

Disclosure

Dr. Root, faculty for this educational event, has received an educational grant from the National Association of EMS Physicians and the Stryker Corporation. All relevant financial relationships have been mitigated.

Chris Root's patented two-part prehospital belly box assessment:

1. What is your blood pressure?
2. Where are your shoes?



Dr. Chris Root's patented two-part in-hospital belly box assessment:

1. What is your blood pressure?
2. What does the CT show?



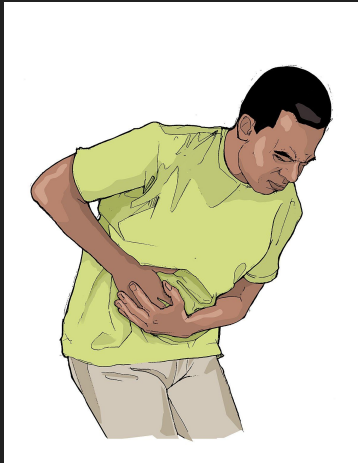
Goals

- Understand the anatomy of the abdomen
- Recognize different pathologies that can cause abdominal pain
- Recognize high risk features of abdominal pain

BLUF

- Abdominal pain is PAIN. It should be taken seriously and treated appropriately
- Most cases of adult abdominal pain deserve a 12-lead
- Beware the older adult with abdominal pain

What is your differential for abdominal pain?



Red Flags

- Fever
- Hypotension
- Age > 50
- Pain out of proportion
- Immunosuppression
- Prior abdominal surgeries

Types of Pain

Visceral- Organ itself

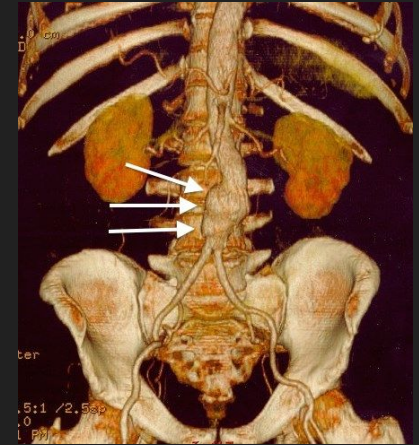
Parietal- Irritation of the peritoneum

Referred- Brain projects visceral pain as occurring elsewhere

Immediately life-threatening diagnoses

50 yo M, Smoker, HTN, severe abdominal pain, hypotension, pallor, palpable pulsatile abdominal mass:

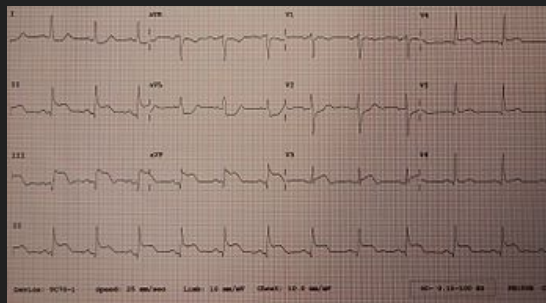
Ruptured Abdominal Aortic Aneurysm



Immediately life-threatening diagnoses

67 yo F, sharp epigastric pain, pallor, diaphoresis

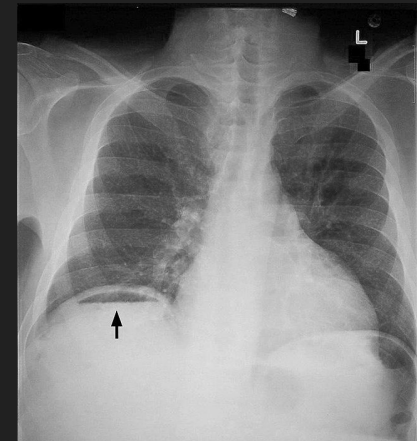
STEMI



Immediately life-threatening diagnoses

72 yo M, hx of diverticulitis, constipation, febrile, tachycardic, rigid abdomen

Bowel Perforation



Immediately life-threatening diagnoses

47 yo F, prior cholecystectomy, tachycardic, hasn't pooped or passed gas for 24 hours

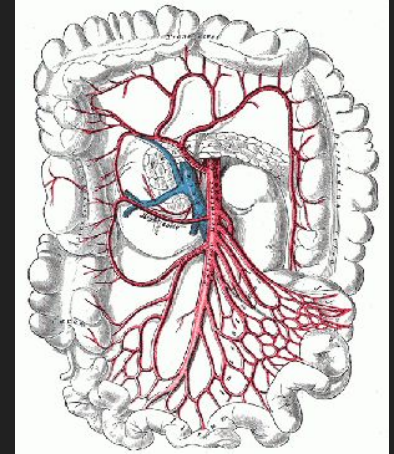
Small Bowel Obstruction



Immediately life-threatening diagnoses

67 yo M, smoker, hx prior CVA, A-fib, non-compliant with anticoag, tachycardic, pain worse after eating, now severely tender abdomen, bloody diarrhea

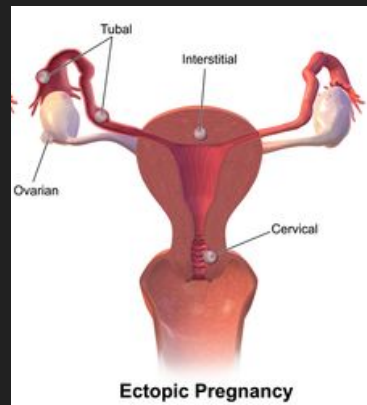
Acute Mesenteric ischemia



Immediately life-threatening diagnoses

24 yo F, no PMHx, LMP 6 weeks ago, severe RLQ pain, tachycardia, hypotension

Ruptured Ectopic Pregnancy



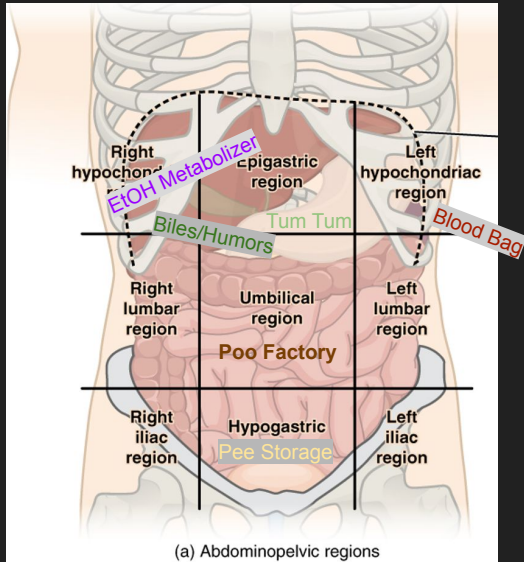
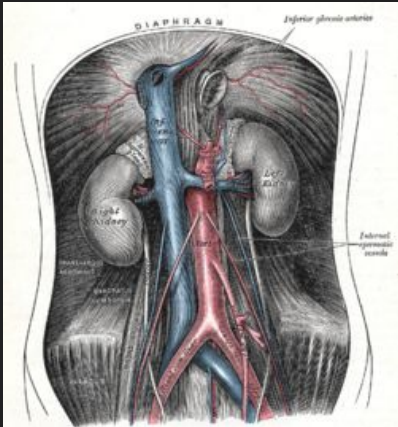
Immediately life-threatening diagnoses

32 yo M, Hx IDDM, Confused, tachycardic, tachypneic, diffuse abd pain, BGL reads "HI"

DKA

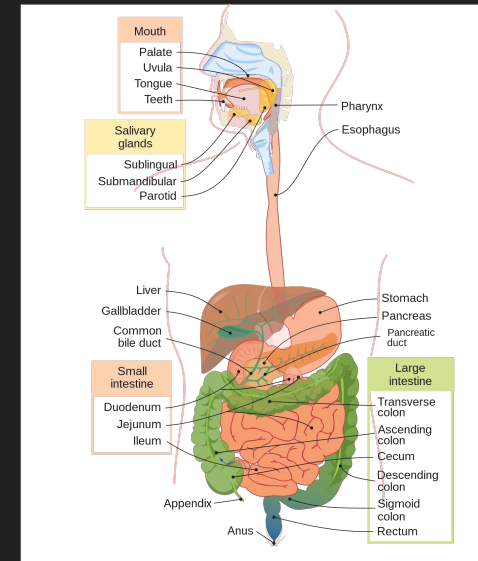


Understanding the Belly Box



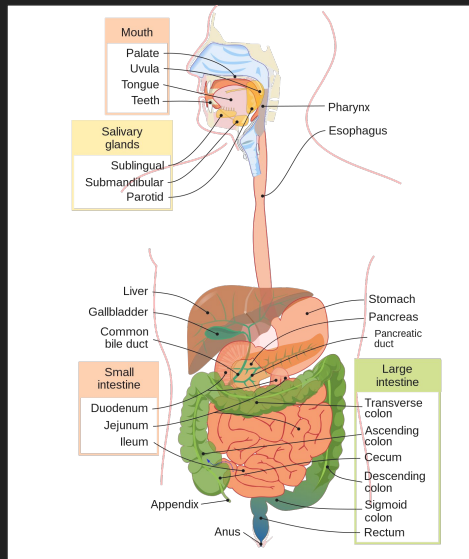
GI System

- Stomach
- Liver
- Gallbladder
- Pancreas
- Small Bowel
- Large Bowel



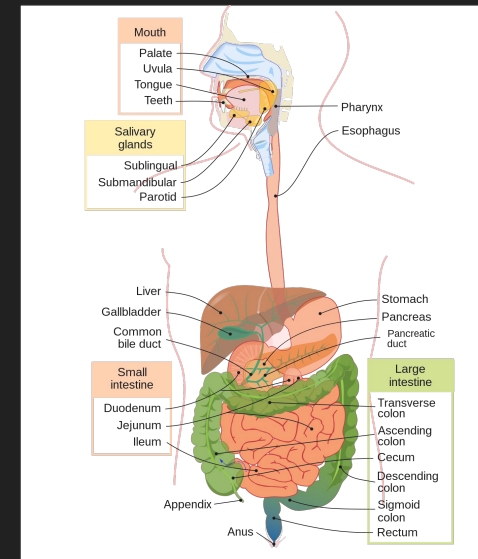
GI System

- Gastritis
- GERD
- Peptic Ulcer Disease
- Gallstones
- Cholecystitis
- Cholangitis
- Acute Hepatitis
- Spontaneous Bacterial Peritonitis
- Pancreatitis



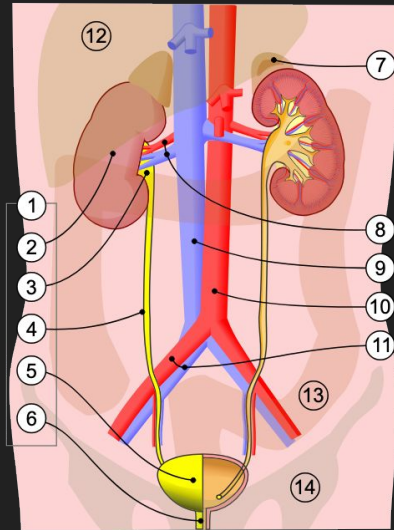
GI System

- Bowel obstruction
- Bowel perforation
- Duodenal Ulcer
- Colitis
- Hernias
- Appendicitis
- Diverticulitis



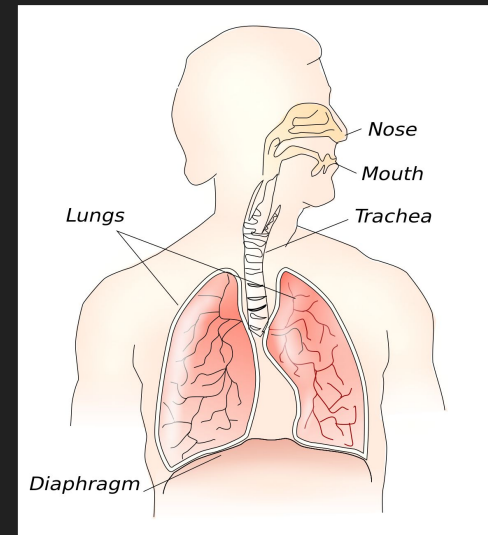
GU System

- Kidney Stone
- Pyelonephritis
- Cystitis
- Urinary Retention



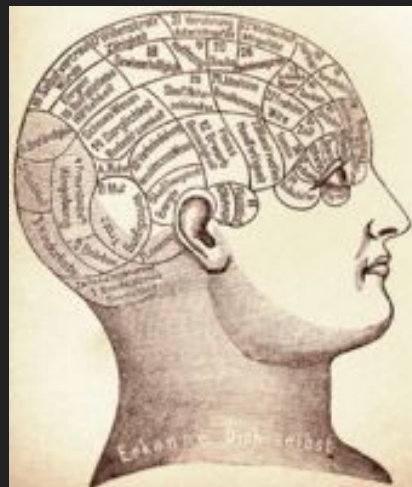
Respiratory System

- Lower Lobe Pneumonia
- Lower Lobe Infarct
- Empyema



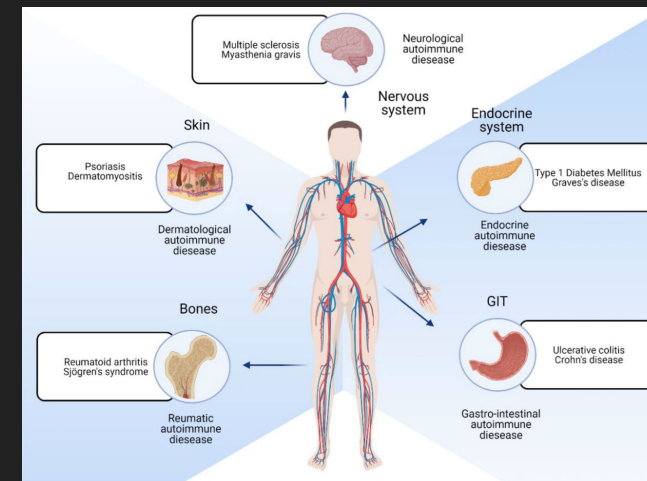
Psych

- Depression
- Anxiety
- Somatic Symptom Disorder



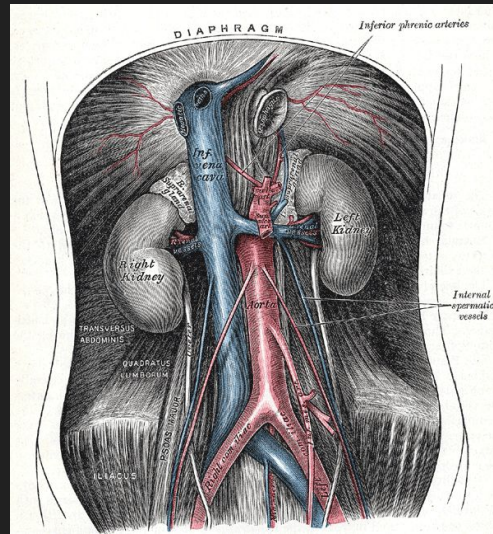
Immune System

- Ulcerative Colitis
- Crohns
- Celiac



Cardiovascular System

- Acute Coronary Syndrome
- AAA
- Aortic Dissection
- Acute Mesenteric Ischemia
- Venous Thrombosis
- Aortic Thrombosis
- Splenic infarct
- Splenic rupture



Not all abdominal pain is created equal



Med student audition tip #7... This is one of my favorite hypothetical questions to ask students:

Two 70 year old patients check in at the same time. They have the same comorbidities. One has a CC of abdominal pain, and the other one has a CC of chest pain. Which one is more likely to have a serious emergency and die in the next 2 weeks?

Older Adults

- Altered pain perception
- More likely to have underlying issues
- Present later



Physical Exam

- Inspect
- Auscultate
- Palpate



Diagnostics

Vitals

BGL

EKG



Treatment

IV Access

Fluids as indicated

Treat pain and nausea



A note on treating pain

Review > [JAMA](#). 2006 Oct 11;296(14):1764-74. doi: 10.1001/jama.296.14.1764.

Do opiates affect the clinical evaluation of patients with acute abdominal pain?

Sumant R Ranji¹, L Elizabeth Goldman, David L Simel, Kaveh G S. Jarian

Affiliations + expand

PMID: 17032990 DOI: [10.1001/jama.296.14.1764](#)

NOPE!

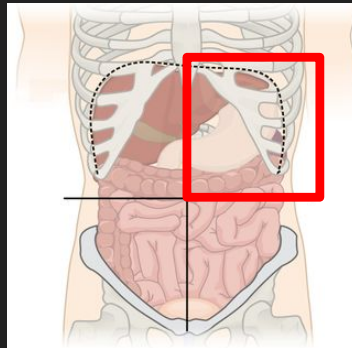
Case 1

32 yo M, CC: LUQ Pain.

Hx IV drug use, several weeks of cough, now with fever, shortness of breath. Tachycardia, tachypnea, low normal SpO₂. Diminished lung sounds, L bases, ronchi all fields.

Differential by Location: LUQ

GI
Gastric Ulcer
Gastritis
PUD



Non-GI:
Pneumonia
Pulmonary Infarct
Empyema
Renal Colic
Pyelonephritis

Case 1

32 yo M, CC: LUQ Pain.

Hx IV drug use, several weeks of cough, now with fever, shortness of breath. Tachycardia, tachypnea, low normal SPO₂. Diminished lung sounds, L bases, ronchi all fields.

Empyema



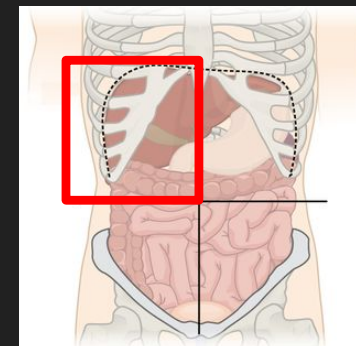
Case 2

44 yo F, CC: RUQ Pain, worse after eating.

Hx HTN, IDDM, Obesity. Vitals stable. Tender in RUQ, Inspiratory arrest with pressure in RUQ

Differential by Location: RUQ

GI:
Biliary Colic
Cholecystitis
Cholangitis
Hepatitis
Liver Abscess
Duodenal Ulcer
Portal Vein Thrombosis



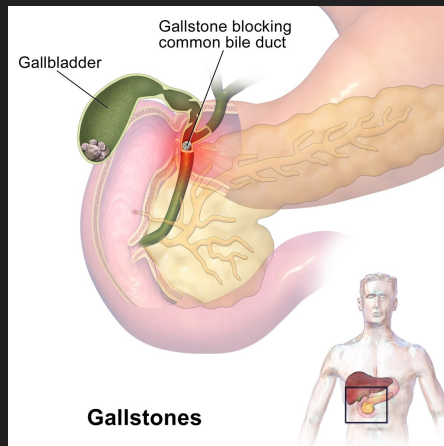
Non-GI:
Pneumonia
Pulmonary Infarct
Empyema
Renal Colic
Pyelonephritis

Case 2

44 yo F, CC: RUQ Pain, worse after eating.

Hx HTN, IDDM, Obesity. Vitals stable. Tender in RUQ, Inspiratory arrest with pressure in RUQ

Cholecystitis



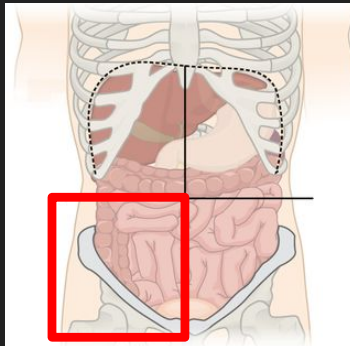
Case 3

28 yo F, CC: RLQ pain, severe, intermittent.

Hx Ovarian Cysts, Vitals stable, also has nausea and vomiting during pain.

Differential by Location: RLQ

GI:
Appendicitis
Colitis
IBD
Epiploic Appendagitis
Neutropenic Enterocolitis
Hernia



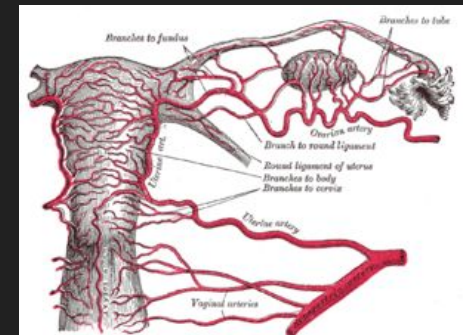
Non-GI:
Renal Colic
Ectopic Pregnancy
Ovarian Torsion
Testicular Torsion
Ruptured Ovarian Cyst
Pelvic Inflammatory Disease

Case 3

28 yo F, CC: RLQ pain, severe, intermittent.

Hx Ovarian Cysts, Vitals stable, also has nausea and vomiting during pain.

Ovarian Torsion



Case 4

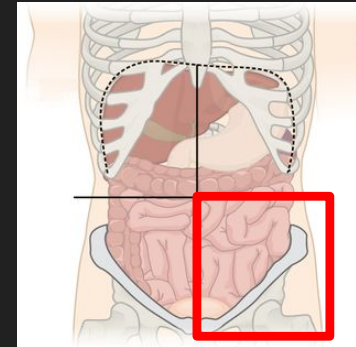
77 yo M, CC: LLQ pain, fever

Hx Diverticulosis, tachycardic, normal BP, also has some bloody stool.

Diverticulitis

Differential by Location: LLQ

GI:
Diverticulitis
Colitis
IBD

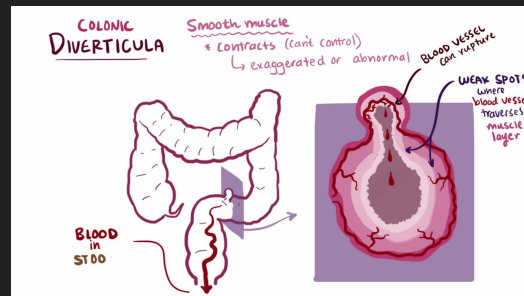


Non-GI:
Renal Colic
Ectopic Pregnancy
Ovarian Torsion
Testicular Torsion
Ruptured Ovarian Cyst
Pelvic Inflammatory Disease

Case 4

77 yo M, CC: LLQ pain, fever

Hx Diverticulosis, tachycardic, normal BP, also has some bloody stool.



Case 5

55 yo M, CC: Burning epigastric pain

Hx EtOH use, HTN. Ate green chile stew 1 hr ago.

Differential by Location: Epigastrium

GI:

Esophagitis

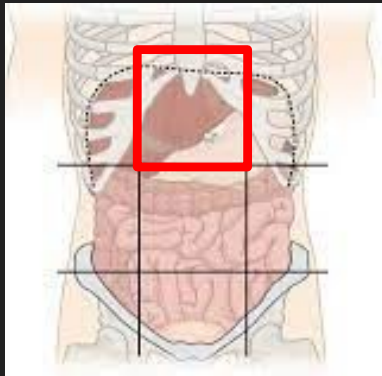
Gastritis

Pancreatitis

Mesenteric Ischemia

PUD

GERD



Non-GI:

ACS

Pericarditis

AAA

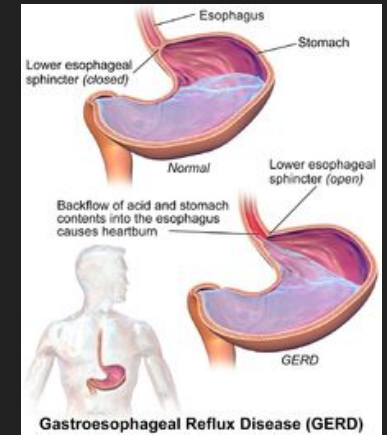
Aortic Dissection

Case 5

55 yo M, CC: Burning epigastric pain

Hx EtOH use, HTN. Ate green chile stew 1 hr ago.

GERD (after a negative EKG)



Case 6

67 yo M, CC: Suprapubic pain

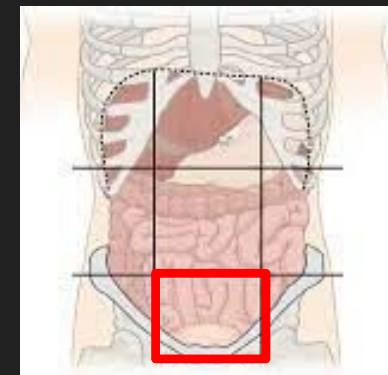
Hx BPH, increased urinary frequency, but volume is lower. Fullness in suprapubic region on palpation.

Differential by Location: Suprapubic

GI:

Diverticulitis

Appendicitis



Non-GI:

Ectopic Pregnancy

PID

Cystitis

Prostatitis

Urinary Retention

Endometriosis

Case 6

67 yo M, CC: Suprapubic pain

Hx BPH, increased urinary frequency, but volume is lower. Fullness in suprapubic region on palpation.

Urinary Retention



Case 8

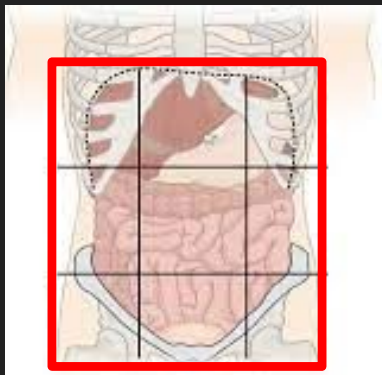
51 yo M, CC: Diffuse Abdominal Pain

Hx Cirrhosis, + Jaundice, Fever, tachycardia, abdomen is distended with fluid wave.

Differential by Location: Diffuse

GI:

- Bowel Obstruction
- Bowel Perforation
- Mesenteric Ischemia
- Irritable Bowel Syndrome
- Constipation
- Gastroenteritis
- Spontaneous Bacterial Peritonitis



Non-GI:

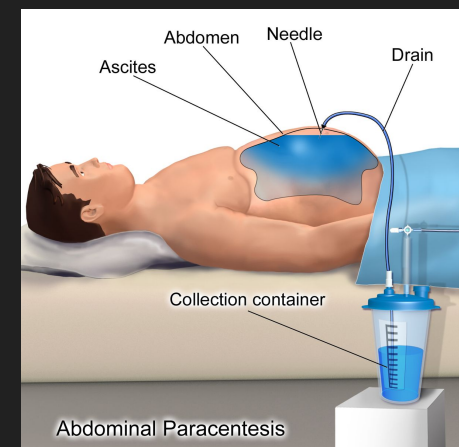
- DKA
- Sickle Cell Crisis
- Porphyria
- Opioid Withdrawal
- Cannabinoid Hyperemesis
- Heavy Metal Poisoning

Case 8

51 yo M, CC: Diffuse Abdominal Pain

Hx Cirrhosis, + Jaundice, Fever, tachycardia, abdomen is distended with fluid wave.

Spontaneous Bacterial Peritonitis



Key Take Homes

- Abdominal pain is PAIN. It should be taken seriously and treated appropriately
- Most cases of adult abdominal pain deserve a 12-lead
- Beware the older adult with abdominal pain

References and Further Reading

Abramson TM, Sanko S, Kashani S, Eckstein M. Safety of Tiered-Dispatch for 911 Calls for Abdominal Pain. West J Emerg Med. 2019 Oct 17;20(6):957-961. doi: 10.5811/westjem.2019.9.44100. PMID: 31738724

<https://www.ems1.com/patient-assessment/articles/back-to-the-basics-that-gut-feeling-zoX9LTuSgh0Qaj4g/>

Medic Mindset Podcast: Thinking Abdominal Pain

<https://medicmindset.com/2022/03/18/thinking-abdominal-pain/>

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