Approach to Lower GI Bleeding (LGIB)

G-ECHO Fellows Meeting

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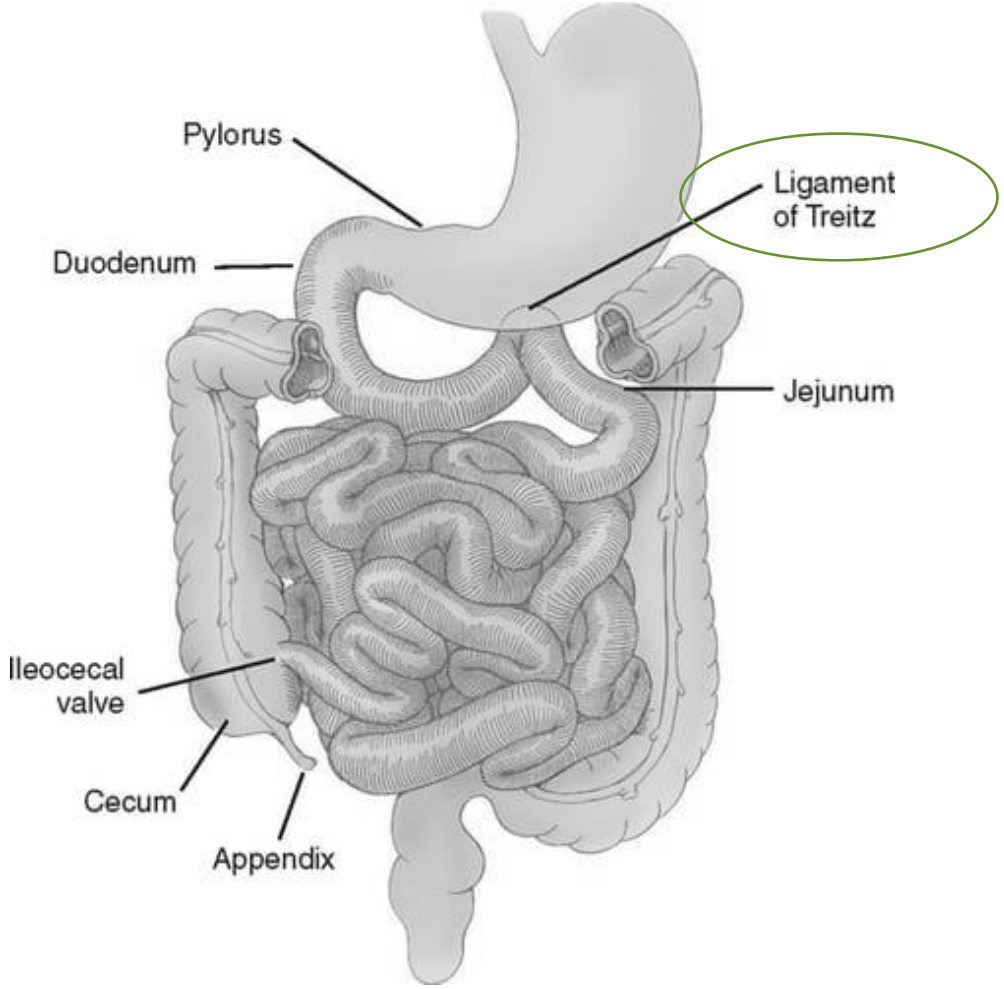
14 October 2024

Introduction: Lower GI bleeding

- Definition Lower GI bleeding:
  - Bleeding from a source distal to the ligament of Treitz
    - 80-85%: colonic or rectal source
    - 5-10%: small intestine source
    - 42% multiple bleeding sites
- Current guidelines practically define LGIB:
  - Hematochezia or bright red blood per rectum originating from a colorectal source
- Natural History:
  - Most LGIB will stop spontaneously (80%)

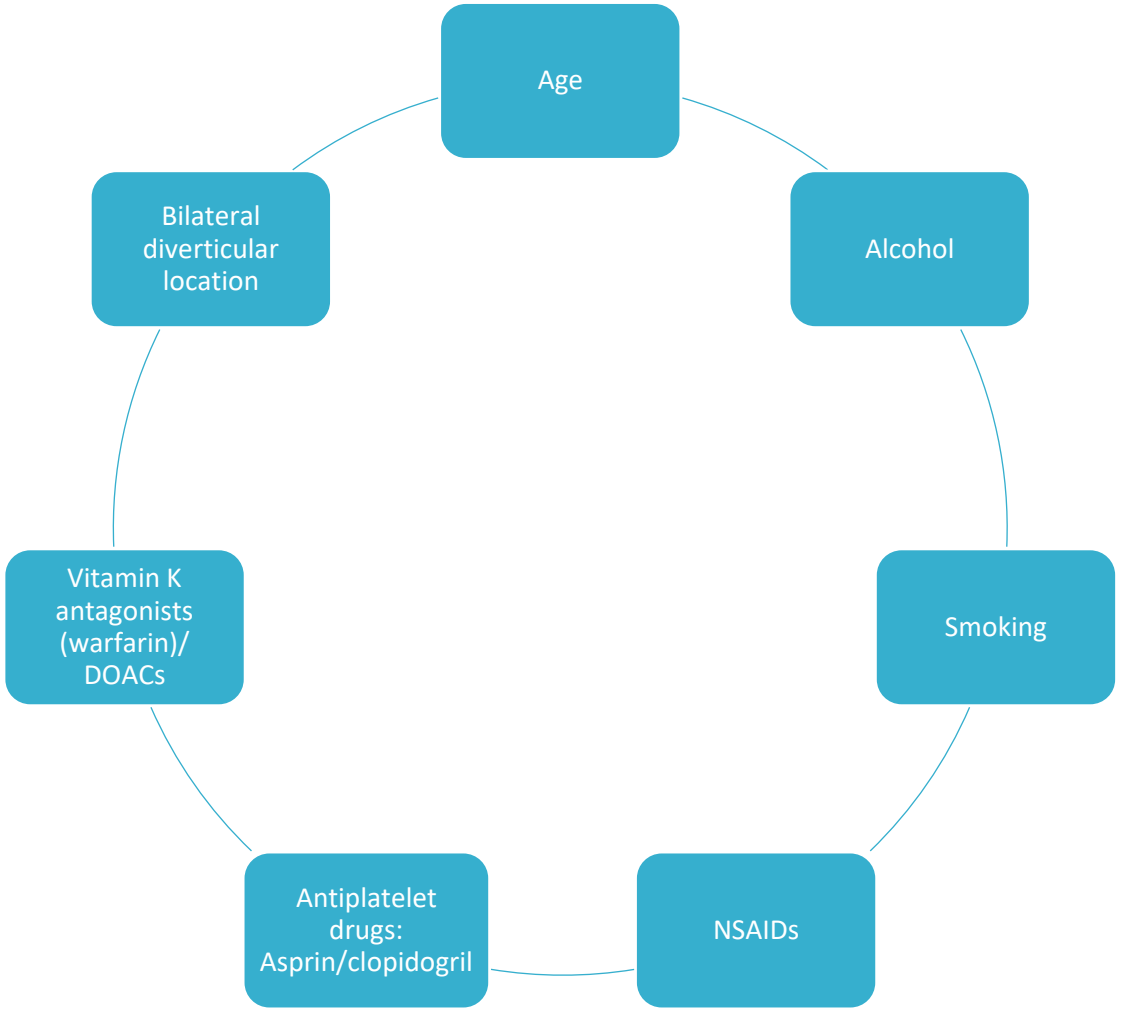


Oakland K, et al. Gut 2019;68:776–789
Sengupta N et al, Am J Gastroenterol 2023;118:208–231
Amin SK et al. Stat pearls. 2024

Epidemiology

- LGIB estimated incidence in UK is 33-87/100 000
- Overall mortality: 3.4%
- Mortality related to underlying comorbidity
- Rising incidence
  - Increasing aging population
  - Increasing antithrombotic use
- LGIB associated with health care costs and increased length of hospital stay

Risk Factors



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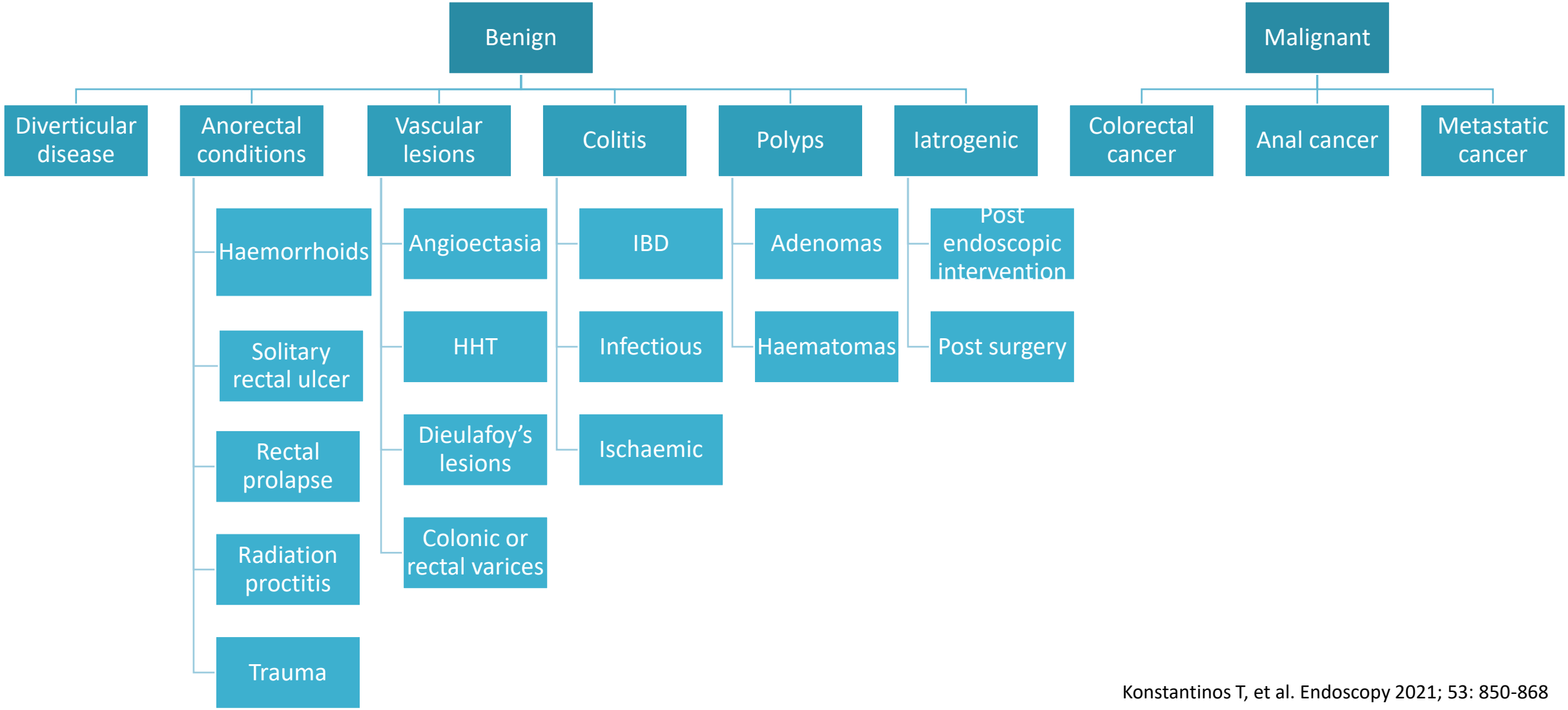
Konstantinos T, et al. Endoscopy 2021; 53: 850-868

Causes of LGIB



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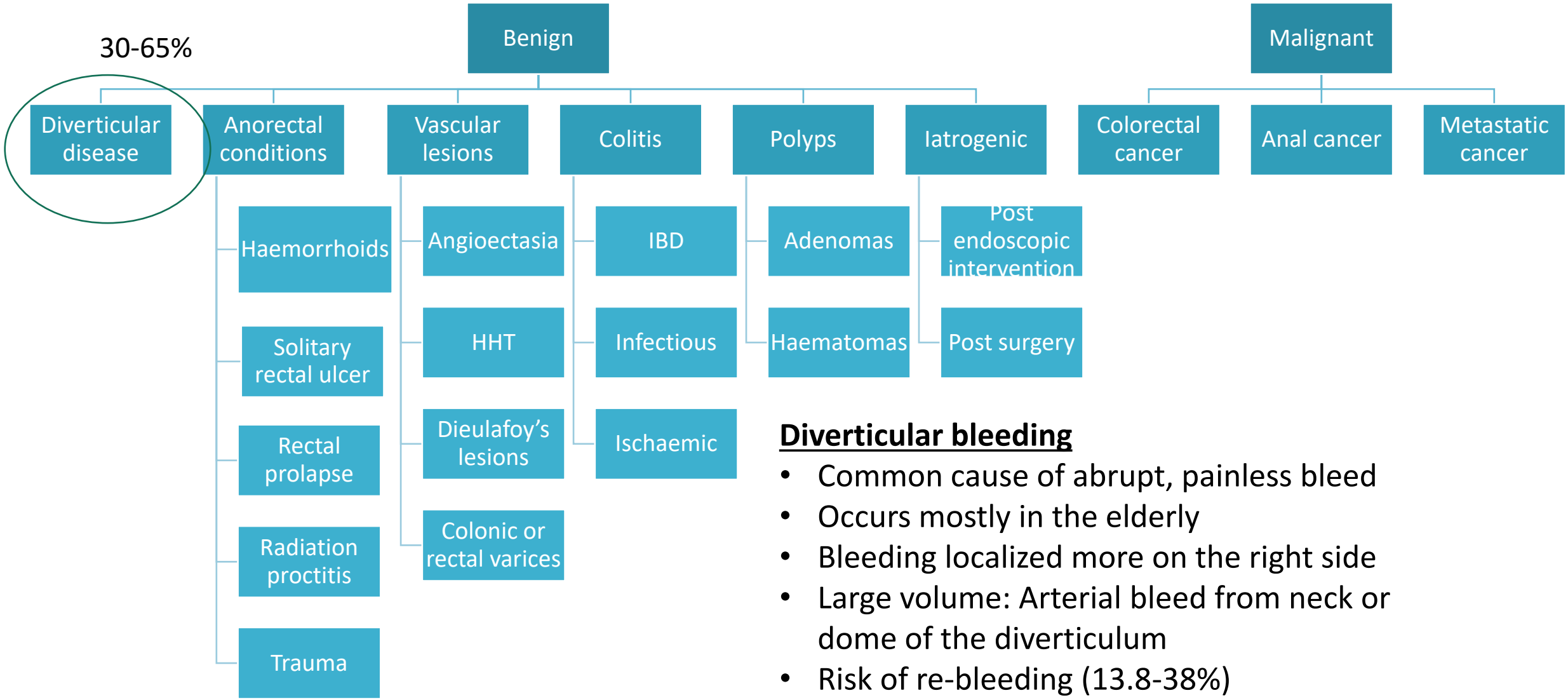
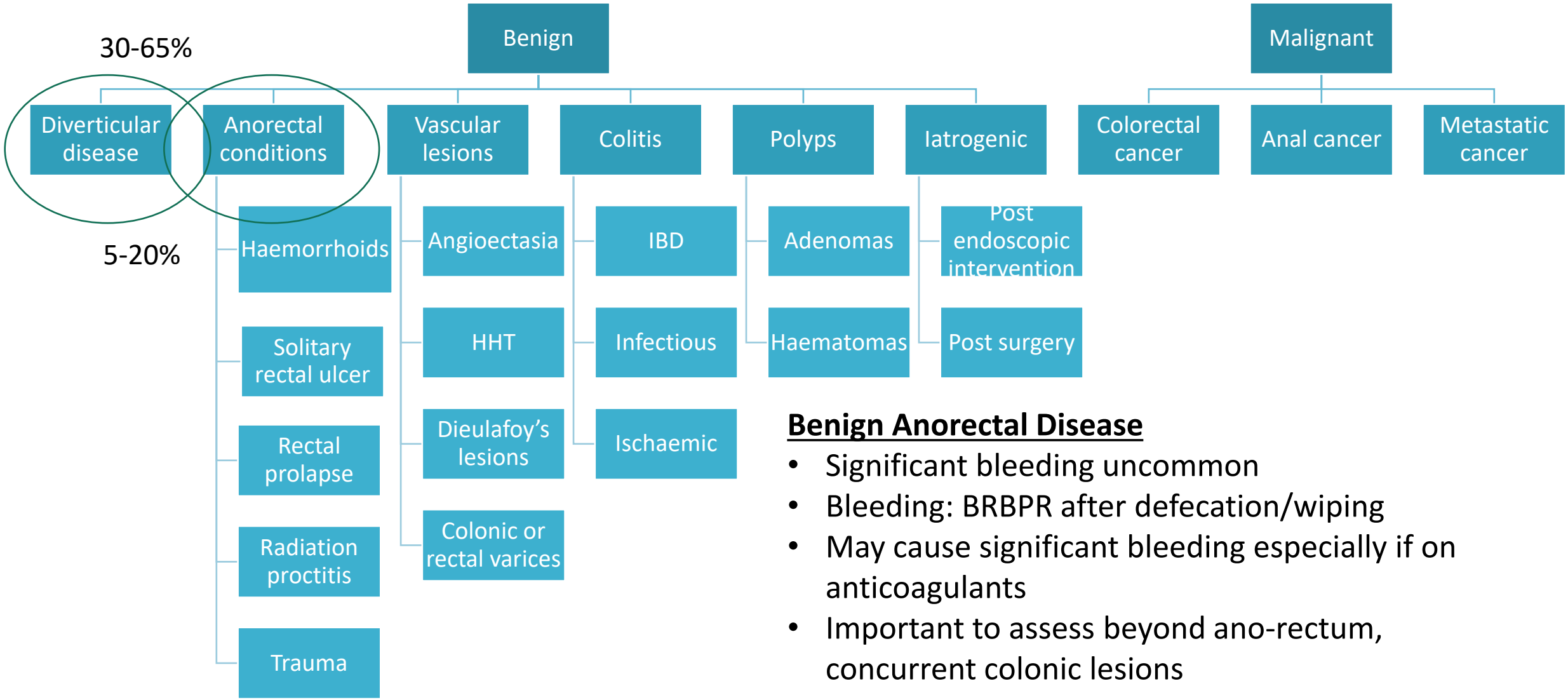
Causes of LGIB



Diverticular bleeding

- Common cause of abrupt, painless bleed
- Occurs mostly in the elderly
- Bleeding localized more on the right side
- Large volume: Arterial bleed from neck or dome of the diverticulum
- Risk of re-bleeding (13.8-38%)

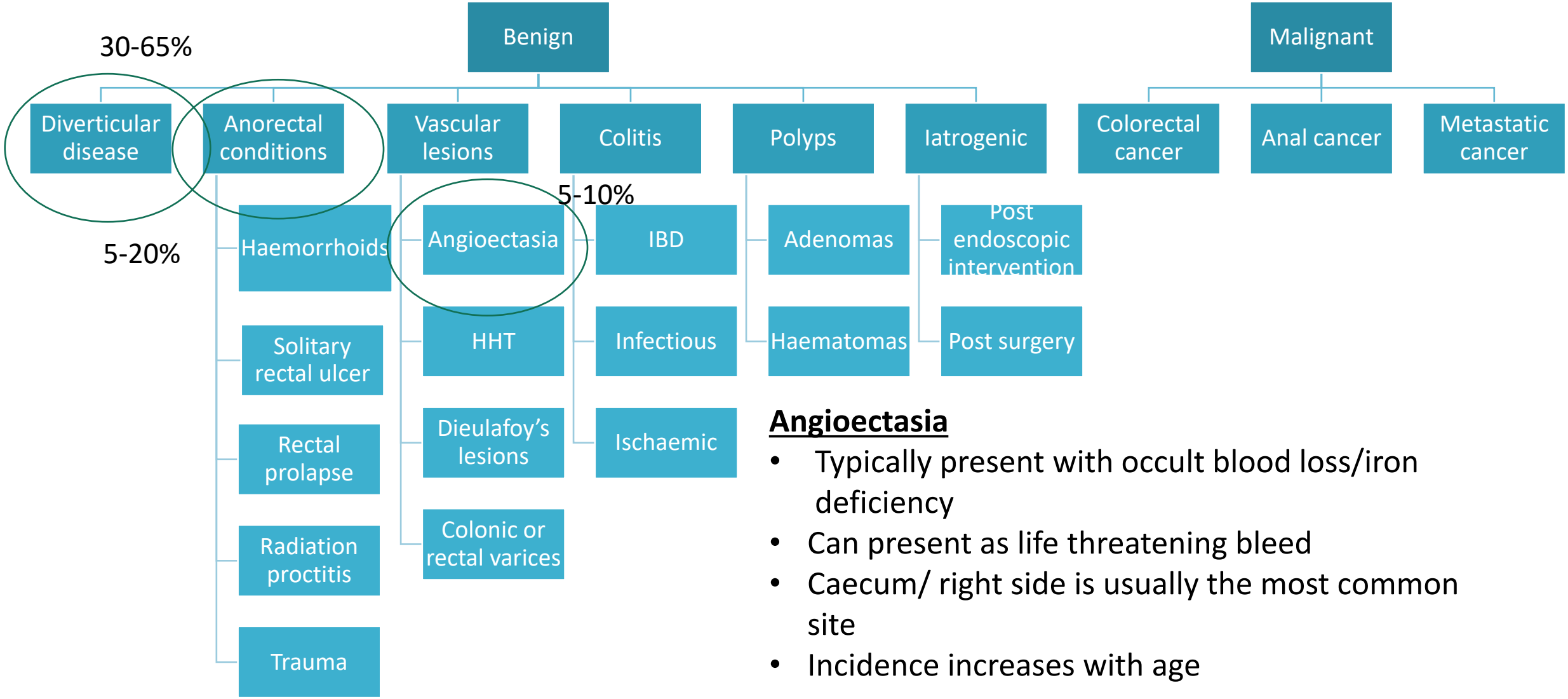
Causes of LGIB



Benign Anorectal Disease

- Significant bleeding uncommon
- Bleeding: BRBPR after defecation/wiping
- May cause significant bleeding especially if on anticoagulants
- Important to assess beyond ano-rectum, concurrent colonic lesions

Causes of LGIB



Angioectasia

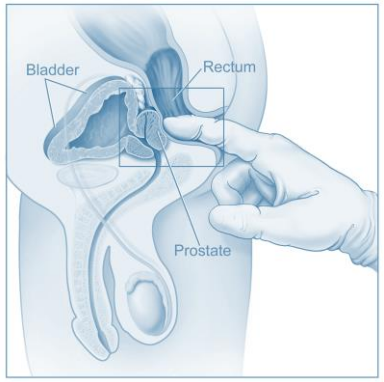
- Typically present with occult blood loss/iron deficiency
- Can present as life threatening bleed
- Caecum/ right side is usually the most common site
- Incidence increases with age

Clinical Presentation
History & Examination

- Presenting Symptoms
  - Hematochezia/ Bright red blood PR
  - Melena
- Associated Symptoms
  - Abdominal pain/ abdominal mass
  - Altered bowel habits/Weight loss
  - Upper GI symptoms
- Past History
  - Age, comorbidities
  - Known GI diagnoses
  - Recent endoscopic intervention
  - Previous pelvic radiotherapy
  - Medication

Vital Signs BP/HR/O2 SATS/GCS
Signs of shock/Pallor

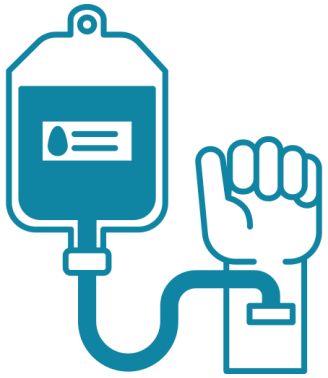
Systemic examination
Signs of chronic illness
Cardiovascular/Abdomen



Digital Rectal Examination
Anoscopy/Proctoscopy

Triage/Risk Stratification/Resuscitation

Full Blood Count
Urea & Electrolytes
Liver function tests
Coagulation Studies
Type & Screen/X-Match



Patients with haemodynamic instability
2x large bore IVI lines
Fluid resuscitation
Blood products
Massive hemorrhage protocol as required

Shock Index

HR ÷ Systolic BP >1 Unstable <1 Stable

Other scores: NOBLADS, BLEED, HAKA, SALGIB

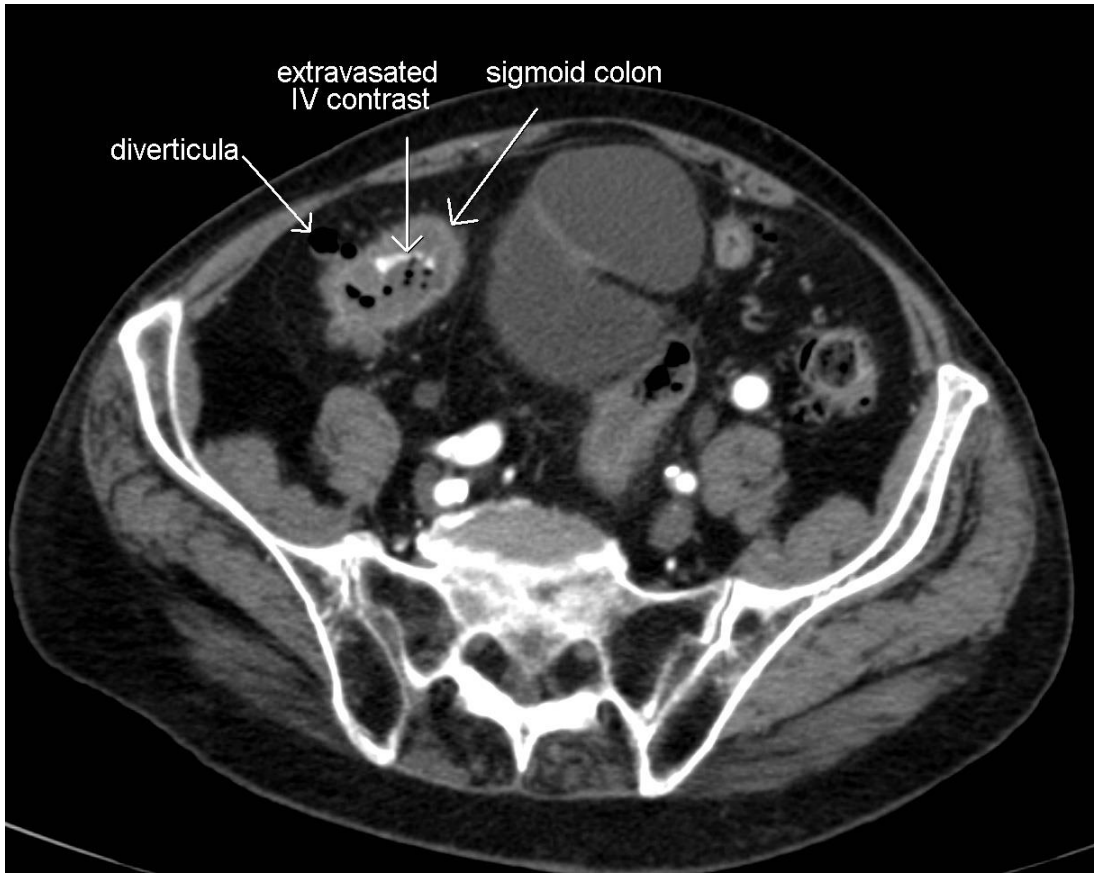
Scores should not be used in isolation and **should not** replace clinical judgement

High Risk----Unstable

- Haemodynamic instability (↑HR, ↓BP, syncope, shock)
- Ongoing, active bleeding
- Older age with comorbidities
- Abnormal labs (↓Hb, ↑creatinine, coagulopathy)
- Medication
- Blood transfusion requirements

Haemodynamically Unstable Patient
First Diagnostic Test

- CT angiography (CTA)
  - Retrospective studies shown sensitivity 79-95% and specificity 95-100%
  - Detection of bleeding if the velocity of bleeding is 0.3–1.0 mL/min
  - Advantages:
    - Fastest and least invasive
    - No bowel prep required
    - Typically completed within minutes
  - Disadvantages
    - Radiation exposure
    - Need for intravenous contrast

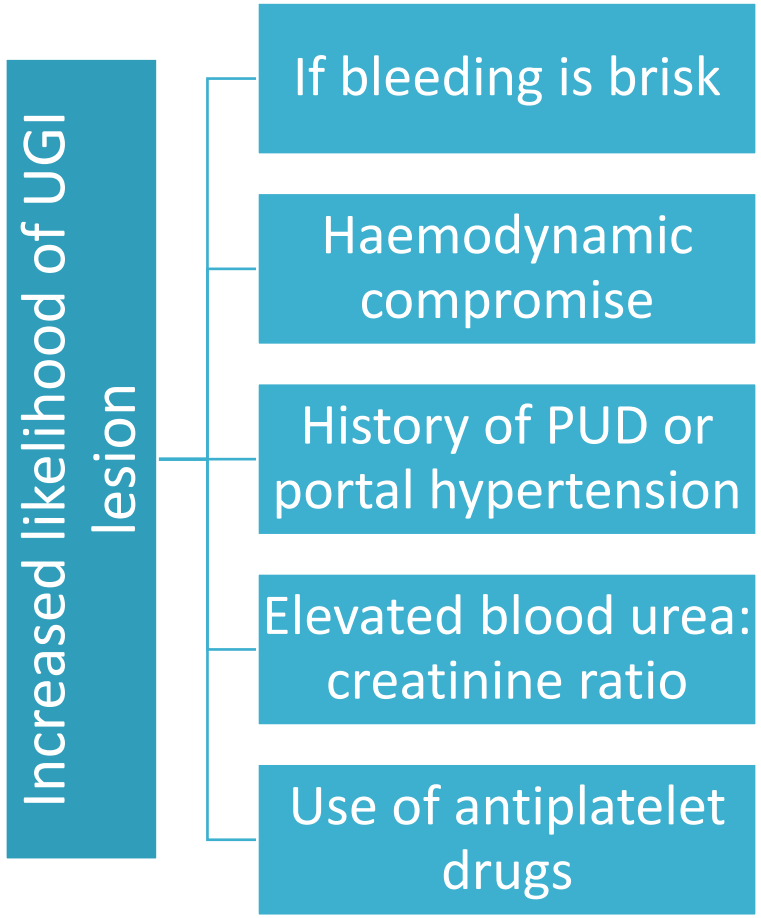


Konstantinos T, et al. Endoscopy 2021; 53: 850-868

http://radiologyacrossborders.org/diagnostic_imaging_pathways

Haemodynamically Unstable Patient
Consider Upper Endoscopy

- Overall 8-9% patients with LGIB have UGI lesion
- Increases to 15% if severe hematochezia and haemodynamic instability
- Should be performed in unstable patients unless CTA has already shown lower GI source



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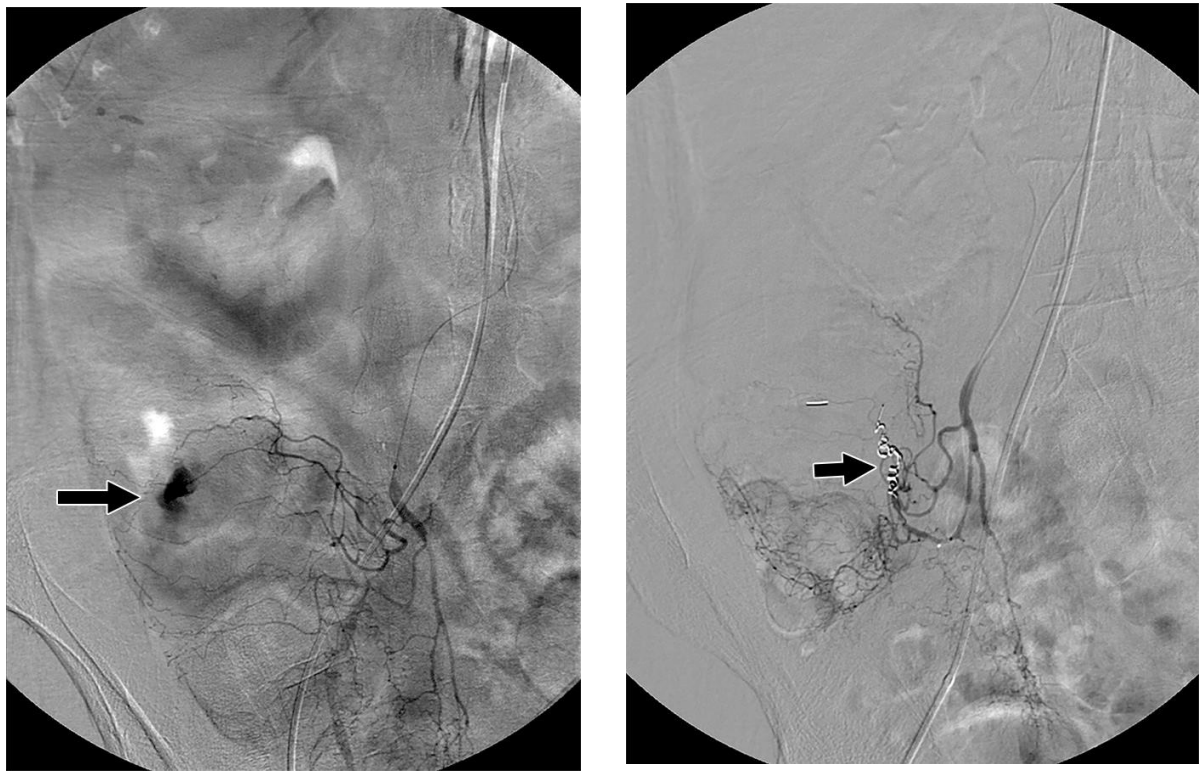
Haemodynamically Unstable Patient
Management After a Positive CTA

Transcatheter Angiography:

- Embolization should be performed ideally within 60 min after positive CTA
- The choice of agent should be based upon operator experience and availability
- Bowel ischemia is 1-4%
- Short term re-bleeding 10% to 50%
- Long term re-bleeding (2yrs) 25%
- Follow up colonoscopy recommended



88-year-old man who presented with brisk acute lower gastrointestinal bleeding in right colon. Images from catheter angiography show excellent correlation between site of bleeding and site of control after embolization

Joseph D. Feuerstein et al AJR:207, September 2016
Sengupta N et al, Am J Gastroenterol 2023;118:208–231

Haemodynamically Unstable Patient
Management After a Positive CTA

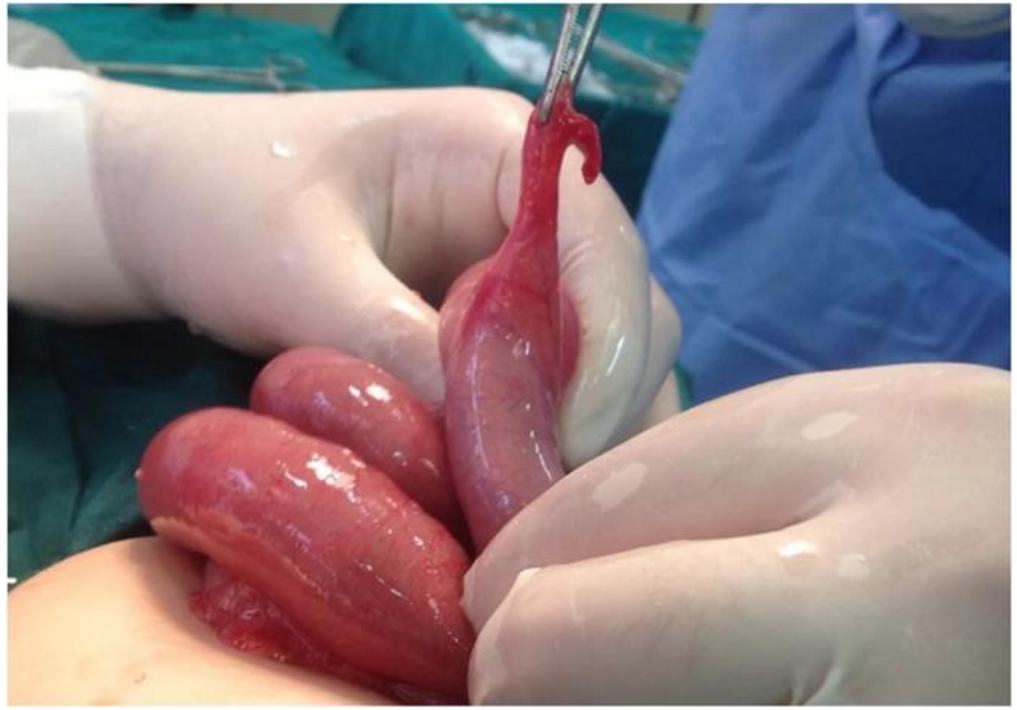
Colonoscopy:

- Patients with severe active hematochezia may not be able to tolerate colonoscopy
- Patients with positive CTA are more likely to have a source detected and treated at the time of a colonoscopy
- ACG guideline: Colonoscopy can be considered after a positive CTA- ideally by an experienced endoscopist

Sengupta N et al, Am J Gastroenterol 2023;118:208–231

Haemodynamically Unstable Patient
Surgery as a diagnostic and therapeutic modality

- No patient should have emergency laparotomy unless every effort has been made to localize bleeding via radiological/endoscopic modalities
- Repeat colonoscopy under anesthesia should performed prior to surgery
- Mortality from laparotomy: 3.6% - 41.7%
- Limited targeted resection, less re-bleeding
- Some instances may warrant direct surgery
  - Aorta-enteric fistulae or Meckels diverticular



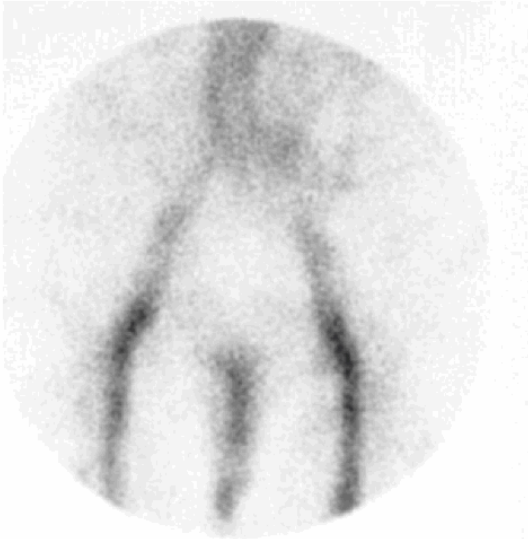
Almetaher, H.A et al Ann Pediatr Surg 16, 45 (2020)
Sengupta N et al, Am J Gastroenterol 2023;118:208–231

Haemodynamically Unstable Patient
Role of Red Cell Scintigraphy

- Despite studies showing comparable detection rates between CTA and RBC Scintigraphy

- Not recommended in diagnostic algorithm for unstable patient
  - Poorer correlation with findings at catheter angiography
  - Logistical constraints
  - More time consuming
  - Not readily available

Tagged RBC scan:
An expensive Rorschach test?

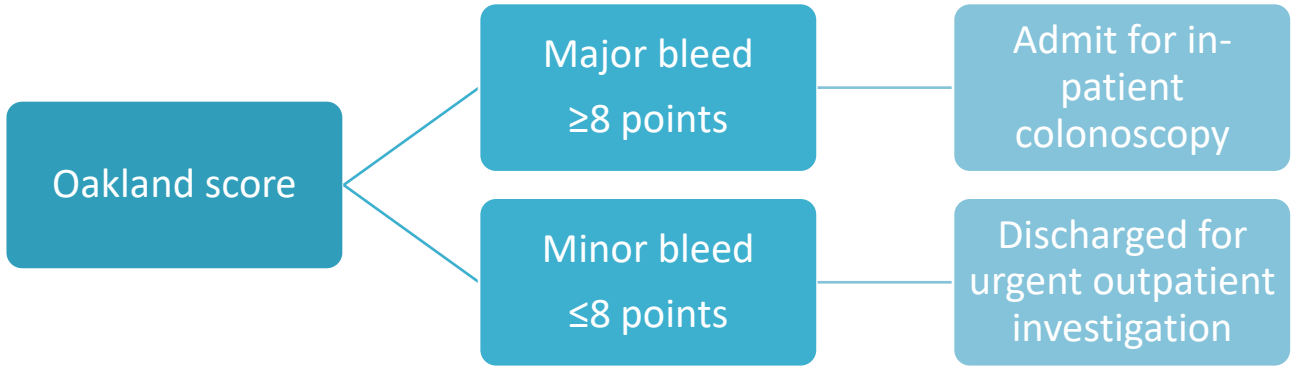


Psychiatrist: Tell me what you see
Surgeon: I see a rectum.
Gastroenterologist: I see the cecum
Psychiatrist: This is worse than I thought

Konstantinos T, et al. Endoscopy 2021; 53: 850-868

Haemodynamically Stable Patient

Risk Stratification



- Oakland score external validation study (Lancet)
  - 140 US Hospitals
  - AUROC for safe discharge was 0.87
  - Score of 8 or less had a sensitivity 98% for safe discharge
  - Score of 10 points or lower maintained sensitivity of 96%

- 8% of people over 50 who report rectal bleeding will have a lower GI cancer: arrange urgent 2 week colonoscopy if DC

Predictor	Score component value
Age	
<40	0
40–69	1
≥70	2
Gender	
Female	0
Male	1
Previous LGIB admission	
No	0
Yes	1
DRE findings	
No blood	0
Blood	1
Heart rate	
<70	0
70–89	1
90–109	2
≥110	3
Systolic blood pressure	
<90	5
90–119	4
120–129	3
130–159	2
≥160	0
Haemoglobin (g/L)	
<70	22
70–89	17
90–109	13
110–129	8
130–159	4
≥160	0

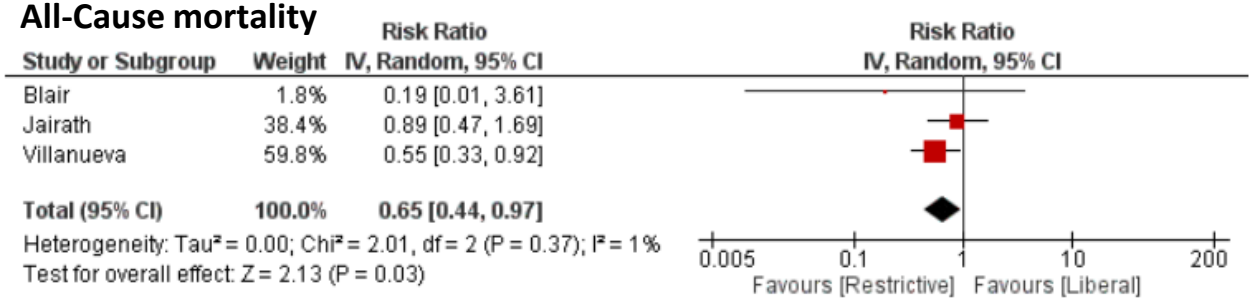
Haemodynamically Stable Patient
Blood Transfusion Strategy

- Transfusion targets in LGIB are extrapolated from the UGIB literature

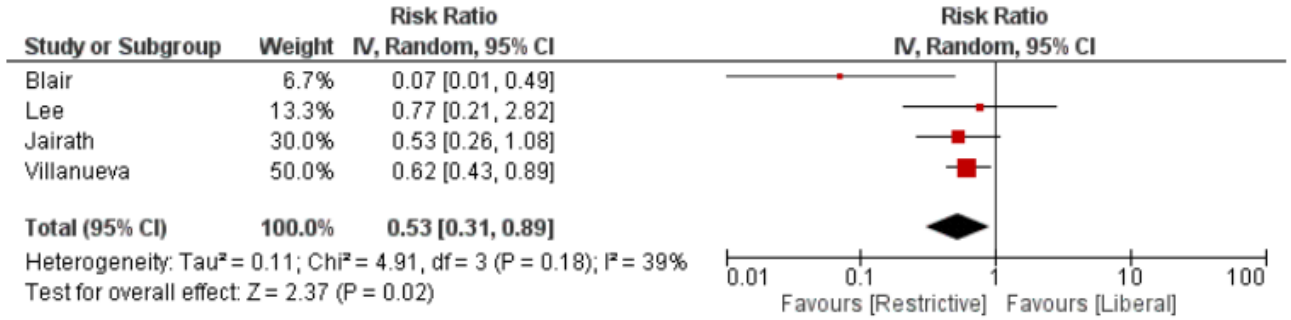
- A restrictive transfusion strategy is recommended in **stable** patients
  - Hb threshold of ≤7g/dl
  - Target post transfusion Hb 7-9g/dl

- Higher Hb threshold of ≤8g/dl
  - Acute or chronic cardiovascular disease (limited data)

All-Cause mortality



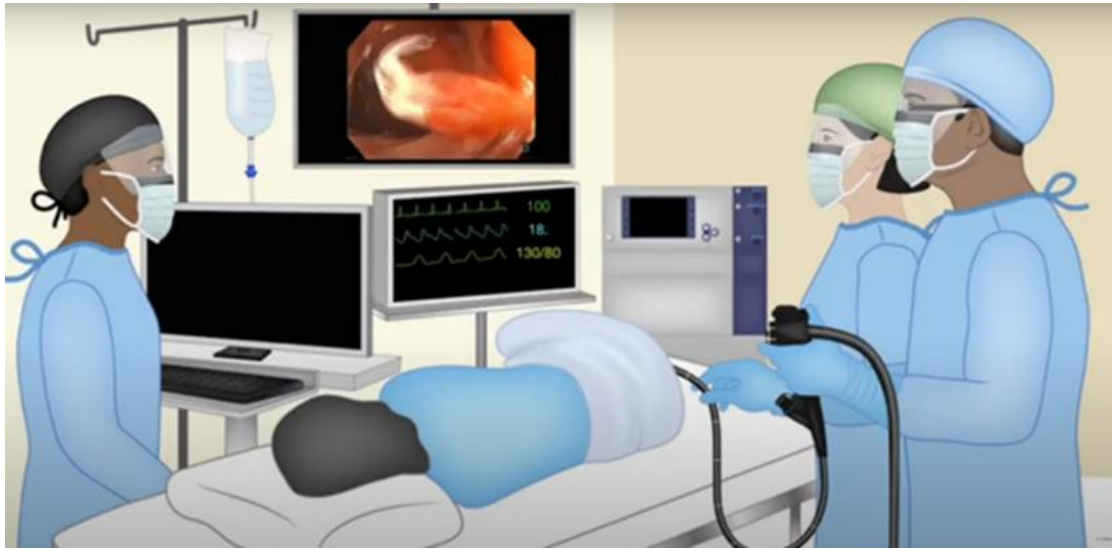
Overall rebleeding



Odutayo A et al. Lancet Gastroenterol Hepatol. 2017 May;2(5):354-360

Haemodynamically Stable Patient
Role of Colonoscopy

- Colonoscopy should be the first diagnostic modality in stable patients with LGIB
- Advantages:
  - Identify bleeding source (irrespective rate of bleed)
  - Therapeutic possibilities
  - Safe (complication rate 0.3%)
- Diagnostic yields of 42–90% for lesion detection
- Generally low rates of haemostatic intervention (3% -4.5%)



Haemodynamically Stable Patient
Role of Colonoscopy: Optimal Timing of Colonoscopy

- Early (<24hrs) vs Delayed (24-96hrs)
- Guideline recommendations
  - Colonoscopy should be performed sometime during hospital stay
  - No high quality evidence that early colonoscopy influences patient outcomes

Table 4. Meta-analyses comparing urgent (<24 hours) to elective (>24 hours) colonoscopy in LGIB

Study	No. in each arm (U vs E)	Diagnostic yield[a]	Rebleeding	LOS	PRBC	Endoscopic intervention	Mortality
Analysis limited to RCTs							
Kherad et al.	230/236	ND	ND	ND	ND	ND	ND
Anvari et al.	228/235	ND	ND	ND	ND	ND	ND
Tsay et al.	228/235	ND	ND			ND	ND
Combined analysis of observational studies and RCTs							
Anvari et al.	63,105/66,170	+U		+U	ND	ND	+U
Roshan Afshar et al.	9,889/14,630	+U	ND	+U	ND	+U	ND
Seth et al.	9,498/13,921	ND	ND	ND		ND	ND
Kouanda et al.	10,172/14,224	ND	ND	ND	ND	+U	ND
Sengupta et al.	422/479	+U	ND	ND	ND	+U	ND

E, elective; LGIB, lower gastrointestinal bleeding; LOS, length of stay; ND, no significant difference between groups; PRBC, packed red blood cell transfusion; RCT, randomized controlled trial; U, urgent.
Comments: +U indicates that the results favored urgent colonoscopy; ND indicates that there was no significant difference seen between groups.
[a]Diagnostic yield defined as definite or probable cause of acute LGIB.

Sengupta N et al, Am J Gastroenterol 2023;118:208–231

Haemodynamically Stable Patient
Role of Colonoscopy: Bowel Preparation

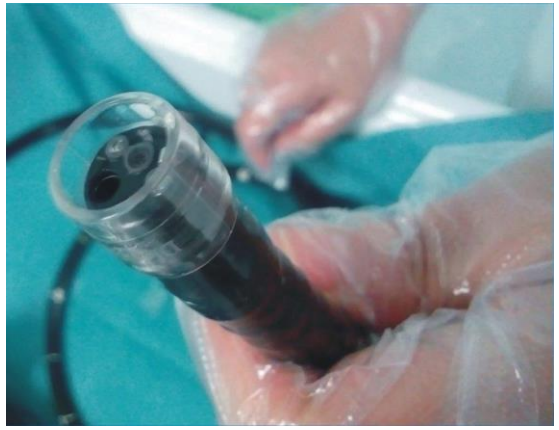
- Previous recommendation
  - Large volume purge protocols
  - 4–6 L of a PEG-based solution over 3–4 hours
  - NGT/antiemetic
  - Followed by colonoscopy within 1-2 hours
- May still have a role if urgent colonoscopy pursued

- Other options
  - Split-dose and/or smaller volume preparations
    - Higher efficacy
    - Improved tolerability
  - Split-dose bowel preparation should be the default
- Hydro-flush colonoscopy: PEG solution added to water-jet pump, need for further studies

Sengupta N et al, Am J Gastroenterol 2023;118:208–231

Colonoscopy in LGIB: Practical Points

- Use large working channel
- Water jet irrigation
- Use of distal transparent cap attachment
- Always attempt to intubate TI
- Haemostatic equipment on hand
- Low flow rate APC 0.8-1.0l/min power of 20-40W
- Bipolar coagulation 10–15 W, 2s pulses until vessel flattening



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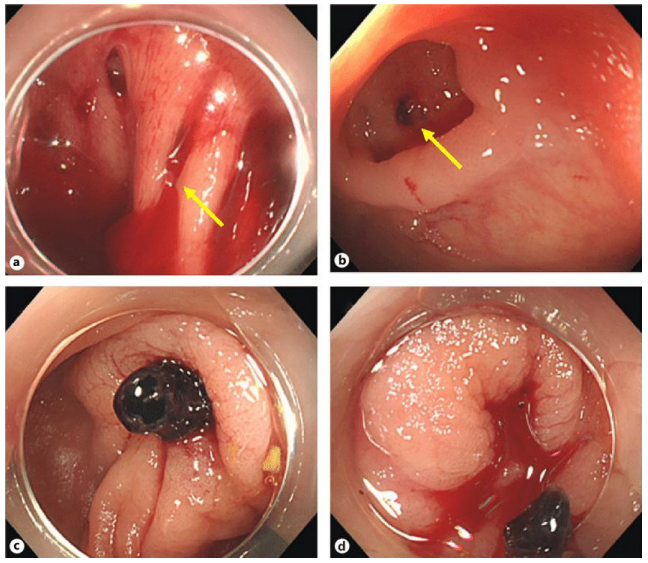
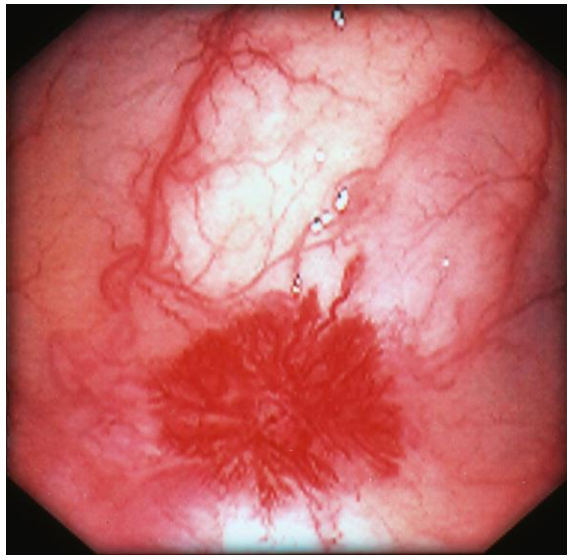
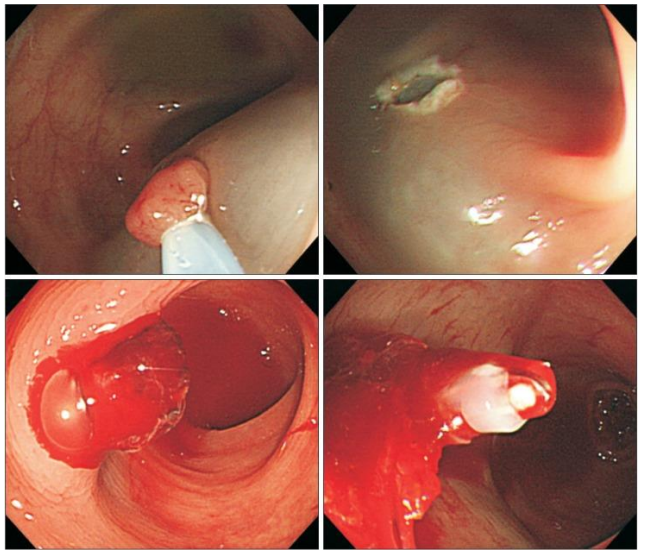
Endoscopic Treatment Options







Diverticular hemorrhage (SRH seen during colonoscopy)

- **EBL**
  - Initial hemostasis: rate(95%CI) 99% (95-100)
  - Early rebleeding: 8% (5-12)
- **Clips***
  - Initial hemostasis: rate(95%CI) 99% (97-100)
  - Early rebleeding: 19% (11-28)
- **Coagulation****
  - Initial hemostasis: rate(95%CI) 100% (91-100)
  - Pooled rebleeding: 21% (1-51)

Additional Treatment Options:
Topical hemostatic spray, epinephrine, OTSC, endoscopic detachable snare ligation, Doppler probe-guided therapy

Colonic Angioectasias

- **APC**

Additional Treatment Options:
Clips, epinephrine, submucosal injection of fluid followed by targeted coagulation

Postpolypectomy bleeding

- **Clips**

Additional Treatment Options:
Direct thermal therapy, APC, OTSC, topical hemostatic spray

Sengupta N et al, Am J Gastroenterol 2023;118:208–231

Management of antithrombotic agents in LGIB

	Vitamin K antagonist	**Direct acting oral anticoagulants**
Oakland score is ≤8	No Interruption	No interruption
Major LGIB: Oakland score ≥ 8/ Stable	Temporarily suspend	Temporarily suspend
Haemodynamically Unstable	IV Vitamin K FFP/PCC (haemosolvex)	Dabigatron: Idarucizumab or PCC Rivaroxaban/Apixiban: Andexanet alfa
Recommence in low thrombotic risk	From Day 7	From Day 7
Recommence in high thrombotic risk	From day 3- bridge with LMWH (cardiology consultation)	

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Management of antithrombotic agents in LGIB

Asprin	Dual antiplatelet (Asprin & anti P2Y12)
Do not transfuse platelets	DAPT associated with 5 fold increase in in-hospital re-bleeding/ not with bleeding associated mortality
Primary prophylaxis- withhold indefinitely	Discontinuing DAPT within 30 days of coronary stent and 90 days of ACS associated with increased risk of MI/death
Secondary prophylaxis- Do not withhold - if severe persistent bleeding stop and resume in 5 days	Continue DAPT as far as possible If severe LGIB, continue only Asprin and restart Anti-P2Y12 within 5-7 days

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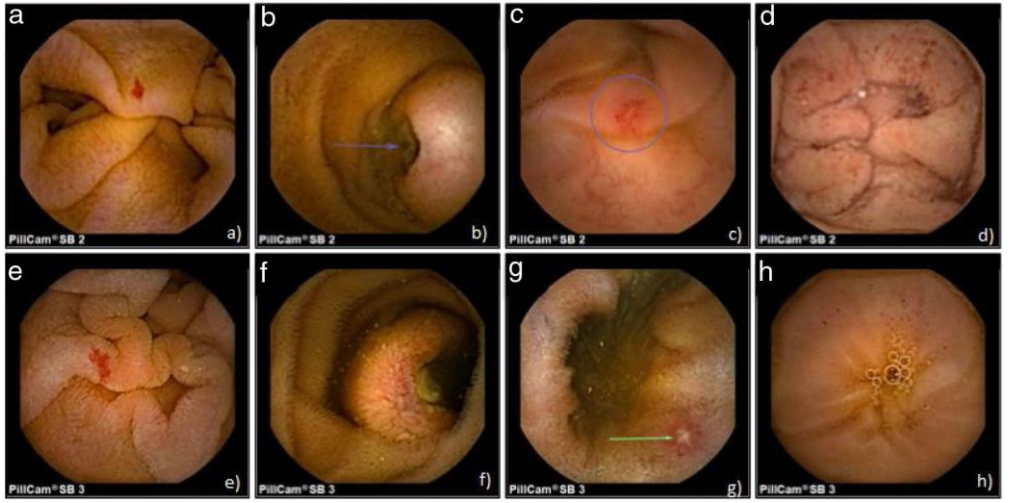
Subsequent Investigation After a Negative CTA, Upper and Lower Endoscopy

Obscure- Overt GI bleed

Video capsule endoscopy

- Should be the next diagnostic modality
- 3 RCTS support its use
  - Higher diagnostic yield than SB radiography, catheter angiography and push enteroscopy
- Highest yield if performed early
  - 48hours- 87-91.9%
  - 72hours- <50%
- Limitations
  - Lacks therapeutic capacity
  - Capsule retention (2%)



Red cell scintigraphy

- May offer diagnosis when bleed rates are intermittent or slow
- Scans can be repeated over the following 24hours

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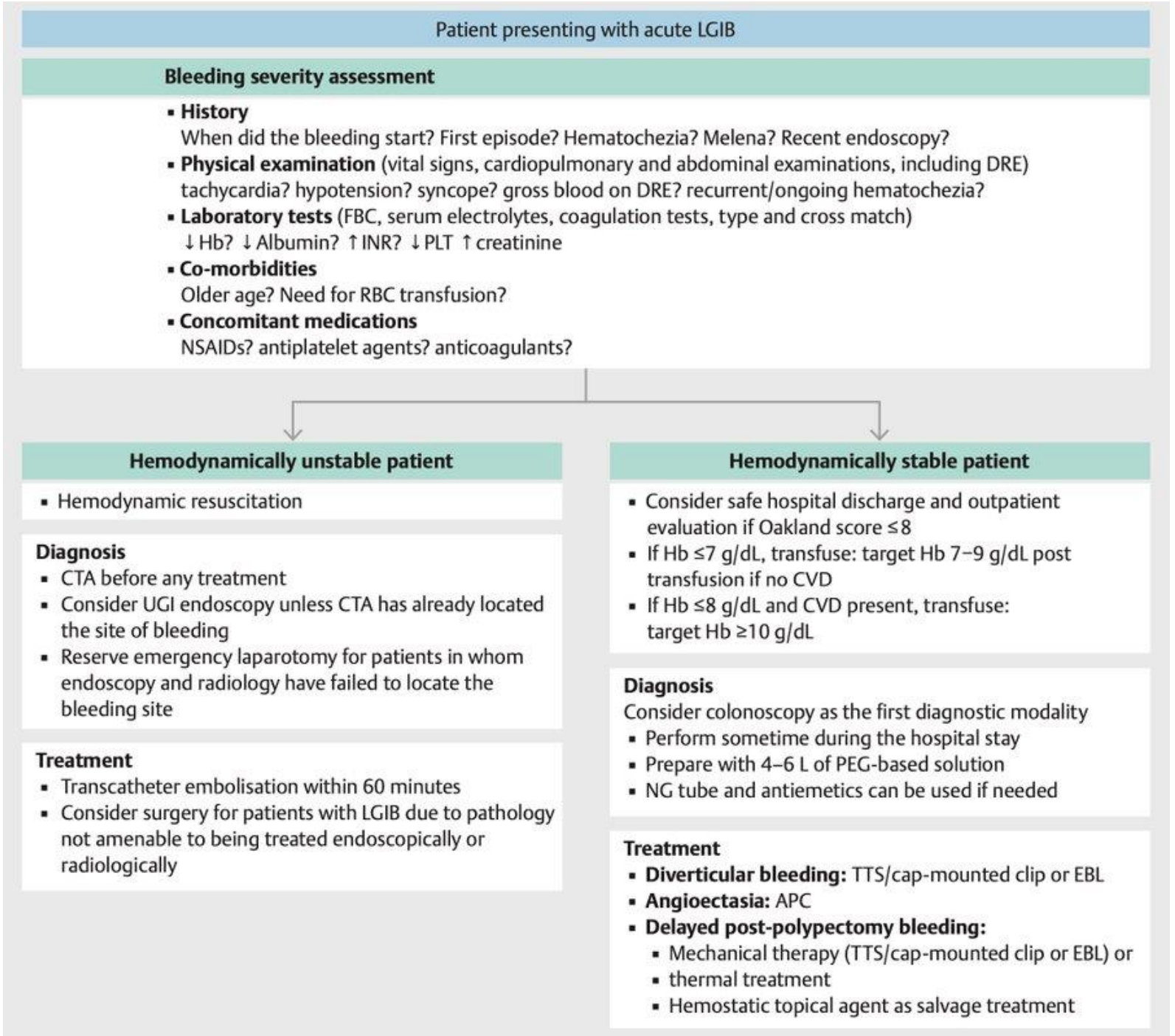
Algorithm Approach to lower GI bleeding



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Take home Messages

- Acute LGIB is a common problem, accounting for 20-25% of all GI bleeds
- Requires prompt patient evaluation, including risk stratification
- Choice of initial diagnostic test should be based on haemodynamic status of the patient
- Fortunately the vast majority will settle spontaneously
- However with continued bleeding, endoscopic and radiological modalities should be used to treat the underlying cause