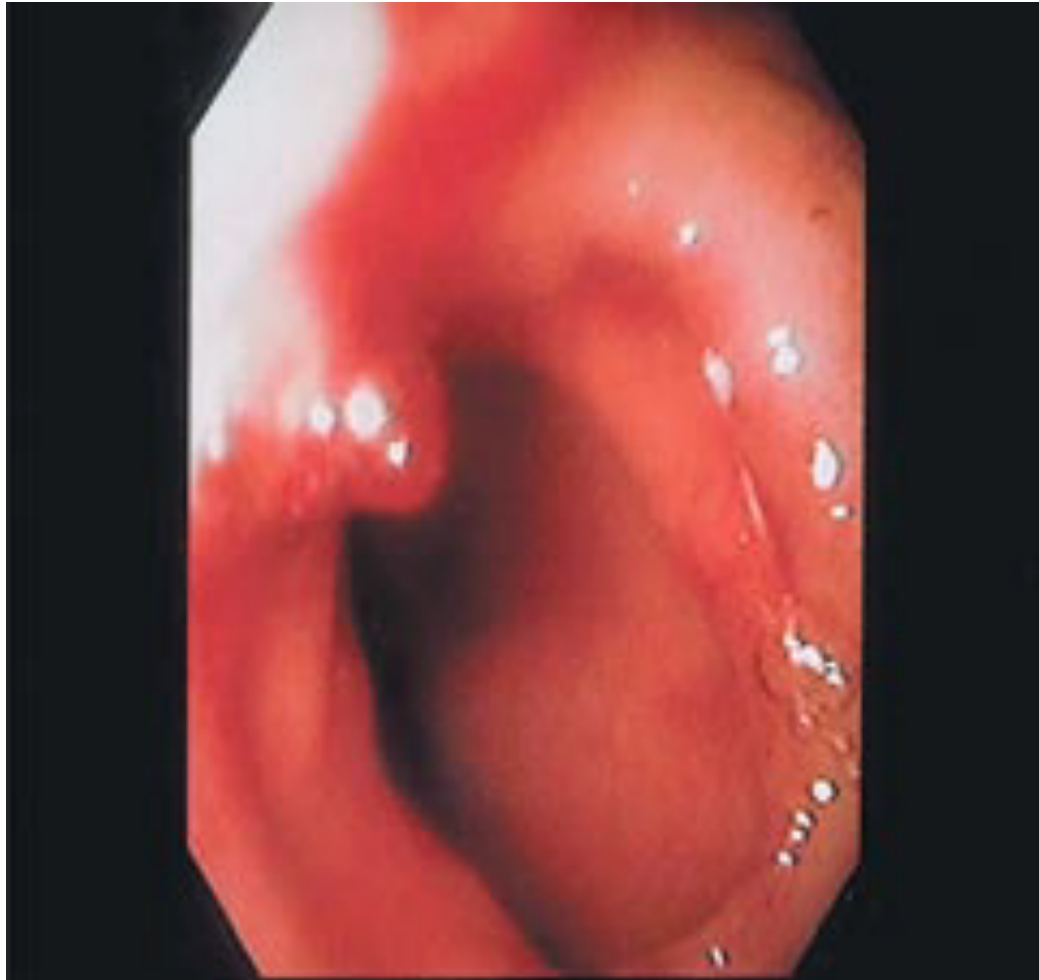
Table 1
Frequency of common causes of upper gastrointestinal bleeding

Diagnosis	Frequency (Percentage)
Peptic ulcer disease, including duodenal and gastric ulcer	28–59
Variceal bleeding	4–14
Mucosal erosive disease, including esophagitis, gastritis, and duodenitis	1–31
Mallory-Weiss tear	4–8
Malignancy	2–4
Arteriovenous malformation	3
Gastric antral vascular ectasia	~ 1
Dieulafoy lesion	~ 1

Gibson et al. Gastrointest Endosc Clin N Am 2011;21:583-96.



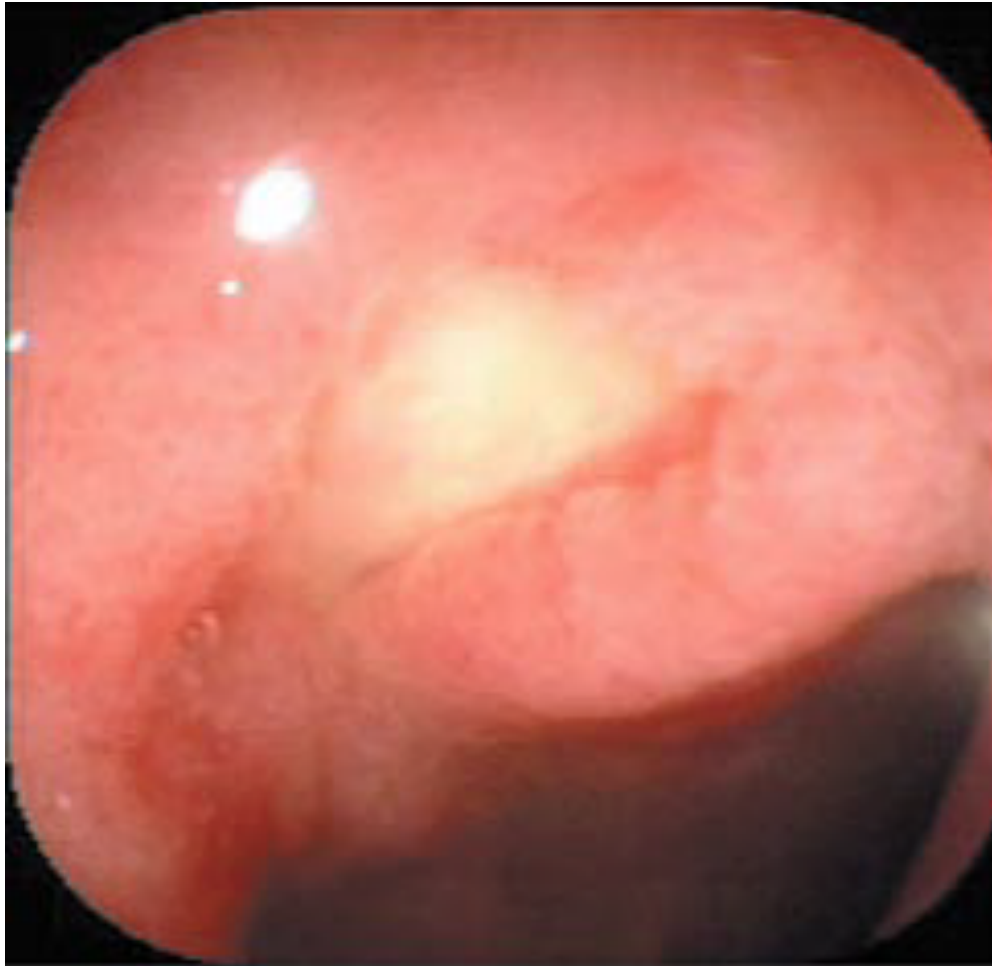
Gralnek et al. N Engl J Med 2008;359:928-37.



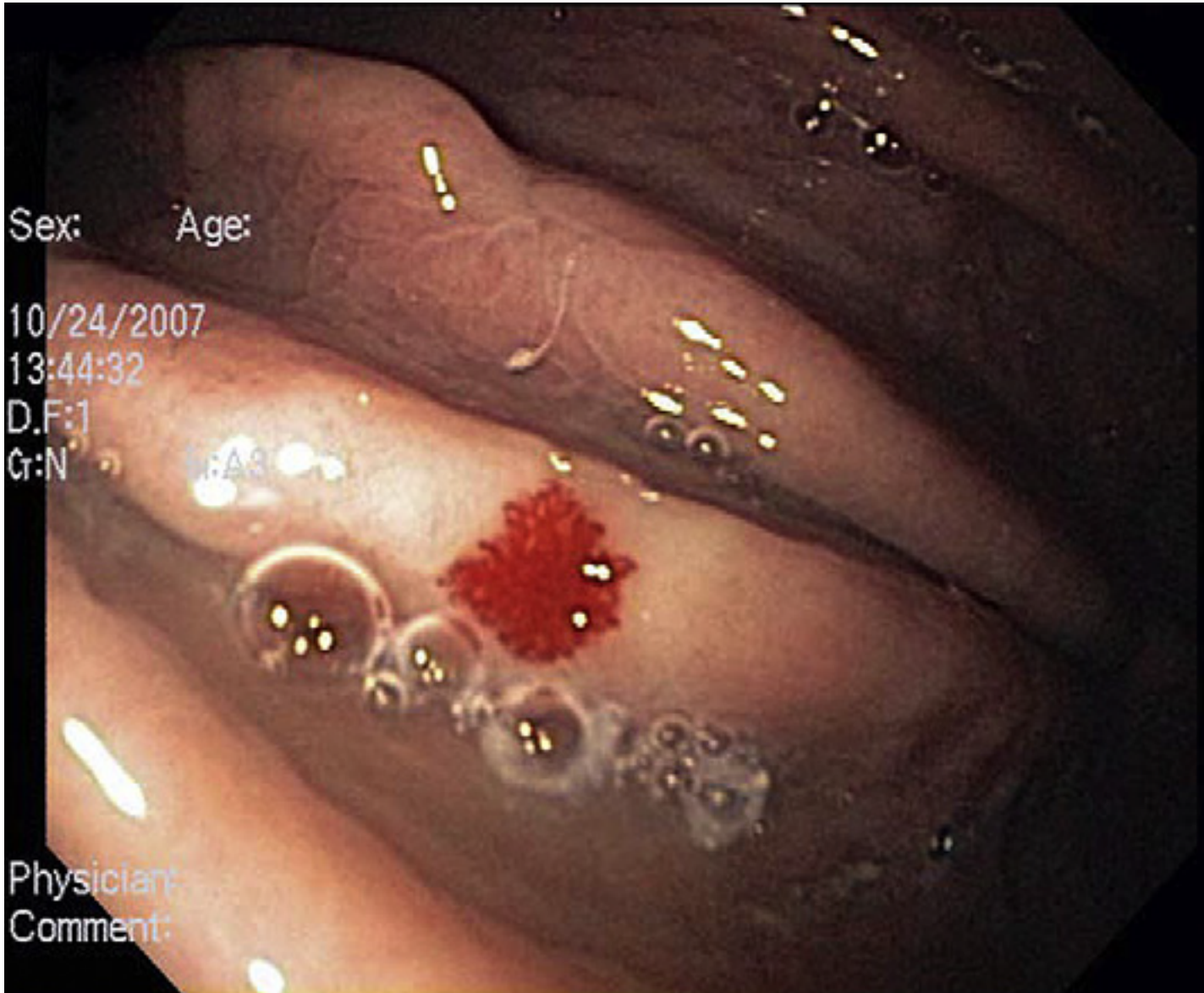
Gralnek et al. N Engl J Med 2008;359:928-37.



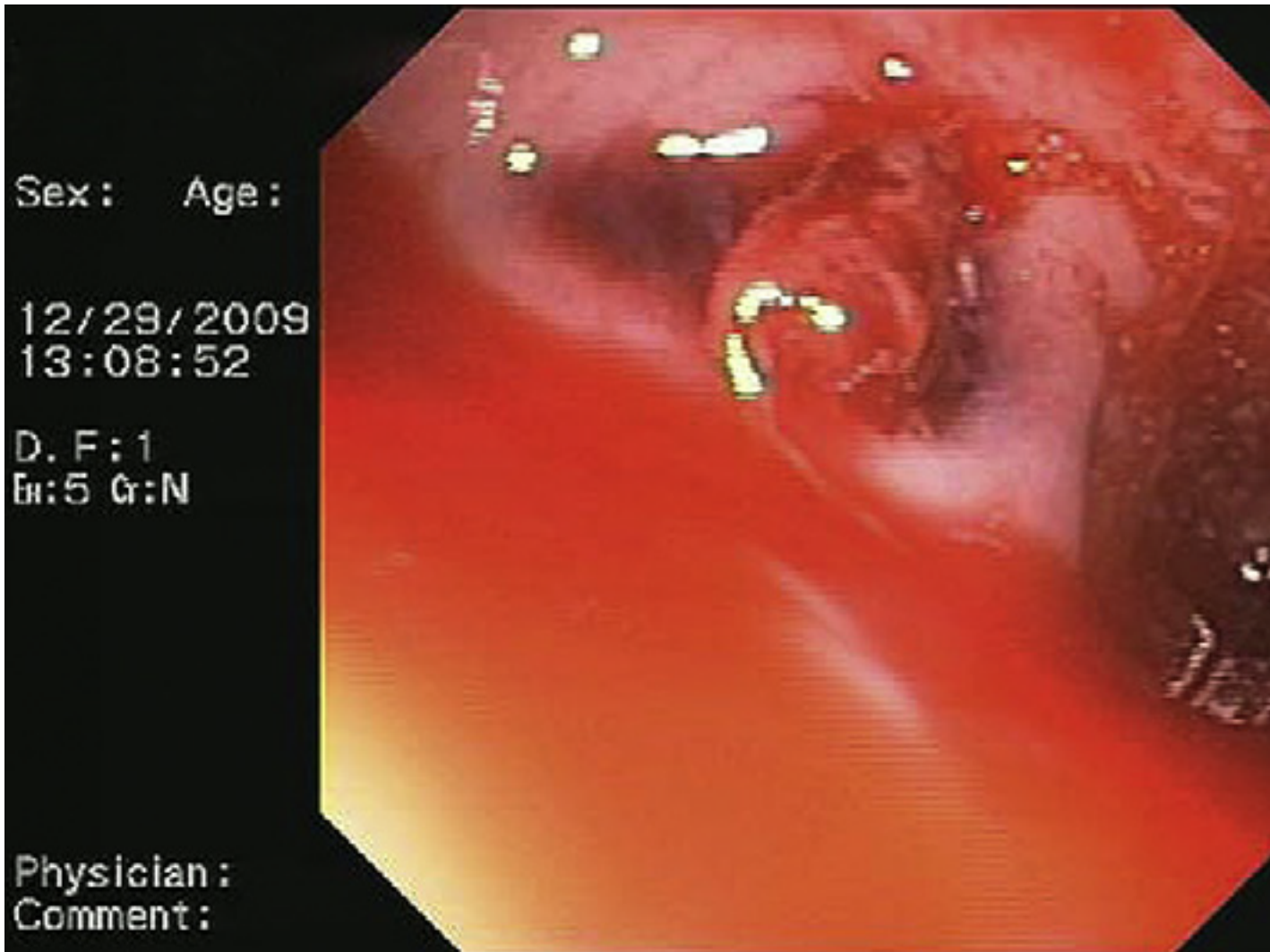
Gralnek et al. N Engl J Med 2008;359:928-37.



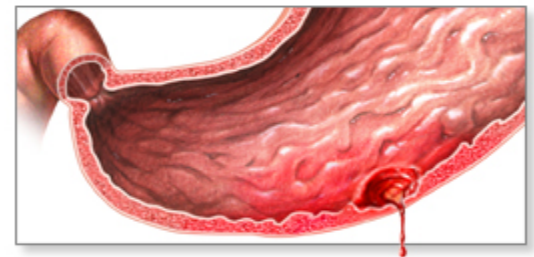
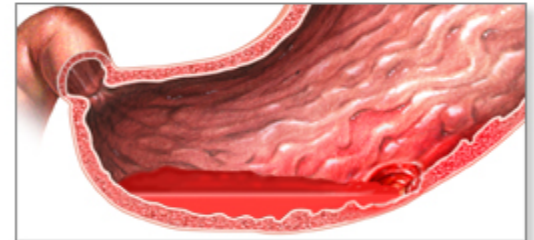
Gralnek et al. N Engl J Med 2008;359:928-37.

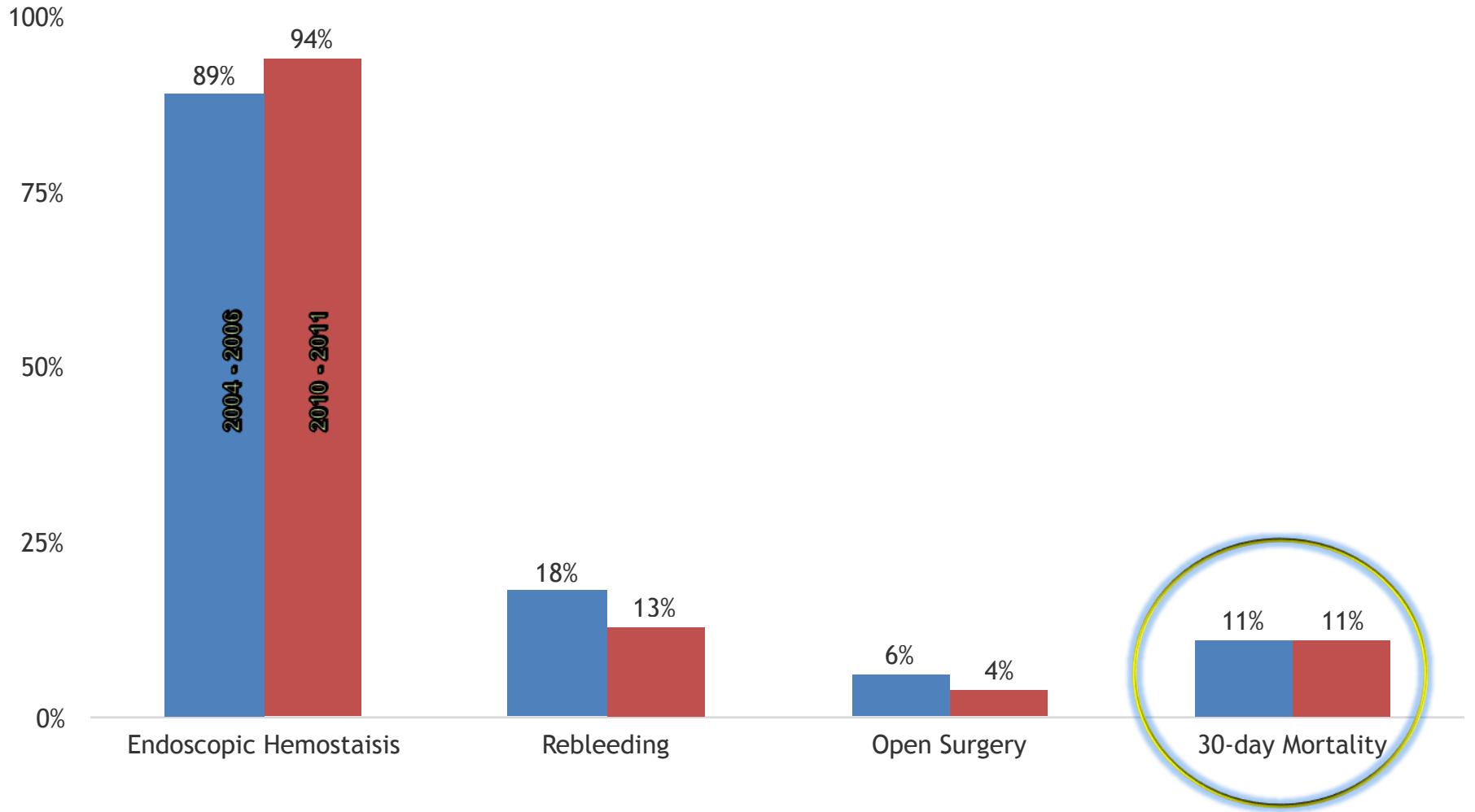


Acosta et al. Gastrointest Endosc Clin N Am 2011;21:555-66.

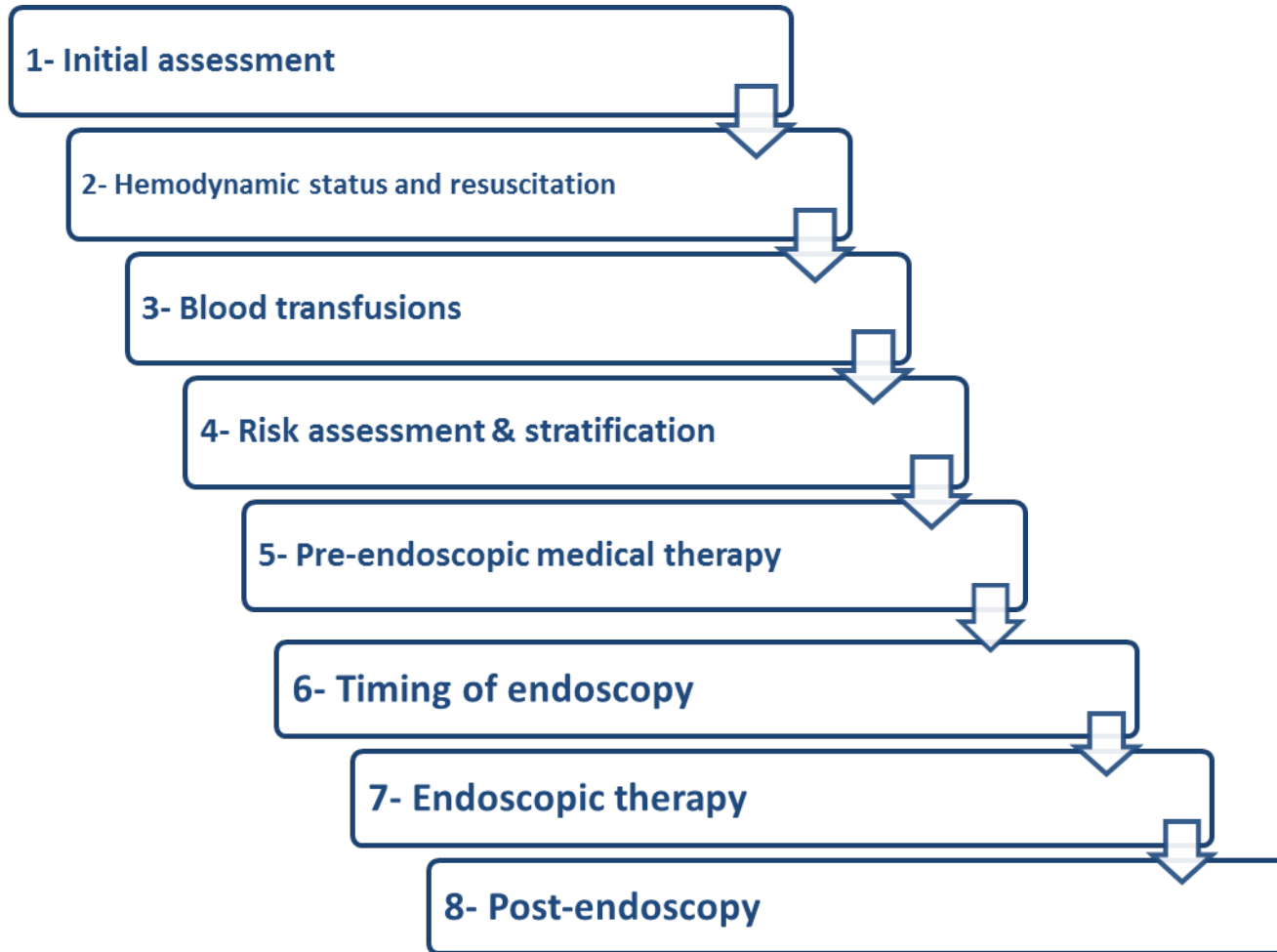


- Acute UGIB is a common medical emergency that has 11% hospital mortality rate
- Despite advances in management, mortality has not significantly improved

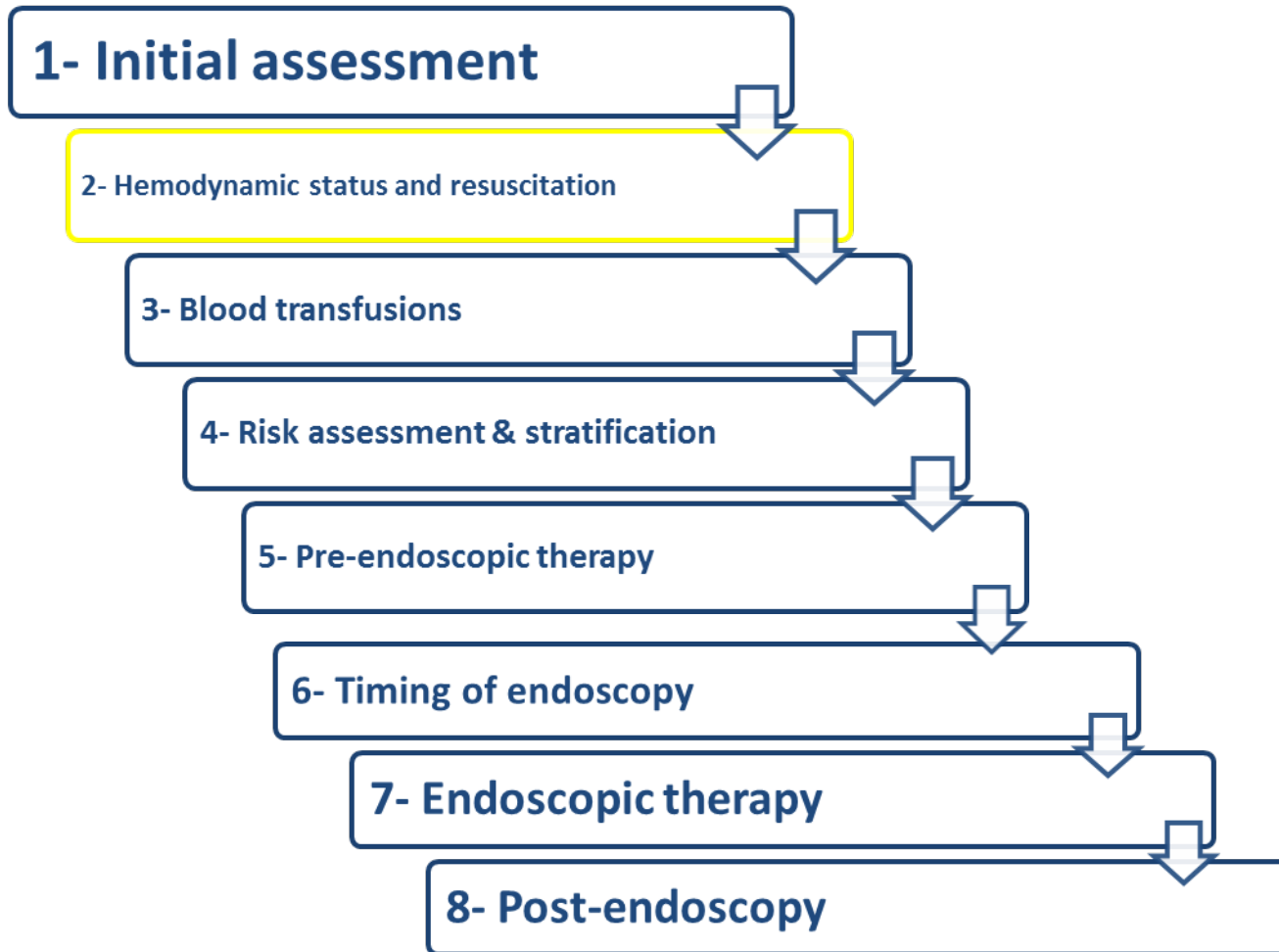




Steps of Management



Steps of Management



Hypovolemic shock: symptoms, signs and fluid replacement

Blood loss (mL)	<750	750–1500	1500–2000	>2000
Blood loss (%)	<15	15–30	30–40	>40
Pulse rate	<100	>100	>120	>140
Blood pressure	Normal	Normal	Decreased	Decreased
Pulse pressure	Normal or increased	Decreased	Decreased	Decreased
Respiratory rate	14–20	20–30	30–40	>35
Urine output (mL)	>30	20–30	5–15	Negligible
Mental status	Slightly anxious	Mildly anxious	Anxious and confused	Confused and lethargic
Fluid replacement	Crystalloid	Crystalloid	Crystalloid and blood	Crystalloid and blood



IV Fluid Resuscitation

Then

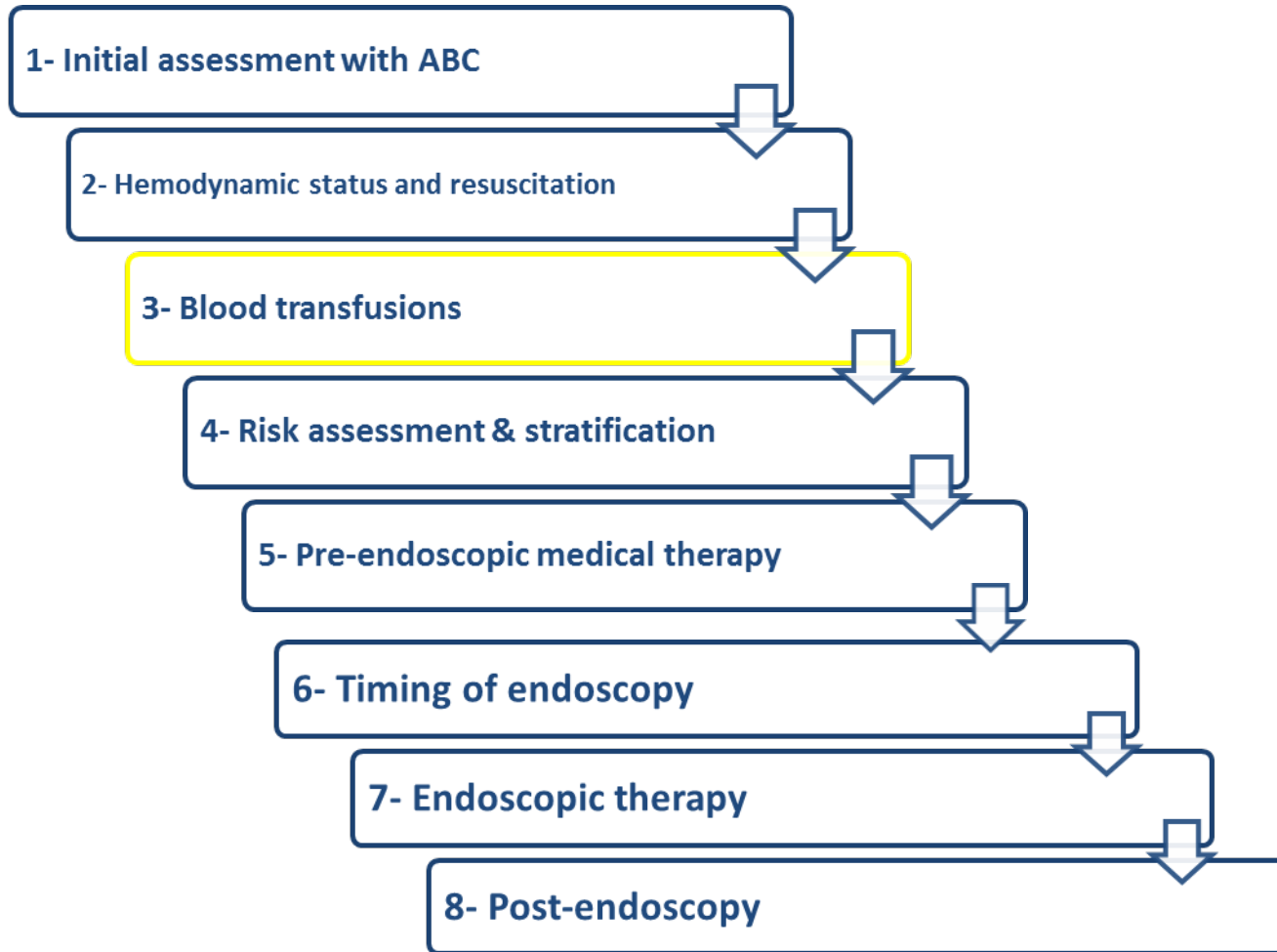
IV Fluid Resuscitation

2- Hemodynamic status and resuscitation

Early intensive hemodynamic resuscitation of patients with acute UGIB has been shown to significantly decrease mortality

Pre-endoscopic management

Steps of Management



3- Blood Transfusions

The role of transfusion in clinically stable patients with mild GI bleeding remains controversial, with uncertainty at which hemoglobin level transfusion should be initiated

Literature suggesting poor outcomes in patients managed with a liberal transfusion

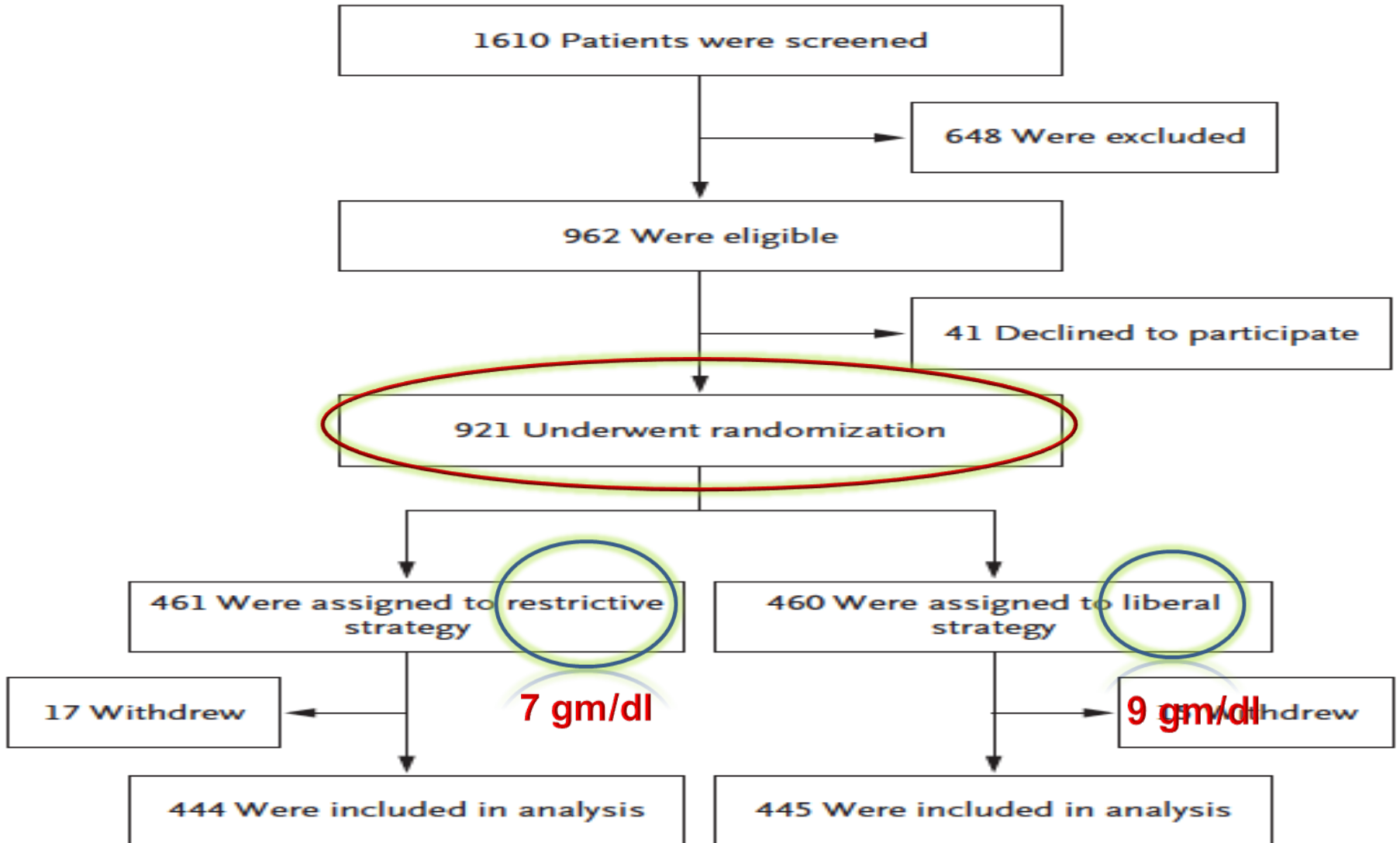
Marik PE, Corwin HL. Crit Care Med 2008; 36: 2667 - 2674

Restellini S, Kherad O, Jairath V et al. Aliment Pharmacol Ther 2013; 37: 316 - 322

3- Blood Transfusions (cont'd)

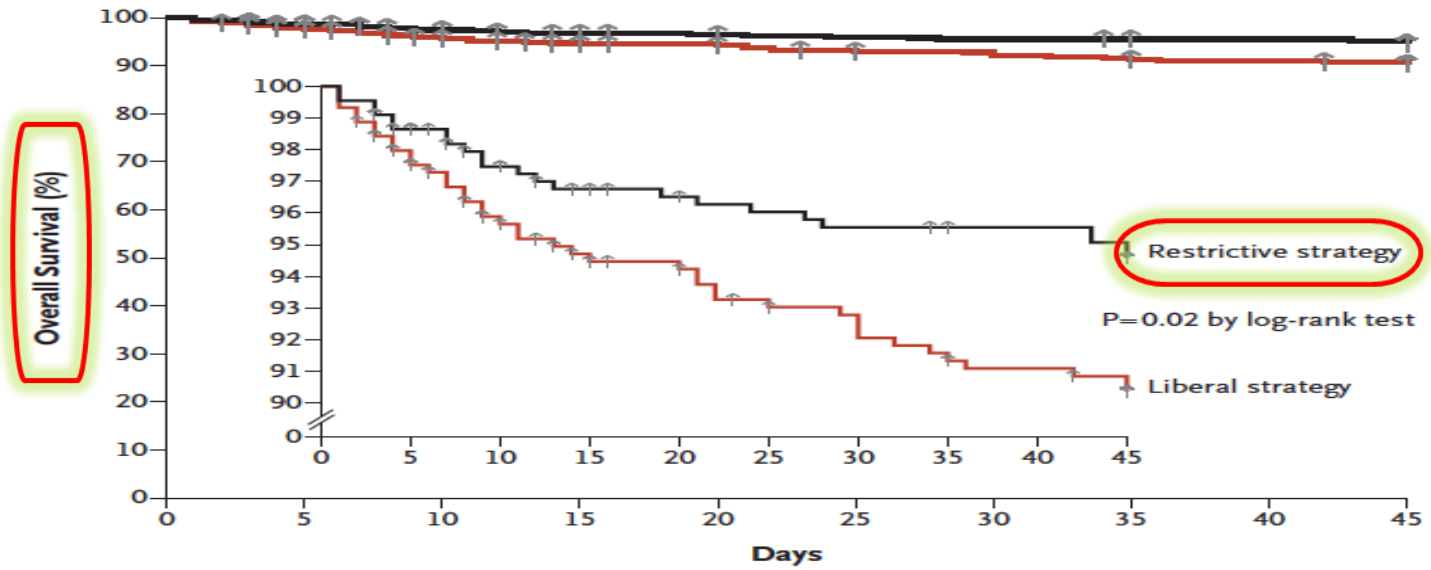
The restrictive RBC transfusion had significantly improved survival and reduced rebleeding

3- Blood Transfusions (Cont'd)



3- Blood Transfusions (Cont'd)

A Survival, According to Transfusion Strategy



No. at Risk

Restrictive strategy	444	429	412	404	401	399	397	395	394	392
Liberal strategy	445	428	407	397	393	386	383	378	375	372

B Death by 6 Weeks, According to Subgroup

Subgroup	Restrictive Strategy no. of patients/total no. (%)	Liberal Strategy no. of patients/total no. (%)	Hazard Ratio (95% CI)	P Value
Overall	23/444 (5)	41/445 (9)	0.55 (0.33–0.92)	0.02
Patients with cirrhosis	15/139 (11)	25/138 (18)	0.57 (0.30–1.08)	0.08
Child–Pugh class A or B	5/113 (4)	13/109 (12)	0.30 (0.11–0.85)	0.02
Child–Pugh class C	10/26 (38)	12/29 (41)	1.04 (0.45–2.37)	0.91
Bleeding from varices	10/93 (11)	17/97 (18)	0.58 (0.27–1.27)	0.18
Bleeding from peptic ulcer	7/228 (3)	11/209 (5)	0.70 (0.26–1.25)	0.26

0.1 1.0 10.0

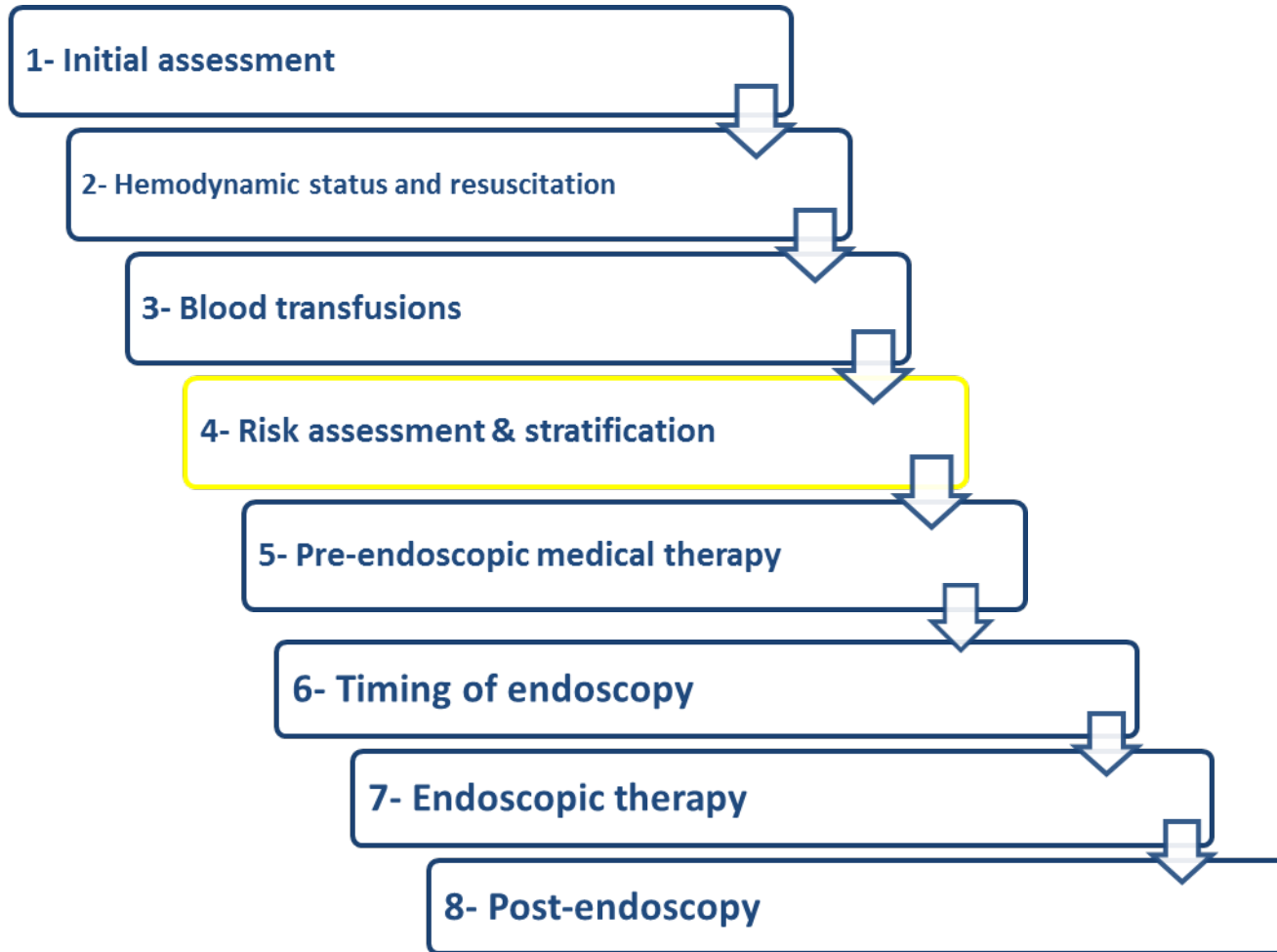
Restrictive Strategy Better Liberal Strategy Better

Patients receiving anticoagulants

Correction of coagulopathy is recommended

Endoscopy should not be delayed for a high INR unless the INR is supratherapeutic

Steps of Management



4- Risk Stratification

Glasgow- Blatchford Score (GBS)

Rockall Score

Table 1 | Glasgow–Blatchford score assessment criteria

	Risk factors at presentation	Threshold	Score
Urea	Blood urea nitrogen (mmol/l)	6.5–7.9	2
		8.0–9.9	3
		10.0–24.9	4
		≥25.0	6
CBC	Hemoglobin for men (g/l)	120–130	1
		100–119	3
		<100	6
	Hemoglobin for women (g/l)	100–120	1
		<100	6
Physical	Systolic blood pressure (mmHg)	100–109	1
		90–99	2
		<90	3
	Heart rate (bpm)	>100	1
History	Melena	Present	1
	Syncope	Present	2
	Hepatic disease	Present	2
	Cardiac failure	Present	2

Total score (0–23). Patients with scores >0 are considered to be at high risk. Permission obtained from Elsevier Ltd © Blatchford, O. *et al. Lancet* 356, 1318–1321 (2000).

B Rockall Score

		Variable	Points
Complete Rockall Score	Clinical Rockall Score	Age	History 0 1 2
		<60 yr	
		60–79 yr	
		≥80 yr	Physical 2
		Shock	
		Heart rate >100 beats/min	
		Systolic blood pressure <100 mm Hg	History 2 3
		Coexisting illness	
		Ischemic heart disease, congestive heart failure, other major illness	
		Renal failure, hepatic failure, metastatic cancer	Endoscopic diagnosis
No lesion observed, Mallory–Weiss tear	0		
Peptic ulcer, erosive disease, esophagitis	1		
Cancer of upper GI tract	2		
	Endoscopic stigmata of recent hemorrhage	Clean base ulcer, flat pigmented spot	0
		Blood in upper GI tract, active bleeding, visible vessel, clot	2

Hearnshaw et al. Aliment Pharmacol Ther 2010;32:215-24.

GBS Score value

Blood urea (mmol/L)

6.5-7.9	2
8.0-9.9	3
10.0-25.0	4
>25.0	6

Haemoglobin for men (g/L)

120-129	1
100-119	3
<100	6

Haemoglobin for women (g/L)

100-119	1
<100	6

Systolic blood pressure (mm Hg)

100-109	1
90-99	2
<90	3

Other markers

Pulse \geq 100/min	1
Presentation with melaena	1
Presentation with syncope	2
Hepatic disease*	2
Cardiac failure†	2

Modified-GBS

Variable	Score			
	0	1	2	3
Age	<60	60-79	>80	
Shock	No shock SBP \geq 100 PR<100	Tachycardia SBP \geq 100 PR \geq 100	Hypotension SBP \leq 100	
Co Morbidity	No major Co-morbidity		Cardiac Failure, IHD, any major co-morbidity	Renal failure, liver failure disseminated malignancy
Diagnosis	Mallory-Weiss tear, no lesion identified, no SRH or blood	All other diagnosis	Malignancy of upper GI tract	
Major SRH	None or dark spot		Blood in upper GI tract, adherent clot, visible or spurting vessel	

Rockall

Parameter	One point for each parameter	Alternative description
Albumin	< 3.0 g/dL (30 g/L)	AIMS65
INR	> 1.5	
Mental status	Glasgow coma score < 14	
Systolic blood pressure	< 90 mmHg	Disorientation, lethargy, stupor, or coma
Age (yr)	> 65	

4- Risk Stratification (Cont'd)

GBS

- Patients with Score of 2 or less can be safely discharged for outpatient management
- Scores of more than 6 are associated with the need for transfusion of blood products and urgent inpatient investigation

Rockall Score

- Can predict rebleeding, surgery and mortality
- But cannot be used to identify safely those suitable for outpatient endoscopy

Mart Schiefer et al. European Journal of Gastroenterology & Hepatology 2012;24:382-387

J Stevenson, K Bowling et al. Gut 2013;62:A21-A22

Chang-Yuan Wang et al. World J Gastroenterol 2013 Jun 14; 19(22): 3466-3472

Matthew R. Johnston et al. Gastroenterology Research and Practice. 2015;2015 DOI 10.1155/2015/410702

4- Risk Stratification (Cont'd)

GBS vs Rockall

- GBS is more sensitive in identifying low risk patients suitable for out-patient management
- GBS is superior to Rockall score in predicting need for transfusion and intervention
- The GBS is as effective as the Rockall score in predicting mortality

GBS vs AIMS65

- The GBS has superior sensitivity in identifying patients who were not likely to require interventions or emergency endoscopy
- The GBS is superior for predicting blood transfusion
- The AIMS65 score is superior to the GBS in predicting inpatient mortality

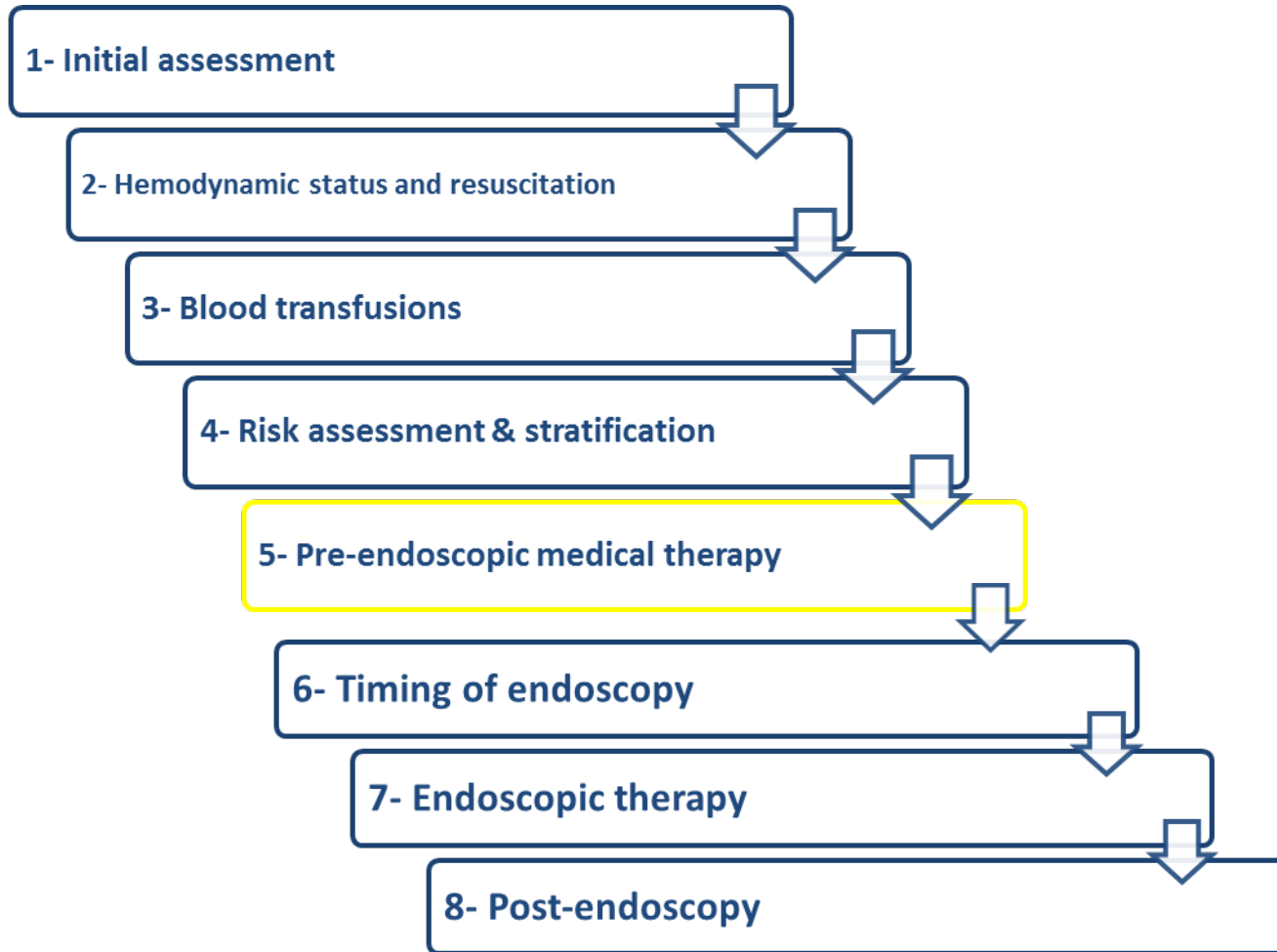
Stanley AJ. World J Gastroenterol 2012; 18(22): 2739-2744

J. Stanley et al. Aliment Pharmacol Ther 2011; 34: 470-475

Yaka E et al. Acad Emerg Med. 2015 Jan; 22(1):22-30

Hyett BH et al. Gastrointest Endosc. 2013;77(4):551-7

Steps of Management



5- Pre-endoscopic therapy

Nasogastric aspirate is useful in predicting high-risk lesions

(bloody NGT aspirate → high-risk lesions)

5- Pre-endoscopic therapy (Cont'd)

PPI treatment initiated before endoscopy

reduce requirement for endoscopic therapy

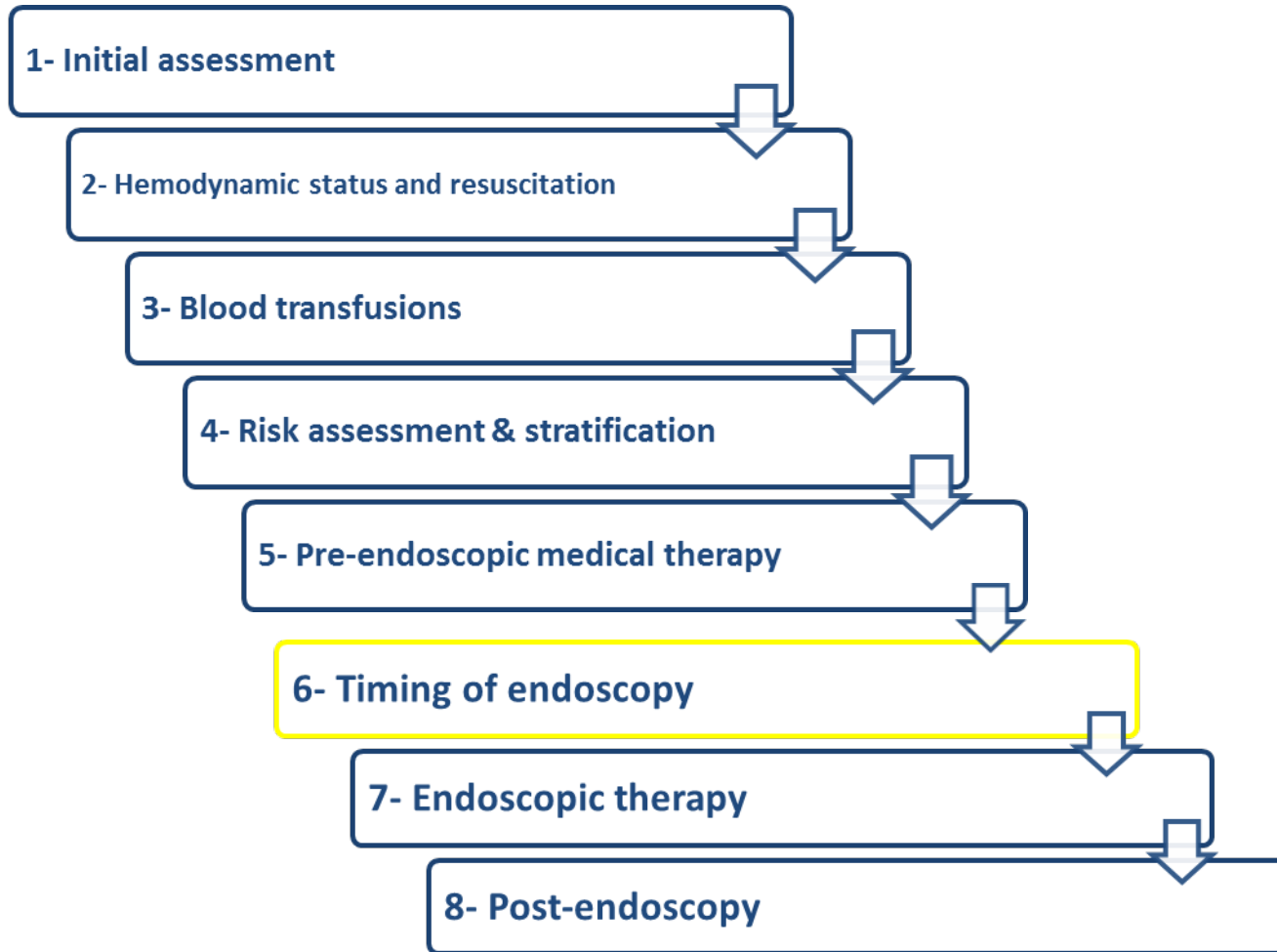
Sreedharan A, Martin J, Leontiadis GI et al. Cochrane Database Syst Rev 2010 (7): CD005415
GI Leontiadis, A Sreedharan et al. Health Technology Assessment 2007; Vol. 11: No. 51

Lau JY, Leung WK, Wu JCY et al. N Engl J Med 2007;356:1631–40

Preendoscopic PPIs

- **HAS NOT** been shown to affect rebleeding, surgery, or mortality
- **HAS** decreased the need for intervention
- **HAS** a supportive cost-effectiveness analyses
- **HAS** an excellent safety profile
- This suggest that these agents **may** be useful

Steps of Management



6- Timing of endoscopy

Early endoscopy

Aids risk stratification

Reduces hospitalization,

Increase use of therapeutic endoscopy

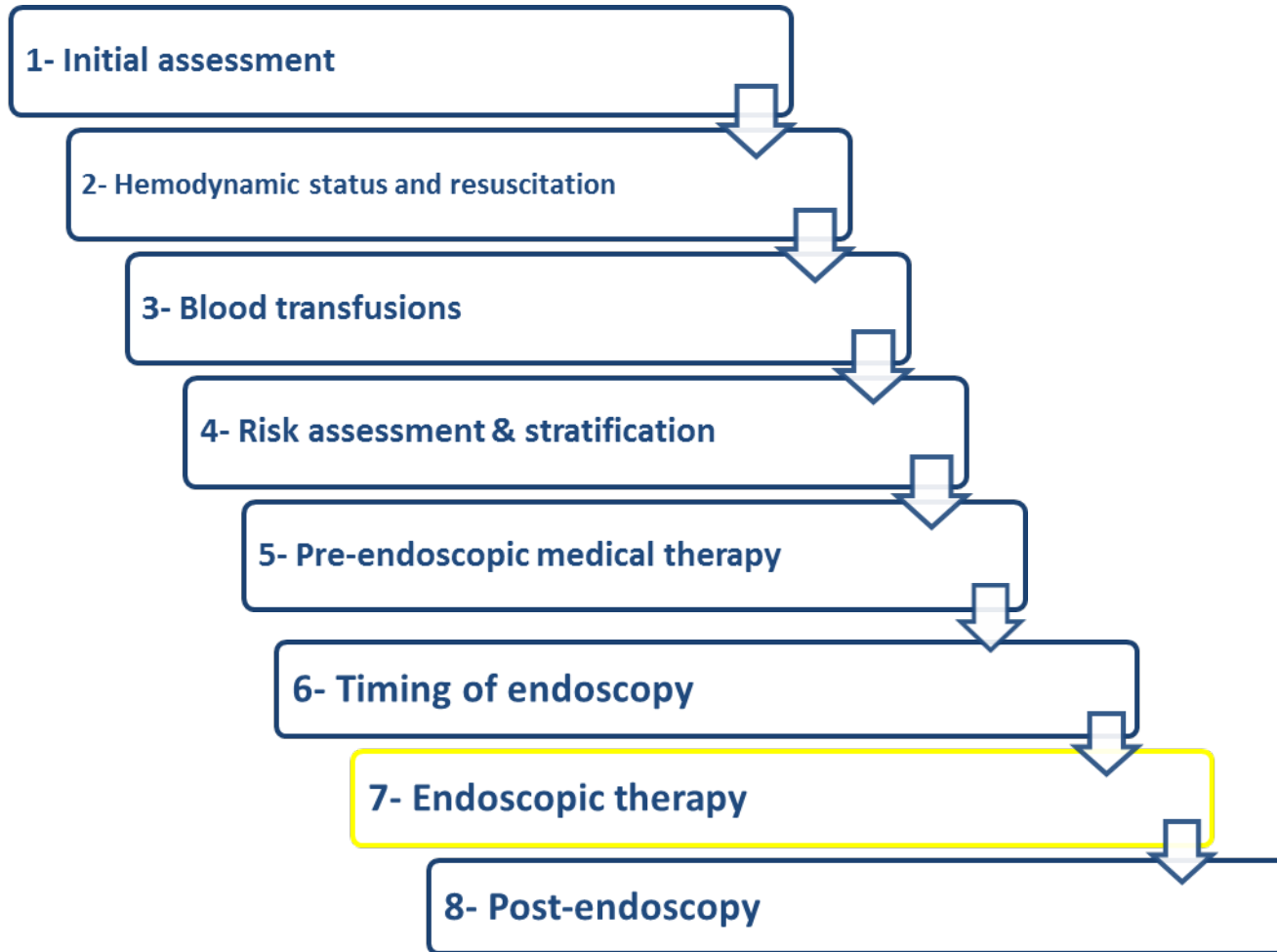
No evidence exists that very early endoscopy (within a few hours of presentation) can improve clinical outcomes

6- Timing of endoscopy

No significant differences in mortality, need for surgery or transfusion; when comparing endoscopy within 6 h and at 6 to 24h

Most patients with acute UGIB can be effectively managed by endoscopy within 24 h

Steps of Management



7- Endoscopic therapy

Injection



Thermal

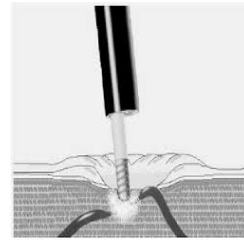
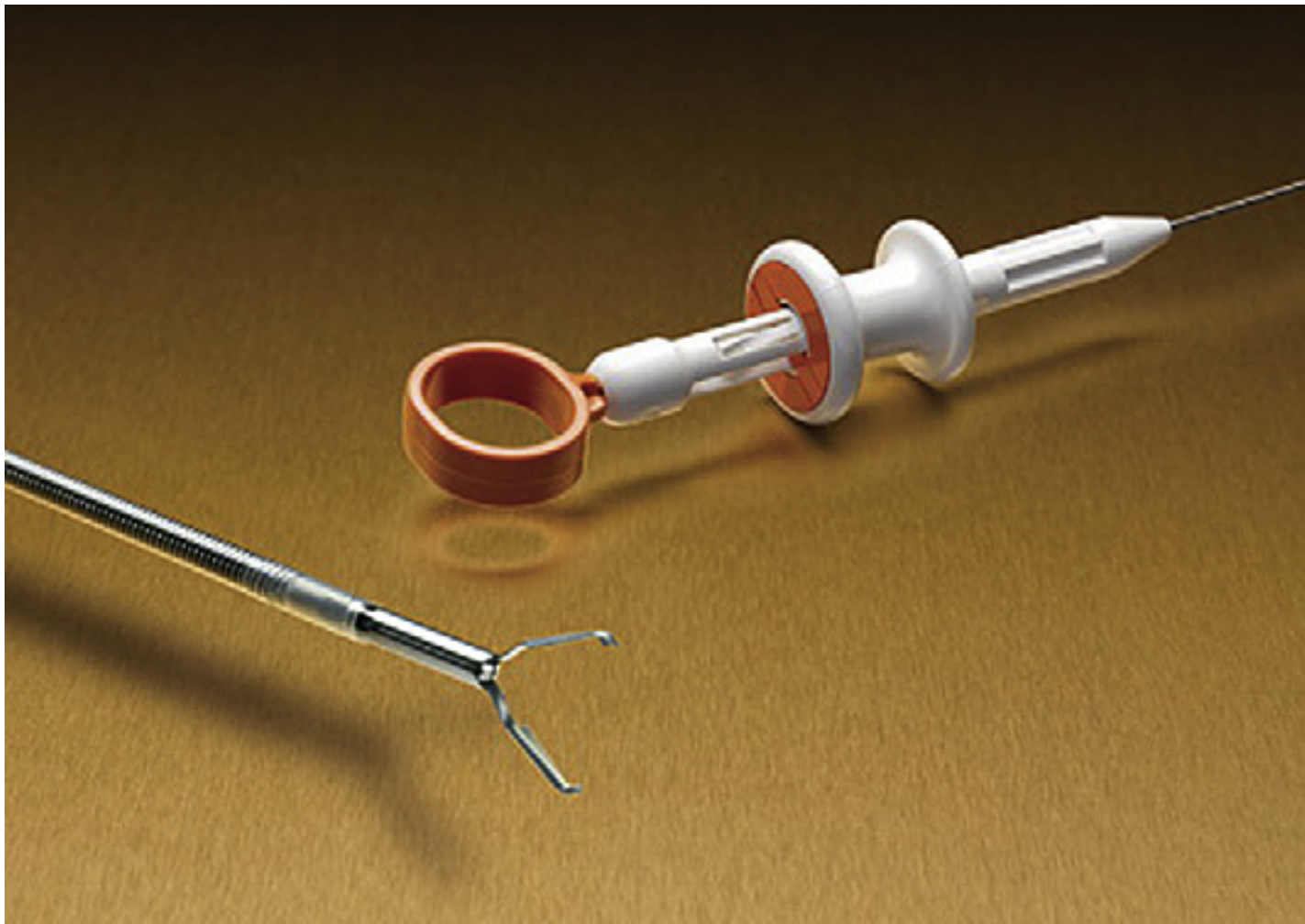


Figure 4 - Técnica térmica

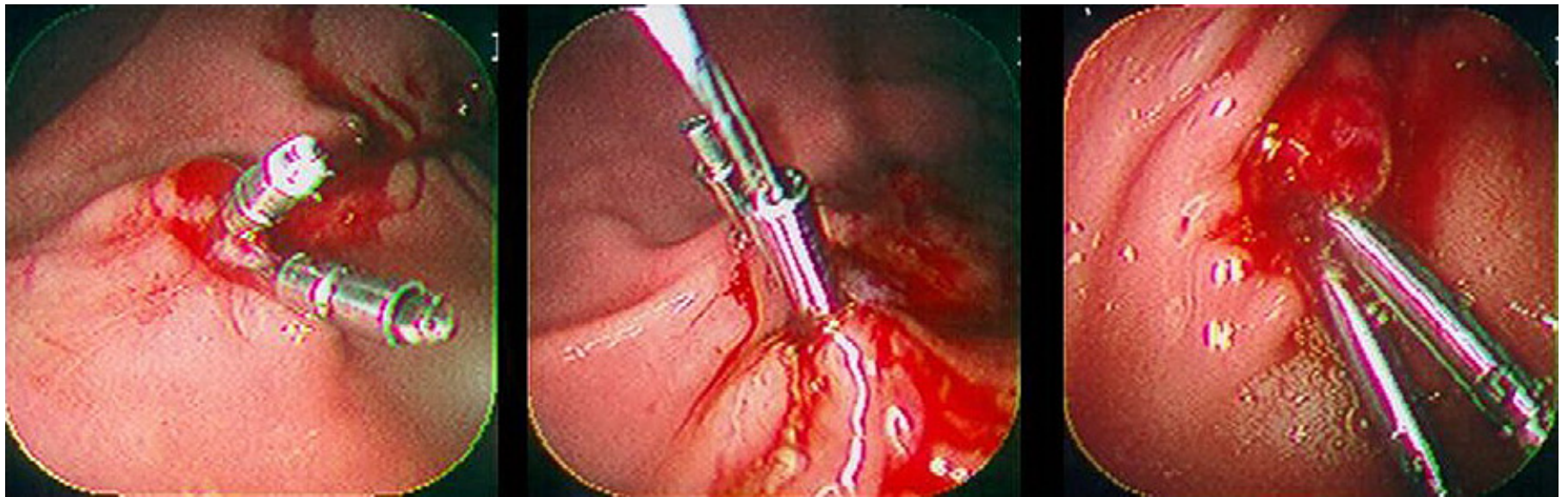


Mechanical

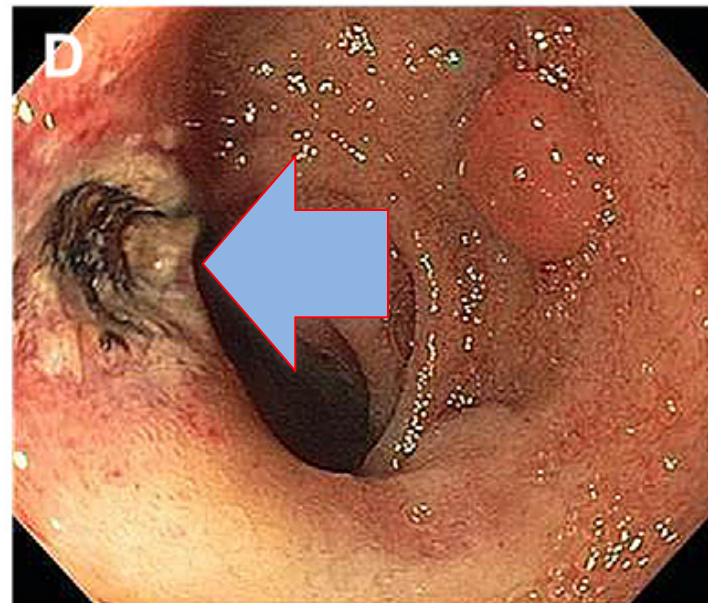
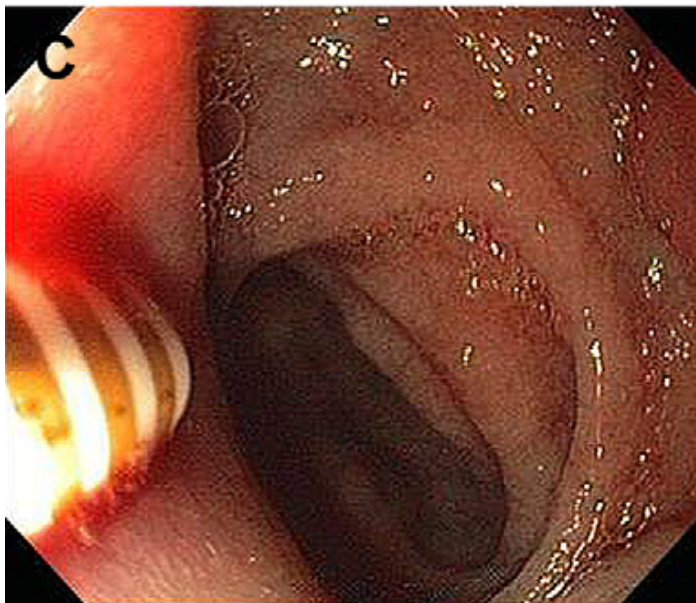
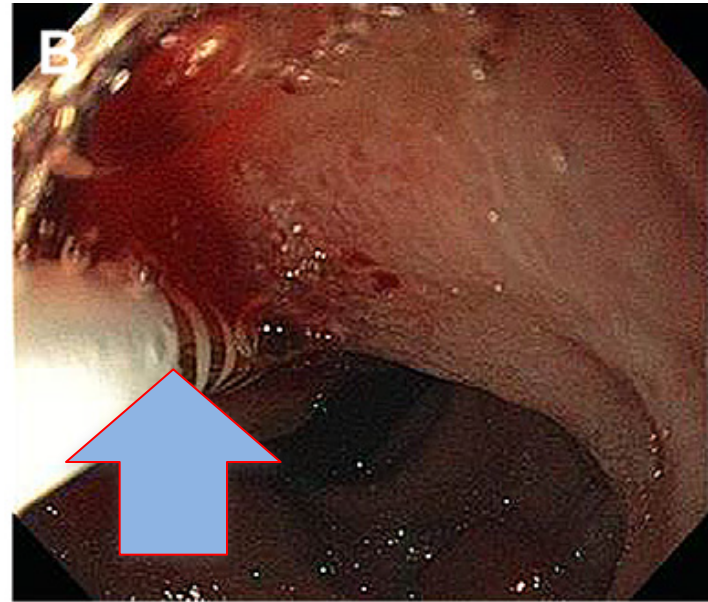
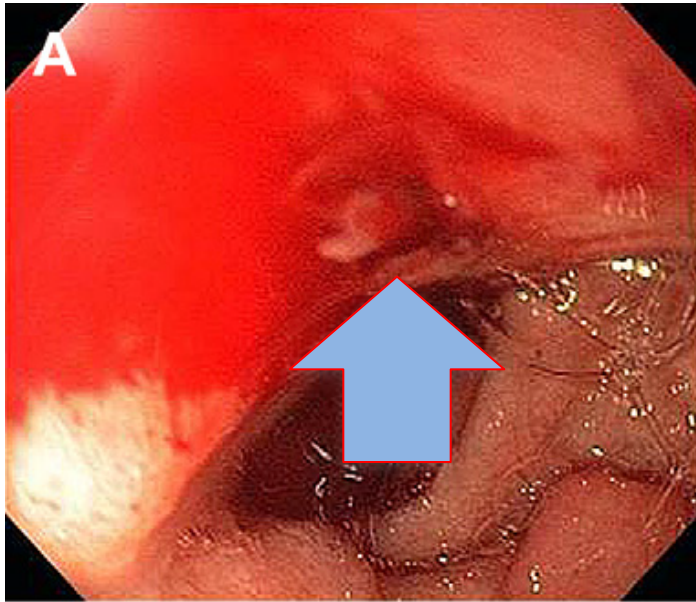




Kovacs et al. *Gastrointest Endosc Clin N Am* 2011;21:681-96.

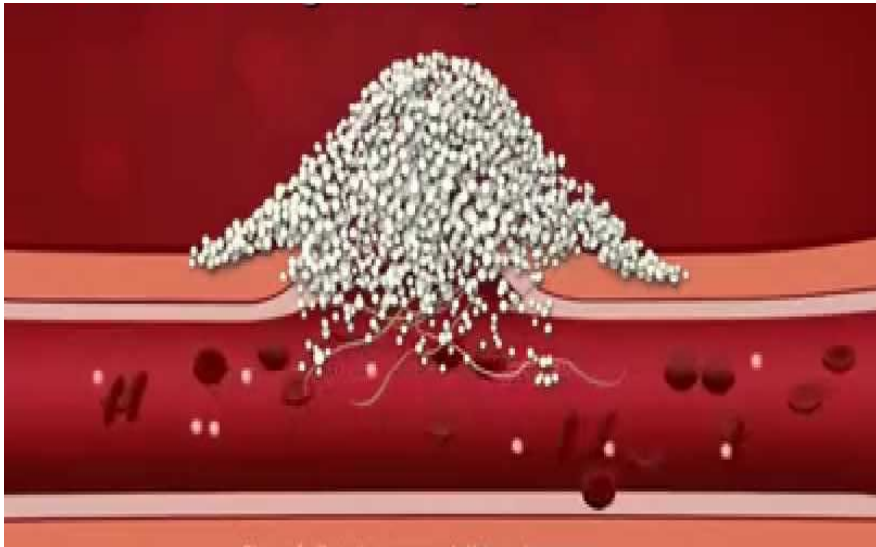


Kovacs et al. *Gastrointest Endosc Clin N Am* 2011;21:681-96.

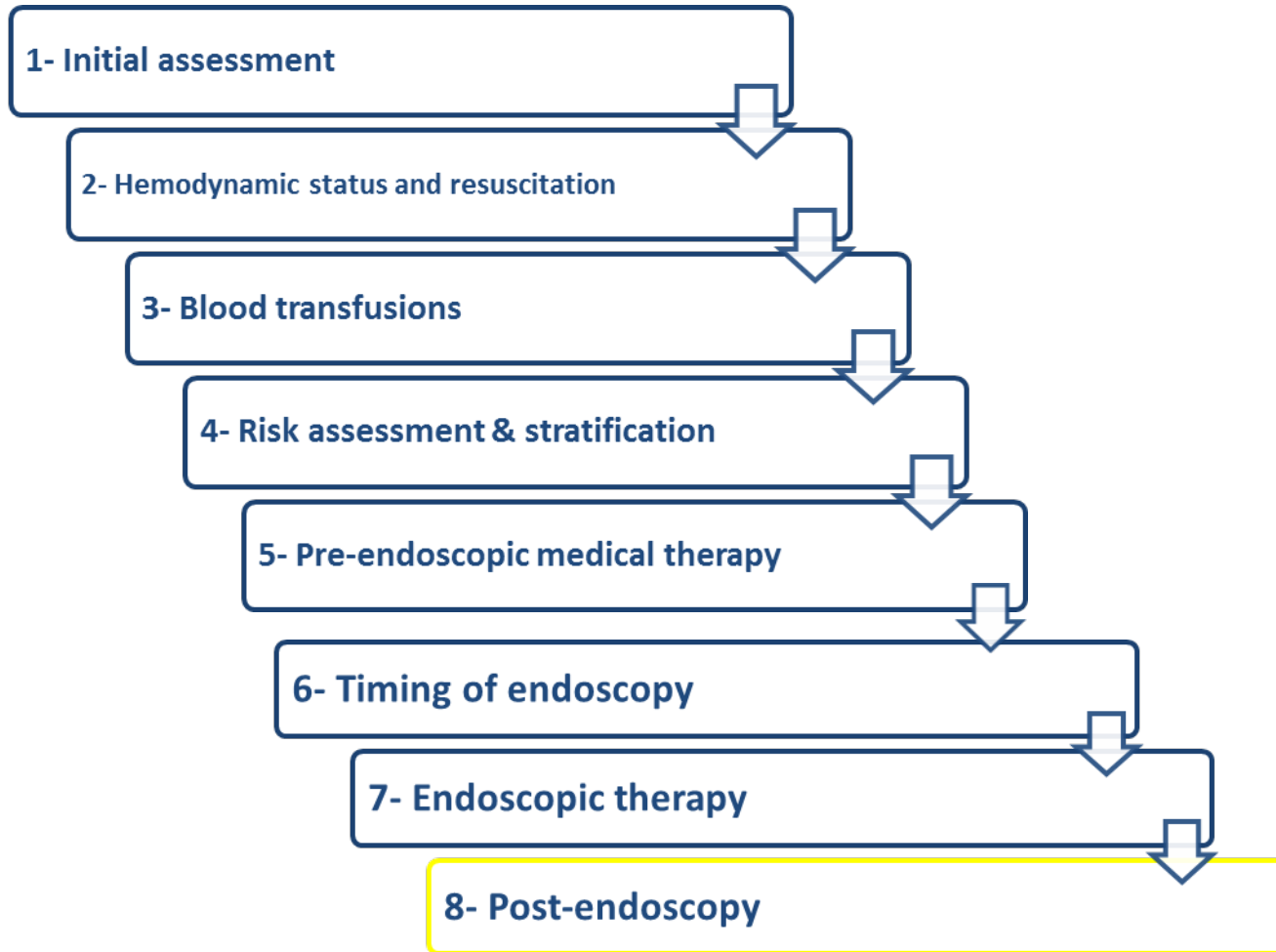


Kovacs et al. *Gastrointest Endosc Clin N Am* 2011;21:681-96.

Hemostatic powder Spray



Steps of Management



8- Post- Endoscopy

PPIs post endotherapy reduce
rebleeding, and
need for surgery

But has no benefit on overall mortality

(improve mortality → patients at highest risk)

Leontiadis GI, Sharma VK, Howden CW. Proton pump inhibitor therapy for peptic ulcer bleeding: meta-analysis of randomized controlled trials. *Mayo Clin Proc* 2007;82:286–96

Leontiadis GI, Sreedharan A et al. Systematic reviews of the clinical effectiveness and cost-effectiveness of proton pump inhibitors in acute upper gastrointestinal bleeding. *Health Technology Assessment* 2007; Vol. 11: No. 51

8- Post- Endoscopy (Cont'd)

Intermittent PPI (IV boluses) therapy is comparable to the recommended continuous IV infusion in patients with high-risk bleeding ulcers

Hamita Sachar et al. Intermittent vs Continuous Proton Pump Inhibitor Therapy for High-Risk Bleeding Ulcers A Systematic Review and Meta-analysis. JAMA Intern Med. 2014;174(11):1755-1762

8- Post- Endoscopy (Cont'd)

There is no difference in clinical outcomes between oral and intravenous PPI

Patients receiving oral PPI have a shorter hospital stay

K. K. F. Tsoi et al. Aliment Pharmacol Ther 2013; 38: 721–728

Hsu-Heng Yen et al. Oral versus intravenous proton pump inhibitors in preventing re-bleeding for patients with peptic ulcer bleeding after successful endoscopic therapy. BMC Gastroenterol. 2012; 12: 66

Laine L et al. Gastroenterology. 2008 Jun;134(7):1836-41

PPIs

- Compared to placebo or H2RAs **with** or **WITHOUT** endoscopic therapy PPIs reduced
 - Rebleeding
 - Surgery
 - **NOT** mortality

Hospitalization

- It takes 72 hours for most high-risk lesions to become low-risk lesions AFTER endoscopic therapy
- 60% - 76% of patients who had rebleeding within 30 days AFTER endoscopic hemostasis PLUS high-dose PPI therapy did so within the first 72 hours

Admission to a ICU

- For at least the first 24 hours on the basis of risk or clinical condition
 - Hemodynamic instability
 - Increasing age
 - Severe comorbidity
 - Active bleeding at endoscopy
 - Large ulcer size (>2 cm)

After discharge

Patients should be discharged with a prescription for a single daily-dose oral PPI for a duration as dictated by the underlying etiology.

Management of continued or recurrent bleeding

Percutaneous or transcatheter arterial embolization

- Technical success range from 52% to 98%
- Recurrent bleeding in about 10% to 20%
- Complications include
 - Bowel ischemia
 - Secondary duodenal stenosis
 - Gastric, hepatic, and splenic infarction
- A second attempt at endoscopic therapy remains the preferred strategy

Angiography

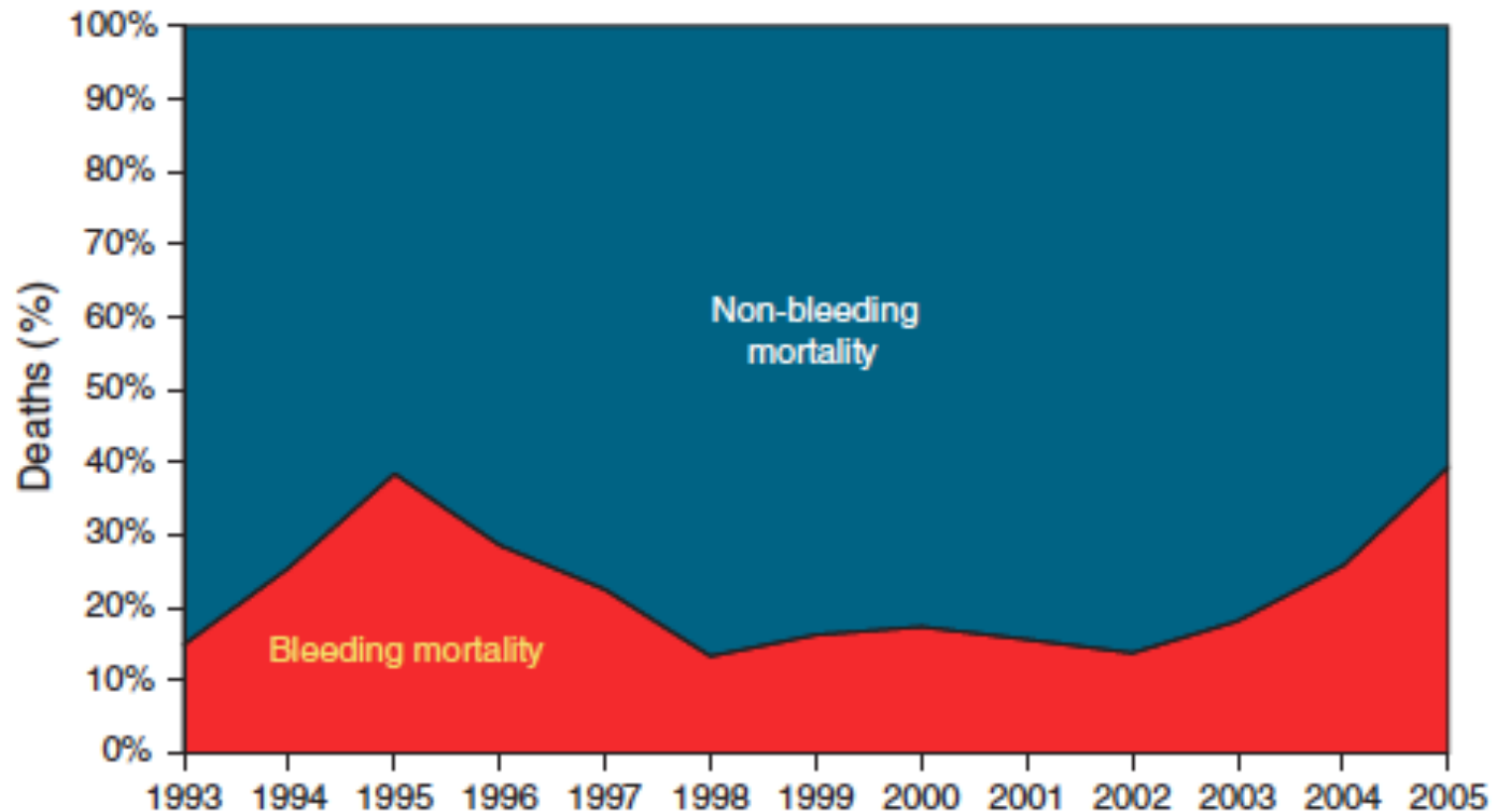
Where available, percutaneous embolization can be considered as an alternative to surgery for patients for whom endoscopic therapy has failed.

H pylori

- Patients with bleeding peptic ulcers should be tested for H. pylori
 - Receive eradication therapy if present
 - Confirmation of eradication
- Negative H. pylori diagnostic tests obtained in the acute setting should be repeated

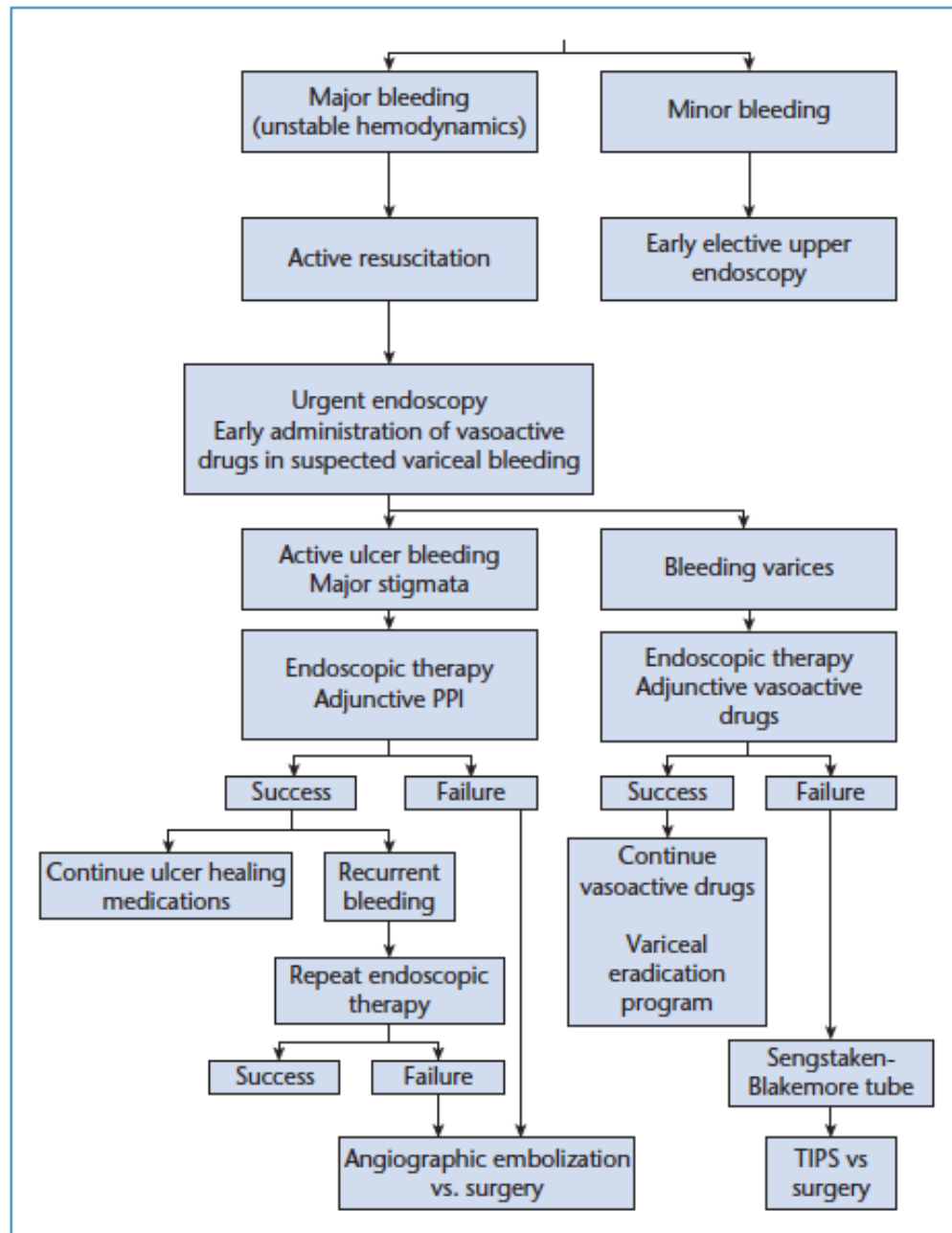
Aspirin Withdrawal in Acute Peptic Ulcer Bleeding: Are We Harming Patients?

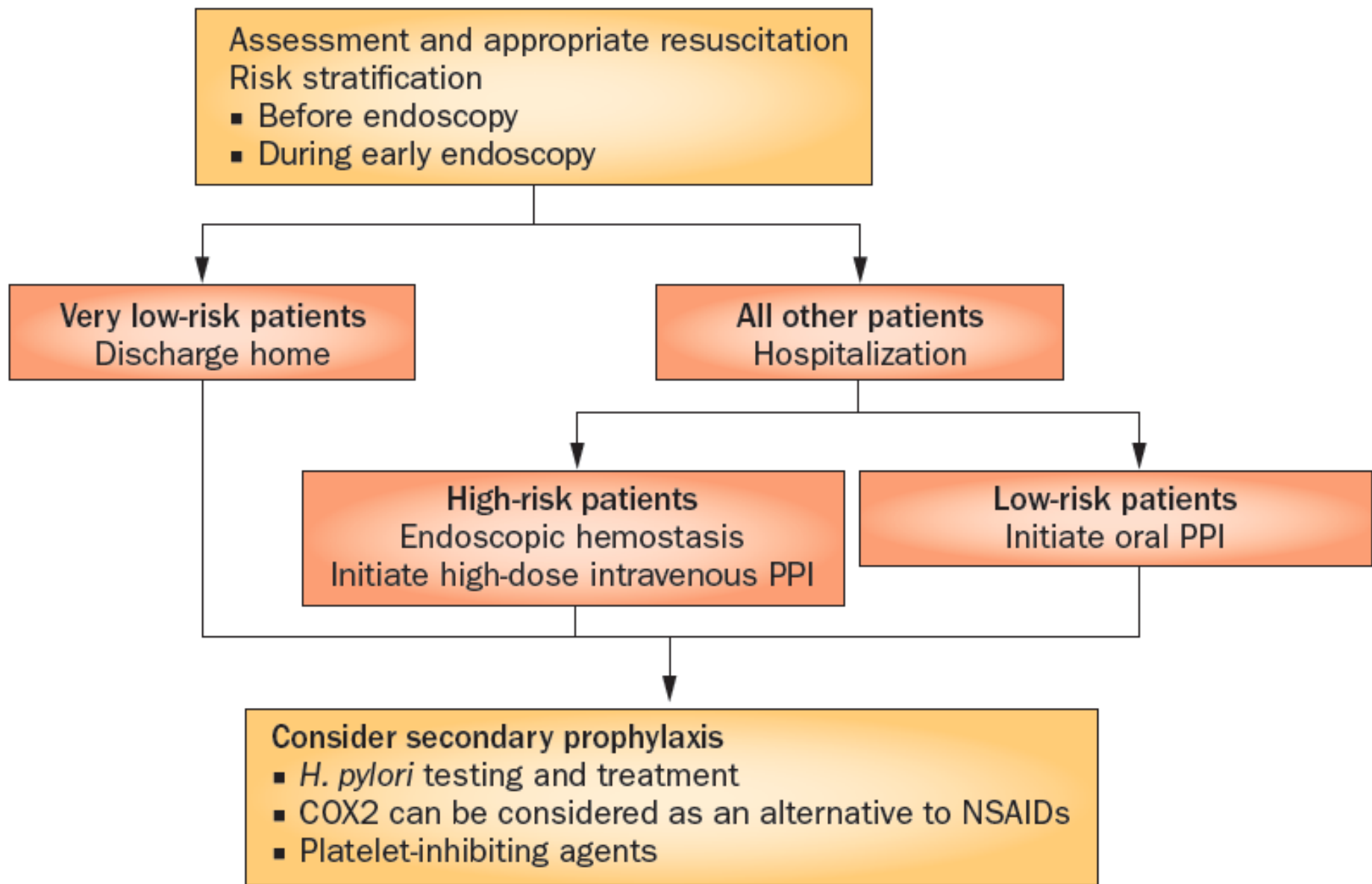
Incidences of bleeding-related and non-bleeding-related mortality



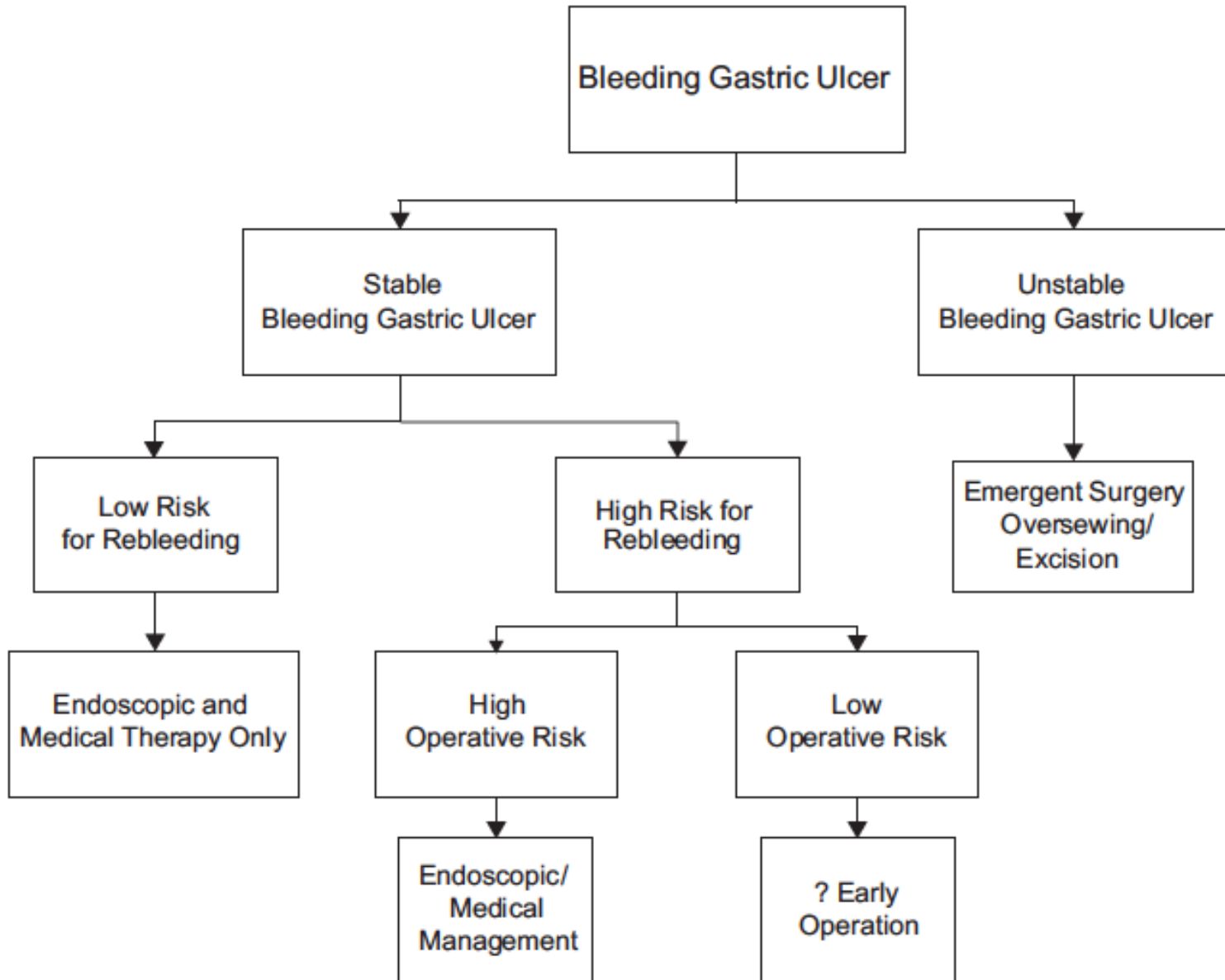
Sung et al. Am J Gastroenterol 2010;105:84-9.

Algorithm for management of acute GI bleeding





When to go to surgery?



Conclusions

- * Resuscitation should be initiated prior to any diagnostic procedure
- * Gastrointestinal endoscopy allows visualization of the stigmata, accurate assessment of the level of risk and treatment of the underlying lesion
- * Intravenous PPI therapy after endoscopy is crucial to decrease the recurrence of bleeding
- * *Helicobacter pylori* testing should be performed in the acute setting

Thank you