

Clinical Problem Solving

Module 3



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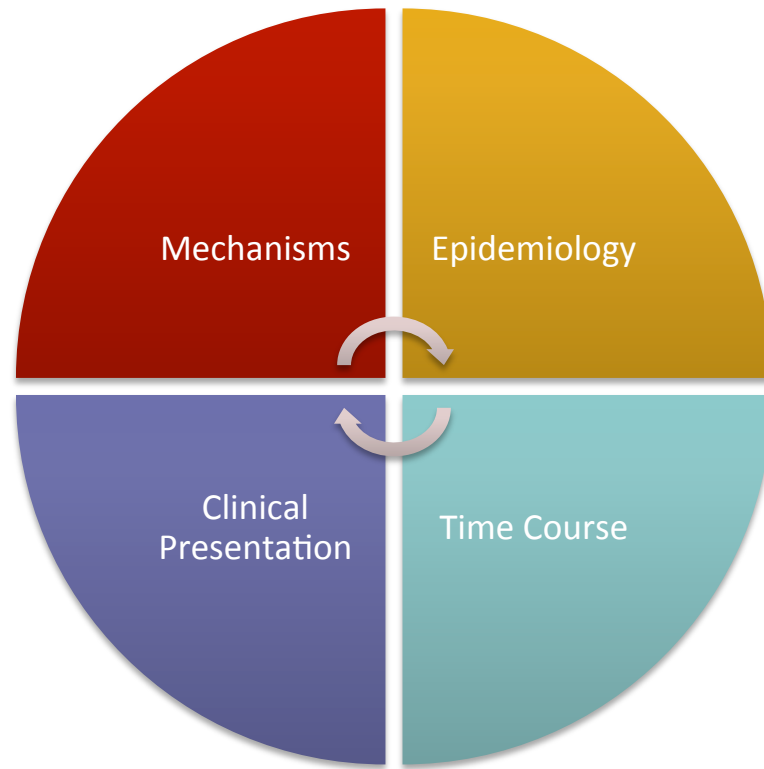
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Thanks and Acknowledgements

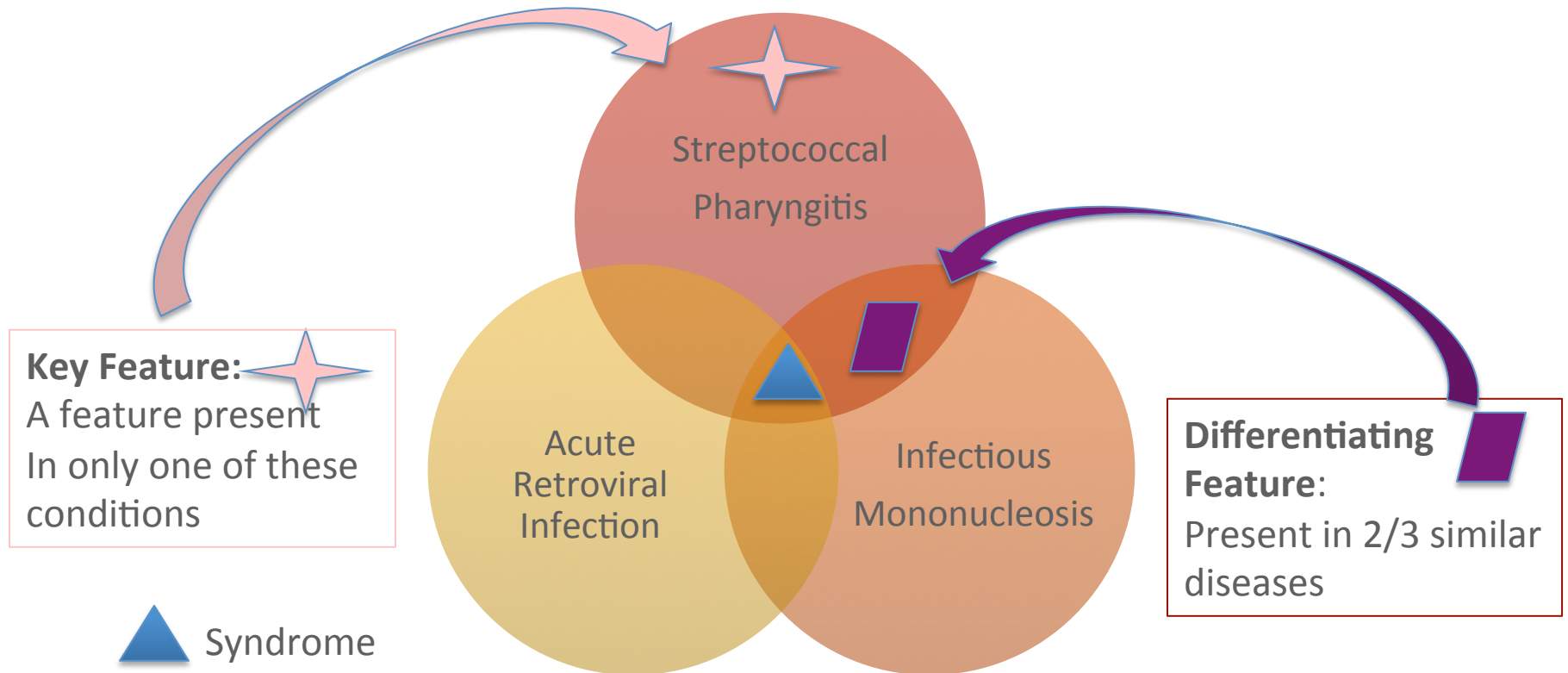
- This work would not have been possible without the intellectual efforts and collaboration of the following outstanding physicians and many students and residents
 - Frederick Williams, MD
 - Cynthia Ledford, MD
 - Judy Bowen, MD

A brief review of Modules 1 & 2

Disease Based Illness Scripts



Learning about Disease: Compare and Contrast Thinking (CCT)



Clinical Problem Solving Strategies

Hypothesis Testing

Forward Thinking

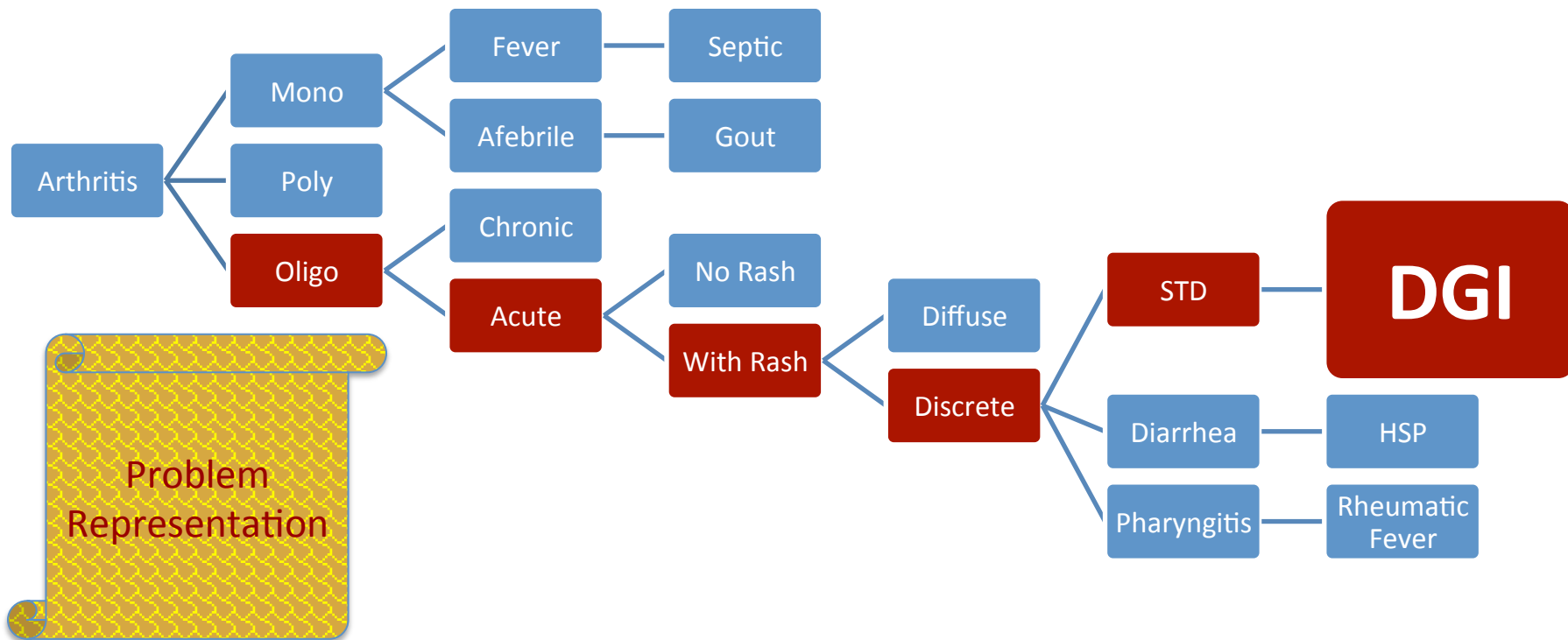
Pattern Recognition

Processing

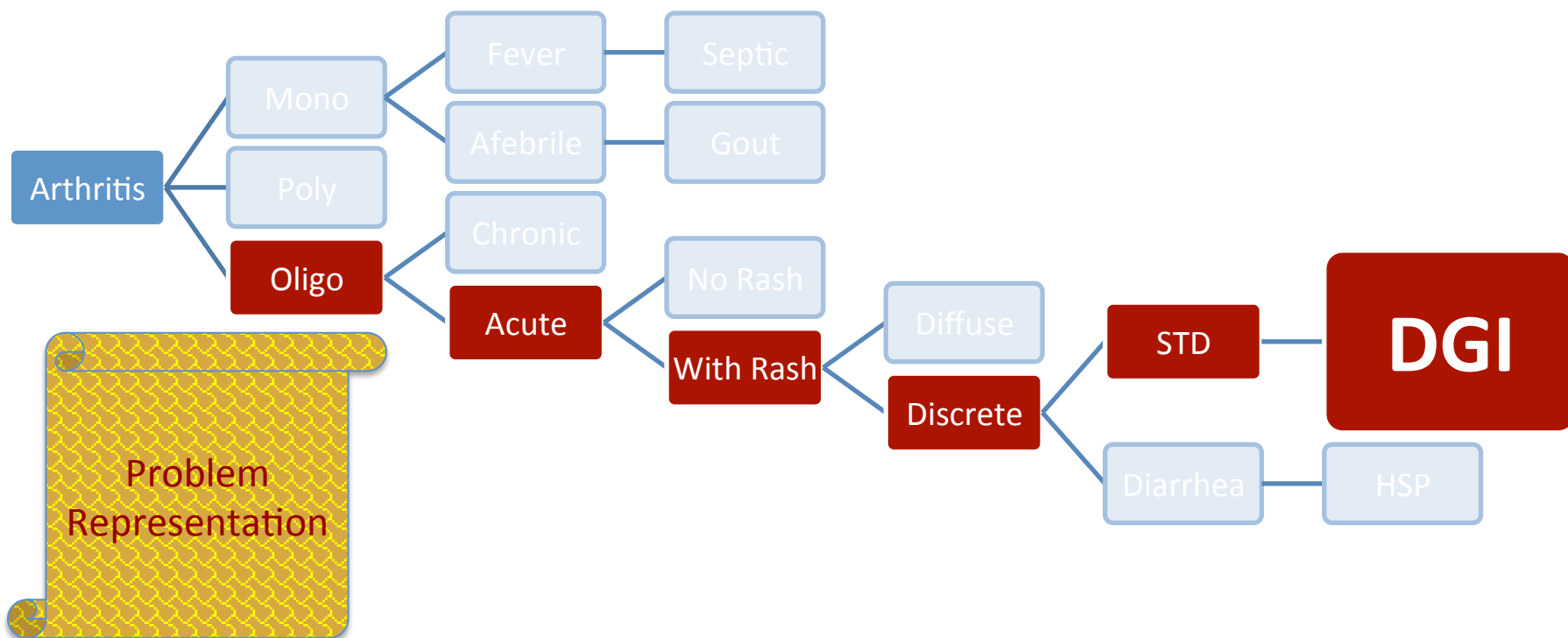
- Translating lay language into more abstract and descriptive medical terminology to:
 - Activate memory stores: play as you practice
 - Seek information in medical resources
 - Support compare and contrast thinking
 - Increase efficiency and precision in diagnosis



Forward Thinking: Trace the steps



Pattern Recognition



Module 3: New Content

- Working from the processed problem list to create the patient illness script.
- Use that patient illness script to prioritize a differential diagnosis.
- Understand how the prioritized differential diagnosis list relates to pre test probability of disease

The Patient Illness Script

Honing diagnostic skills

- Obtain information from the patient
- Compose a problem list
- Process that list to increase its impact
- Create a problem representation that facilitates comparison with disease illness scripts

Goal of the Patient Illness Script

- Shortest, richest description of the patient's problems.
 - Attend to cognitive loads and biases
- Requires prioritization of the most sensitive and specific information and
- Elimination or de-emphasis of less relevant or nonspecific symptoms
 - This information is not lost, just not carried front and center

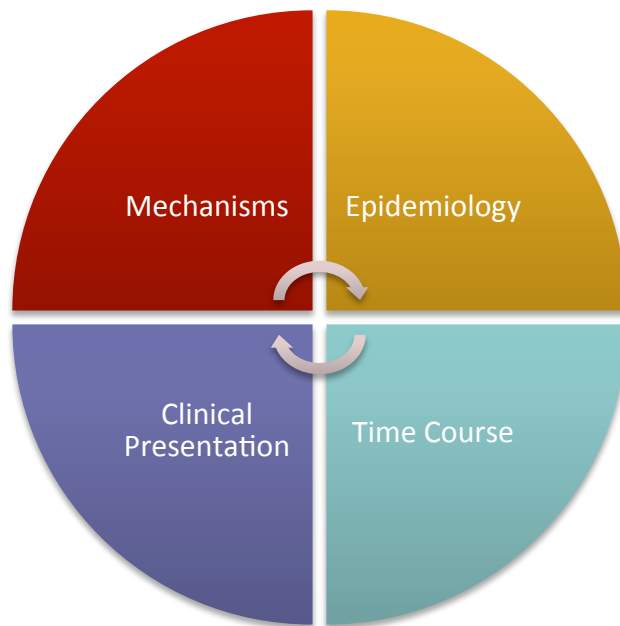
Problem Rep = Patient Illness Script

- Elements of an Illness Script
 - Epidemiology:
 - Exposures, demography, past disease history
 - Time Course
 - Syndrome Statement
 - Important medical history not otherwise included
- Almost Identical to disease illness scripts



Patient
Illness
Script

Disease Illness Script



Patient's Illness Script

Epid
Time Course
Syndrome
Other PMHx

Epidemiology: What's in? What's Out?

- Only those elements relevant to the existing case
- **Do** include: exposures of relevance
 - i.e. drugs, habits, toxins, medications
- **Do** include: PMHx that is relevant as a risk or predisposing factor
- **Don't** include: race, ethnicity, socioeconomic status, physical exam elements (i.e. obesity)
 - Usually not helpful in differential diagnosis and often create cognitive biases

Judgment is necessary!

- Decisions are made on a presentation by presentation basis.
- For example, if someone is presenting with chest pain that increases with exertion, the PMHX of htn, dm and dyslipidemia is relevant but the history of nephrolithiasis and onychomycosis is not.

Time Course: What's in, What's Out

- **Do** Include: statement about duration
- **Do** Include: descriptor of symptom persistence and intensity

Syndrome: What's in, What's out

- **Do** Include: Elements of processed problem list that are not epidemiology or time course
- **Don't** include: non specific markers of illness
 - Fatigue, malaise, tachycardia proportionate to physiology
- **Don't** include: PMHx that is not linked in some way to the chief complaint
 - We will keep track of it– just don't clutter the story
- **Don't** include: prior diagnoses for this CC unless unequivocally correct
 - Start from scratch to avoid confirmation bias

A leap of faith: Is it relevant?

- **Tachycardia**: If it causes problems in its own right rather than a marker of another more specific derangement, include it
 - Example, HR 180 is always relevant; 110 usually not
- **Fatigue and malaise**: rarely diagnostically specific, look for a better descriptor of the problem
 - Example: Fatigue: what activity can't they do? Stay awake? Lift their arms? Walk a block?
- **Truly transient symptoms**:
 - Example: one loose stool does not diarrhea make

Sophia: Simple vs. Processed

Simple Problem List

- Leg pain
- Can't walk
- Feverish
- Funny spots
- Red, warm ankle and wrist
- Swollen achilles tendon
- History of elbow pain
- T 101
- Fatigue
- Soccer Player
- Sexually Active

Processed Problem List

- Fever
- Oligoarthritis
- Enthesopathy
- Distal, discrete Hemorrhagic papules
- Sexually Active
- Exposure to ticks
- History of asthma

Processed Problem List

- Fever
- Oligoarthritis
- Enthesopathy
- Distal, discrete Hemorrhagic papules
- Sexually Active
- Exposure to ticks

Patient Illness Script

Epidemiology: young, sexually active, exposure to ticks

Time Course: acute, evanescent

Syndrome Statement:

Febrile Oligoarthritis and enthesopathy with discrete hemorrhagic pustules

Other History: Asthma

Test: Summarize this case in one sentence

- Patient illness scripts = the foundation of the case summary
- 17 yo sexually active woman with a history of tick exposure presenting with an acute history of evanescent oligoarthritis and hemorrhagic pustular rash. She also has a history of asthma.

Quiz 3.1

Every patient's illness script should include a statement about the patient's

1. Race
2. Weight
3. Symptom Complex
4. Vital Signs

TODAY: In class exercise

- Write a problem list as I present the next case.
- Use processed terms if possible.

Ana Garcia: “I’m Short of Breath”

Ana is a 57 yo woman. 1 month ago, she noted several spells of shortness of breath and a dry cough. The spells would come on abruptly and then would abate after about 30 minutes. She was seen in an ED where she was given an albuterol inhaler for asthma. She noted no improvement. The following week she had a severe episode of shortness of breath at work without provocation. It lasted about 45 minutes and then went away spontaneously.

Ana Garcia: “I’m Short of Breath”

She was seen by her primary care provider who thought the symptoms were compatible with panic attacks and advised her to stop caffeine and smoking and to try stress reduction. Over the past one week, her shortness of breath has been constant to the point where any activity leaves her gasping for breath. She denies orthopnea or paroxysmal nocturnal dyspnea but does note that she is more comfortable lying on her left side. She continues to have an irritating dry cough and mild right sided chest discomfort that does not increase with breathing.

Ana Garcia: “I’m Short of Breath”

- She admits to a 30 lb unintentional weight loss over the past month. She notes pain in both calves after walking about 1 block, relieved by rest.
- She denies fevers, chills, night sweats, hemoptysis and purulent sputum.
- She has had no recent travel, sick contacts or exposure to pets or toxins.
- She denies joint aches and pains, skin rash, or loss of hair
- **PMHX:** Htn x 6 years **Meds:** Zestril 20 mg po q day; HCTZ 25 mg po q day
- **SHX:** 30 pk years cigarettes; no IDU; Manages a McDonalds, **Allergies:** NKDA

Ana Garcia: “I’m short of breath”

PE: 130/76 HR 110 RR 28 Temp 98.9 Pulse Ox 99% on Room Air

- Mildly dyspneic at rest, is able to complete full sentences without pausing.
- **HEENT:** normal **Neck:** right supraclavicular firm node, about 1 cm in diameter
- **Lungs:** dullness to percussion about $\frac{3}{4}$ of the way up on the right. Decreased breath sounds, decreased tactile fremitus in the same area. No egophony, wheezes or rales noted. Left lung field is clear with normal breath sounds.
Cardiovascular exam: Normal JVP. Normal PMI. Normal Heart sounds with no extra sounds noted, diminished Dorsalis Pedis pulses bilaterally. No bruits are present
- **Abdomen:** normal, no Hepatosplenomegaly
- **Extremities:** + loss of hair on distal shins no clubbing, cyanosis or edema,
- **Neuro:** normal. **Joints:** normal **Skin and hair:** normal

Ana Garcia

Simple Problem List

Defying the limits of human attention

1. SOB x 4 weeks
2. Dry cough
3. Right chest pain, dull
4. Asthma
5. Panic attacks
6. 30 lb weight loss
7. leg pain with walking
8. Hypertension
9. Smoker
10. Tachycardia
11. Tachypnea
12. Dyspnea at rest
13. Right supraclavicular node
14. Dullness to percussion right lung
15. Decreased bs right lung
16. Decreased tactile fremitus right lung
17. Decreased pulses in both dp
18. Loss of hair distal shins

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Simple Problem List

Processed Problem List

57 yo woman

- Smoking history
- Subacute, progressive dyspnea without hypoxia
- Non productive Cough
- Right sided visceral pain
- Pathologic weight loss
- Pathologic regional adenopathy
- Vascular Claudication
- PEx evidence of a pleural effusion*
- History of Hypertension

Drop:

- *Asthma and Panic Attacks: unsubstantiated*
- *Tachycardia: non specific*

Processed Problem List

57 yo woman ? Smoking history

- Subacute, progressive dyspnea without hypoxia
- Non productive cough
- Right sided visceral pain
- Pathologic weight loss
- Pathologic regional adenopathy
- Vascular Claudication
- PEx evidence of a pleural effusion*
- History of Hypertension

Drop:

- *Asthma and Panic Attacks as unsubstantiated*
- *Tachycardia as non specific*

Patient Illness Script

Epidemiology: 57 yo woman with minor smoking history

Time Course: Subacute, progressive

Syndrome Statement: Constant dyspnea and cough with physical exam evidence of pleural effusion, pathologic regional adenopathy and pathologic weight loss

Other History: Hypertension, Vascular Claudication

Pathophysiology questions

- Can you explain dyspnea without hypoxia?
- Can you explain how mechanisms of cough with a pleural effusion?

Physiology

- Patient Illness scripts can include proposed mechanisms of disease- this will increase specificity
- E.g. Dyspnea– a complex sensation
 - Chemoreceptors (carotid body, medulla): hypoxia, hypercapnia, acidosis
 - Mechanoreceptors (lungs): bronchospasm, Interstitial edema, stretch (J Receptors)
 - Metaboreceptors (muscles): local tissue environment changes during exercise

Quiz 3.2

In Ms. Garcia's case, we dropped the sign of tachycardia because:

1. We questioned whether the value was correct
2. It wasn't really tachycardia
3. It was a nonspecific marker of illness