Inpatient Management of GI Bleeding

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Faculty disclosure:

I am a consultant for Boston Scientific and Medtronic, which manufacture devices used in evaluation and treatment of GI bleeding

Agenda

1. Initial resuscitation strategy in GI bleeding

2. Review medical management of upper GI bleeding prior to EGD:
   A. NG tubes, yay or nay?
   B. PPI dosing
   C. Simplified UGIB algorithm

3. Review management of LGIB, including:
   A. Urgent colonoscopy vs. CT angio
   B. Simplified LGIB algorithm

4. Small bowel bleeding- (Exactly one slide)

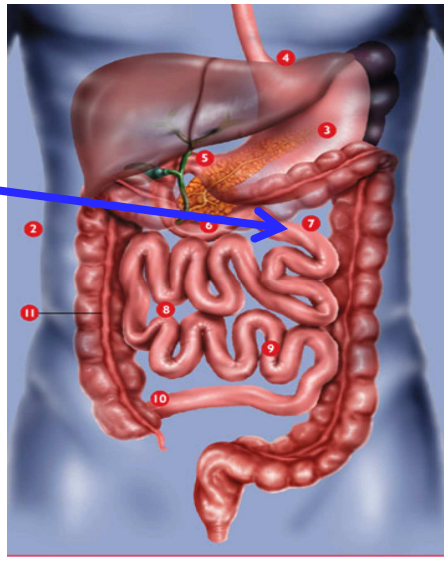
5. Bonus topics: Anticoagulation decisions, H.pylori eradication, PPI duration

Before we continue… 5 important definitions:

1. *Upper* GI bleeding: arising from above the Ligament of Treitz

2. *Lower* GI bleeding: arising from the colon

(*Midgut' bleeding or 'deep small bowel' bleeding = varying definitions)



Before we continue… 5 important definitions:

3. *Overt* GI bleeding
   melena, hematochezia, hematemesis….

4. *Occult* GI bleeding
   guaiac positive stool only

5. *Suspected small bowel* bleeding (formally termed 'obscure GIB')
   recurrent bleeding from unknown source despite
   negative EGD/colonoscopy/ +/-capsule

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   recurrent bleeding from unknown source despite
   negative EGD/colonoscopy/ +/-capsule

Resuscitation Strategies for GIB

*

68 y.o. M presents to ED with hematochezia x 3. Initial BP 70/30, HR 110. Hgb 8.5. Sent to ICU with 1U PRBC hanging + two 20g IVs.

Which of the following is NOT an appropriate next step in this patient's management?

1. Insertion of additional 16-18g IV catheters
2. Insertion of a TLC central line
3. Insertion of a cordis/trauma line
4. NG lavage
5. Two additional units PRBC

Volume Resuscitation & IV Flow Rate:

22 gauge angiocath: 35 ml/min

20 gauge angiocath:

18 gauge angiocath:

16 gauge angiocath:

14 gauge angiocath:

Triple lumen central line:

Cordis/trauma line:

*Source: Cornell MICU Manual

Volume Resuscitation & IV Flow Rate:

22 gauge angiocath: 35 ml/min

20 gauge angiocath: 60 ml/min

18 gauge angiocath: 105 ml/min

16 gauge angiocath: 205 ml/min

14 gauge angiocath: 333 ml/min

Triple lumen central line:

Cordis/trauma line:

*Source: Cornell MICU Manual

Volume Resuscitation & IV Flow Rate:

- 22 gauge angiocath: 35 ml/min
- 20 gauge angiocath: 60 ml/min
- Triple lumen central line: 68 ml/min (34ml/min + 2 x 17 ml/min)
- 18 gauge angiocath: 105 ml/min
- 16 gauge angiocath: 205 ml/min
- 14 gauge angiocath: 333 ml/min
- Cordis/trauma line: >1000ml/min

FASTER FLOW

*Source: Cornell MICU Manual

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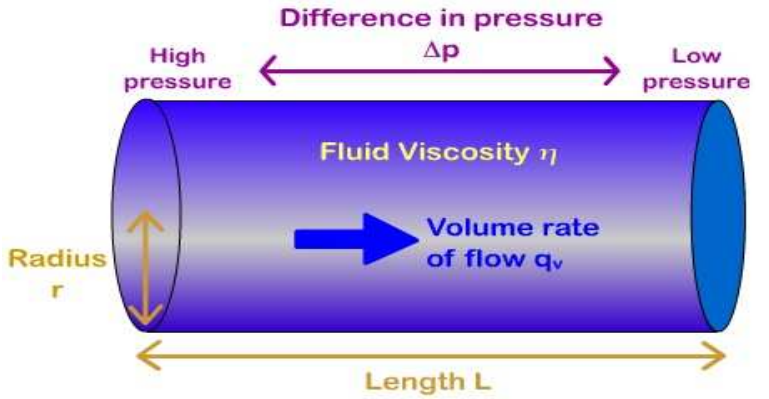
Science Section of Slide



$$\text{Blood Flow} = \frac{\Delta P\ r^4\ \pi}{\eta\ L\ (8)}$$

Δ = Change
P = Pressure
r = Radius of vessel
π = constant (3.14)
η = Viscosity of blood
L = Vessel length

Poiseuille's law [pwah-zweez]

Doctor Section of Slide

wide catheter =

much faster infusion

long catheter =

slower infusion

Transfusion Strategies for Acute Upper Gastrointestinal Bleeding

Càndid Villanueva, M.D., Alan Colomo, M.D., Alba Bosch, M.D., Mar Concepción, M.D., Virginia Hernandez-Gea, M.D., Carles Aracil, M.D., Isabel Graupera, M.D., María Poca, M.D., Cristina Alvarez-Urturi, M.D., Jordi Gordillo, M.D., Carlos Guarner-Argente, M.D., Miquel Santaló, M.D., Eduardo Muñiz, M.D., and Carlos Guarner, M.D.

921 patients with acute upper GIB randomized to:

restrictive transfusion strategy (Hgb target >7)

vs.

liberal transfusion strategy (Hgb target >9)

- all patients underwent EGD within 6 hours
- included both cirrhotic patients and peptic ulcer patients

NEJM January 2013

Transfusion Strategies for Acute Upper Gastrointestinal Bleeding

Càndid Villanueva, M.D., Alan Colomo, M.D., Alba Bosch, M.D., Mar Concepción, M.D., Virginia Hernandez-Gea, M.D., Carles Aracil, M.D., Isabel Graupera, M.D., María Poca, M.D., Cristina Alvarez-Urturi, M.D., Jordi Gordillo, M.D., Carlos Guarner-Argente, M.D., Miquel Santaló, M.D., Eduardo Muñiz, M.D., and Carlos Guarner, M.D.

Summary:

- Restrictive transfusion → lower overall mortality (5% vs. 10%) and lower risk of rebleeding (10% vs. 16%)
- Mortality benefit largest for cirrhotic patients, but also present in PUD

Limitations:

- hypovolemic shock subgroup not analyzed separately
- excluded patients with "exsanguinating bleed requiring transfusion" (i.e. best strategy for rapid bleed is rapid resuscitation- don't wait for CBC!)

NEJM January 2013

Transfusion Strategies for Acute Upper Gastrointestinal Bleeding

Càndid Villanueva, M.D., Alan Colomo, M.D., Alba Bosch, M.D., Mar Concepción, M.D., Virginia Hernandez-Gea, M.D., Carles Aracil, M.D., Isabel Graupera, M.D., María Poca, M.D., Cristina Alvarez-Urturi, M.D., Jordi Gordillo, M.D., Carlos Guarner-Argente, M.D., Miquel Santaló, M.D., Eduardo Muñiz, M.D., and Carlos Guarner, M.D.

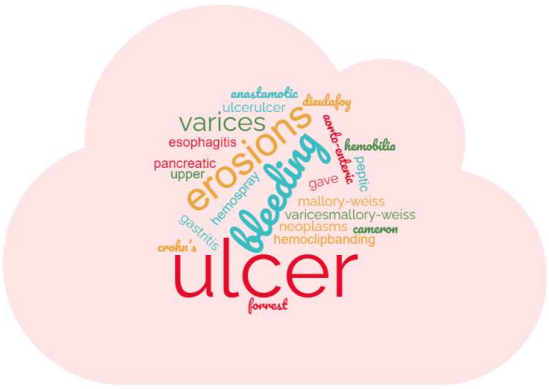
The practical summary:

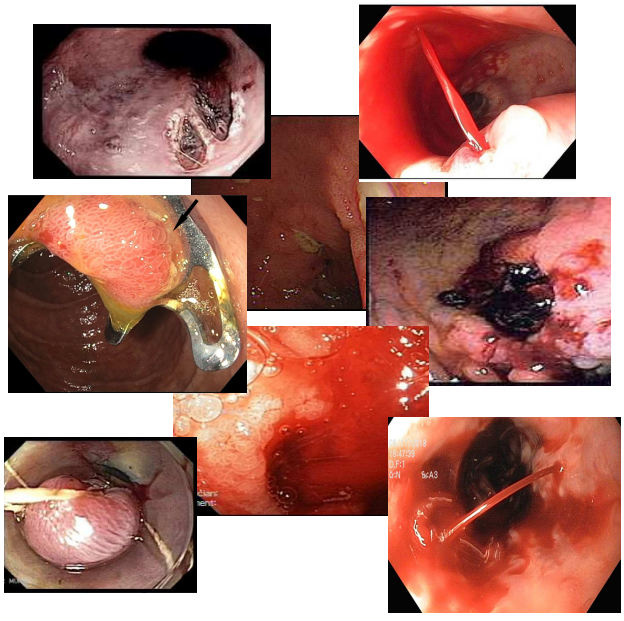
1. Ignore these thresholds in a 'rapid exsanguinating bleed' – these patients were excluded from the study. Blood out → blood in.

2. For the 'more stable' bleeder (in whom you actually have time to monitor labs!)- transfusing more conservatively may be beneficial.

NEJM January 2013

Upper GI Bleeding- A Visual Atlas





Upper GI Bleeding

Differential Diagnosis

Common

gastric/duodenal ulcer, esophageal varices, Mallory-Weiss tear, gastritis/erosions, esophagitis, anastamotic ulcers

Less common

Cameron lesions, Dieulafoy lesions, gastric varices, GAVE, neoplasms

Rare

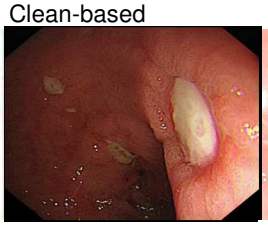
esophageal ulcer, aorto-enteric fistula, hemobilia, pancreatic bleeding, upper GI Crohn's disease

Ulcer appearance *predicts rebleeding risk* with medical rx vs. endotherapy

Forrest et al. Lancet 1974
Kovacs et al. Curr Treatment Gastro 2007

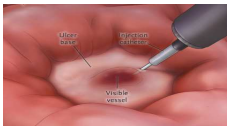
Ulcer appearance *predicts rebleeding risk* with medical rx vs. endotherapy

Endoscopic therapy space

Clean-based	Pigmented spot	Overlying Clot	Visible Vessel	Active Bleeding
				
Rebleed risk → 3% after endo tx →NA	Rebleed risk →7% after endo tx →NA	Rebleed risk →35% after endo tx →<5%	Rebleed risk →50% after endo tx → 10%	Rebleed risk →90% after endo tx → 15%

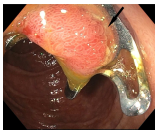
Forrest et al. Lancet 1974
Kovacs et al. Curr Treatment Gastro 2007

Endoscopic hemostasis techniques and tools

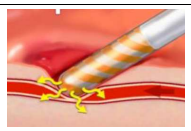
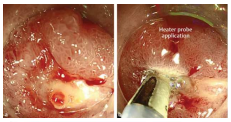


1. Injection/local vasoconstriction (temporary)





2. Clip closure of ulcer/vessel (**definitive**)

3. Thermal coagulation (**definitive**)


4. Hemospray (salvage)

Upper GI Bleeding

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gastric/duodenal ulcer, esophageal varices, Mallory-Weiss tear, gastritis/erosions, esophagitis, anastamotic ulcers

Less common
Cameron lesions, Dieulafoy lesions,, gastric varices, GAVE, neoplasms

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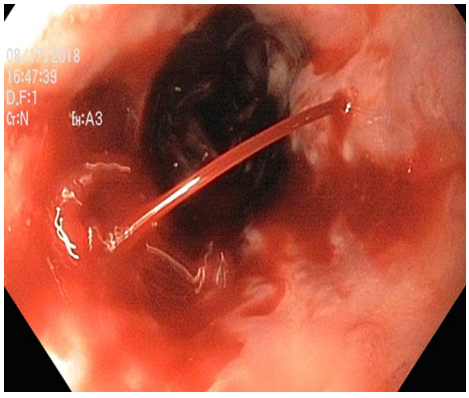
Esophageal Varices

Bleeding varix



Endoscopic banding/ligation of varices

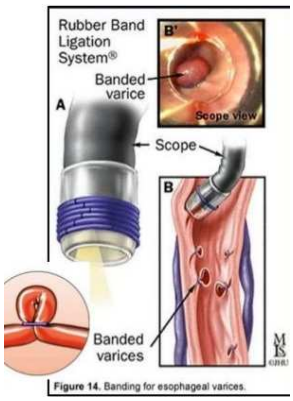


Figure 14. Banding for esophageal varices.

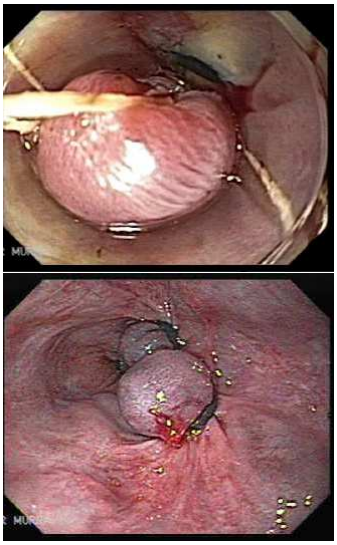
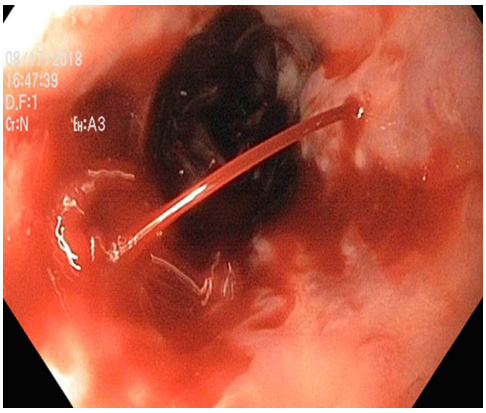


Image sources: gastrointestinalatlas.com, Boregowda et al WJGPT 2019

Esophageal Varices

Bleeding varix



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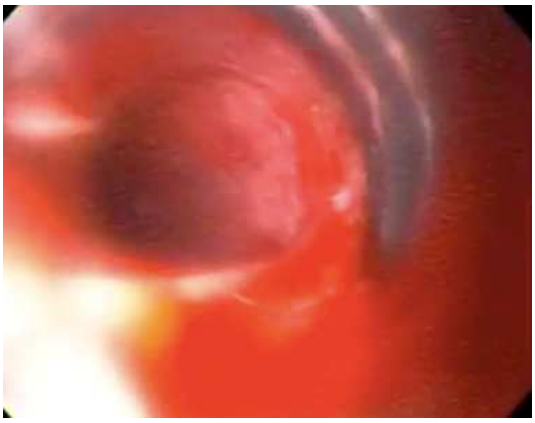

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Upper GI Bleeding

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Mallory-Weiss Tear

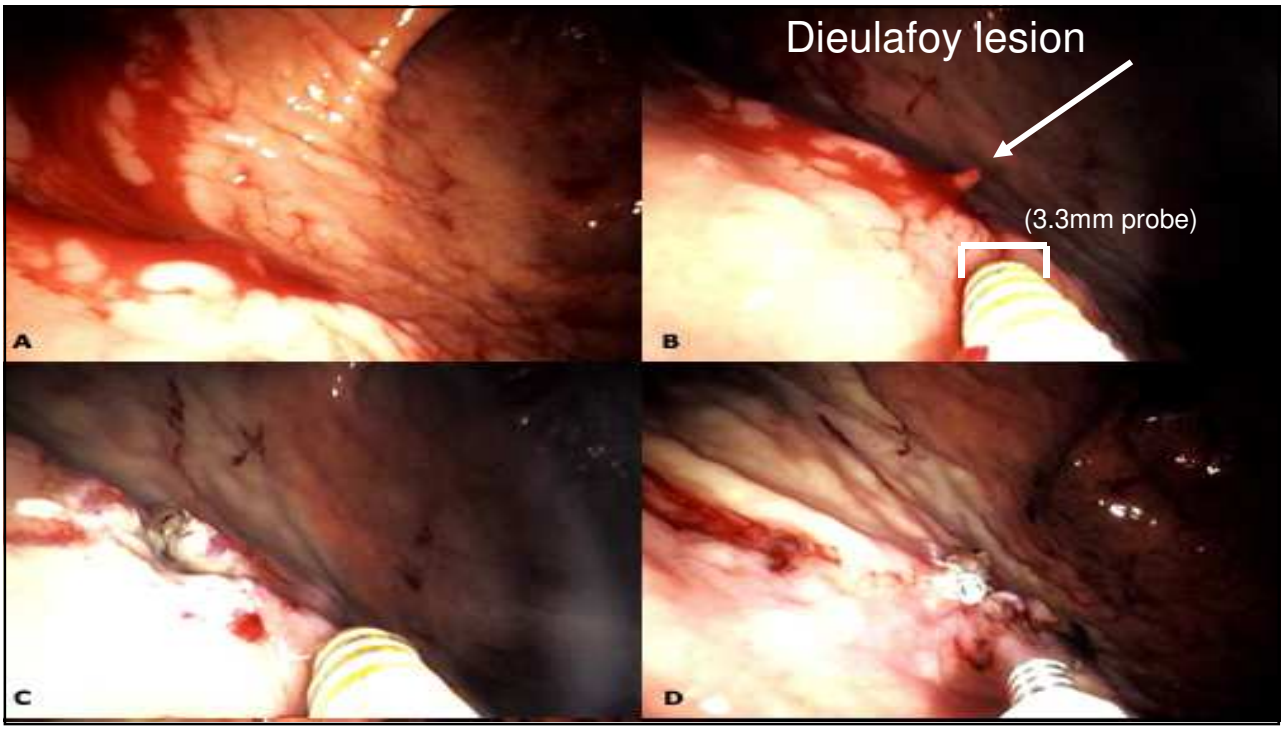
(GE junction, view from esophagus)

Mallory-Weiss Tear

(GE junction, view from esophagus)

Cameron Lesion (hiatal hernia)

(GE junction, view from stomach, retroflexed)



*

62 y.o. male presents to the ED with melena and syncope. Blood pressure is 90/60 and HR is 115. HCT 22, PLT 250, INR 1.0. Sent to ICU with 2U PRBC hanging.

NG lavage reveals fresh red blood. Two 16g IV lines are in place.

Which of the following is NOT an appropriate next step.

1. Urgent upper endoscopy
2. Intubation for airway protection prior to EGD
3. IV pantoprazole 40mg bolus
4. 250mg IV erythromycin
5. 1g IV ceftriaxone

How to rule-out variceal bleeding (i.e. decompensated cirrhosis) in 2 steps:

Step 1: Look at platelet count and INR

How to rule-out variceal bleeding (i.e. decompensated cirrhosis) in 2 steps:

Step 1: Look at platelet count and INR

There isn't really a step 2. If PLT and INR are normal, then your patient doesn't have decompensated cirrhosis.

Upper GI Bleeding Management

Initial approach
Treat as peptic ulcer disease unless strong evidence otherwise

1) Resuscitation, triage.
2) IV or oral PPI
3) ? NG tube
4) 'Early' upper endoscopy
5) Scoring systems
6) Last ditch options: angio embolization > surgery

Physiologic Goals of Medical Therapy of Bleeding Ulcer

- pH>4 Prevents pepsin activation and reduces proteolytic degradation of clots
  (Good!)

- pH>6 Clot stabilization via improved platelet aggregation
  (Even Better!)

Two key trials established PPI role in upper GI bleed

EFFECT OF INTRAVENOUS OMEPRAZOLE ON RECURRENT BLEEDING AFTER ENDOSCOPIC TREATMENT OF BLEEDING PEPTIC ULCERS

JAMES Y.W. LAU, M.B., B.S., JOSEPH J.Y. SUNG, M.D., KENNETH K.C. LEE, PH.D., MAN-YEE YUNG, B.N., SIMON K.H. WONG, M.B., CH.B., JUSTIN C.Y. WU, M.B., CH.B., FRANCIS K.L. CHAN, M.D.,

NEJM August 2000

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Omeprazole before Endoscopy in Patients with Gastrointestinal Bleeding

James Y. Lau, M.D., Wai K. Leung, M.D., Justin C.Y. Wu, M.D., Francis K.L. Chan, M.D., Vincent W.S. Wong, M.D., Philip W.Y. Chiu, M.D., Vivian W.Y. Lee, Ph.D., Kenneth K.C. Lee, Ph.D., Frances K.Y. Cheung, M.B., Ch.B., Priscilla Siu, B.Sc., Enders K.W. Ng, M.D., and Joseph J.Y. Sung, M.D.

NEJM August 2007

Critical findings of first two PPI RCTs

1. PPI reduced risk of *recurrent* bleeding (at multiple intervals: days 3, 7, and 30)

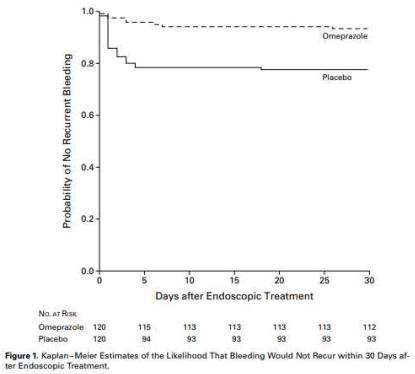
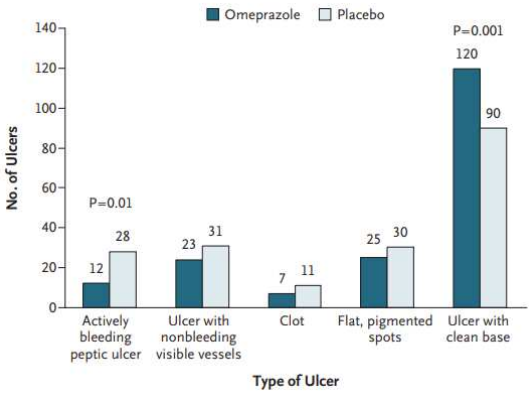


Figure 1. Kaplan–Meier Estimates of the Likelihood That Bleeding Would Not Recur within 30 Days after Endoscopic Treatment.

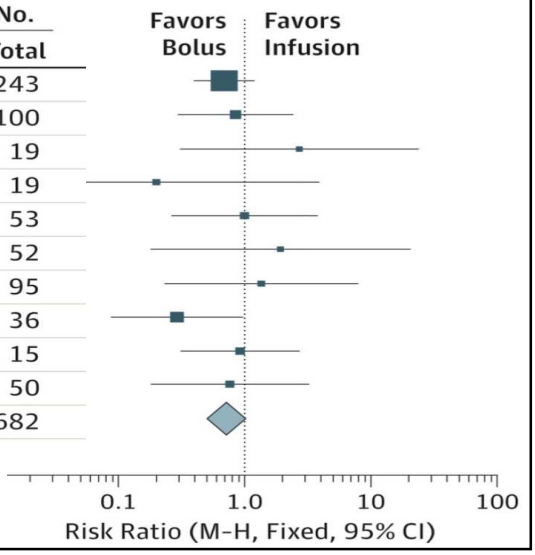
2. PPI 'downstaged' the ulcer at time of EGD
   ↓ active bleeding ↑ clean-based ulcers



Lau et al NEJM 2000 and Lau et al NEJM 2007

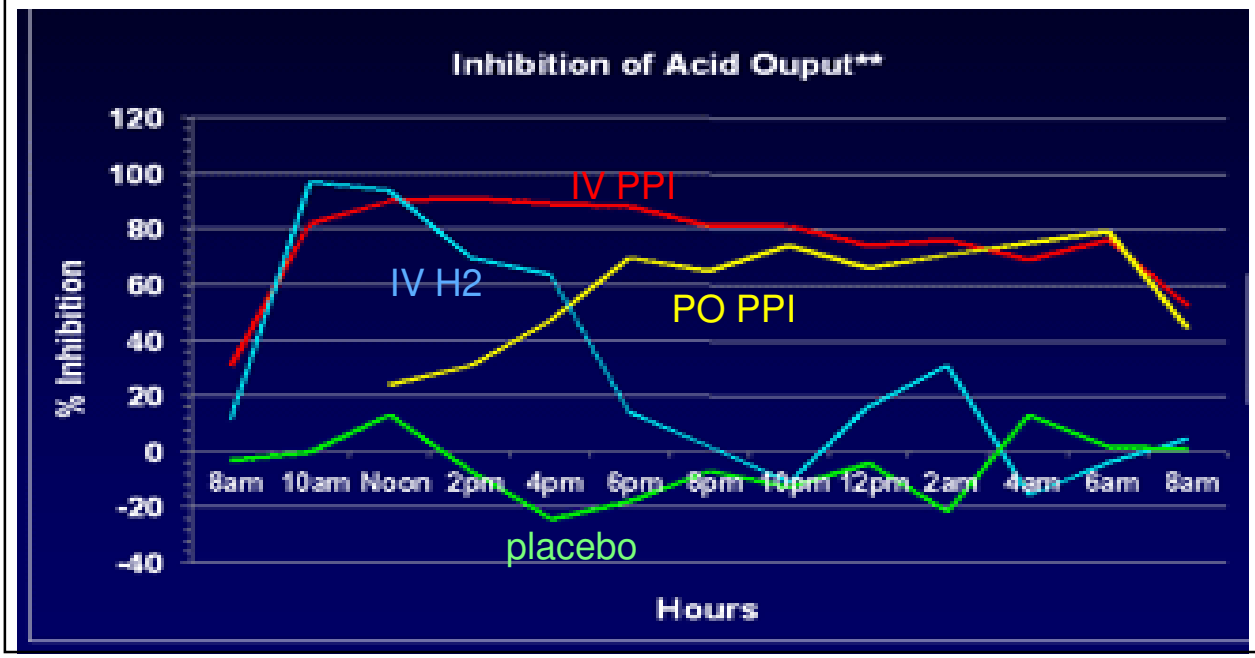
Clinical equivalence between PPI bolus and infusion strategies

Source	Intermittent Bolus, No. Events	Total	Continuous Infusion, No. Events	Total
Andriulli et al,[14] 2008	19	239	28	243
Chen et al,[16] 2012	6	101	7	100
Choi et al,[17] 2009	3	21	1	19
Jang et al,[24] 2006	0	19	2	19
Javid et al,[20] 2009	4	53	4	53
Kim et al,[21] 2012	2	54	1	52
Sung et al,[25] 2012	3	105	2	95
Ucbilek et al,[26] 2013	3	37	10	36
Yamada et al,[22] 2012	4	13	5	15
Yüksel et al,[23] 2008	3	49	4	50
Total (95% CI)	47	691	64	682



Sachar et al. JAMA Internal Medicine 2014

The world's oldest and ugliest Powerpoint slide



Clinical equivalence between PO PPI vs IV PPI?

Effects of Intravenous and Oral Esomeprazole in the Prevention of Recurrent Bleeding from Peptic Ulcers after Endoscopic Therapy

Joseph J.Y. Sung, MD, PhD[1], Bing-Yee Suen, RN[1], Justin C.Y. Wu, MD[1], James Y.W. Lau, MD[1], Jessica Y.L. Ching, MPH[1], Vivian W.Y. Lee, PharmD[1], Philip W.Y. Chiu, MD[1], Kelvin K.F. Tsoi, PhD[1] and Francis K.L. Chan, MD[1]

STOMACH

118 patients who underwent endoscopic treatment of bleeding ulcer →

randomized to: IV esomeprazole (80 mg bolus + 72 hr drip) OR

oral esomeprazole (40mg bid)

Findings: Rates of recurrent bleeding at 72h, 7 days, & 30 days were comparable between oral and IV PPI. No differences in any other major outcome (transfusions, mortality etc)

Am J Gastro, July 2014

A reasonable approach for PPI in Upper GI bleeding:

For patients with ongoing melena/hematemesis who need urgent endoscopy → IV PPI 40mg BID. Continue IV if patient remains unstable and needs to be NPO. Otherwise, reasonable to switch to 40mg PO BID.

For more stable patients → single IV dose, then oral PPI 40mg PO BID

The NG tube debate during the 2023 UGIB guidelines meeting

Upper GI Bleeding- NG tubes

"Pro" arguments:

1. Suctioning blood from the stomach *may* improve endoscopic visualization or reduce aspiration
2. Large amount of red blood is highly specific for large UGIB requiring early EGD

"Con" arguments:

1. Endoscopy is diagnostic/therapeutic procedure of choice, period.
2. Sensitivity/specificity of NG lavage for UGIB is inadequate to guide management (Sens 79%, Spec 55%)…

↑

(specificity is low in the setting of coffee grounds or scant red blood)

Upper GI Bleeding Management

Initial approach
Treat as PUD unless strong evidence otherwise

1) Resuscitation, triage.
2) IV or oral PPI
3) ? NG tube
4) 'Early' upper endoscopy
5) Scoring systems
6) Last ditch options: angio embolization > surgery

Timing of endoscopy for upper GI bleed
(aka: does this patient need to be scoped at 2am?)

The “urgent overnight EGD” debate during the 2023 UGIB guidelines meeting

TB1

Early endoscopy (6-24hrs) is better than <6h or >24h

Retrospective, territory-wide cohort study with 6,474 patients with AUGIB

Urgent Endoscopy ≤6 hours N = 1,008	Early Endoscopy 6 to 24 hours N = 3,865	Late Endoscopy 24 to 48 hours N = 1,601

Urgent Endoscopy	When Compared to Early Endoscopy	Late Endoscopy
1.430 (1.237 - 1.653), p < 0.001	30-Day All Cause Mortality	1.250 (1.078 - 1.449), p = 0.003
1.215 (1.107 - 1.334), p < 0.001	30-Day Repeat Therapeutic Endoscopy	1.040 (0.944 - 1.145), p = 0.426
Higher risk, p = 0.017	In-hospital Mortality Rate	Higher risk, p = 0.022

Results suggest that most bleeding patients need not be rushed to endoscopy immediately
Active resuscitation and medical treatment should be initiated, then endoscopy performed within 24 hours of presentation

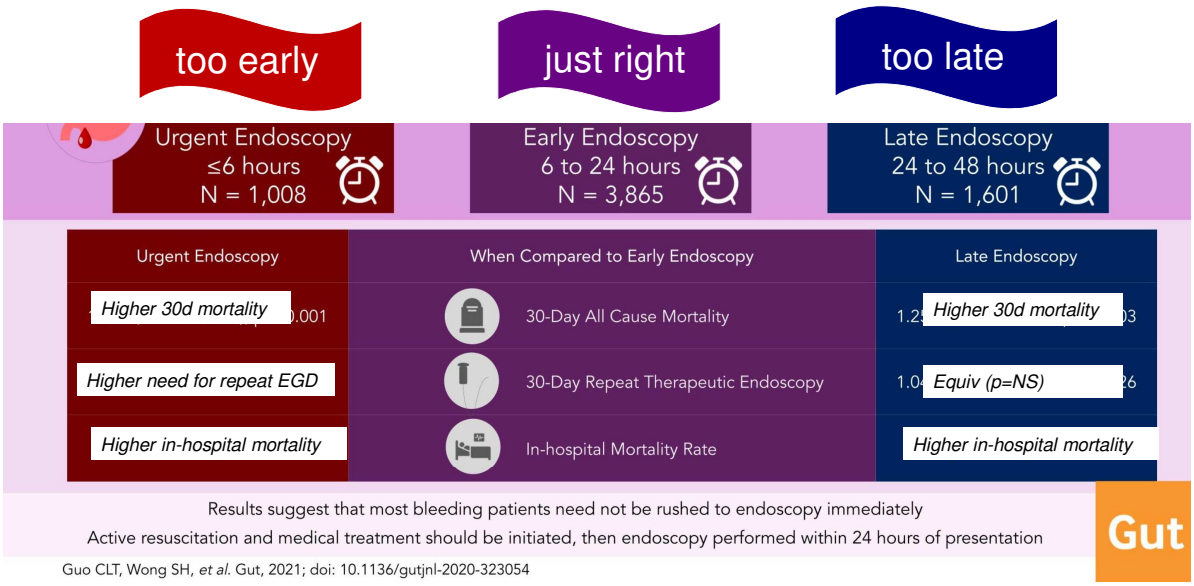
Gut

Guo CLT, Wong SH, *et al.* Gut, 2021; doi: 10.1136/gutjnl-2020-323054

Slide 44

TB1 Tyler Berzin, 10/13/2022

The *Goldilocks principle* of upper endoscopy timing



Guo CLT, Wong SH, *et al.* Gut, 2021; doi: 10.1136/gutjnl-2020-323054

Prokinetic prior to endoscopy in UGIB

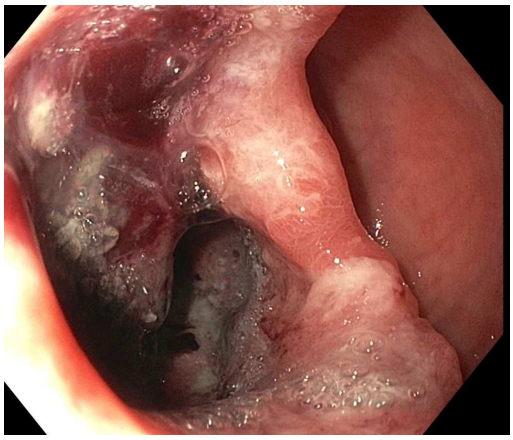
- Prior to EGD, give erythromycin 250 mg IV (3mg/kg) over 30 minutes (prokinetic effect)
- Reasonable data to suggest better gastric clearance = reduced need for 2nd look endoscopy

(Azithromycin 500mg IV x 1 may have similar effect)

Bai et al. Aliment Pharmacol Ther. 2011;34(2):166

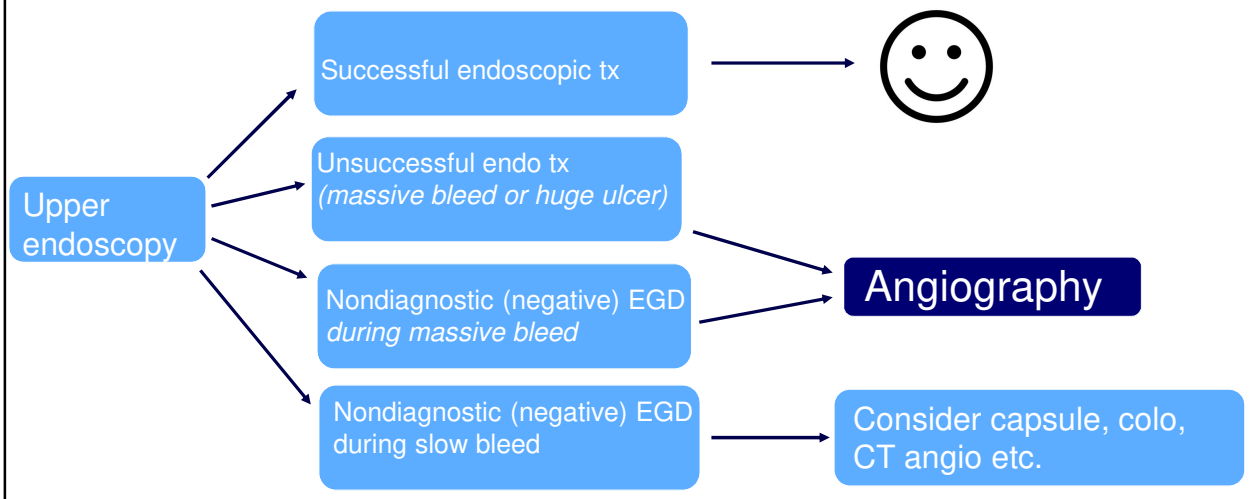
Calling for IR backup

Massive bleed



Giant ulcer

Algorithm for considering angiography for upper GI bleed



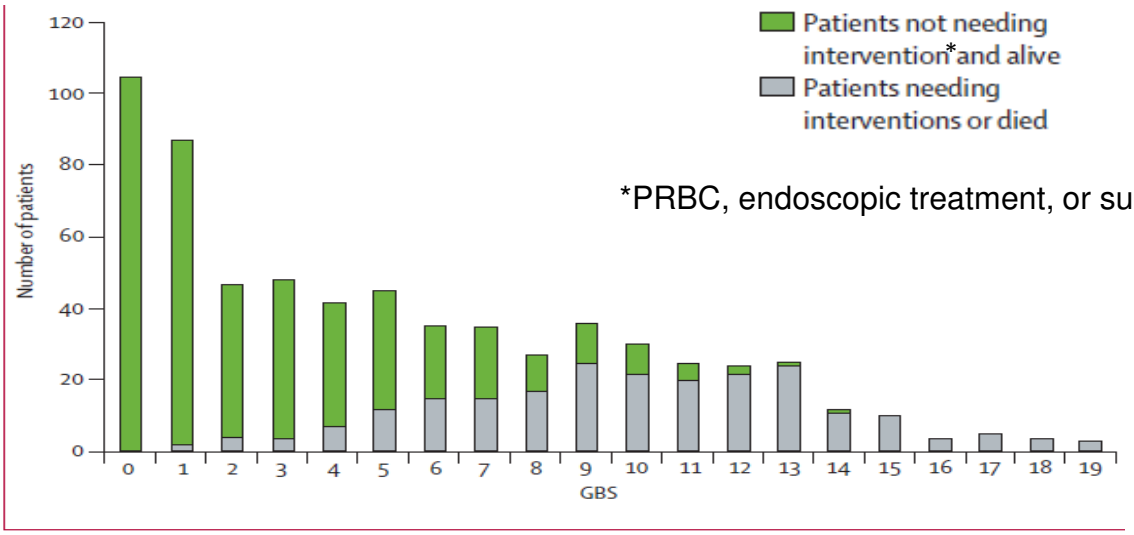
UGIB scores can predict need for endo intervention +/- mortality

- Rockall Score
- AIMS 65 Score
- Blatchford Score →

..and others

At Presentation	Points
Systolic blood pressure	
100–109 mm Hg	1
90–99 mm Hg	2
<90 mm Hg	3
Blood urea nitrogen	
6.5–7.9 mmol/liter	2
8.0–9.9 mmol/liter	3
10.0–24.9 mmol/liter	4
≥25 mmol/liter	6
Hemoglobin for men	
12.0–12.9 g/dl	1
10.0–11.9 g/dl	3
<10.0 g/dl	6
Hemoglobin for women	
10.0–11.9 g/dl	1
<10.0 g/dl	6
Other variables at presentation	
Pulse ≥100	1
Melena	1
Syncope	2
Hepatic disease	2
Cardiac failure	2

Blatchford score of 0 = No need for 'intervention*'



*PRBC, endoscopic treatment, or surgery

Figure 1: **Need for intervention or death by score for all four centres in phase one**

Lancet 2009

Plan B… if you suspect variceal bleed*

*Consider varices if known/suspected cirrhosis based on exam, imaging, or lab findings (low platelets, high INR)

Upper GI Bleeding

Plan B… if you suspect variceal bleed

1) Resuscitation, triage.
2) IV Octreotide (50mcg + 50mcg/hr gtt)
3) NG tube (ok to use in most cases)
4) Antibiotic treatment
5) Endoscopy for banding/injection
6) Recurrent/massive bleeding → TIPS

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AASLD
AMERICAN ASSOCIATION FOR THE STUDY OF LIVER DISEASES

2017 AASLD Guidelines

- Patients with cirrhosis presenting with any type of GI bleed, are at high risk for SBP and other bacterial infections
- Multiple RCTs show definitive benefit for antibiotics re: reduced risk of infection, rebleeding, death
- Best option: 1g IV ceftriaxone q24hrs

Garcia-Tsao et al. Hepatology 2017

Lower GI Bleeding

Lower GIB: Evidence Deficit

- UGIB and LGIB have fairly similar incidence and similar mortality rate… but…. LGIB has no ‘gold standard’ approach and evidence base for clinical management is relatively thin.

Lower GI Bleeding

Differential Diagnosis

Common
colonic diverticula, angioectasia

Less common
post-polypectomy bleeding, colon cancer/polyp, hemorrhoids, Meckel's, colitis (inflammatory, ischemic, radiation)

Rare
Dieulafoy's lesion, rectal varices

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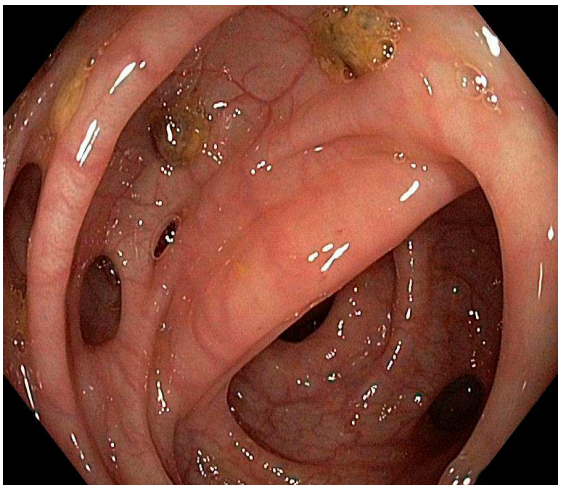
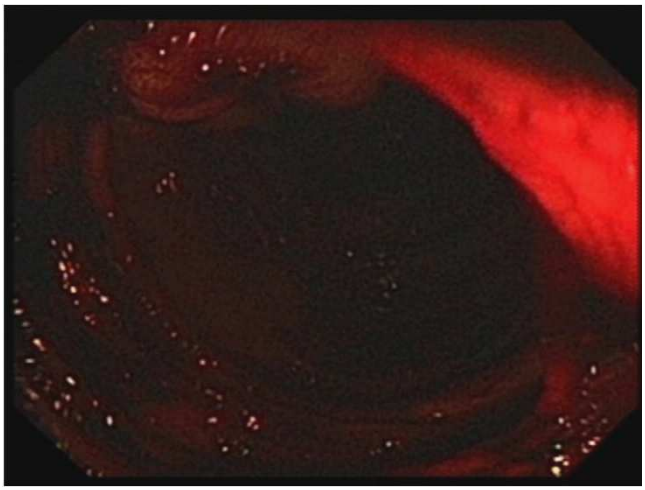
Diverticulosis

Sigmoid colon with multiple diverticuli



Diverticular bleed with inadequate prep



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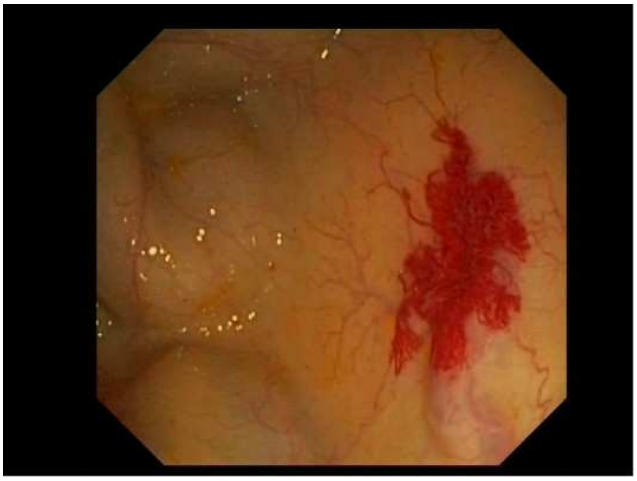
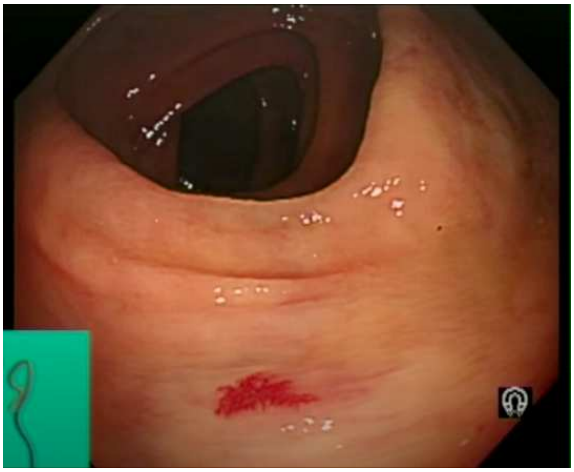
‘Angioectasia’

sometimes (incorrectly) referred to as ‘angiodysplasia’ or ‘AVM’





*

72 y.o. female presents to ED with 2 episodes of hematochezia. Hemodynamically stable. Colonoscopy is planned the next day.

What is the likelihood that she will leave the hospital <u>without</u> a definitive ‘source’ identified for her likely lower GI bleed?

1. 80%
2. 50%
3. 35%
4. 20%
5. 5%

Lower GI bleeding Pro Tip: *Set expectations*

30-40% of patients admitted with LGIB will be discharged without a definitive source. This is because many LGIBs (including diverticular) stop spontaneously, before the diagnostic studies occur.

The *wise* physician says...

"*Please understand that it is expected for lower GI bleeding that we may not find the source despite careful investigation. This is because…*"

The *foolish* physician says...

"*How confusing that we could not find your bleeding source*!"

Sengupta et al Mayo Clinic Proc 2015

Lower GI Bleeding

Treat as diverticular unless strong evidence otherwise*

1) Resuscitation, triage.
2) Consider NG tube lavage (r/o UGI source)
3) Careful rectal exam to evaluate for obvious fissure/hemorrhoids
4) Localization and treatment

* i.e. Post-polypectomy bleed, known large hemorrhoids, possible UGI source

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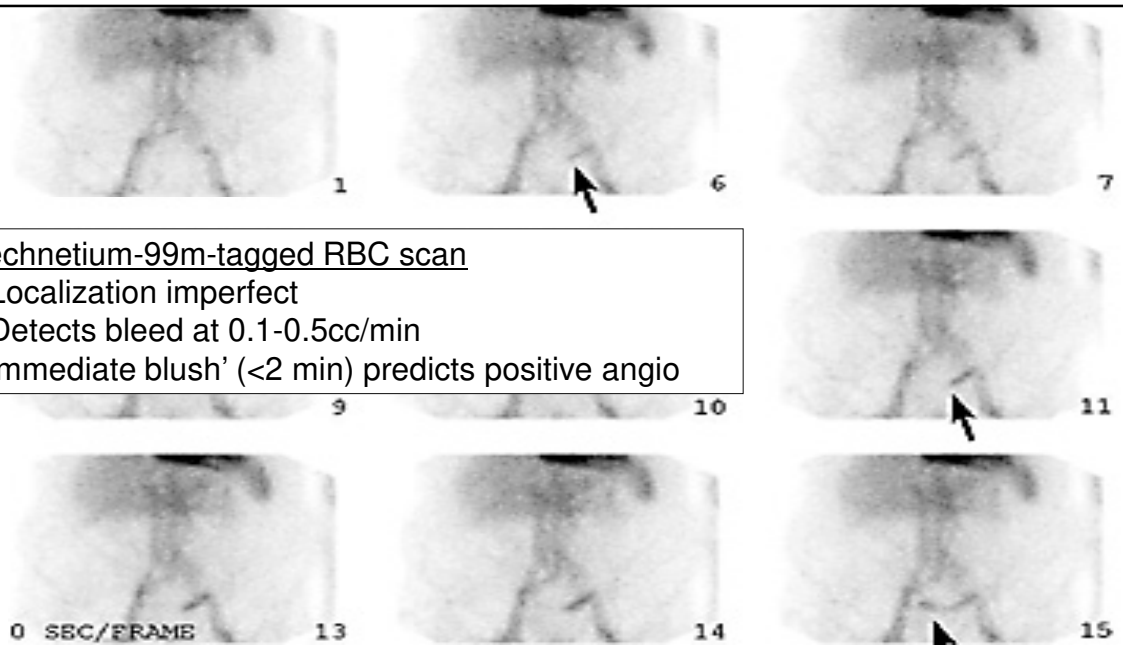
Lower GI Bleeding- localization/treatment

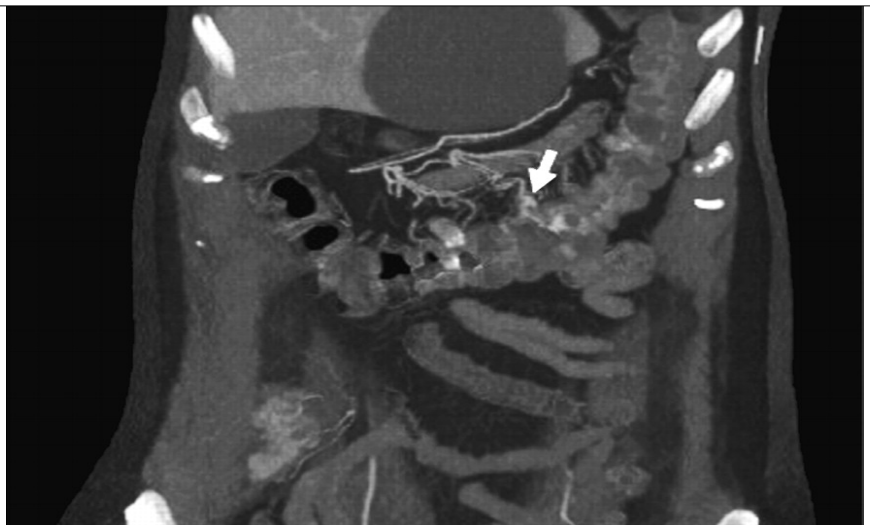
~ 6 options

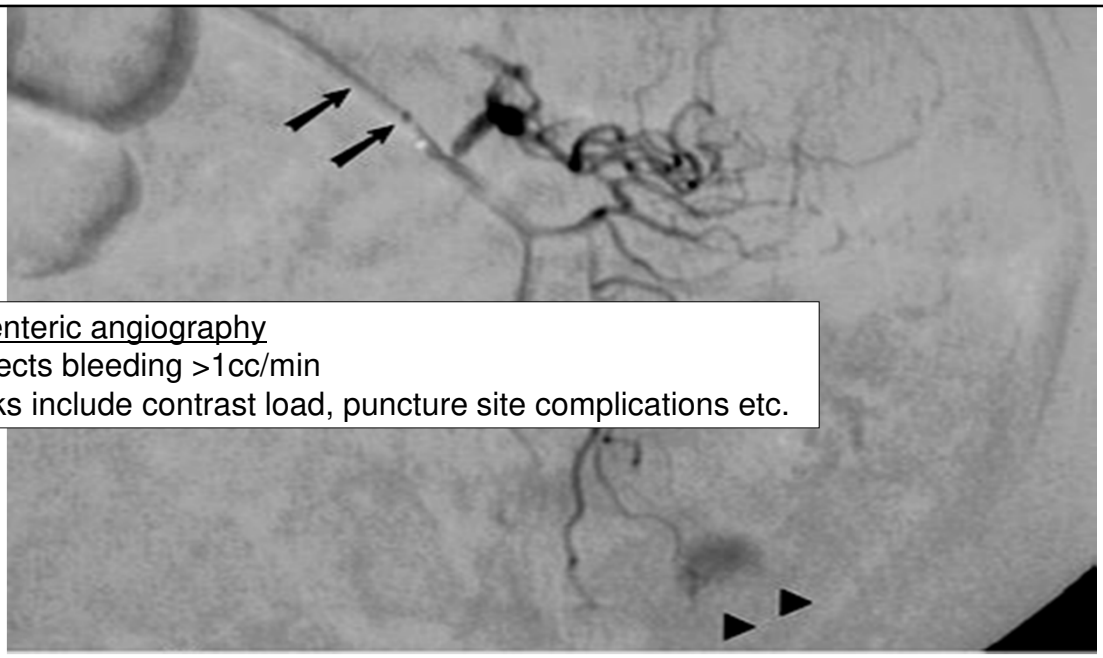
Rectal exam/anoscopy	diagnostic
Tagged RBC scan	diagnostic
CT angiography	diagnostic
IR/Angiography	diagnostic/therapeutic
Urgent colonoscopy	diagnostic/therapeutic
Surgery	last ditch option



Technetium-99m-tagged RBC scan
- Localization imperfect
- Detects bleed at 0.1-0.5cc/min
-'Immediate blush' (<2 min) predicts positive angio

CT angiography
- Best radiologic test for localization of most lower GIB
- Detects bleeding 0.3-0.5cc/min





Mesenteric angiography
- Detects bleeding >1cc/min
- Risks include contrast load, puncture site complications etc.

Colonoscopy
- Can detect bleeding site at “0 cc/min” (e.g. can see lesion that has *stopped* bleeding)
- Particularly effective for post-polypectomy bleeding
- No evidence that bowel purge ‘disrupts the clot’

Adherent clots over *recently* bleeding sites which would be *invisible* to CTA

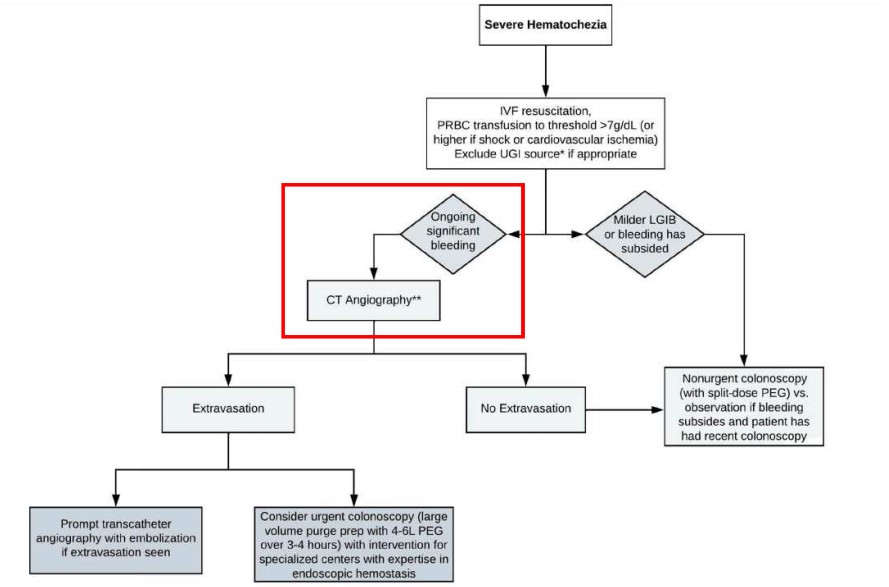
Image sources: UptoDate and Medtube

The inpatient colo prep: an opportunity for quality improvement

- ~25% of inpatient colo preps are inadequate*…often because patients have not fasted and/or colon is filled with blood
- Poor prep = delayed care and prolonged hospitalization
- Solution: Inpatient prep should generally be more aggressive than routine outpatient colo prep. → "Moviprep 2L every 4 hours until clear"

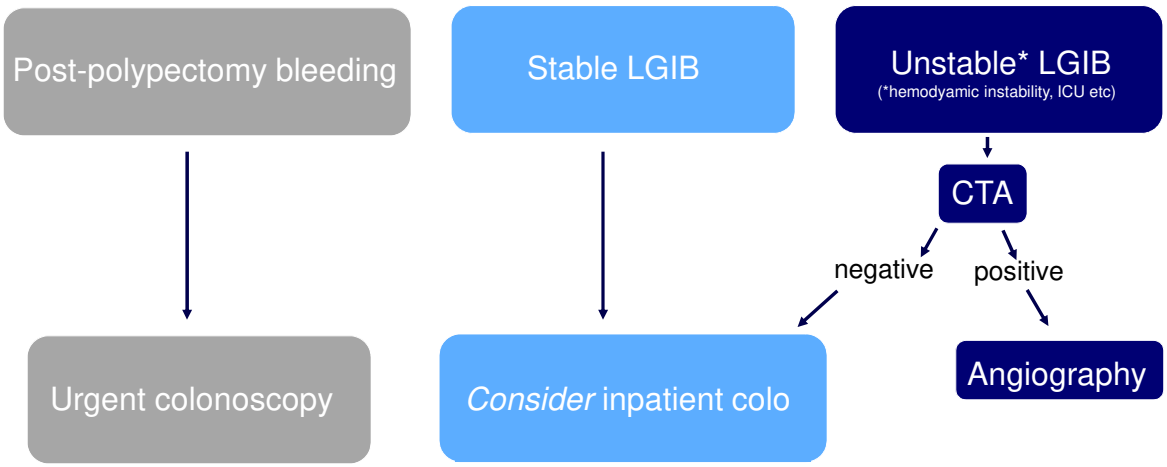
*Yadlapati et al Dig Dis Sci 2015

2023 ACG guidelines favor CTA as *first diagnostic step* for severe hematochezia



Sengupta et al. AJG 2023

Simplified algorithm for lower GI bleeding requiring admission (post-polypectomy bleeding vs. everything else..)



Adapted from Clerc et al 2017

Suspected small bowel bleeding = 1 slide

- If EGD/colo negative, must evaluate for small bowel bleeding (most common = angioectasia, most dangerous = tumor). Capsule endoscopy is reasonable 1st step.
- Yield of capsule drops from >90% if done during active bleeding, to 33% if capsule several weeks after event (Pennazio et al. 2004).
- Use capsule as screening tool before deep enteroscopy (single/double balloon)

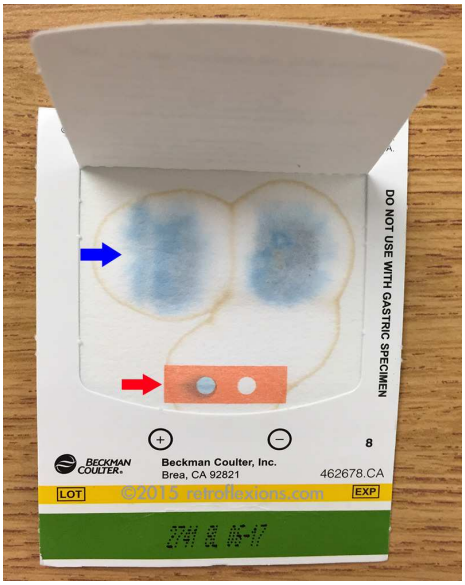
GI bleeding bonus slides (3 key questions):

1. When is inpatient FOBT testing appropriate?

2. How long does a patient need to be on a PPI after a peptic ulcer?

3. What about patients who need to resume anticoagulation?

1) When is inpatient FOBT use appropriate?



Fecal occult blood testing in hospitalized patients

FOBT generally not useful to answer clinical questions in hospitalized patients. Several studies show FOBT results *rarely change management.*

- High clinical suspicion for GIB in hospitalized patient? → endoscopy
- Low clinical suspicion for GIB... but positive FOBT? → likely false positive

Matthews et al. J. Hosp Medicine 2017 (TWDFNR series)

2) What is best duration of PPI therapy after a gastric/duodenal ulcer?

- No evidence-based answer to this question
- I typically treat for 8 weeks if there is an obvious, reversible cause (H.pylori, NSAIDs which can be avoided)
- Consider longer/lifelong treatment if there is no reversible cause, or if there is a clear need for continued NSAID use

3) Should anticoagulation be restarted after GI bleeding?

For most patients previously on anticoagulation, medication should be resumed (specific *timing* is individualized)

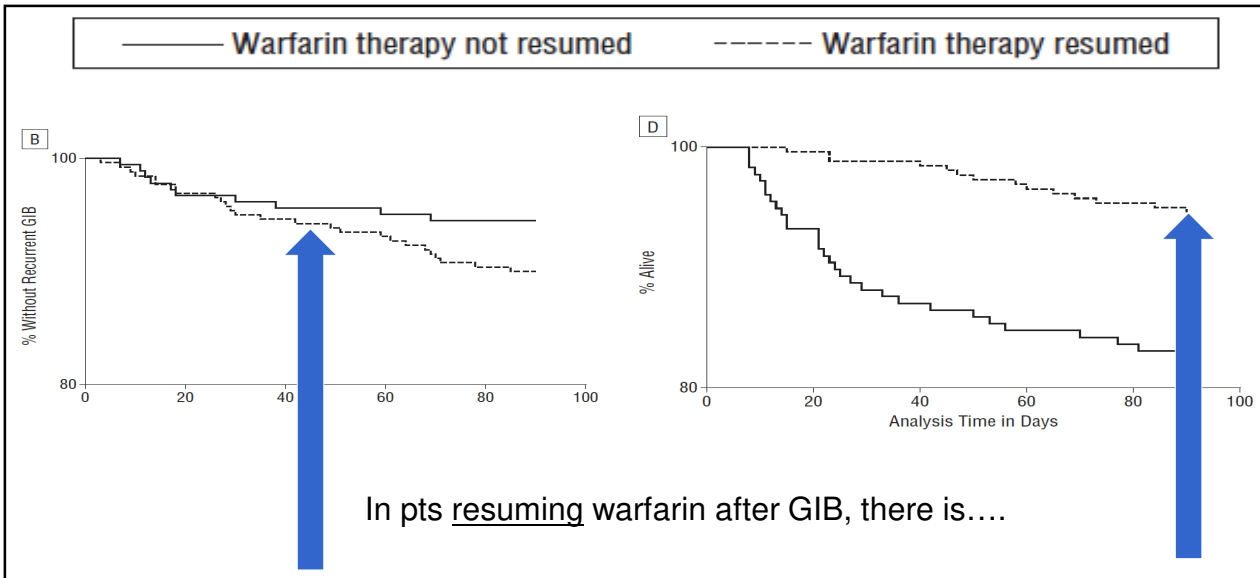
ORIGINAL INVESTIGATION

ONLINE FIRST

Risk of Thromboembolism, Recurrent Hemorrhage, and Death After Warfarin Therapy Interruption for Gastrointestinal Tract Bleeding

Daniel M. Witt, PharmD, FCCP, BCPS; Thomas Delate, PhD; David A. Garcia, MD; Nathan P. Clark, PharmD; Elaine M. Hylek, MD; Walter Ageno, MD; Francesco Dentali, MD; Mark A. Crowther, MD

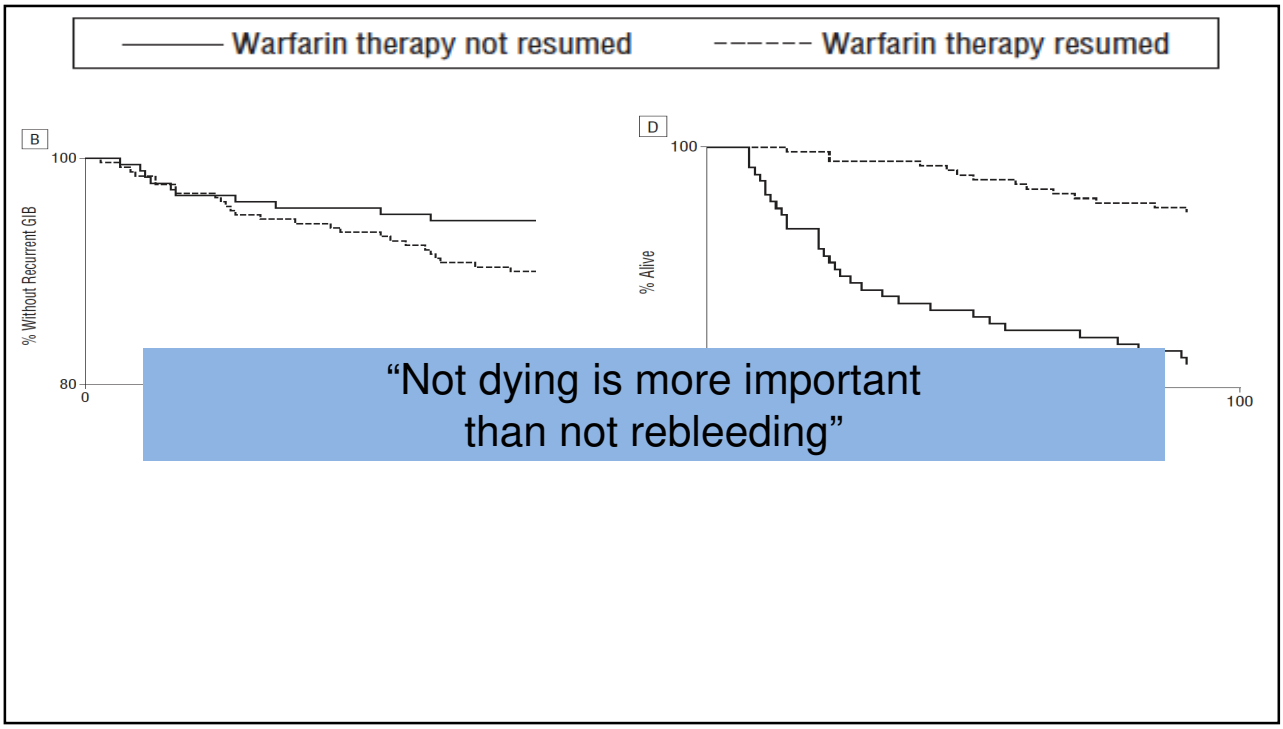
Arch Int Med 2012



In pts resuming warfarin after GIB, there is….

…a trend towards higher rate of GI bleeding (10% vs. 5%, p=0.09)

…but significantly *better* 90 day survival (94% vs. 80%, p<0.001)



4 management pearls for GI bleeding

1. Resuscitation requires adequate IV access (short, fat peripheral IVs preferred)
2. For UGIB, re-bleeding risk % is predicted by specific ulcer stigmata
3. Goldilocks principle of 'early' EGD (6-24h zone is *just right*)
4. LGIB approach: stable patient → colonoscopy
   unstable patient → CTA → angio

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