Clinical Reasoning Strategy

Teaching of Tomorrow
March 2019

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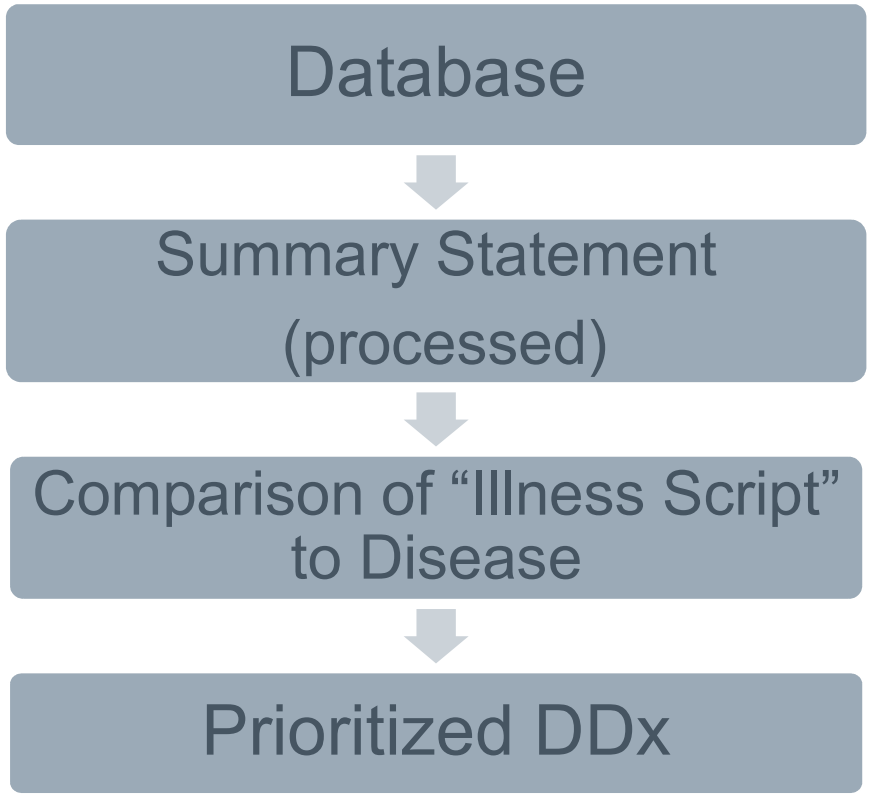
Can We Teach Doctors How to Think?



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Processing Key Features

- Eliminate non-specific/redundant symptoms
- Identify most important symptoms
- Group those symptoms/signs that explain the most important symptom (identify patterns)
- Descriptively process all items on the list

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Summary Statement (Illness Script)

- Key features of the database (processed)
- Time course
- Epidemiology

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Compare and Contrast

- Generate potential diagnoses to consider
- Define the key or classic features of proposed disease
- Compare and contrast these features with the features and patterns in current patient
- Prioritize the DDx based on the comparison process

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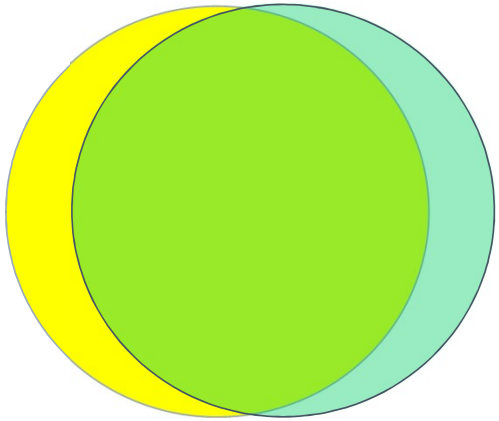
Prioritized DDx

- Type 1 Diagnosis



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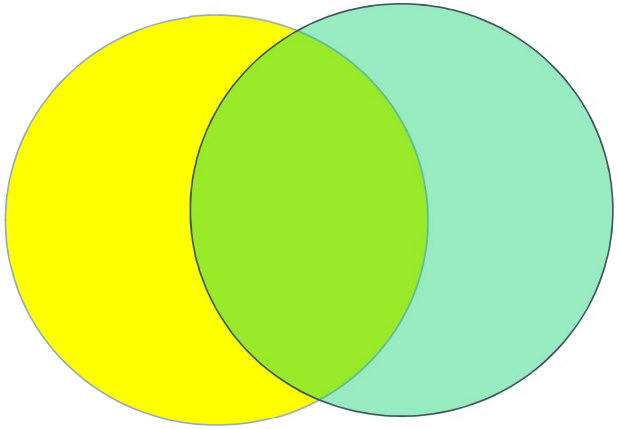
Prioritized DDx

- Type 2 Diagnosis



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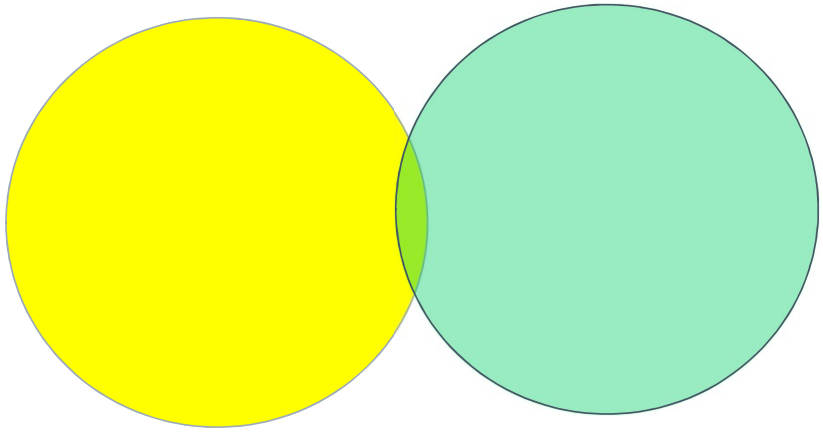
Prioritized DDx

- Type 3 Diagnosis



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Prioritized DDx

- Type 1b Diagnosis

?

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Prioritized DDx

- Type 1
  - 1b
- Type 2
- Type 3

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Large Group Case

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CC: Diarrhea

› 14yo Ecuadorian male presents with 4 days of progressively worsening diarrhea. Stool 10x/day with mucus initially, now with some blood. Patient recently traveled to U.S., no new foods, no known exposures. U.S.-born 14-month old sibling had few loose stools 2 days ago, but no further symptoms. No other sick contacts. He also c/o nausea and crampy abdominal pain that improves with diarrhea.

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CC: Diarrhea

- PMHx:
  - Unknown
    - lived in Ecuador whole life, here with step-father
- SocHx:
  - walked to U.S. border, then drove to MA (arrived 5 days ago)
  - no tobacco, EtOH, or drugs
- Meds:
  - no daily meds
  - tried Pepto Bismol (no effect)
- NKDA/NKFA

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- NKDA/NKFA

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CC: Diarrhea

Physical Exam

- VS: 101.2F BP 118/72 HR 124 Wt 35kg (<3%, z= -2)
- GEN: thin, ill-appearing 14yo male, short stature
- HEENT: dry membranes, poor dentition
- CV: tachy, but regular rhythm, pulses 2+ b/L, CR <3s
- ABD: diffusely tender (L>R), no rebound/guarding, no perirectal fissures/tears
- SKIN: no rashes, diminished turgor

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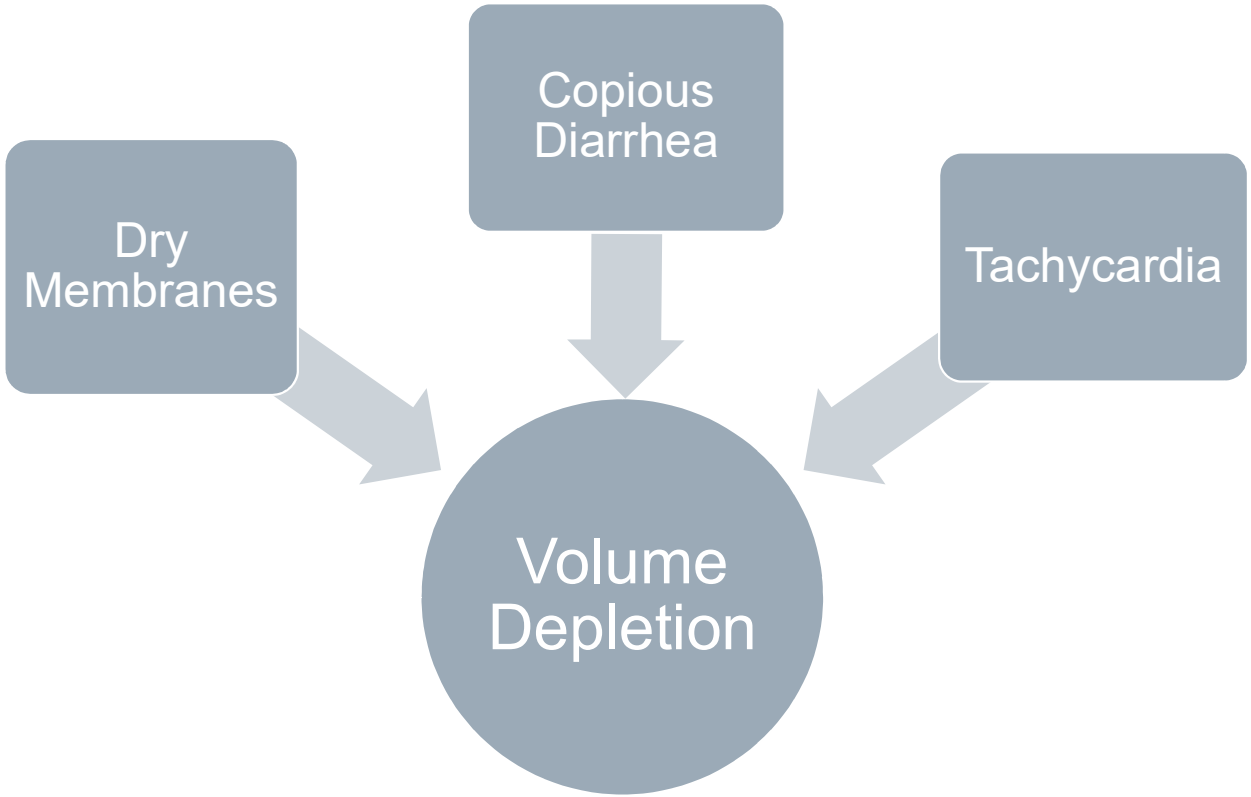
Processed Key Features



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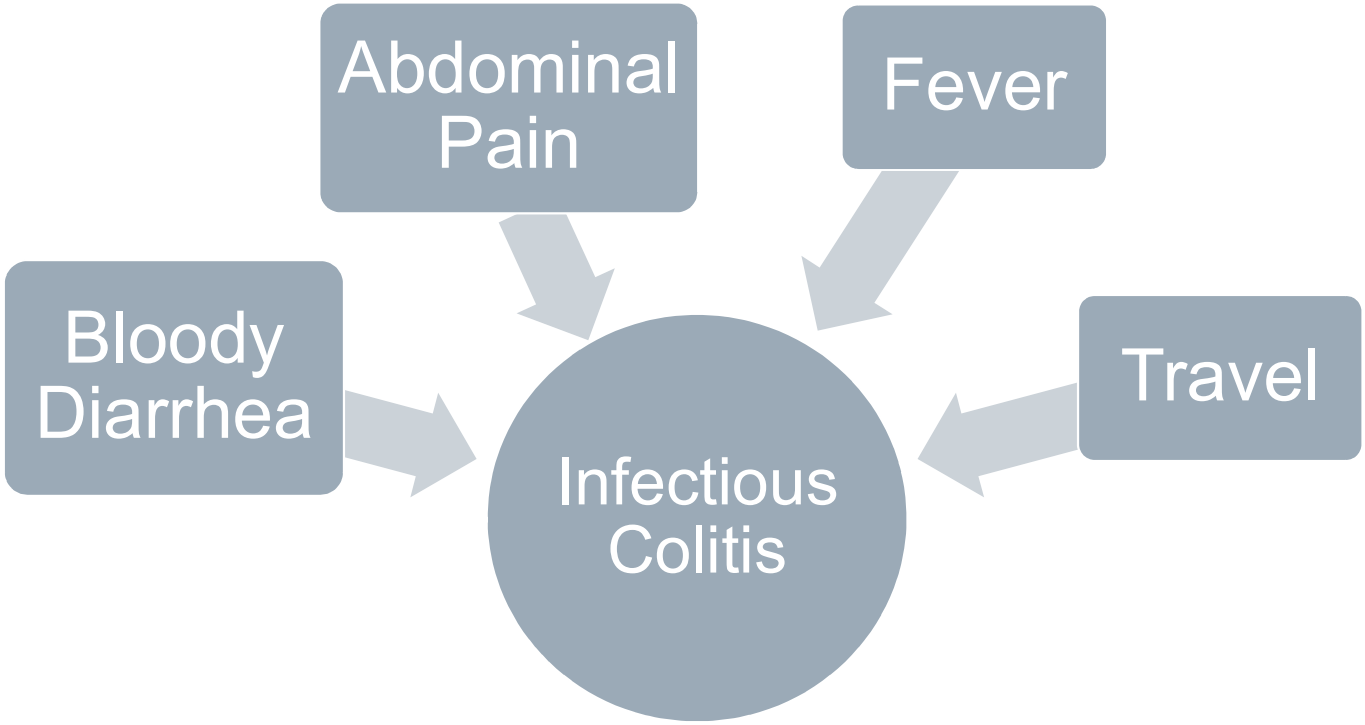

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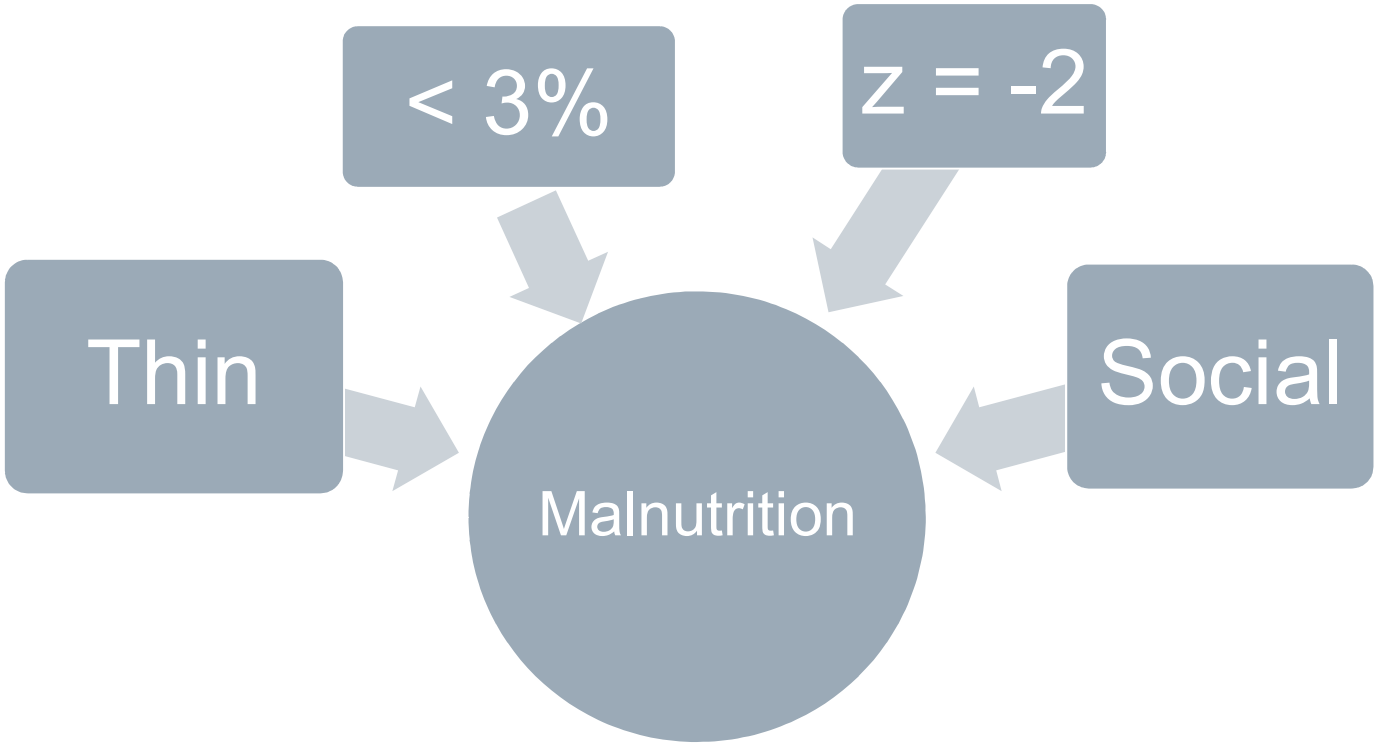
Processed Key Features



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Summary Statement

Epidemiology: 14yo male recent emigrant

Time Course: acute

Key Features:

- Infectious Colitis
- Volume Depletion
- Malnutrition

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CC: Diarrhea

Prioritized D/Dx

- Type 1:
  - 1b:
- Type 2:
- Type 3:

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CC: Diarrhea

Prioritized D/Dx

- Type 1: Bacterial Enterocolitis, Parasitic infection, Viral Enterocolitis
  - 1b: Sepsis, HUS, toxic exposure
- Type 2: IBD, Functional diarrhea, Lactase deficiency, Starvation stools
- Type 3: Withdrawal, food allergy

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Table Practice Case 1

An ED admission

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CC: I am short of breath

- 72 yo male presents describing 3 days of increasing dyspnea. Initially this was with mild exertion such as going up one flight of stairs, but then became notable at rest, especially when lying to sleep. He also notes some mild swelling of his legs, R>L over the previous week. He denies fever but does complain of a general sense of weakness. He has had a slight increase in his baseline chronic cough. He recently returned from a trip to Spain, where he acknowledges considerable dietary indiscretion.

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CC: I am short of breath

- PMHx:
  - COPD
  - HTN
  - DM (diet-controlled)

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CC: I am short of breath

› SHx:

- Former tobacco abuse (60 pk-yrs)
- ETOH: none
- IVDA: none
- Retired auto mechanic

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CC: I am short of breath

- Meds:
  - Lisinopril 10 mg po daily
  - HCTZ 25mg po daily
  - Albuterol MDI 2 puffs QID prn dyspnea
  - Fluticazone MDI 2 puffs BID

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CC: I am short of breath

PE:

- VS: T=37.9 BP=155/85 P=100 pOX=91%(2L)
- Gen: elderly male in no acute distress
- Neck: +JVD with est CVP=10cm
- Lungs: rales bilaterally (R>L)
- Abd: soft, non-tender, NABS
- Ext: pitting edema bilaterally to knees
- Neuro: A&O x3, otherwise non-focal

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CC: I am short of breath

Data:

- WBC=13.4
- Electrolytes WNL
- Creatinine=1.9
- BNP= 500
- D-dimer mildly elevated
- EKG: sinus tach with LVH
- CXR: Small R effusion, moderate vascular redistribution, question small R basilar infiltrate vs atelectasis

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Educational Scenario

- You meet your team in the ED to precept this case
  - Your team is an MS4 and an R2
  - The MS4 has presented the information above

- Now use the clinical reasoning paradigm to discuss the case.

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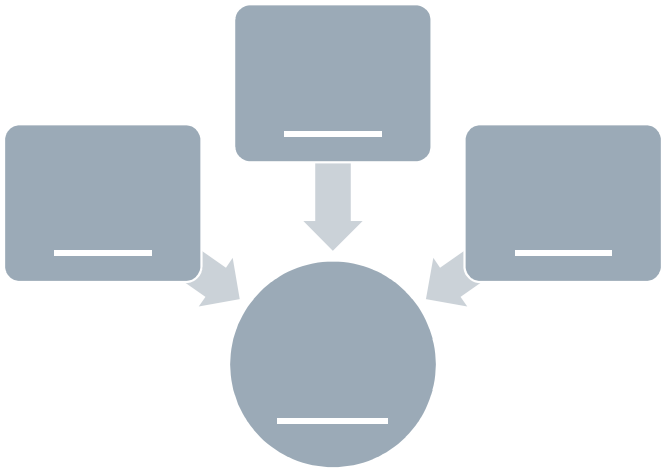
Clinical Reasoning Paradigm



Epidemiology:

Time Course:

Key Features:

Prioritized D/Dx

- Type 1:
  1b:
- Type 2:
- Type 3:

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Table Practice Case 2

A Clinic Patient

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CC: I have chest pain

- 19yo male presents with acute onset of sharp chest pain today after playing basketball. Denies trauma other than physically competitive basketball practice. Worse discomfort with deep breaths. Denies anginal pain, tearing pain, denies positional pain, palpitations, dizziness, or difficulty breathing. Recent viral URI, but otherwise healthy. Denies cough and fever.

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CC: I have chest pain

- PMHx:
  - History of asthma, no PICU, no ETT, last exacerbation prior to high school.
  - History of L shoulder dislocation x2 in high school
- ALL: NKDA
- Meds: none
- SurgHx: tooth extraction x2 (for orthodontia)

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CC: I have chest pain

- SocHx:
  - Attends local college, pre-law major
  - Smokes occasional tobacco (socially)
  - EtOH: socially (Th-Sat) with friends
  - Drugs: occasional THC (socially)
  - Plays for college team
  - Currently sexually active with partner, monogamous relationship

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CC: I have chest pain

Physical Exam

- VS: T 37.2 HR 94 RR 26 BP 124/82 pOx 96%ra
- GEN: Tall, thin male in minor discomfort
- PULM: Clear b/L with no increased WOB, but ? diminished L upper lung field. No tenderness in chest wall.
- CV: Tachy but regular without murmur. +2 pulses b/L
- MSK: No tenderness in chest wall. Muscle strength and AROM/PROM in left shoulder is equal to right side. Normal muscle bulk.

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CC: I have chest pain

Data:

- ECG: non-specific ST changes in anterior leads, T-wave inversion in V1-V3
- CXR: Lung fields clear. Heart size normal. Small left upper lobe pneumothorax. No bony abnormalities appreciated.

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Educational Scenario

- You meet with the learner to precept this case
- Learner is a PGY-1 in July
  - 1st week on rotation (FM or peds)
  - This was their presentation

- Use the clinical reasoning paradigm to discuss the case

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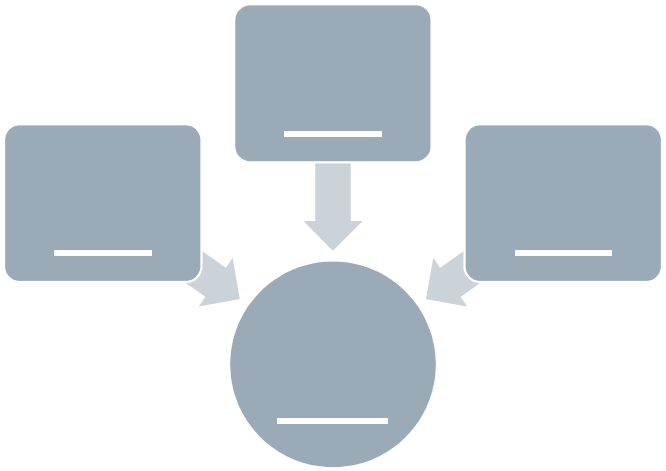
Clinical Reasoning Paradigm



Epidemiology:

Time Course:

Key Features:

Prioritized D/Dx

- Type 1:
  1b:
- Type 2:
- Type 3:

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Table Practice Case 3

A ^ Clinic Patient

Peds

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CC: He has a rash

- Mother reports rash on her 11yo male child. She noticed it this morning when she woke him for school (chest and abdomen). Patient reports mild sore throat that started yesterday and is now “way worse”. Hurts to swallow food, but is able to drink. However, has been nauseous so decreased drinking today. Complaining of neck pain and a headache that have started since this morning.
- First time ever having these symptoms.

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CC: He has a rash

- PMHx:
  - Orthodontia placed September 2018
  - Allergic rhinitis
  - History of toddler's fracture
  - History of frequent otitis media as infant, no PETs
- SocHx:
  - attends 5th grade, no EtOH or tobacco
- ALL: peanuts (severe), NKDA
- Meds: loratadine 10mg chewable prn; EpiPen prn

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CC: He has a rash

Physical Exam

- VS: T 100.6 BP 108/64 HR 84 RR 20 Wt 45kg
- GEN: pale, quiet 11yo, in mild discomfort
- HEENT: Fundi nml b/L, MM tacky, +halitosis, 3+ tonsils w/ +exudates, palatal petechiae, uvula bifid
- NECK: tender anterior cervical nodes R>L
- SKIN: erythematous, fine, papular rash on chest, abdomen and axillae.

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CC: He has a rash

Data:

› Rapid throat swab: positive for strep

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Educational Scenario

- You meet with the learner to precept this case
- Learner is an MS3
  - 1st week on rotation (FM or peds)
  - This was their presentation

- Use the clinical reasoning paradigm to discuss the case

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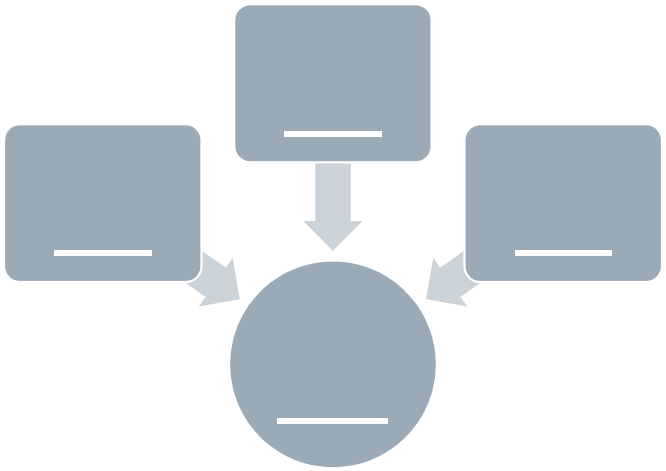
Clinical Reasoning Paradigm



Epidemiology:

Time Course:

Key Features:

Prioritized D/Dx

- Type 1:
  1b:
- Type 2:
- Type 3:

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SUMMARY

Teaching our learners critical thinking can be done, it just needs structure and deliberate practice!

1. Accumulate Data
2. Processed Summary Statement
3. Compare “Illness Script” to Disease
4. Prioritized D/Dx

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