

Teacher's Guide

Slide 2

1. Before clicking on the slide, ask learners if they have heard of this concept before
2. If yes, explore what this term means to them and solicit examples
3. Click slide to reveal definition

Slide 3

1. Before clicking slide, ask learners if they have an approach to how they think about LE edema – i.e. you may hear organ system based approaches
2. Write learners' examples/approaches on the board
3. Click slide to show a list of potential causes

Slide 4

1. Reveal example of a schema and discuss; if learners gave other examples previously, you can compare/contrast the different approaches
2. Key to make the point that there is no one gold standard diagnostic schema for a given problem, but rather that different clinicians, depending on their prior knowledge, experience and practice patterns develop schema that make sense to them and help them to organize their thinking around complex problems.

Slide 5

1. Use this more elaborated schema as an example of the development of a provider's schema over time. With experience, providers incorporate additional branch points to further refine their diagnostic schema
2. In the urgent causes of volume overload, the jugular venous pressure to further divide the causes into JVP elevated (CHF, renal disease) and JVP negative (liver disease)
3. Similarly, the pitting versus non-pitting distinction can be used to further divide these non-urgent causes of edema.

Slide 6 (No Associated Questions)

Slide 7

1. Start by drawing out your learners' schema to this problem and consider emphasizing the important of prioritizing urgent over non-urgent causes.
2. Depending on the discussion, you can offer your own approach, or add nuance to what the learners discuss
3. As an example:

There are **six** causes of potentially lethal chest pain (CP). A schema for CP might have a branch point of urgent/non-urgent, with clinicians always considering the urgent/life-threatening potential causes first:

Cardiac (3)

Myocardial Infarction

Tamponade

Aortic Dissection

Pulmonary (2)

Pulmonary Embolism

Pneumothorax

Esophageal (1)

Perforation

After considering the life-threatening causes, non-urgent causes may be considered using an anatomic approach:

*****Note: You do not need to cover all of the possible causes, but rather, help your learners consider which organ systems to consider, with just 1 exemplar in each category to bring it to life:**

Skin

Herpes Zoster

Muscle

Muscle Strain

Bone (sternal, ribs)

Fracture

Pulmonary

Pneumonia

Cardiac
Pericarditis

Esophagus/stomach
GERD
Mediastinum
Mediastinitis

Slide 8

1. Ask learners what they would want to focus on in the physical exam (and why) before revealing next slide

Slide 9 (No Associated Questions)

Slide 10

1. Ask someone (or a team of learners) to interpret the chest-x-ray:
2. For example: there is an consolidation in the left lower lobe. No cardiomegaly or pleural effusions.

Slide 11

1. The problem representation is a one sentence summary that highlights the defining features of case (for more please see:: <http://www.sgim.org/web-only/clinical-reasoning-exercises/problem-representation-overview>)
2. Compare/contrast a few different problem representations from your learners; a good challenging question is: Why would you include that detail, how does that detail change your thinking about this patient?
3. An example would be:
 - 31yo previously healthy man with acute pleuritic chest pain, cough, and a unilateral infiltrate on CXR.

Slide 12

1. Scribe learners' answers on the board
2. Click on to the next slide to show as one helpful approach

Slide 13

1. Compare and contrast approaches mentioned by learners vs. that shown on the slide.
2. Make the point that splitting a long list of diagnoses (ARDS, PE, pneumonia, aspiration, etc.) into smaller, categories makes it easier to (1) remember and (2) incorporate new diagnoses into the schema over time.
3. The categories chosen can vary by schema or provider. For example, an anatomic categorization is one way to approach chest pain (see prior example; but other providers may chose to use organ system based approach). In the schema of CXR infiltrates one set of categories is the nature of the fluid causing the infiltrate.

Slide 14

1. At this point learners should come up with 1-3 competing diagnosis.
2. Encourage learners to discuss the "for" and "against" categories for each diagnosis
3. Consider using a table on the board to visually represent the discussion.

Slide 15 (No Associated Questions)

Slide 16

1. The important piece to incorporate is the failure to improve with antibiotic therapy aimed at community acquired pneumonia.
 - Example: 31 year-old previously healthy man with ongoing pleuritic chest pain and cough despite completing therapy for CAP.
2. Would gently guide learner's in that direction before proceeding to the next slide.

Slide 17

1. Before clicking on animation to reveal the question, ask learners what the crux of the problem being solved is at this point (goal – to help students identify CAP treatment failure)
2. Similar to above, have the learners discuss, and write possible causes on the board.
3. Advance to the next slide to see one approach.

Slide 18

Wrong “bug”

CAP is the correct diagnosis, but the causative organism is unusual:
gram-negative rod, virus, endemic fungus

Wrong “drug”

CAP is the correct diagnosis, but the causative organism is resistant to treatment:
doxycycline-resistant *S. pneumonia*

Wrong “host”

CAP is the correct diagnosis, but the patient does not improve due to anatomic obstruction, immunocompromise, or disease severity. (e.g. malignancy, HIV)

Wrong diagnosis-

Patient has an alternative diagnosis, or a complication of CAP:
interstitial lung disease, pulmonary abscess, recurrent aspiration, congestive heart failure

Slide 19 (No Associated Questions)

Slide 20

1. Ask a learner to walk you through the labs and how they impact their diagnostic thinking.
2. Consider emphasizing the mild leukocytosis and low grade eosinophilia.
3. Pending time, may ask learners to suggest next diagnostic steps (and why).

Slide 21 (No Associated Questions)

Slide 22

1. The read for the CT is on the next slide.

Slide 23 (No Associated Questions)

Slide 24

1. The important features to include in an updated problem representation include:
 - Eosinophilia
 - CT with evidence of consolidation
 - Example: 31yo previously healthy man with ongoing, subacute pleuritic chest pain despite CAP therapy, now with eosinophilia, lingular consolidation, pleural effusion and lymphadenopathy.

Slide 25

1. As above, consider using the a board to list the diagnoses mentioned by the students and then use the following slide to illustrate an exemplar schema.
2. As learner's begin to outline a collective schema, would make the emphasize how their precise problem representation in the previous slide makes it easier to generate a schema.

Slide 26 and 27 (No Associated Questions)

Slide 28

1. The picture shows lesions characteristic of erythema nodosum: nodular lesions over the anterior shin that are exquisitely tender.
2. For the sake of time, we have not included a discussion of E.Nodosum in this section. However, if additional time is available, please refer to “additional information” slide (slide 36) for a discussion of E.Nodosum.

Slide 29 (No Associated Questions)

Slide 30

1. At this point, important features of the problem representation include:

- Development of erythema nodosum
- Travel to the San Joaquin Valley
- Example: 31yo previously healthy man with pleuritic chest pain and cough after a trip to the San Joaquin Valley found to have eosinophilia and on-going symptoms despite CAP therapy.

Slides 31, 32, 33, 34, 35 (No Associated Questions)

Slide 36

1. If there is time, please use this as a guide for the discussion on slide 28:
E.Nodosum

Erythema Nodosum

Definition: A form of panniculitis that presents as an outcropping of painful, erythematous nodules, usually on ventral aspect of the lower extremities.

Causes: In the majority of cases (55%), no clear cause is identified. However, the presence of E.Nodosum should prompt investigation for systemic causes. There can be categorized as:

1. Infection (post-streptococcal infection, post-enteritis, tuberculosis and endemic mycoses including coccidiomycosis)
2. Autoimmune disease (inflammatory bowel disease and sarcoidosis)
3. Drug-induced (oral contraceptives, azathioprine)
4. Malignancy (lymphoma)
5. Other (pregnancy)