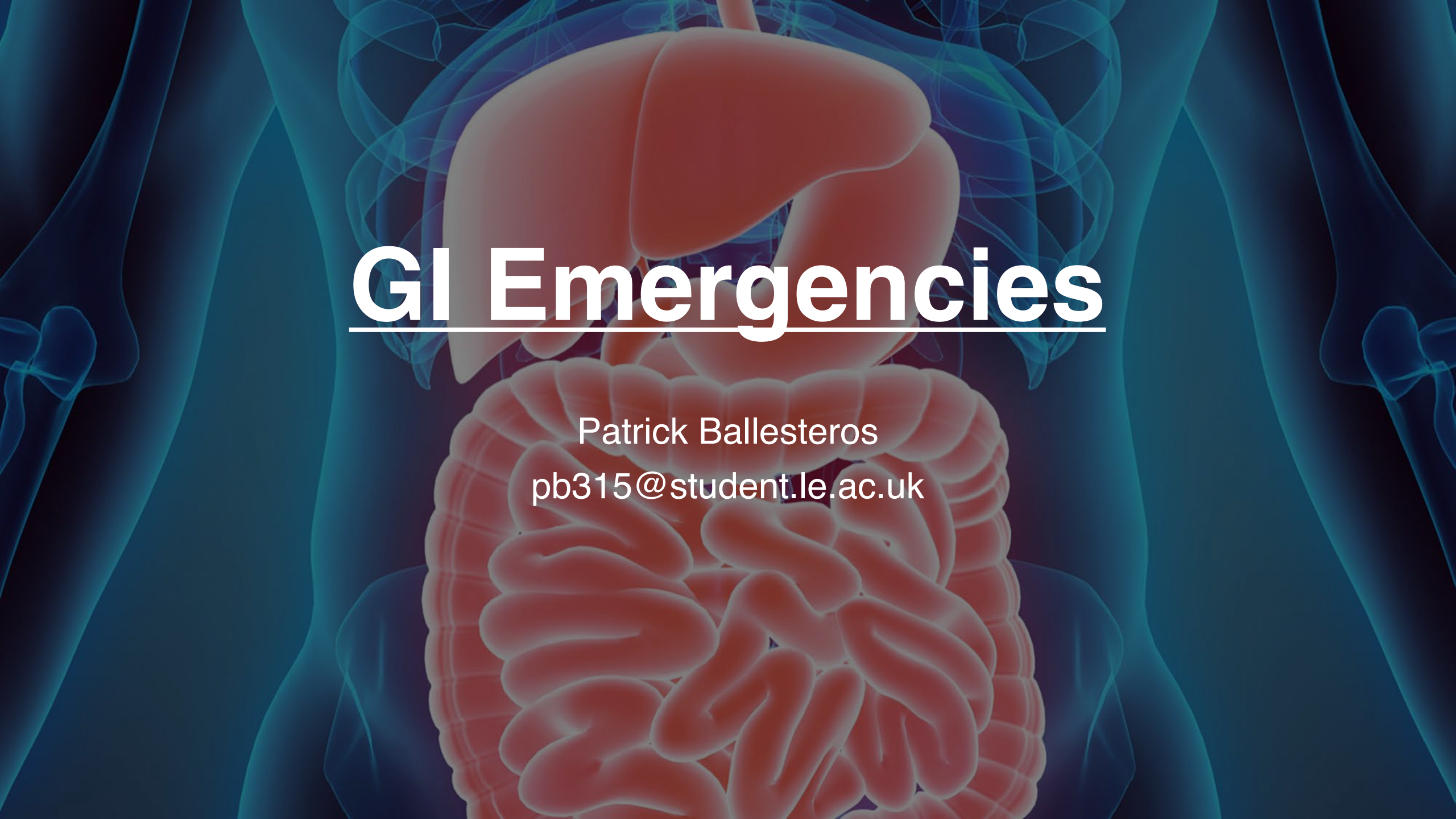

GI Emergencies

Patrick Ballesteros
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Objectives

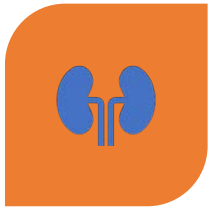
COMMON GI PRESENTATIONS

EXAMINATION FINDINGS

INVESTIGATIONS (WHY ARE WE DOING THEM)

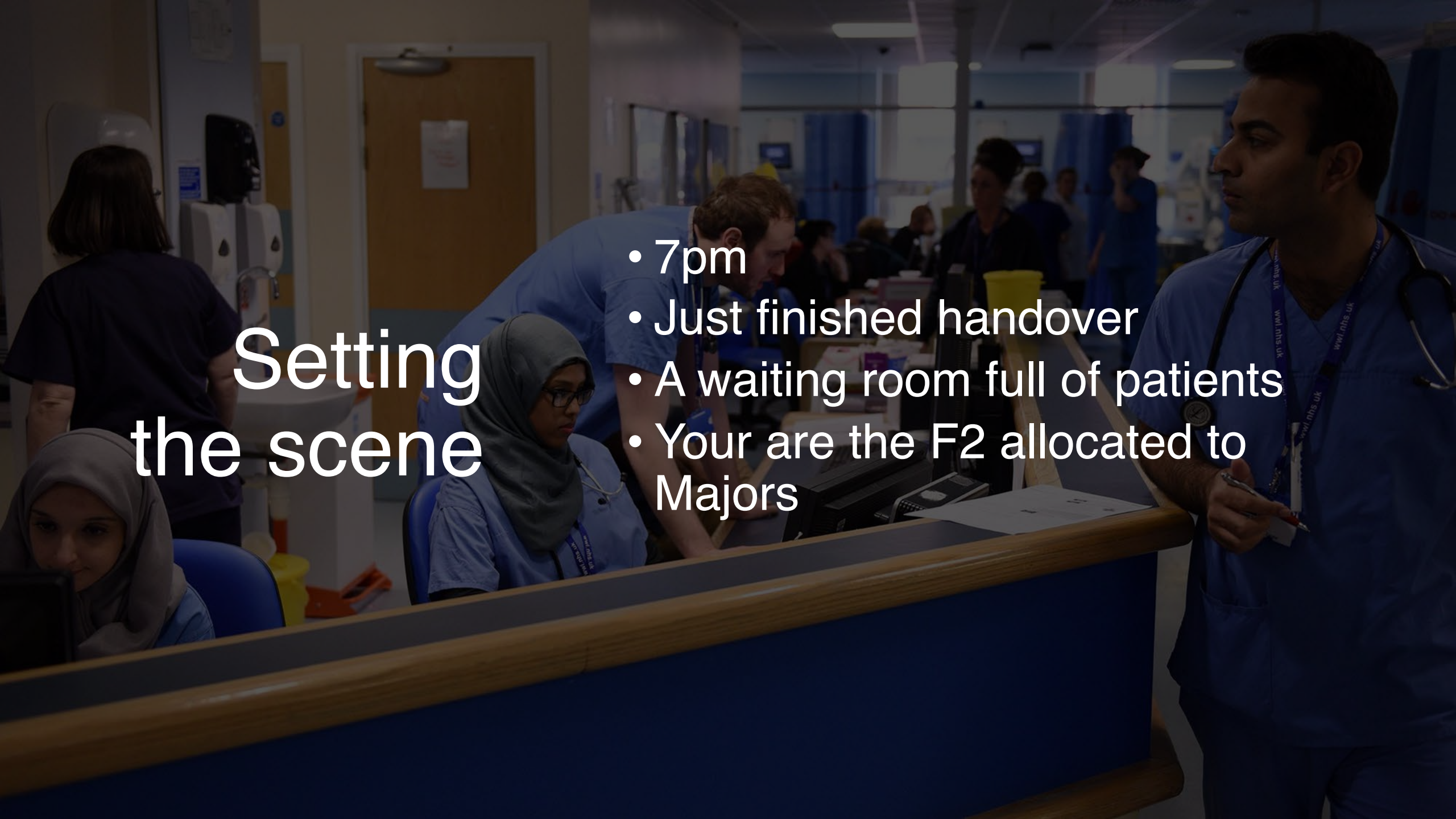
PHARMACOLOGY

RADIOLOGY



ANATOMY

CLINICAL TOOLS



Setting the scene

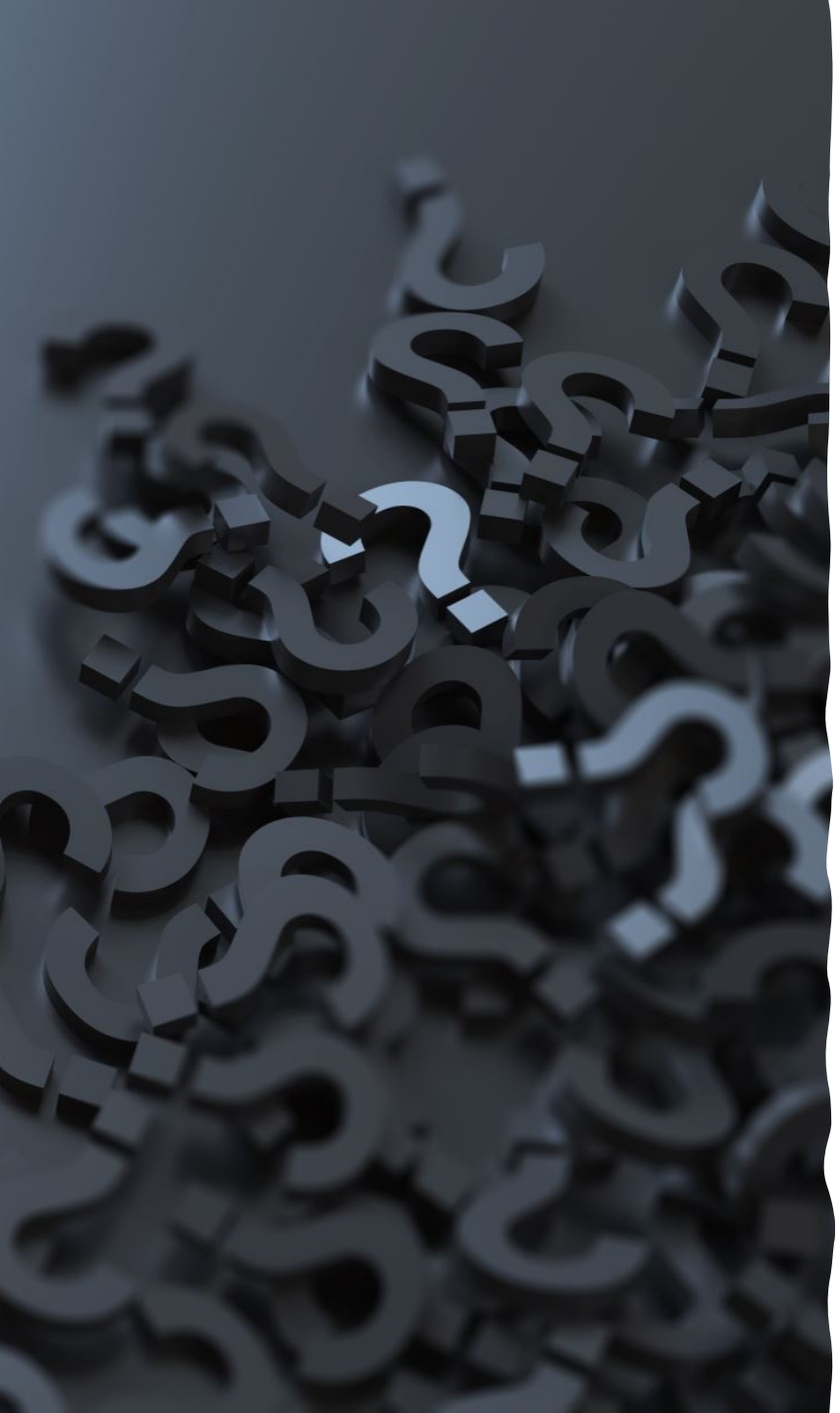
- 7pm
- Just finished handover
- A waiting room full of patients
- Your are the F2 allocated to Majors

Patient 1: Alexia

21 year old Female

Presenting Complaint

- Right lower abdominal Pain
- Sharp in nature
- 8/10
- Started at 12pm but then suddenly got worse in the last hour
- Has taken Paracetamol but not helping
- Nausea and vomiting

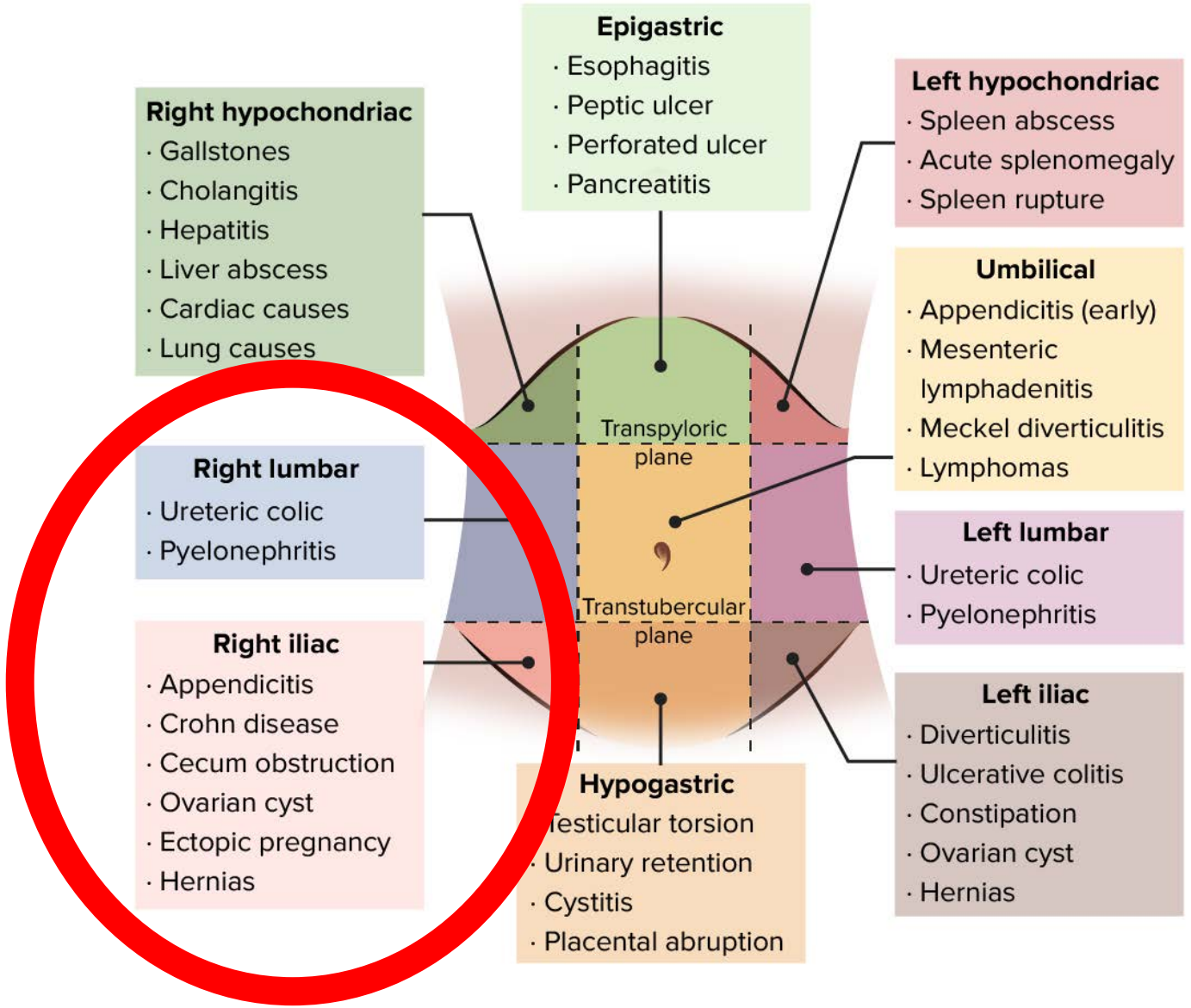


Question

What other questions would you like to ask?

Given the location of the pain which set of differentials must be considered?

Differentials



Alexia - Examination

Obs

RR – 22

SpO2 – 98% on RA

HR – 110

BP – 98/60

Temp – 38.0

Examination

HS

S1 + S2 + 0

Chest

Clear

Abdo

Pain in the RIF on superficial palpation

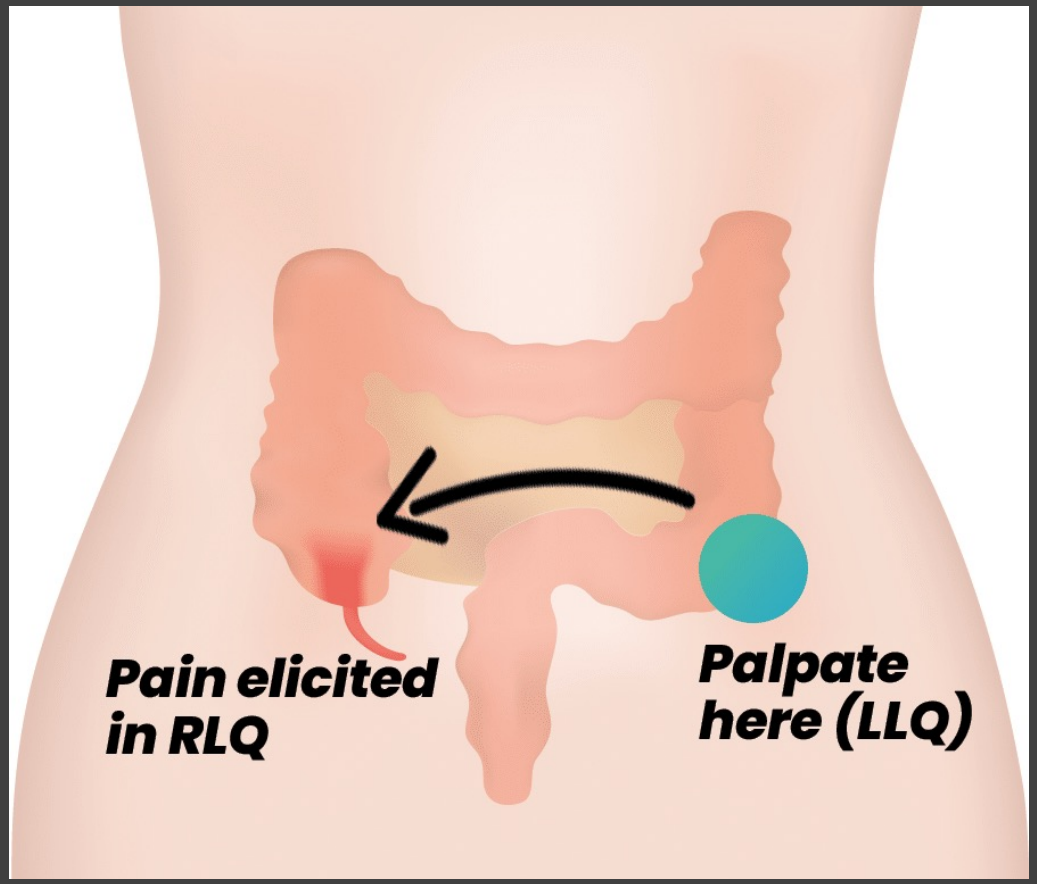
Pain is also felt in the RIF when the LIF is palpated

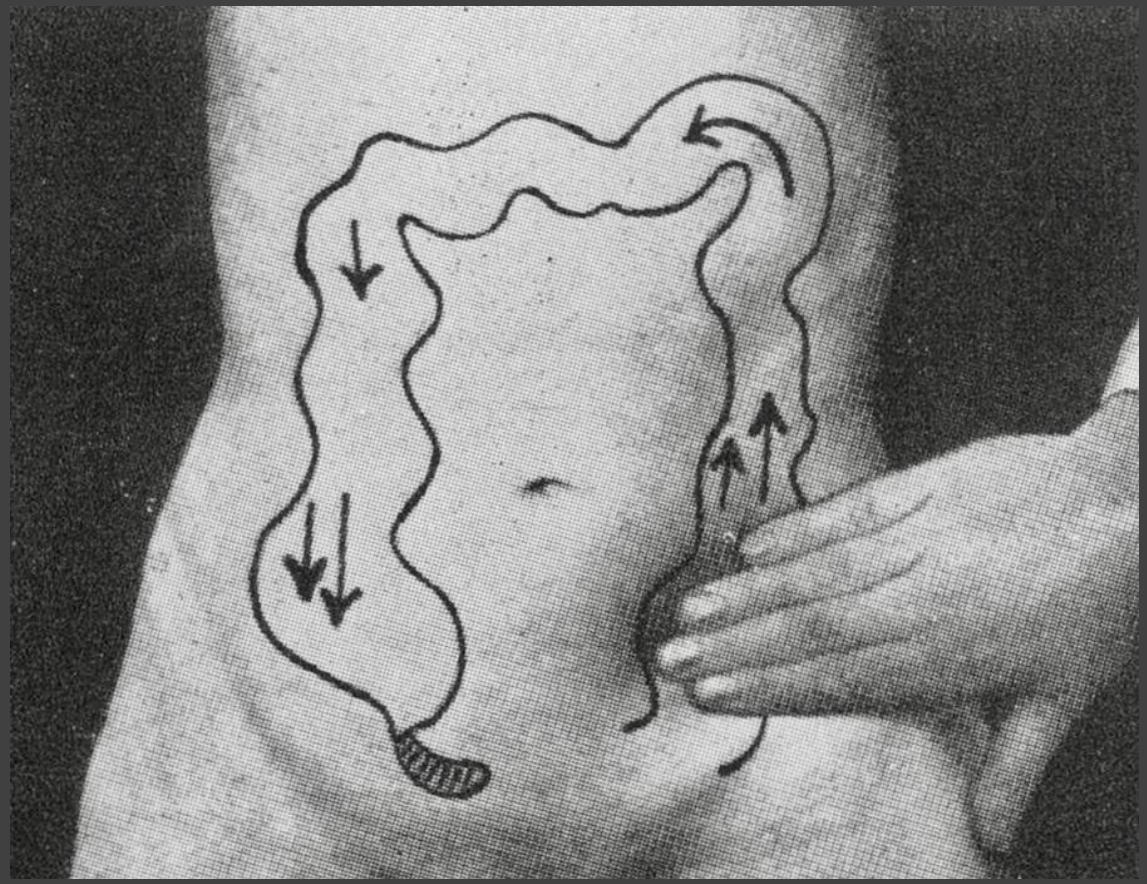
Question

What is the name of the sign when pain in experienced in the Right Iliac Fossa, when the left Iliac fossa is palpated

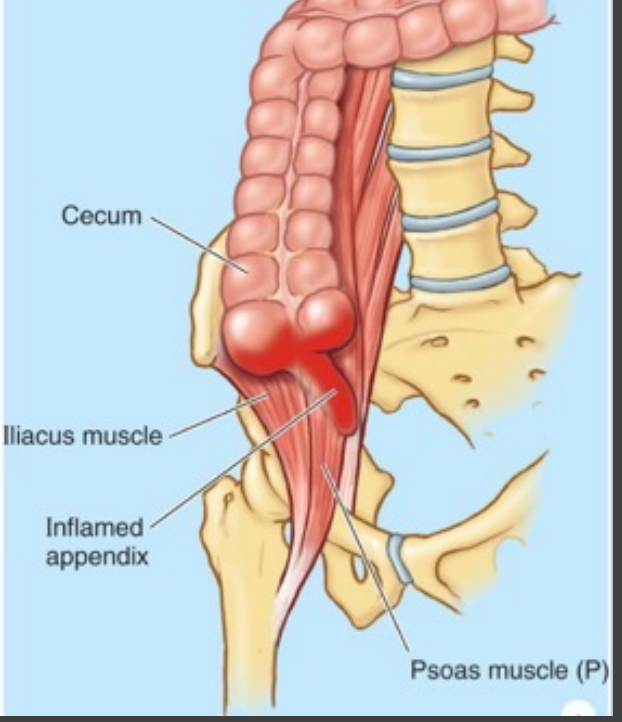
A. Rovsing’s Sign
B. Psoas Sign
C. Murphy’s Sign
D. Cullen’s and Grey Turner’s Sign

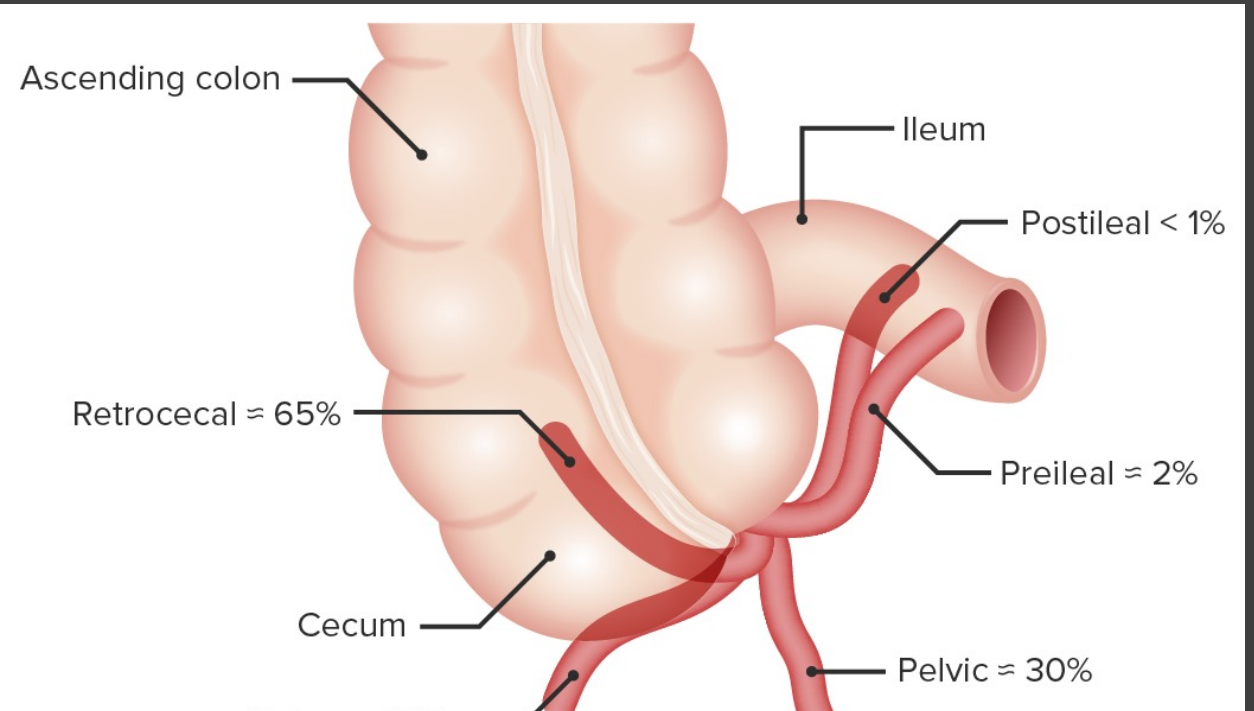
Rovsing’s sign





Other signs that can be seen in GI pathologies





Psoas Sign

- Patient extends the right hip
- Abdominal (RIF) pain felt

Mechanism:

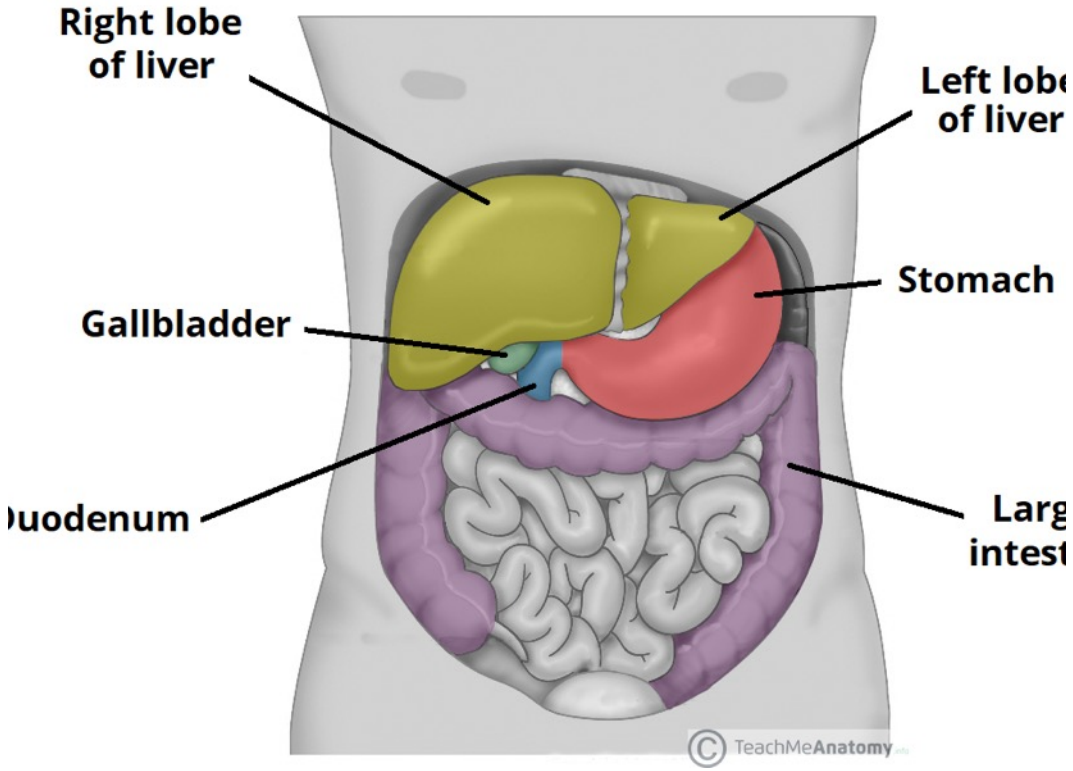
- Majority of the population appendix is retrocaecal
- Causes friction on the psoas muscle

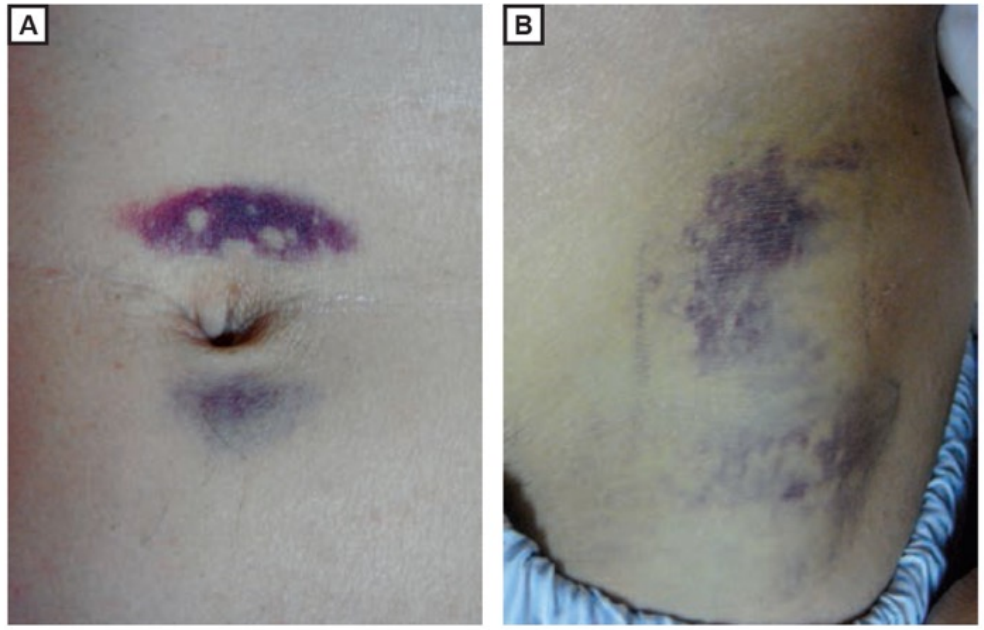
Murphy’s sign

- Pain is elicited on palpation of the right upper quadrant whilst patient breaths in
- Pain causes them to ‘catch their breath’

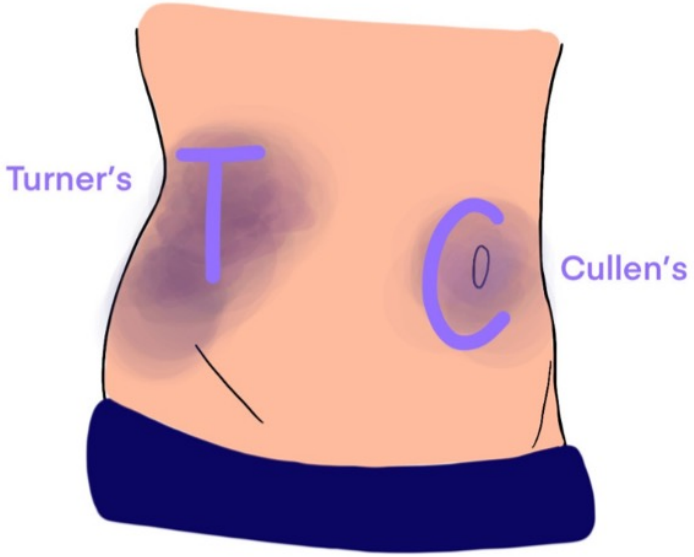
Significance:

- Inflamed gallbladder (Cholecystitis)





Cullen's and Grey Turner's Sign



- Signs of retro-peritoneal bleeding

Retro-peritoneal organs

S = Suprarenal (Adrenal) glands

A = Aorta

D = Duodenum (2^{nd} +3^{rd} Segment)

P = Pancreas

U = Ureters

C = Colon (Ascending and Descending)

K = Kidneys

E = Eosophagus

R = Rectum

Investigation	Specific elements	Rationale
Bedside	Urinalysis, Pregnancy test	Pregnancy, Bacteruria
Bloods	FBC, CRP, Group and screen, U&E, LFT, Pregnancy	Bleeding, Infection, Baseline, Pregnancy
Imaging	Ultrasound (Transabdominal/transvaginal) CT scan	Abnormalities in the gentio- urinary tract, GI system

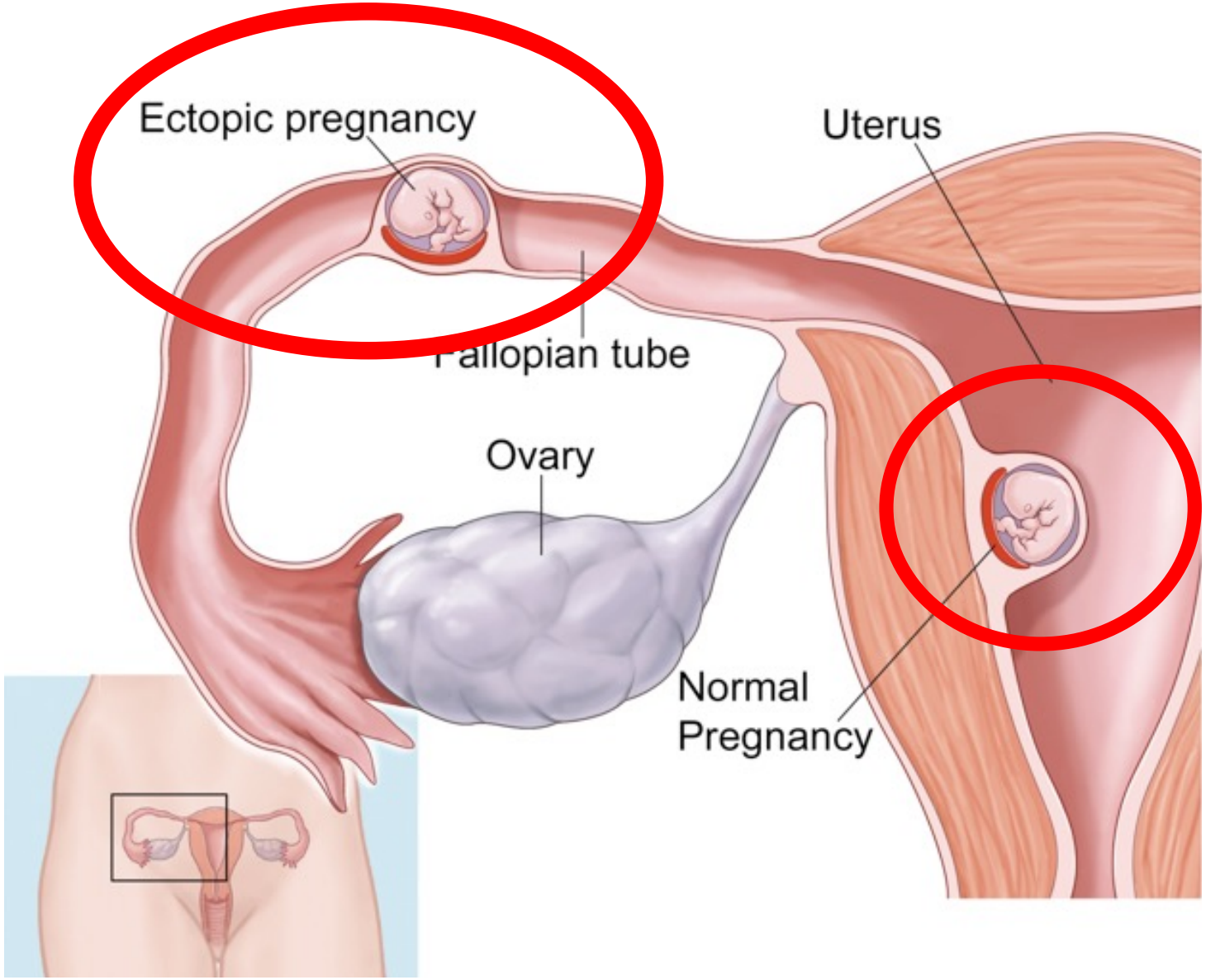
Alexia – Investigations

Important Point!

In any female of reproductive age presenting with abdominal pain, it’s important to rule out pregnancy

Ectopic pregnancy

- Risk of rupture and life threatening bleeding
- Damage to fallopian tube
- Infertility/ Sub-fertility issues



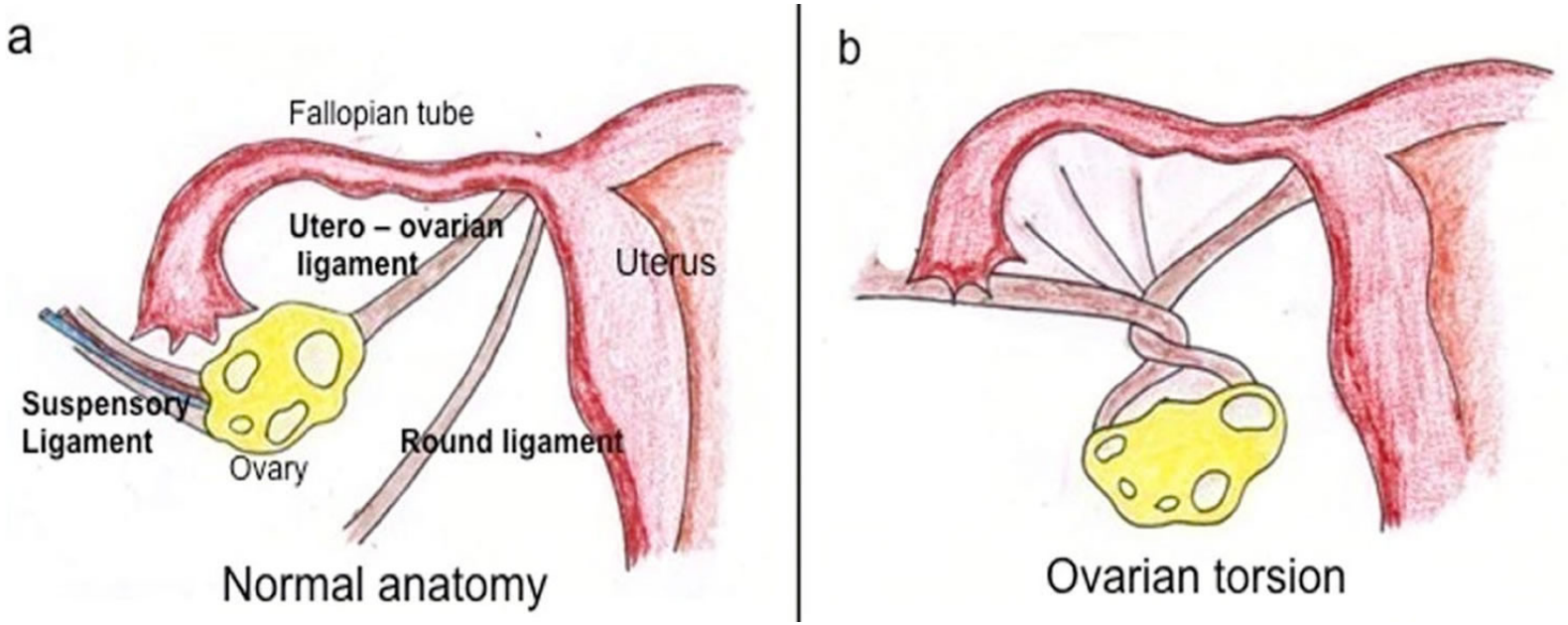
Question

What hormone is detected in serum or urine to confirm pregnancy

A. Alpha Feto Protein (AFP)
B. B- Human Chorionic Gonadotrophin (B-HCG)
C. Inhibin A
D. Pregnancy Associated Plasma Protein A (PAPPA)

Other Gynaecological causes of abdo pain

- Ovarian cyst rupture
- Ovarian torsion



Alexia – Results

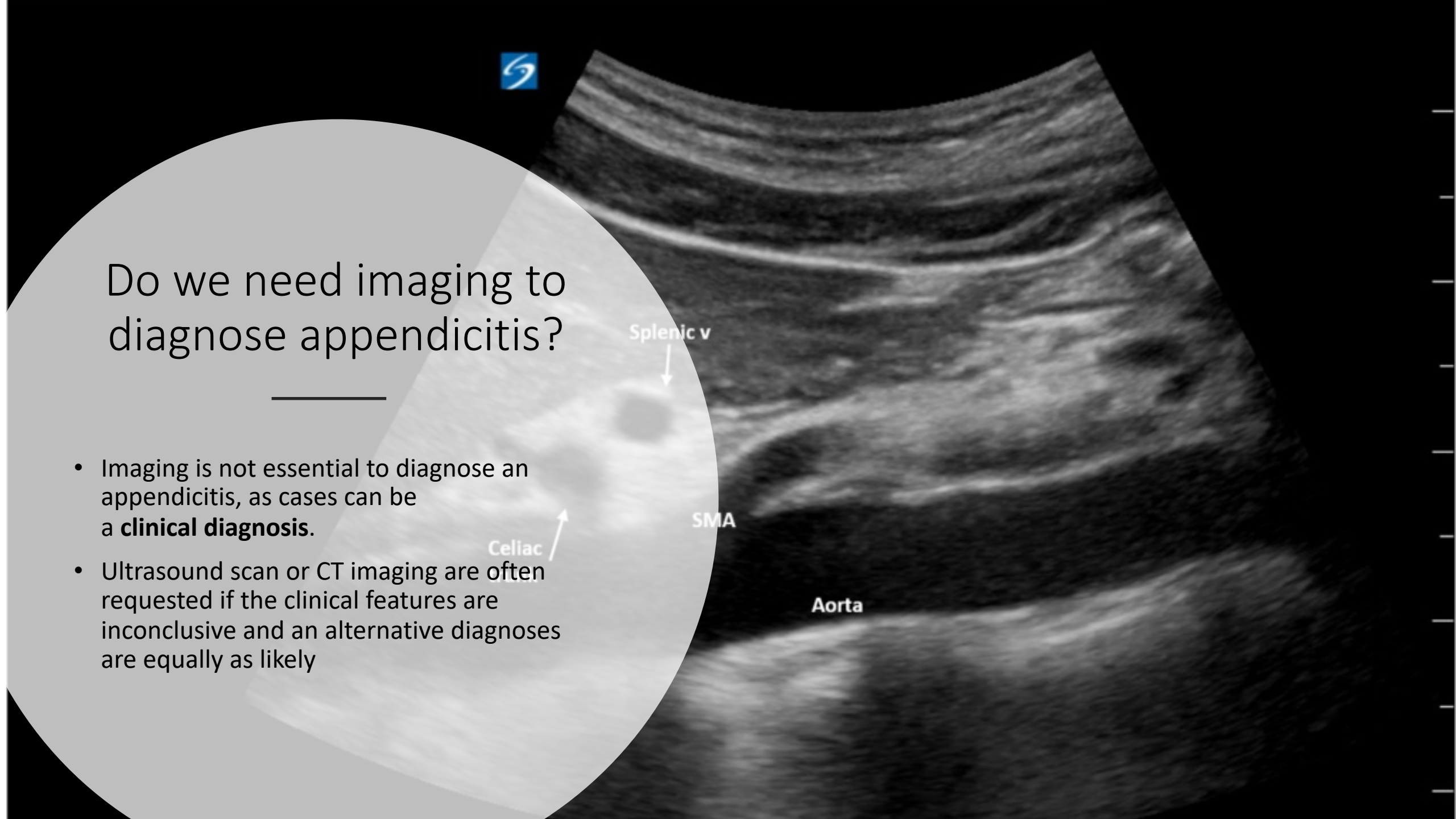
- Urine Dipstick – NAD, Pregnancy Test negative
- Bloods- Elevated WCC, Elevated CRP
- U/S – Normal ovaries and the appendix is not visualised

Most likely diagnosis?

Appendicitis

Do we need imaging to diagnose appendicitis?

- Imaging is not essential to diagnose an appendicitis, as cases can be a **clinical diagnosis**.
- Ultrasound scan or CT imaging are often requested if the clinical features are inconclusive and an alternative diagnoses are equally as likely



Alexia – Management

- You refer to the surgeons for management of her appendicitis
  - Appendectomy

- As they are waiting you prescribe Alexia some analgesia as she still in a lot of pain

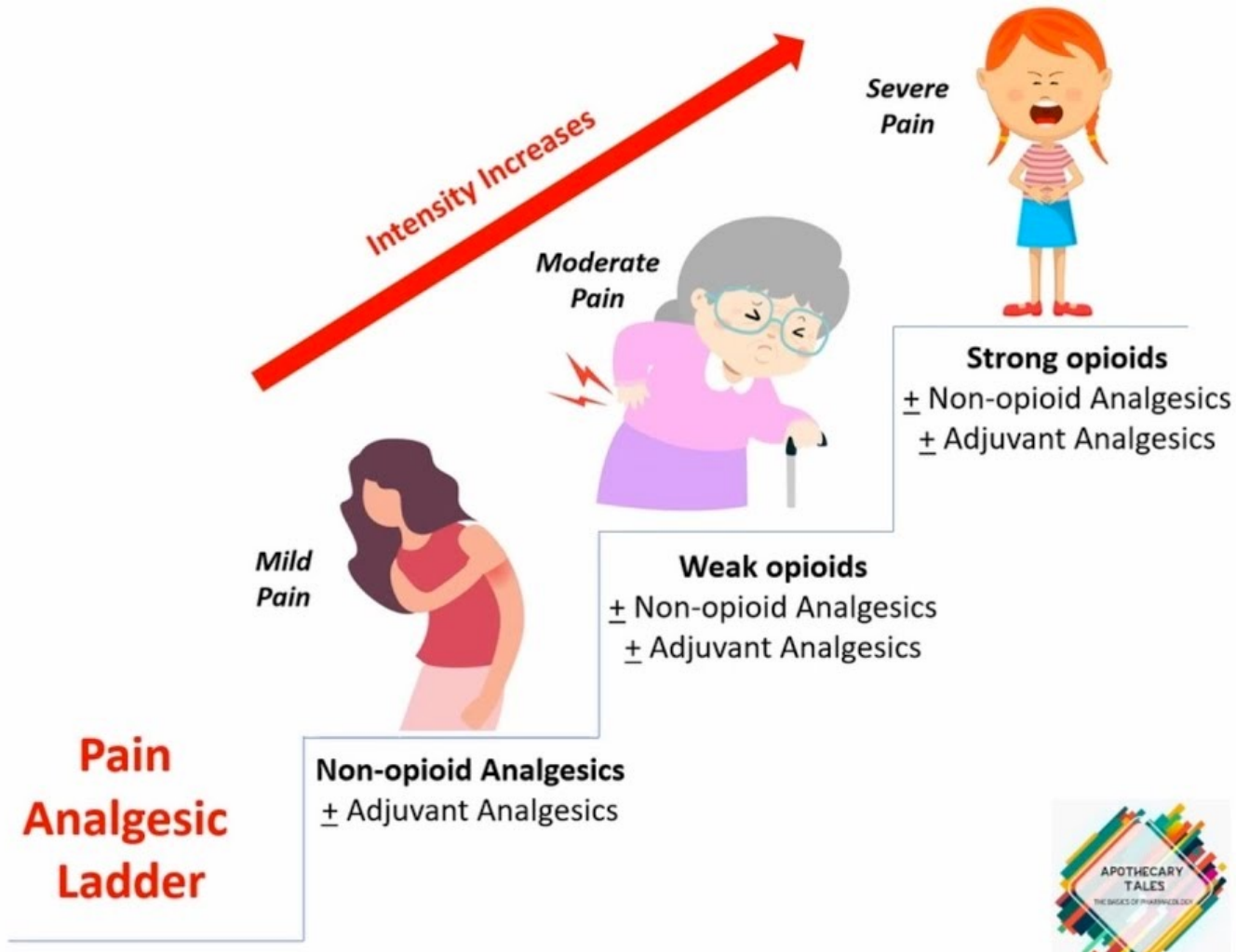
Who Analgesic Ladder

Non-Opioid Analgesics
Aspirin
Paracetamol
NSAIDS

Adjuvant Analgesics
Antidepressants
SNRIs
Anticonvulsants
Topical Anesthetics
Topical Therapies
Corticosteroids
Bisphosphonates
Cannabinoids

Weak Opioids
Codeine
Tramadol

Strong Opioids
Morphine
Fentanyl
Buprenorphine
Methadone



Question

What are the most common side affects associated with opioid medication?

A. Nausea and vomiting
B. Tachycardia
C. Diarrhoea
D. Tachypnoea

Opioids

In those with a poor renal function, opioids can accumulate

Naloxone is used as the reversal agent in overdose

Route

Orally, Sub-Cut, IM, IV, Transdermal

Pharmacokinetics

Renal excretion

Adverse Drug Reactions

- N&V
- Constipation
- Sedation and confusion
- Respiratory Depression

Patient 2: Harold

65 year old Male

Harold – Presenting complaint

- Abdominal pain
  - Generalised
  - Sharp in nature
  - Waves of excruciating pain
  - Started off as discomfort yesterday but now is very painful
  - Relived by vomiting
  - Unable to tolerate food and drink
- Abdominal distension
- Has previously had constipation in the last 2 months, followed by some diarrhoea
  - Now hasn't opened his bowels in 2 days!

Harold – Examination

Obs

- RR – 22
- SpO2 – 95% on RA
- HR – 103
- BP – 91/63
- Temp – 37.8

Examination

Harold looks very cachexic

HS

S1 +S2 + 0

Chest

Clear

Abdomen

Clear Distention

No scars

Abdominal pain

Vomiting

Abdominal distention

Absolute constipation

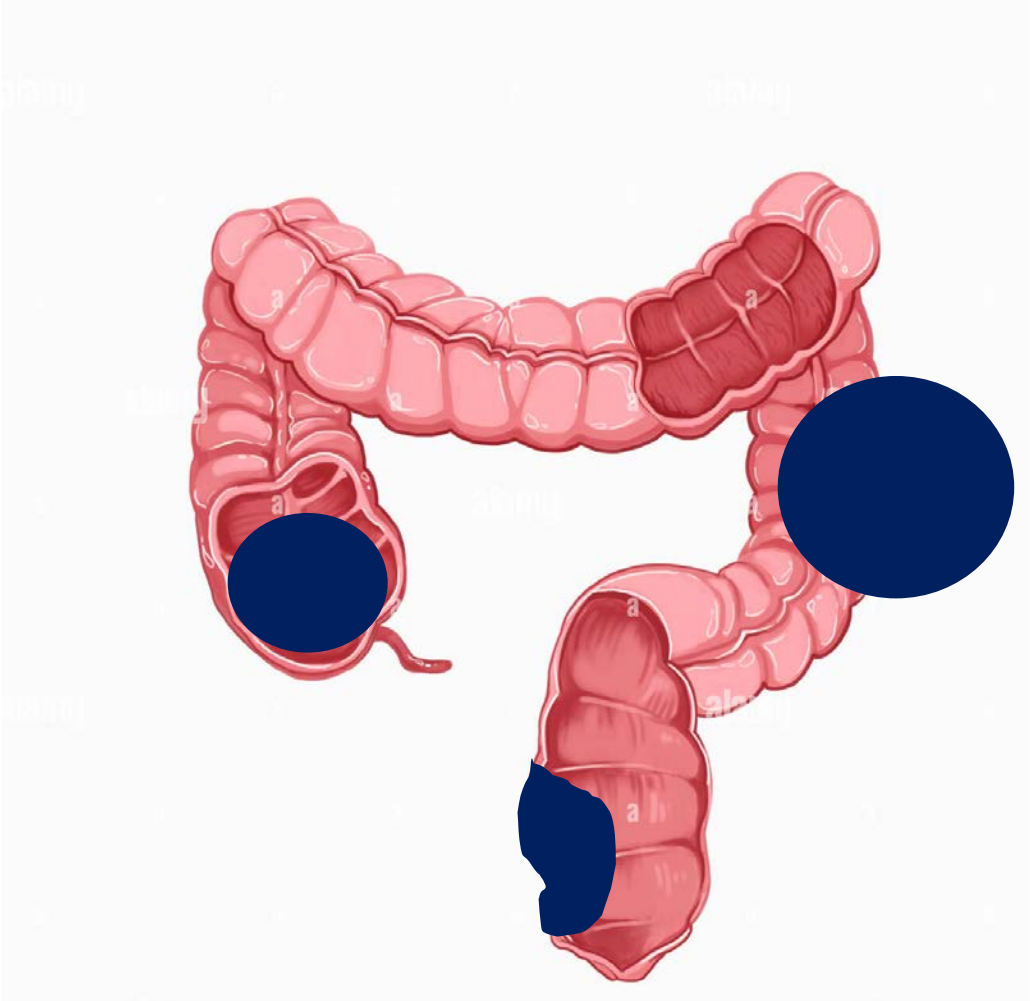
These a 4 cardinal symptoms of which emergency GI presentation?

Bowel Obstruction

Causes of bowel obstruction

- Intra luminal – Foreign body, faecal impaction
- Mural – Cancer, inflammatory strictures, Intussuseption
- Extramural – Hernia, adhesions, volvulus

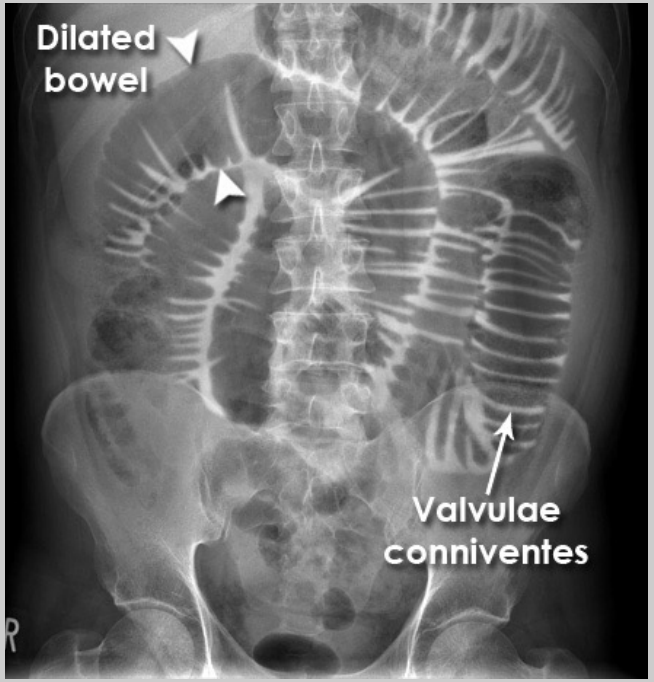
Important to identify and treat as it can causes ischemia, infection



Harold – Investigations

Investigation	Specific	Rationale
Bedside	ECG	Cause of tachycardia
Bloods	FBC, CRP, Group and screen, U&E, VBG,	Anaemia, Infection, Electrolyte imbalance, Baseline
Imaging	Abdo CT, Abdo X-ray	Looking for masses, changes in bowel

Abdominal x-rays of small vs large bowels

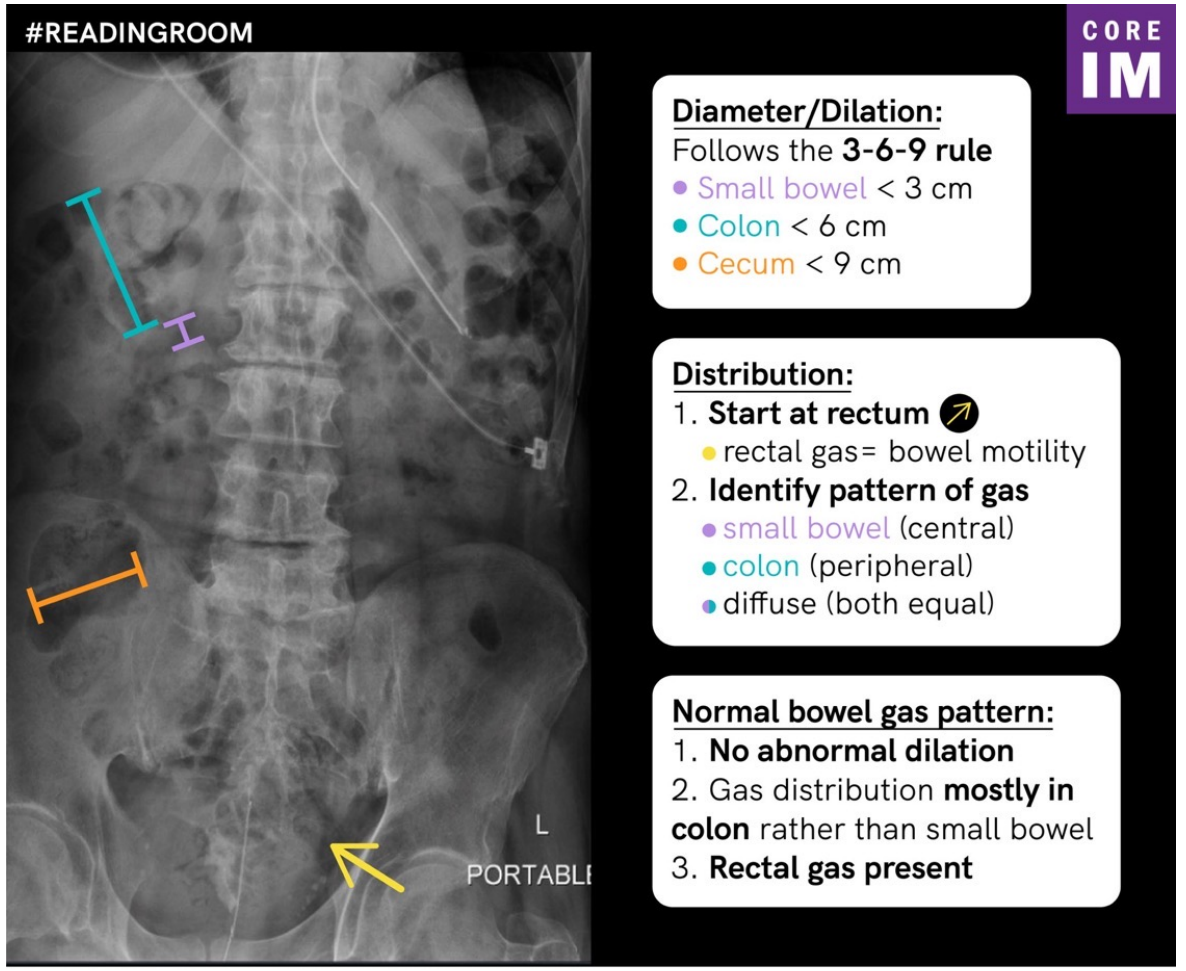
	Small Bowel	Large Bowel
Location	Central in the abdomen	Peripheral in the abdomen
Anatomical features	Valvulae coniventes (lines that runs through the bowel)	Haustra (Lines do not cross the whole bowel)
Image		

Question

When measuring bowel diameter, over which measurements is the bowel considered to be ‘dilated’

	Small Bowel	Large Bowel	Caecum
A	>1cm	>2cm	>4cm
B	>2cm	>4cm	>6cm
C	>3cm	>6cm	>9cm
D	>4cm	>8cm	>12cm

3 6 9 rule



Evaluation of bowel gas patterns:
The two most important components are diameter and distribution.

Harold – CT Scan results

“Free fluid is seen in the abdomen and pelvis

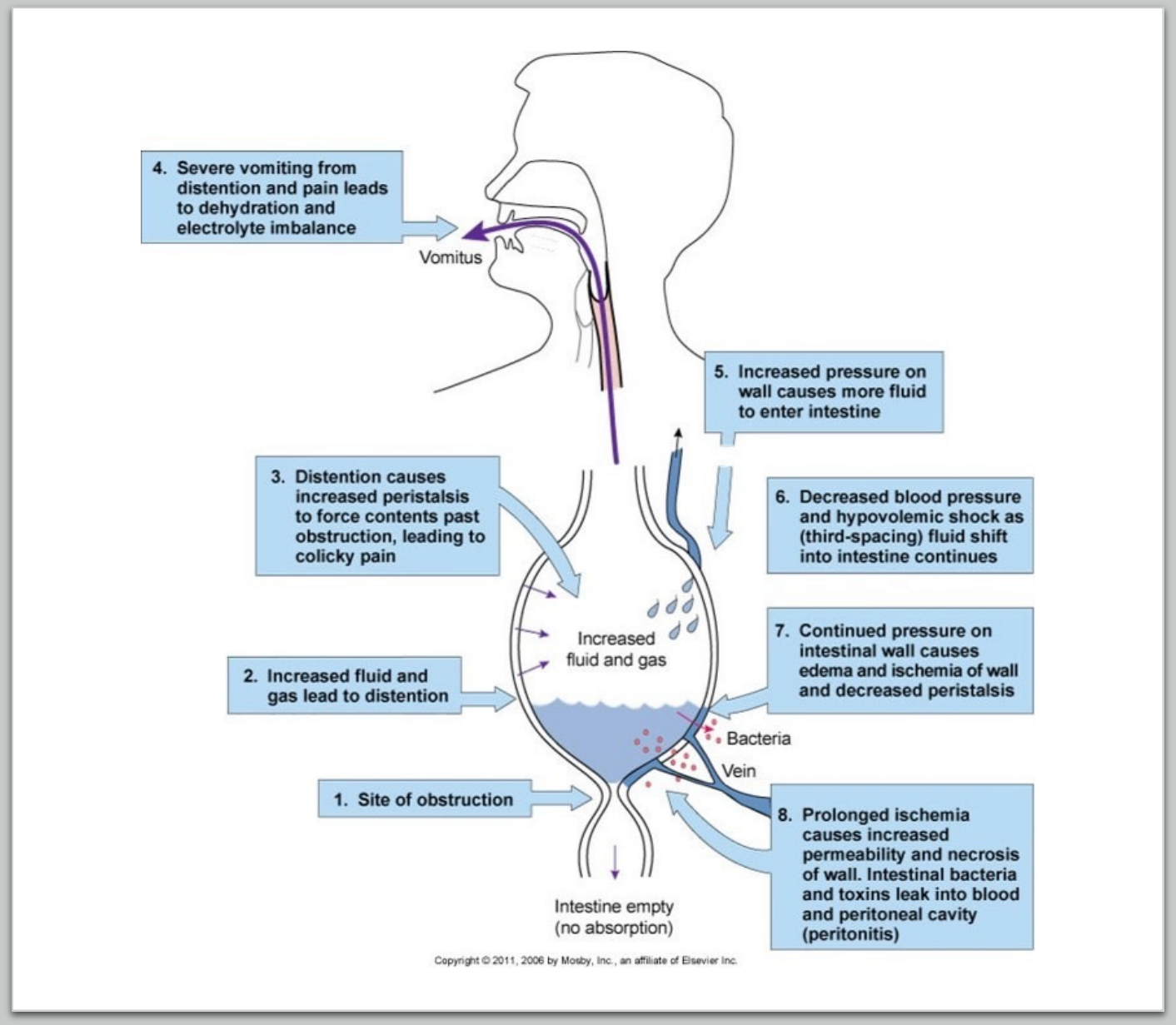
There is marked dilatation (>8cm) of the transverse and ascending colon proximal to a 6cm mass in the sigmoid colon, probable of cancer”

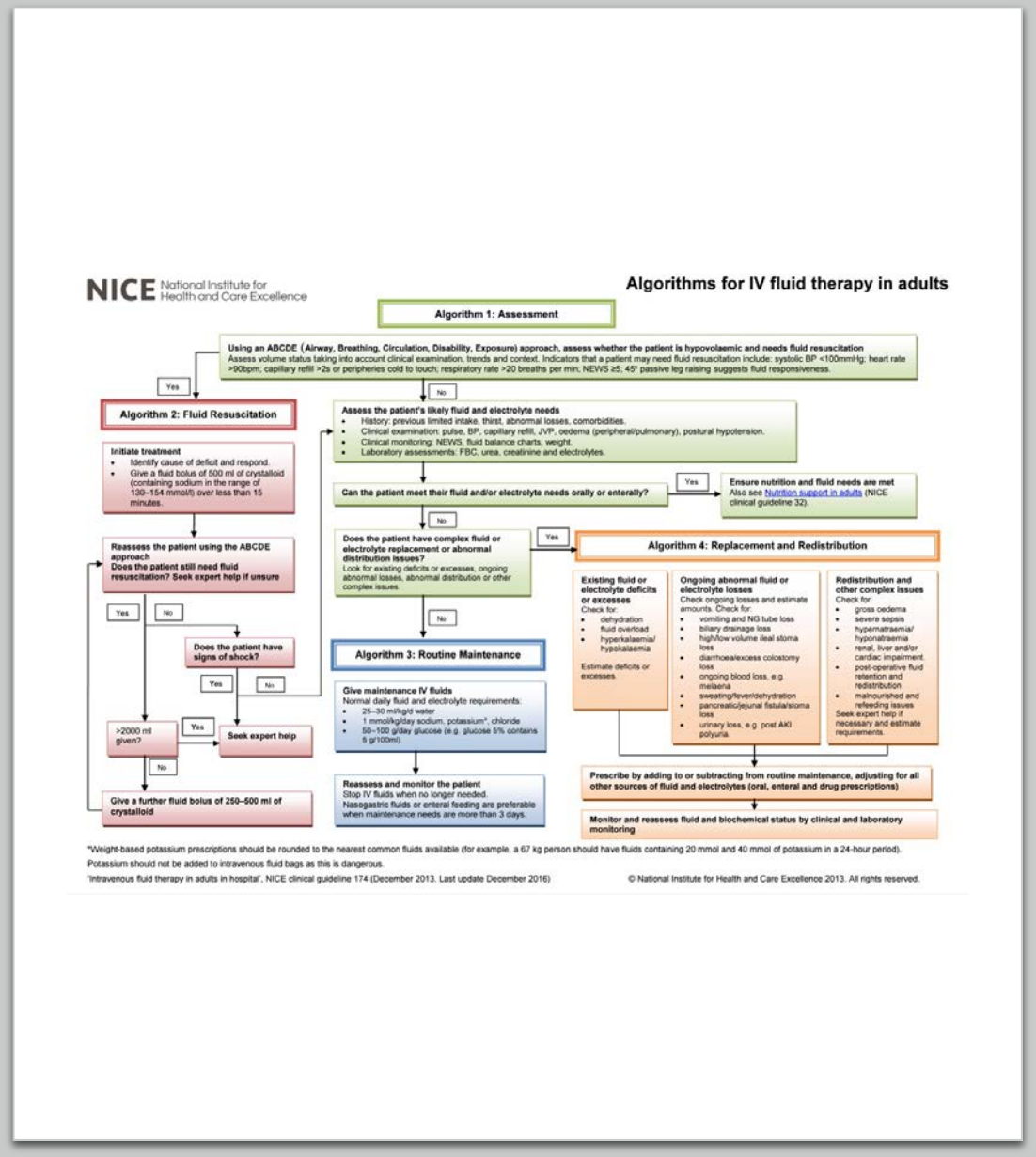
Management of the bowel obstruction

- Patient to be kept Nil-By-Mouth (NBM)
- IV Fluid resuscitation
- NG Tube insertion
- Analgesia
- Referral to general surgeons (Bowel resection)

Why give IV fluids - Dehydration in bowel obstruction

- Vomiting
- ‘Third spacing’
  - Movement of fluid into the lumen of the bowel





Fluid Management

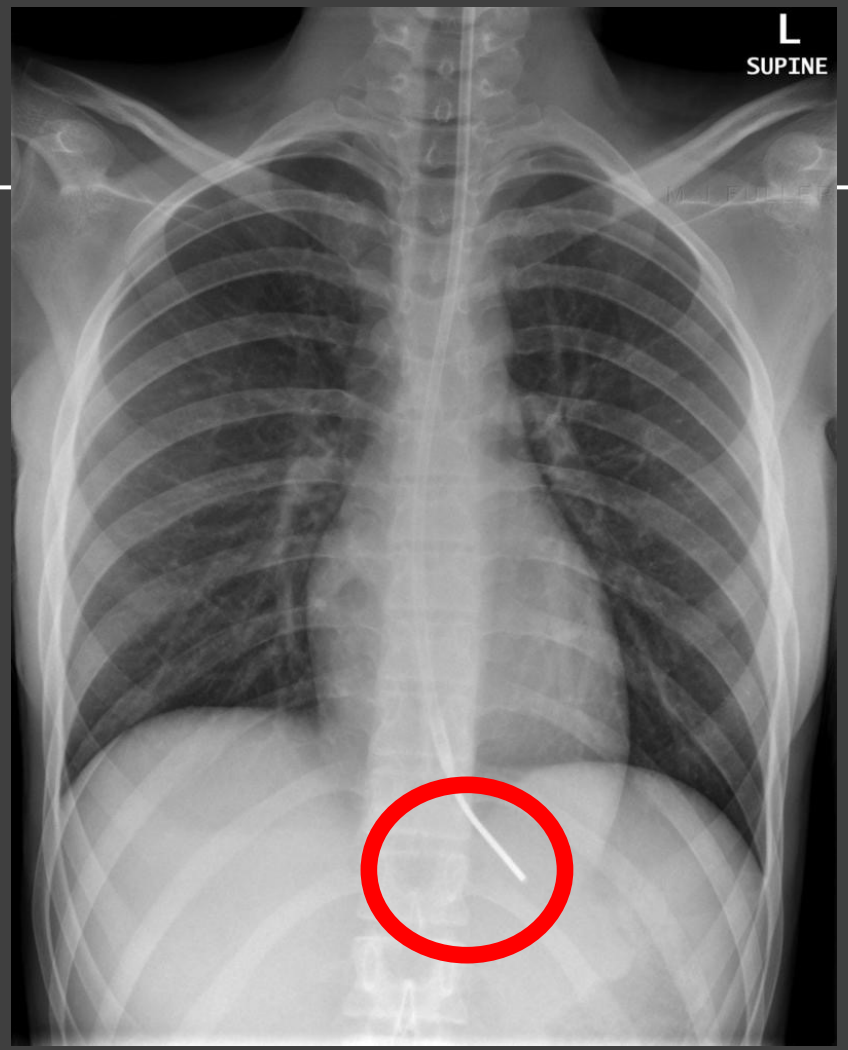
Does this patient need fluids?

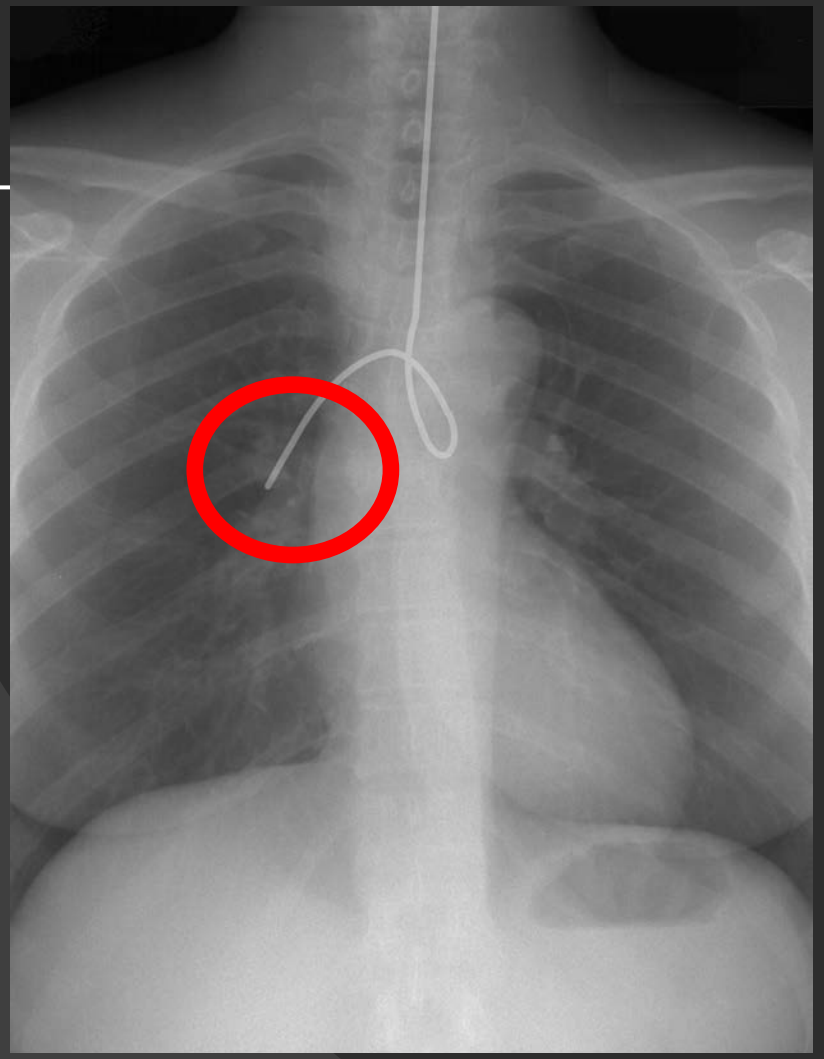
1. Resuscitation
2. Maintenance
3. Replacement and redistribution

Principles of fluid resuscitation

- A-E assessment
  - Decreased BP (<90 SBP)
  - Increased Heart rate (>100 bpm)
  - Dry mucous membrane
  - Capillaries >2 seconds
- 500ml crystalloid over 15 mins
  - Can be repeated until 2000ml given
- Reassess response
  - Seek help early

NG tube – Ensuring correct positioning





Harold

"The pain is now 10/10. I can't move because it's so painful. Something is wrong…"

Re-examining him:

- Rebound tenderness
- Guarding
- Percussion tenderness

Question

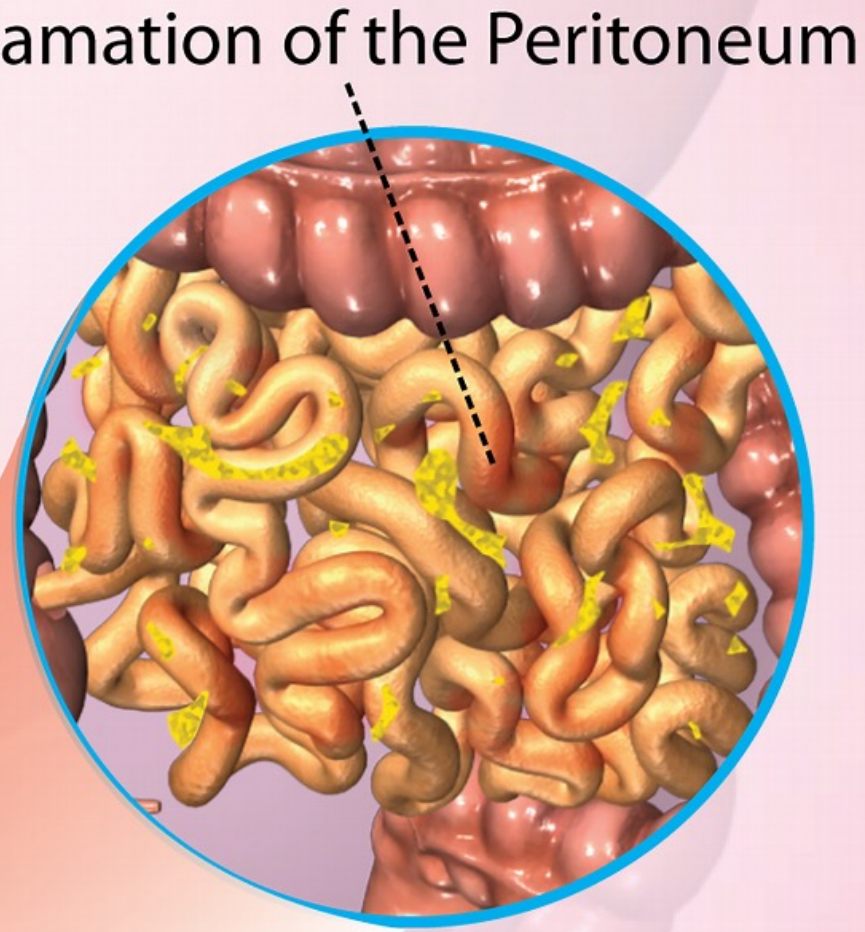
What does the guarding and rebound tenderness suggest

A. Colitis
B. Intussusception
C. Peritonitis
D. Herniation

What has caused the peritonitis?

Peritonitis

- Increased inflammation
  - Increased permeability of the gut mucosa
  - Bacteria translocation
  - Bacteria causing inflammation of the peritoneum
- Ischemia leading to bowel wall necrosis
  - This leads to perforation
  - Spilling of gut content into the abdomen



Question

A VBG is repeated. Which of the following results would indicate continuing deterioration?

A. Decreasing potassium
B. Increasing creatinine
C. Decreasing sodium
D. Increased lactate

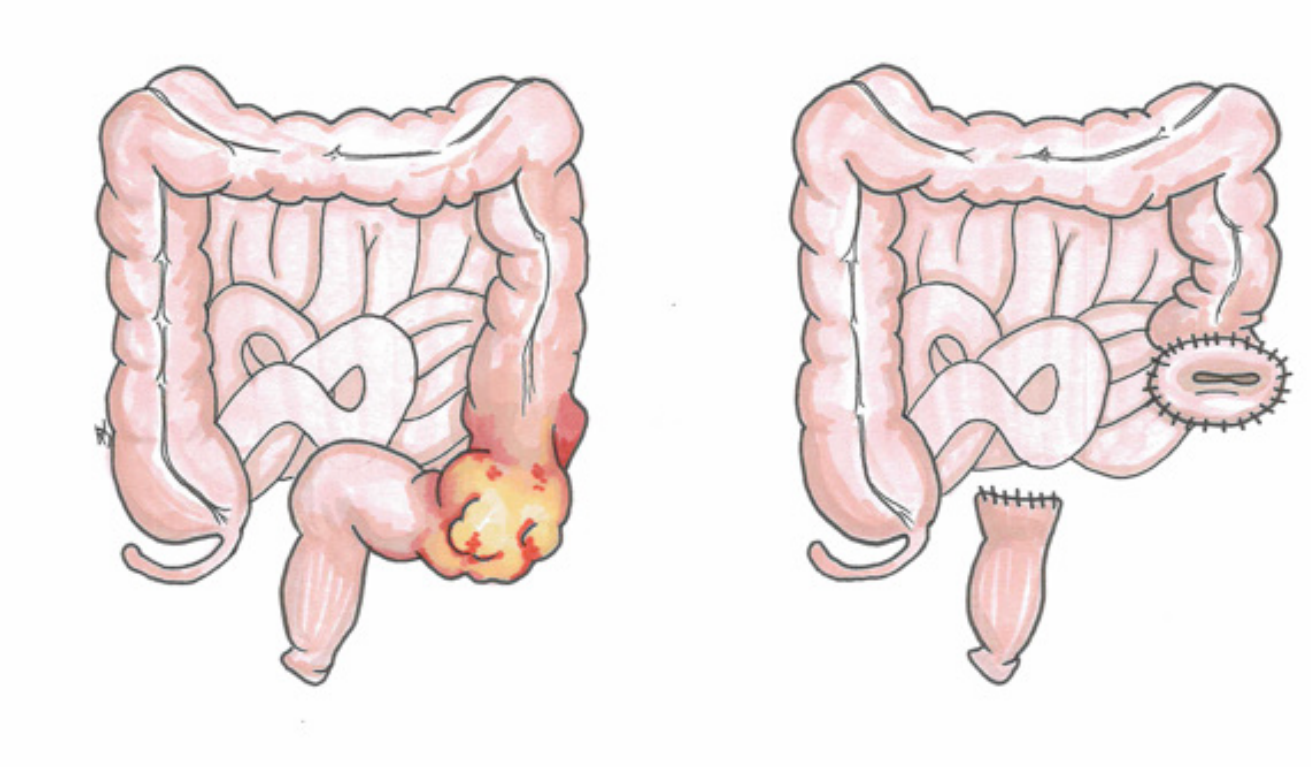
Differential diagnosis

Bowel obstruction > Bowel Ischaemia

Peritonitis/Bowel perforation management

- High chance of infection
  - Sepsis 6
    - IV antibiotics
    - IV fluids
    - Oxygen (if needed)
    - Take bloods/cultures
    - Measure urine output
    - Measure lactate
- Surgical management

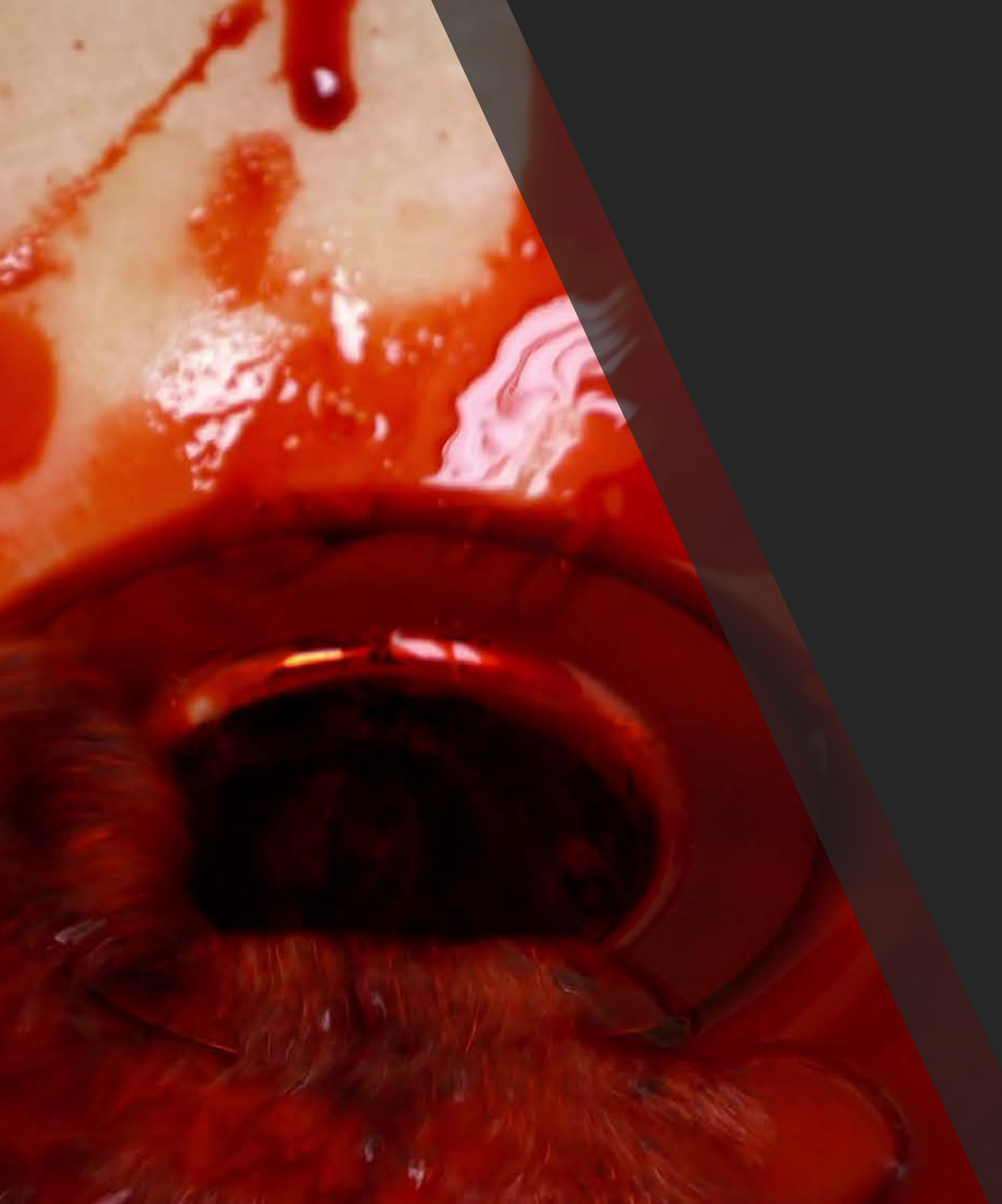
Emergency Surgical management



Emergency bowel surgery for bowel obstruction or perforation is called a Hartmann's procedure

Patient 3: Ingrid

34 year old Female



Ingrid – Presenting Complaint

- Vomiting blood earlier
  - Around ‘1 mug full’
  - Bright red blood
  - Not mixed in vomit
- Drinks 25 units of alcohol a week
- Not on any regular medication and does not take anything over the counter
- No abdominal pain
- No history of weight loss
- Known liver disease

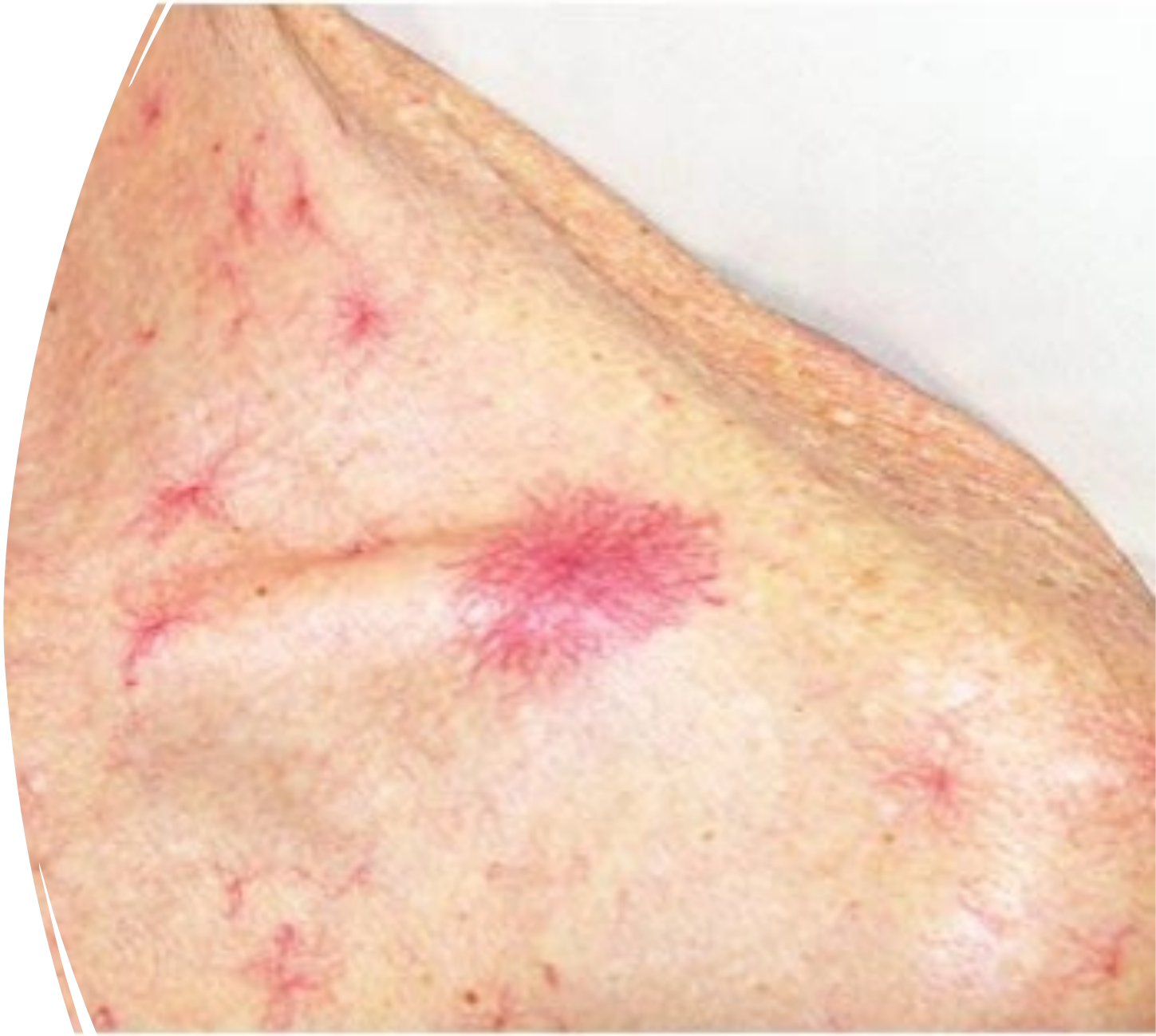
Ingrid – Examination

Which of the following signs does the picture refer to

A. Caput medusa
B. Spider naevi
C. Kayser-Fletcher rings
D. Dupytren’s contracture

Spider Naevi

- Can be normal
  - Pregnancy
  - Women on combined oral contraceptive
- Pathological if >5 are present
  - Liver cirrhosis



Other physical signs seen in GI pathologies

Caput Medusae

- Engorged para-umbilical veins
- Associated with portal hypertension

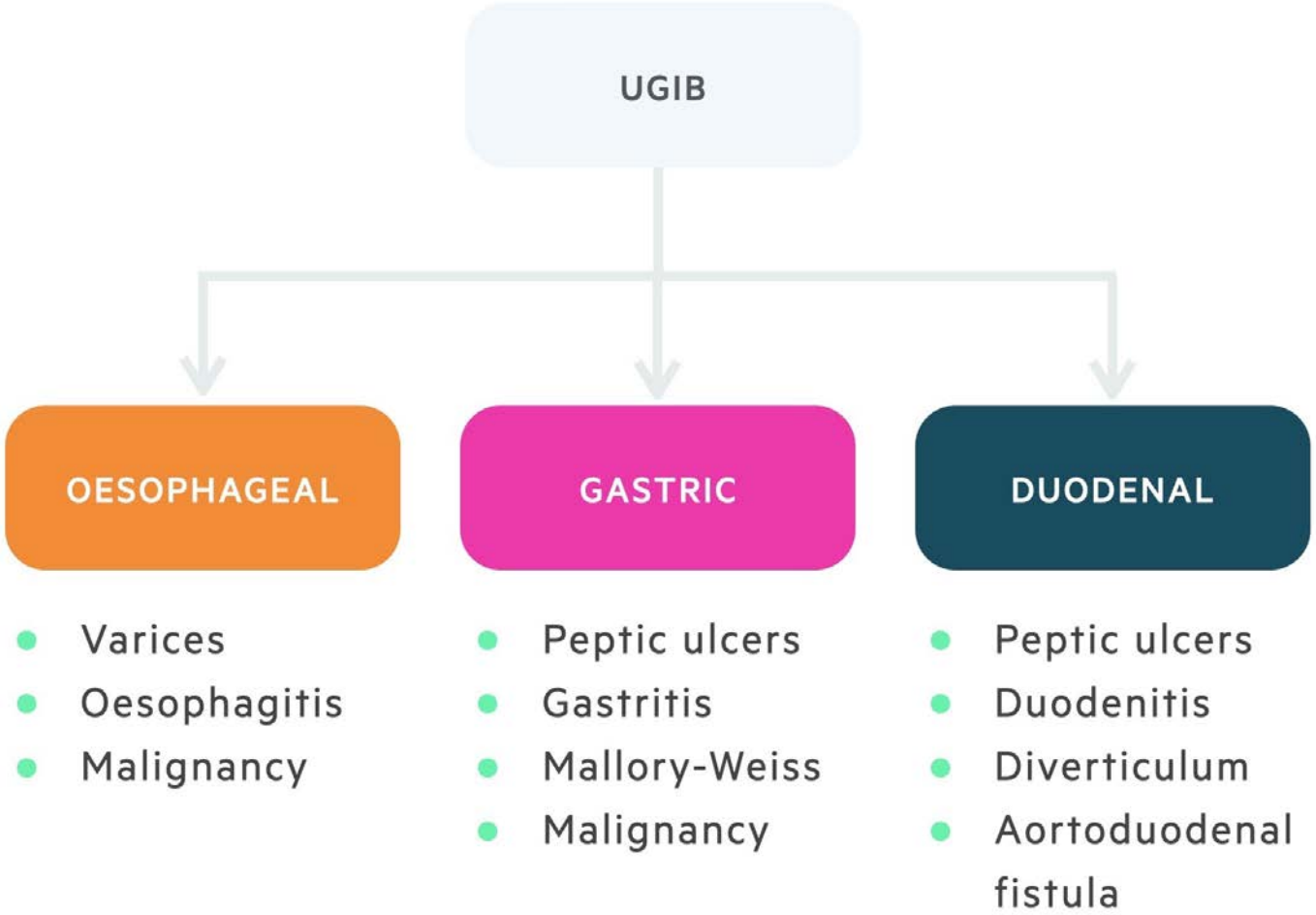
Kayser-Fletcher Rings

- Dark rings around the iris
- Associated with Wilson’s disease
- Accumulation of copper deposits in the liver causes cirrhosis

Dupytren’s Contracture

- Thickening of palmar fascia
- Multiple associations
  - Genetic
  - Increasing age
  - Diabetes
  - Excessive alochol use

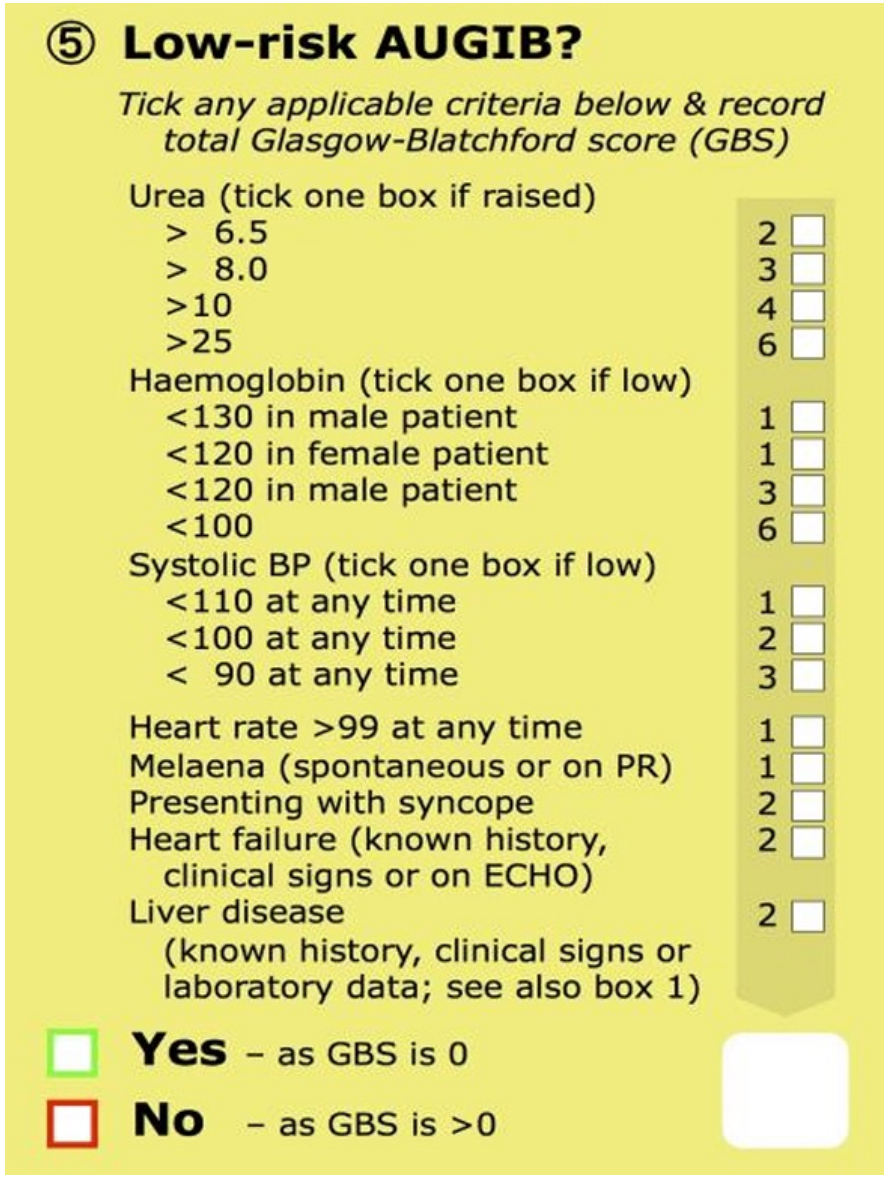
Different causes of AUGIB



Question

Which of the following scoring system is used before endoscopy to determine the risk of having a catastrophic upper GI bleed

1. Rockall score
2. Glasgow-Blatchford score
3. Child-Pugh Score
4. ASA score



⑤ **Low-risk AUGIB?**

Tick any applicable criteria below & record total Glasgow-Blatchford score (GBS)

Urea (tick one box if raised)	
> 6.5	2 ☐
> 8.0	3 ☐
>10	4 ☐
>25	6 ☐
Haemoglobin (tick one box if low)	
<130 in male patient	1 ☐
<120 in female patient	1 ☐
<120 in male patient	3 ☐
<100	6 ☐
Systolic BP (tick one box if low)	
<110 at any time	1 ☐
<100 at any time	2 ☐
< 90 at any time	3 ☐
Heart rate >99 at any time	1 ☐
Melaena (spontaneous or on PR)	1 ☐
Presenting with syncope	2 ☐
Heart failure (known history, clinical signs or on ECHO)	2 ☐
Liver disease (known history, clinical signs or laboratory data; see also box 1)	2 ☐

☐ **Yes** – as GBS is 0

☐ **No** – as GBS is >0

Glasgow-Blatchford

- Score based on the clinical presentation of the patient
- No endoscopy needed
- Used to differeniate low vs. high risk suspected Upper GI bleeds
- Can be used to aid management
  - Further referral
  - Discharge

Other scoring systems used in GI

Rockall Score

- Post endoscopy score
- Risk of re-bleeding and overall mortality
- Score of >6 is high risk

Variables	Points
Age (years)	
<60	0
60–79	1
≥80	2
Hemodynamic shock	
Heart rate >100 bpm	1
Systolic blood pressure <100 mmHg	2
Coexisting illnesses	
Heart failure, ischemic heart disease	2
Renal failure, hepatic failure, metastatic cancer	3
Endoscopic signs (diagnostic)	
No lesion observed, or Mallory–Weiss tear	0
Peptic ulcer, erosive disease, esophagitis	1
Cancer of the upper gastrointestinal tract	2
Endoscopic signs (hemorrhagic)	
Clean-base ulcer or flat, pigmented spot	0
Visible blood, active bleeding, visible vessel, adherent clot	2

Scores range from 0 to 11 and are divided into three categories of risk: low risk ≤2, moderate risk 3–5, high risk ≥6. Permission obtained from BMJ Publishing Group Ltd © Rockall, T. A. *et al*. *Gut* **38**, 316–321 (1996).

Child-Pugh Score

Child-Pugh Scoring Interpretation

Measure	1 Point	2 Points	3 Points
Total bilirubin (mg/dL)	< 2.0	2.0–3.0	> 3.0
Serum albumin (g/dL)	> 3.5	2.8–3.5	< 2.8
INR	< 1.70	1.71–2.30	> 2.30
Ascites	None	Mild	Mod/Severe
Hepatic encephalopathy	None	Grade I–II	Grade III–IV

- Indication of the severity of liver cirrhosis
- Helps to aid prognosis
- Mixture of biochemical and clinical factors
- Score between 5-15

ASA score

- American Society of Anaesthesiologists score
- Classifies the physical status of patients prior to surgery
- Helps to determine peri-operative risk along with other factors

ASA Classification	Definition	Examples
ASA I	A normal healthy patient	Healthy, non-smoking, no or minimal alcohol use
ASA II	A patient with mild systemic disease	Mild diseases only without substantive functional limitations. Current smoker, social alcohol drinker, pregnancy, obesity (30<BMI<40), well-controlled DM/HTN, mild lung disease
ASA III	A patient with severe systemic disease	Substantive functional limitations; One or more moderate to severe diseases. Poorly controlled DM or HTN, COPD, morbid obesity (BMI ≥40), active hepatitis, alcohol dependence or abuse, implanted pacemaker, moderate reduction of ejection fraction, ESRD undergoing regularly scheduled dialysis, history (>3 months) of MI, CVA, TIA, or CAD/stents.
ASA IV	A patient with severe systemic disease that is a constant threat to life	Recent (<3 months) MI, CVA, TIA or CAD/stents, ongoing cardiac ischemia or severe valve dysfunction, severe reduction of ejection fraction, shock, sepsis, DIC, ARD or ESRD not undergoing regularly scheduled dialysis
ASA V	A moribund patient who is not expected to survive without the operation	Ruptured abdominal/thoracic aneurysm, massive trauma, intracranial bleed with mass effect, ischemic bowel in the face of significant cardiac pathology or multiple organ/system dysfunction
ASA VI	A declared brain-dead patient whose organs are being removed for donor purposes	

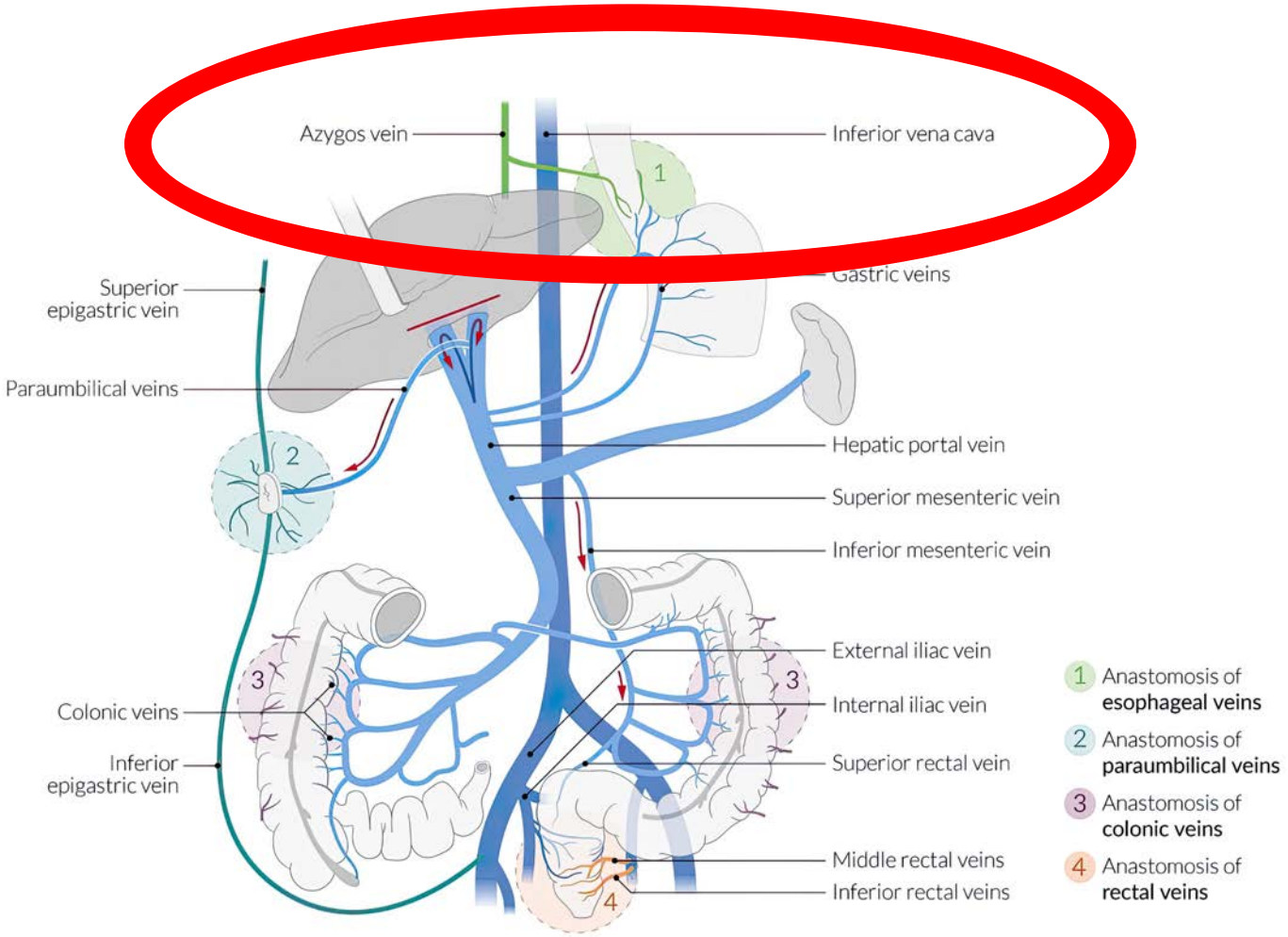
Ingrid – Differential diagnosis

- Vomiting blood earlier
  - Around ‘1 mug full’
  - Bright red blood
  - Not mixed in vomit
- Drinks 25 units of alcohol a week
- Not on any regular medication and does not take anything over the counter
- No abdominal pain
- No history of weight loss
- Known liver disease

Given the history, presentation and clinical signs, what is the most likely cause of her upper GI bleed?

Oesophageal Varicies

Variceal bleed



- Varices are dilatations of the portosystemic anastomosis
- Increased pressure can cause these to rupture

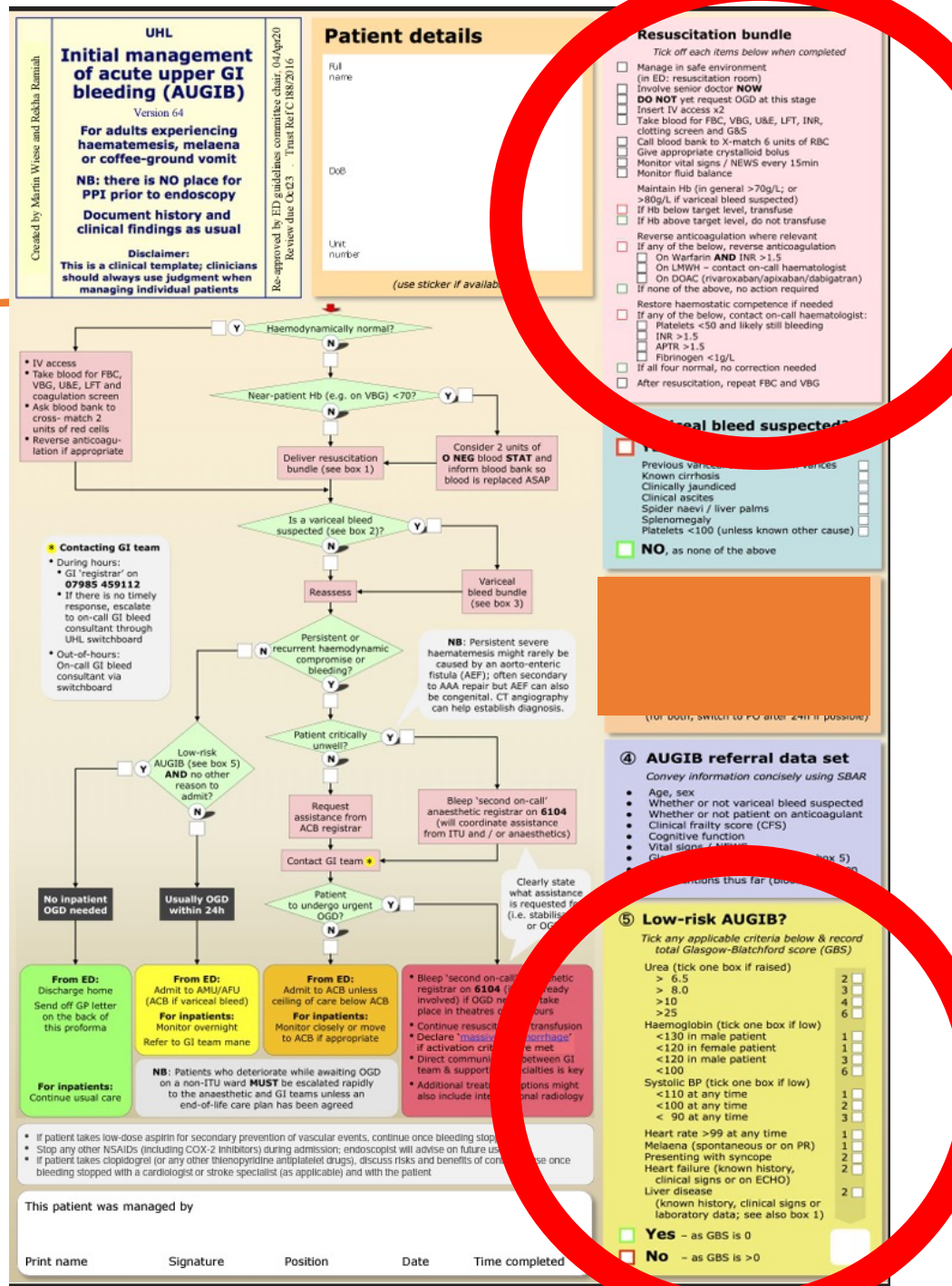
Variceal bleeding
Investigations and Management

Investigations

- Bloods
  - G&S, FBC, INR, LFT, U&E

Management

- Fluid resuscitation
- Transfusion if Hb <80
- Reverse any anti-coagulation
- Escalation to appropriate teams (GI, ITU, Anaesthetics)

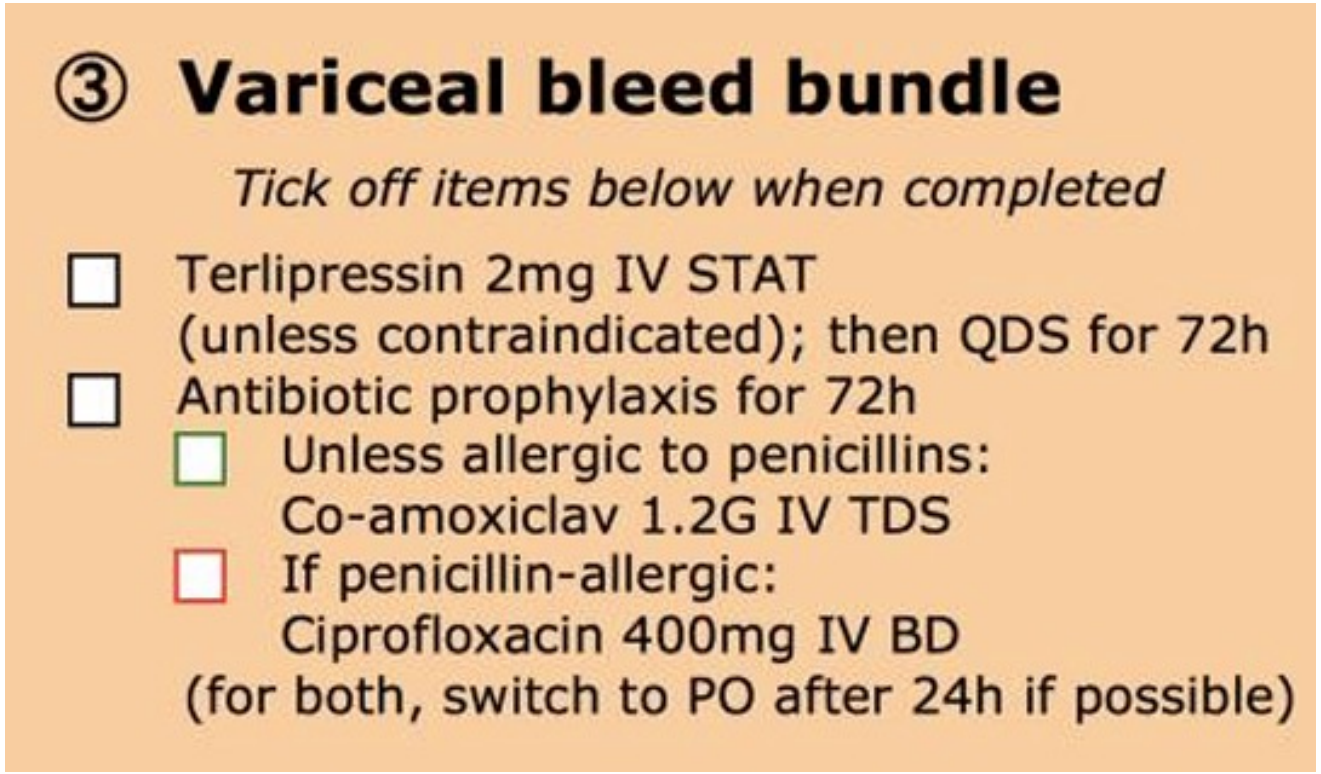


Question

What additional medications are given when resuscitating someone with oesophageal varices prior to definitive treatment?

A. Prednisolone + Mesalizine
B. Amoxicillin + Metronidazole + Omeprazole
C. Terlipressin + Co-Amoxiclav
D. Chlordiazepoxide + Thiamine

Terlipressin and Prophylactic antibiotics



③ Variceal bleed bundle

Tick off items below when completed

- ☐ Terlipressin 2mg IV STAT (unless contraindicated); then QDS for 72h
- ☐ Antibiotic prophylaxis for 72h
  - ☐ Unless allergic to penicillins: Co-amoxiclav 1.2G IV TDS
  - ☐ If penicillin-allergic: Ciprofloxacin 400mg IV BD

(for both, switch to PO after 24h if possible)

Terlipressin

Vasoconstricts splanchnic blood vessels, **reduces blood flow into the portal vein** and, thus, reduces portal venous pressure and blood flow through porto-systemic shunts

Prophylactic Antibiotics

Increased risk of infection which leads to poor prognosis

Common medication combinations in gastroenterology

COMBINATION	INDICATION
Prednisolone + Mesalizine	Flare up of ulcerative colitis
Amoxicillin + Metronidazole + Omeprazole	H. Pylori eradication in peptic ulcer disease
Chlordiazepoxide + Thiamine	Alcohol withdrawal

Topics we've covered

- Abdominal signs on examination
- Differentials for Illiac fossa pain
- Appendicits
- Pharmacology – Opioids
- Differentials for bowel obstruction
- Radiology – Abdominal X-rays
- IV Fluid management
- NG tube placement
- Peritonitis
- Physical signs on GI exam
- Differentials on an Upper GI bleed
- Scoring systems used in GI
- Variceal bleeds
- Medications used in GI