

Critical Thinking Skills for Clinicians

By: Dr. Brynne Ridgewell

Case # 1



HPI: A 40 yo female presents with a complaint of nausea, abdominal swelling and pain, and has not passed stool in 5 days.

1. What are you most worried about?
2. What are your first three general diagnoses?
3. What information do you need next? →
HPI

What is critical thinking in medicine?

Goal → identify all plausible explanations for patient presentation

How? Turning objective data into a testable differential diagnoses.

Ask: What is most Likely? What would be dangerous to miss? What can I realistically investigate?

Employ Cognitive Flexibility: don't let bias anchor you

HPI:

Location

Worst in LLQ

Onset

4-5 days, This has happened before

Characteristics

Early fullness, stomach swelling

Alleviating factors

None

Aggravating factors

Lying down flat, eating large meals

Associated Symptoms

Burping, nausea

Timing

Environment

Intermittent

Severity

None

6/10

Patient Assessment

Physical Exam

Vitals:

HR- 73 bpm

BP - 137/88

Temp - 36.9 C

RR - 18

SPO2 - 99% RA

General: well nourished female, uncomfortable appearing

Cardiac: regular rate and rhythm, normal S1, S2 without murmur

Pulmonary: normal work of breathing, lungs are clear bilaterally

Abdomen: rounded abdomen, soft, percussion with tympany over the stomach, dullness in other quadrants. Bowel sounds hypoactive throughout. Tenderness to deep palpation diffusely.

Genitourinary: No suprapubic tenderness. No pain at right and left adnexa.

Extremities: Upper and lower extremities without edema

Build a broad Differential Diagnosis: "VINDICATE"

Vascular

Infectious/Inflammatory

Neoplastic

Degenerative

Idiopathic/Intoxication/Iatrogenic

Congenital

Autoimmune/Allergy/Anatomic

Trauma

Endocrine

Vascular: Mesenteric Ischemia, atypical chest pain/MI

Infectious/Inflammatory: Pancreatitis, PUD, reflux, Gastroenteritis, Appendicitis, cholecystitis, choledo, diverticulitis, colitis

Neoplastic: obstructing mass, metastases

Degenerative Referred back pain???

Toxic: drug induced liver injury, poison ingestion

Congenital: Malrotation

Autoimmune: Irritable bowel disease: Crohn's or ulcerative colitis, primary or sclerosing biliary cholangitis

Allergic: Food or medication side effects

Anatomic: Ileus, Constipation, SBO, Intussusception, volvulus

Trauma: Organ laceration or perforation

Endocrine: Gastroparesis from DM

Applications to Medicine: Bring Order to your differential

What is most likely?

Dangerous to miss?

What can I realistically investigate?

What finding would support my diagnosis? What would argue against it?

Gathering Supporting Data:

What labs do I want?

What imaging do I want?

Evidence:

Lab values:

FBC:

- WBC 4.5
- Hb 14.5
- Plt 278

RFT

- BUN 5
- Cr 65

LFT

- AST 45
- ALT 30
- Alk Phos 140
- GGT 61

Xray:



Ultrasound:

Liver - homogenous parenchyma

Gallbladder - multiple gallstones present, no pericholecystic fluid, no cystic ductal dilatation

Spleen - homogenous texture, 11 cm in length

Renal - right and left normal parenchyma, sizes normal, no ureteral dilation bilaterally

Bladder- decompressed

Interpreting Evidence:

Anchoring

“I’ve decided what this is, and everything afterward gets interpreted through that diagnosis.”

Premature closure

“I have a diagnosis, so I’m done.”

Availability bias

“I recently saw this disease, so I overestimate how likely it is.”

Confirmation bias

“I look for evidence supporting my diagnosis rather than evidence against it.”

Search satisficing

“I found one explanation, so I stop looking—even though it doesn’t explain everything.”

Avoid Logic Traps:

“One diagnosis to explain everything”

The lesson: Not every abnormality has to come from the same disease.

Sometimes the correct differential is:

Diagnosis A + Diagnosis B

rather than searching endlessly for an exotic diagnosis that explains everything.

Most Likely Diagnoses?

1. Constipation
2. Ileus
3. PUD or Biliary Colic

→ Next Steps?

Case # 2:

HPI: A 44 yo male presents with a complaint of nausea, vomiting, abdominal swelling and pain, and has not passed stool in 5 days.



HPI:

Location	All over, diffuse
Onset	4-5 days, This has not ever happened before
Characteristics	Cramping
Alleviating factors	None
Aggravating factors	Movement
Associated Symptoms	Emesis, sweating
Timing	Constant
Environment	None
Severity	10/10

Patient Assessment

Physical Exam

Vitals:

HR- 111 bpm

BP - 145/90

Temp - 37.9 C

RR - 22

SPO2 - 99% RA

General: well nourished male, diaphoretic, uncomfortable appearing

Cardiac: tachycardic rate, normal S1, S2 without murmur

Pulmonary: normal work of breathing, lungs are clear bilaterally

Abdomen: rounded abdomen, tympanic to percussion in LQ, RUQ and RLQ.
Dullness LLQ. Bowel sounds hypoactive throughout. Tenderness to deep palpation diffusely.

Genitourinary: No suprapubic tenderness.

Extremities: Upper and lower extremities without edema

Build your differential diagnosis: "VINDICATE"

Vascular
Infectious/Inflammatory
Neoplastic
Degenerative
Idiopathic/Intoxication/Iatrogenic
Congenital
Autoimmune/Allergy/Anatomic
Trauma
Endocrine

What are you most
worried about now?

Evidence:

Lab values:

FBC:

- WBC - 15.3
- Hb - 11
- Plt 258

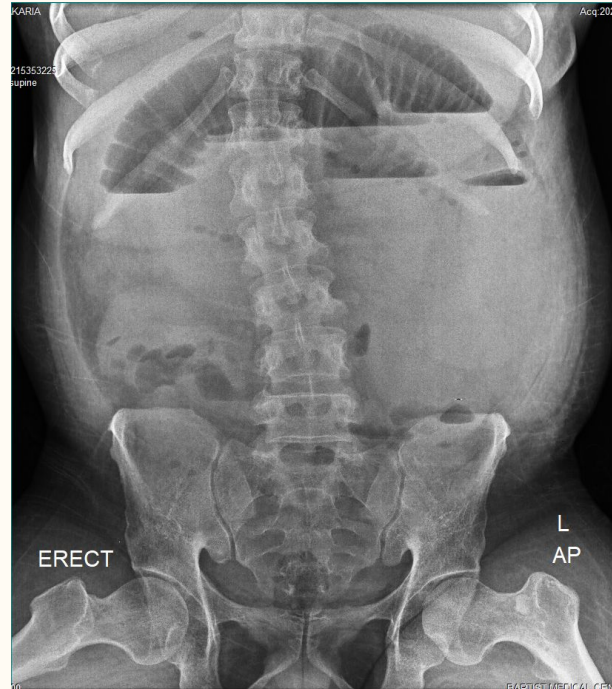
RFT

- BUN 4.3
- Cr 7.1

LFT

- normal

Xray:



Ultrasound:

Liver - homogenous parenchyma

Gallbladder - no pericholecystic fluid, cystic ductal dilation or gallstones

Spleen - homogenous texture, 11 cm in length

Renal - right normal parenchyma, left with 0.32x0.33 cm nephrolithiasis in renal pelvis, sizes normal, no ureteral dilation bilaterally

Bladder - decompressed

Interpreting Evidence:

Now, reorder your differential based on these new facts.

What is more likely?

What is less likely? Why?

Most Likely Diagnoses:

1. SBO or Paralytic Ileus
- 2.
- 3.

→ Next Steps?

NPO
NG tube
Foley
Fluids
Prophylactic Abx

THANK YOU!