

Diagnostic Strategies and Tools

Module 2 New Concepts

- Describe methods of clinical problem solving and how they differ between novices and experts.
- Learn about processing: the building block to good problem representation.

Ms. Sophia Bulara

- 17 yo woman with a complaint of difficulty walking and leg pain for 2 days. She has felt tired and feverish for about four days, but she attributes this to soccer practice and the stress of college applications. She also remembers an unusually painful elbow 3 days ago that resolved on its own and then some vague wrist aching and redness. She also notes some spots on her hands.
- She is a high school soccer player and she leads camping trips. She has asthma. She is sexually active with one male partner, using OCPs. She is currently menstruating.

Sophia's rash



Sophia's physical Exam

Temp: 101° F, HR 102 BP 90/60 RR nl

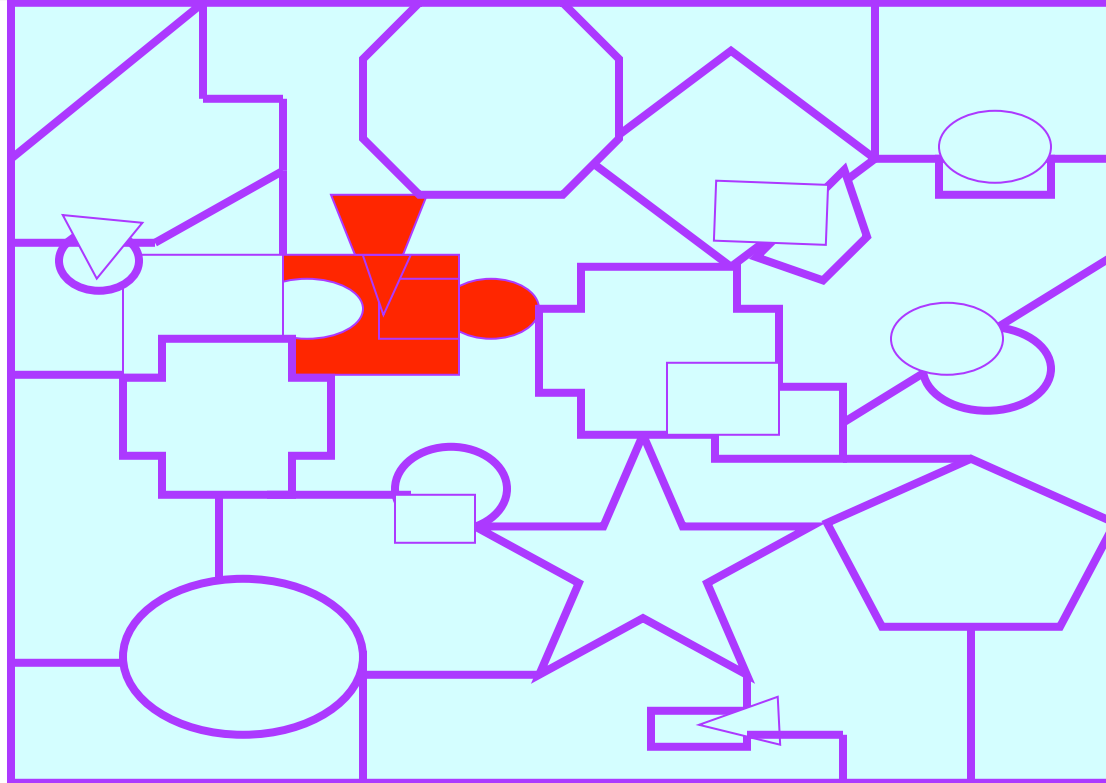
Mildly ill appearing

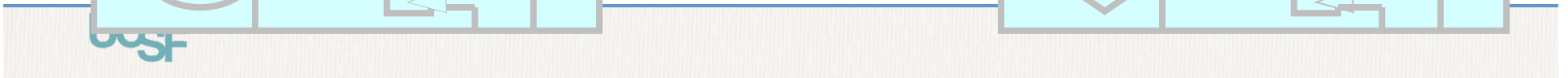
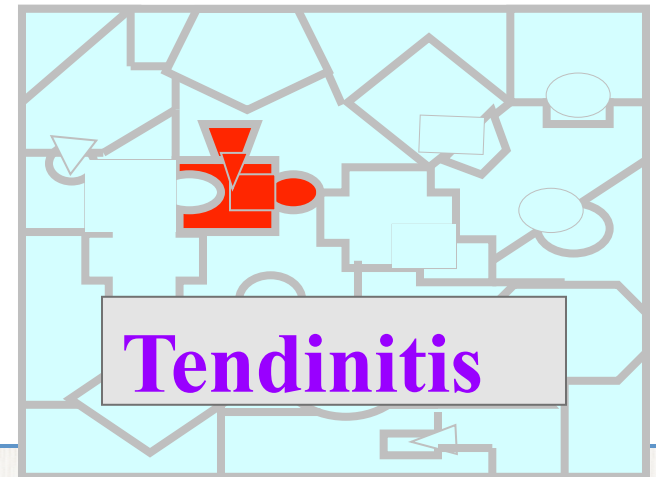
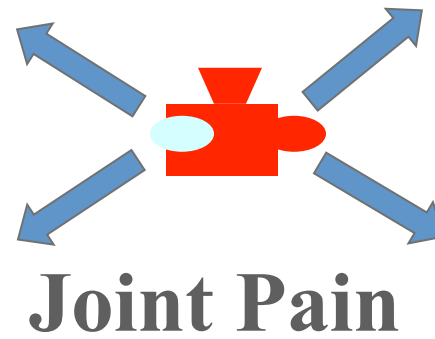
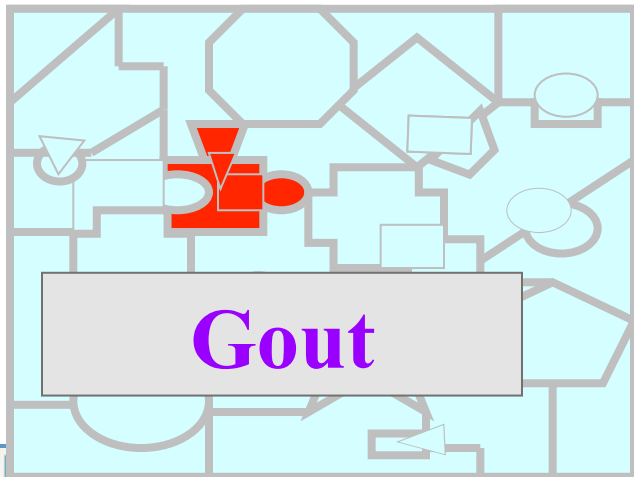
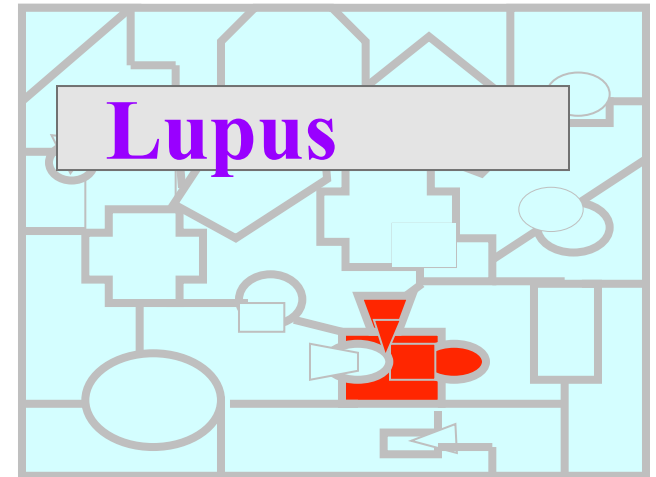
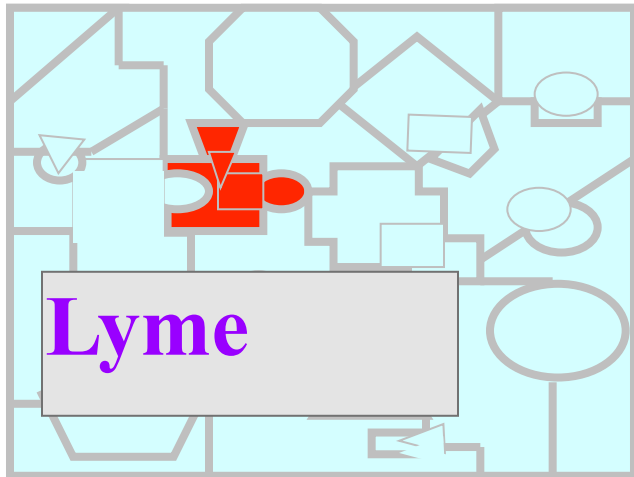
Skin: isolated hemorrhagic pustules scattered on hands and lower legs, non blanching.

Joints: right wrist is red, warm and tender to range of motion testing. Both achilles tendons are red, warm and tender to touch, l > r ,
left ankle is warm and red and and painful to ROM testing.
Elbows appear normal.



Symptoms are like Puzzle Pieces





Clinical Problem Solving Strategies

Hypothesis Testing

Forward Thinking

Pattern Recognition

Ms. Sophia Bulara: My ankles hurt

- 17 yo woman with a complaint of difficulty walking and **leg pain** for 2 days. She has felt tired and feverish for about four days, but she attributes this to soccer practice and the stress of college applications. She also remembers an unusually painful elbow 3 days ago that resolved on its own and then some vague wrist aching and redness.
- She is a high school soccer player and she leads camping trips. She has asthma. She is sexually active with one male partner, using OCPs. She is currently menstruating.

Hypothesis Testing: Single Sx

- Chief Complaint
- “leg pain”

Differential Diagnosis

- Deep Venous Thrombosis
- Sprained ankle
- Lupus
- Cellulitis
- Shin splints
- Osgood Schlatter Syndrome
- Sciatica
- Rheumatic Fever
- Gout

Characteristics of Hypothesis Testing

- Link a single or a few symptoms to a large and comprehensive list of possible diagnoses.
- Sequentially consider each diagnosis.
- Each time they consider a diagnosis, they turn back to the patient to ask if other s/s are present
- If they can't find more symptoms to match, they move on to the next disease.



DVT

Unilateral swelling?
Use of birth control pills?
Long car ride?
Recent immobilization?
Shortness of breath?
Pain improves with rest?
Swelling improves with rest?

NO?



Lupus

Hair Loss?
Malar Rash?
Sun sensitivity?
Anemia?
Low Platelets?

NO?



HT: Cons

- Single symptom triggered lists are long
- Often precipitates redundant data gathering
- If the patient has multiple symptoms, the process is often repeated with multiple lists.
- Alternatively, may ignore important symptoms
- Intellectually taxing so strong tendency to accept a “good enough” fit

HT: Pros

- It can be effective if the right diagnosis is on the list at the start AND both the MD and the patient have the stamina work through the list.
- Useful for other forms of problem solving don't work— particularly in novel situations.

How do people arrive at the list?

- Published lists: textbooks, on line sites
 - Personal lists: based on personal experience
 - Highly subject to availability heuristic*
 - Category Chase:
 - I VINDICATE: idiopathic, vascular, iatrogenic, neoplastic, degenerative, infectious, congenital, autoimmune, trauma, endocrine.....
 - Many others....
- * heuristic: exploration via trial and error

Quiz 2.2

- Hypothesis Testing is:
 1. Efficient
 2. Sometimes known as forward thinking
 3. The form of problem solving preferred by experts
 4. Potentially Effective but time consuming