

Establishing and Prioritizing a Differential Diagnosis

Problem Representation has already helped us!

- We started out the course with a complaint of shortness of breath– a differential in the thousands!!!!
- We are now working on a differential diagnosis of pleural effusion and weight loss.– much narrower.

Diseases behave predictably*

- For centuries, Physicians have relied on classic descriptions of phenotype to establish initial diagnostic hypotheses, which can then be assessed with diagnostic tests
 - Recall streptococcal pharyngitis
- We describe this phenotype with our illness scripts.
- We can use prioritize the likelihood of a given diagnosis by how well the patient's illness script matches the classic disease illness script.

** somewhat!!*

Prioritization is important!

- Allows for targeted rather than shotgun approaches to diagnostic testing
 - Testing and treating for high priority diagnostic possibilities avoids unnecessary cost and treatment
- Aids in interpretation of subsequent dx tests
 - False positive → unnecessary followup tests
 - False negative → erroneously discarded correct diagnosis

A Tiered Approach

- Tier I Possibility: CLINICALLY HIGH LIKELIHOOD
 - Disease explains all of patient's major findings
 - Patient has all major manifestations of the disease.
 - They have no rejecting features and may have a key feature
- Tier II Possibility: CLINICALLY MODERATE LIKELIHOOD
 - Disease explains most of the patient's findings
 - Patient lacks some of the usual manifestations of the disease
 - They have no rejecting features
- Tier III Possibility: CLINICALLY LOW LIKELIHOOD
 - Patient has single or few features of the disease in question
 - Patient has a rejecting feature of the disease in question.



Helps clarify pretest probability

Tier	Categorical Probability	Numerical Probability	Comment
I	VERY LIKELY	> 90%	Defining Feature(s)
	LIKELY	67-90%	
II	UNCERTAIN	34-66%	
III	UNLIKELY	10-33%	Rejecting Feature
	VERY UNLIKELY	< 10%	

Another tier..

- Clinicians at times test and treat for low likelihood diseases because they have severe consequences if missed *that day!*
 - e.g. dissecting aneurysm, acute bacterial meningitis, acute myocardial infarction
- Tier 1e: a disease that is clinically a Tier II or III but that we will consider earlier in our testing/treating strategy because it is a high risk disease
- Warning: don't overuse!

Back to Ms. Garcia

Proposed Differential Diagnoses

- Breast Cancer
- Lung Cancer
- Tuberculosis
- Sarcoid
- COPD
- Community Acquired Pneumonia
- Anaerobic Pneumonia
- Congestive heart failure
- Asthma
- Lymphangiomyomatosis
- Lupus
- Pneumocystis Pneumonia

Ana Garcia Prioritized DDx

Tier I



Lung cancer with malignant pleural effusion

Tier Ie



Acute Pulmonary Embolism

Tier II



Tuberculosis
Congestive Heart Failure
Breast Cancer with effusion
Anaerobic Pneumonia with Effusion

Tier III



Unlikely: COPD Asthma, Lupus, Sarcoidosis,
Very Unlikely: LAM, CAP, Pneumocystis Pneum.

Self Directed Learning Clues

- For each diagnosis you consider, you should be able to describe the illness script of that disease.
 - If not, follow the gap!!!
- If you have no ideas to expand your ddx:
 - Think pathophysiologically (how do effusions form?)
 - Think mechanistically (I VINDICATE, see module 1)

Revisit Sophia Bulara

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



Sophia Bulara: Prioritized DDx

Tier I



Disseminated Gonococcal Infection

Tier Ie



Septic Arthritis: Non Gonococcal

Tier II



Reiter's Disease

Tier III



Unlikely: Systemic Lupus, Lyme disease
Very unlikely: GOUT, PSEUDOGOUT

Quiz 3.2

Tier 1E is the tier reserved for:

1. Diseases that by clinical phenotype are Tier 1 disease but very important to consider
2. Diseases that by clinical phenotype are Tier 2 or 3 but that have **E**mergent severe consequences if missed
3. Diseases that are rare but **E**xciting
4. Diseases that are facing **E**xtinguishment

Key Take Home Points: Module 3

- Processing is the first step in developing a good disease representation.
- Building a patient illness script allows us to compare and contrast between the patient's presentation and the possibly relevant diseases.
- That compare and contrast can lead to a well prioritized differential diagnostic list that can guide testing and treatment.

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End of Module 3