

CBL Tutor Teaching Tool

Cognitive Integration Questions – Mechanistic Explanations

Facilitating discussions to help students integrate the basic and clinical sciences

What is Cognitive Integration?

Looking at basic and clinical sciences in an integrated AND causal way. Cause and effect story or narrative that links clinical concepts and underlying basic science concepts in a causally related manner.¹

Why are we bringing it into CBL? Improves learning, retention, transfer, and diagnostic ability. Allows learners to organize and create “cognitive conceptual coherence”.

The following are steps a CBL tutor may wish to follow to facilitate a discussion that will help students integrate basic and clinical science. This is an activity you can get students to do with you.

Step 1

Take a look at the key features in the case related to a diagnosis (Clinical signs & symptoms, laboratory results, diagnostic results).

- *Why was it abnormal?*
- *Why does it matter to the case or at all?*
- *What are the students to learn from this?*

Step 2

Take a look at the questions in the Assignment Questions in the CBL Virtual Patient Case and identify a few that are potential questions that can foster cognitive integration/mechanistic explanations.

- **HINT:** Questions about pathology require mechanistic explanation and thus have a cause and effect, or require probing for understanding of underlying concepts. Example: Why does this patient with CHF have swollen legs and shortness of breath? (mechanistic explanation)

Step 3

Identify core diagnosis and clinical concept or features

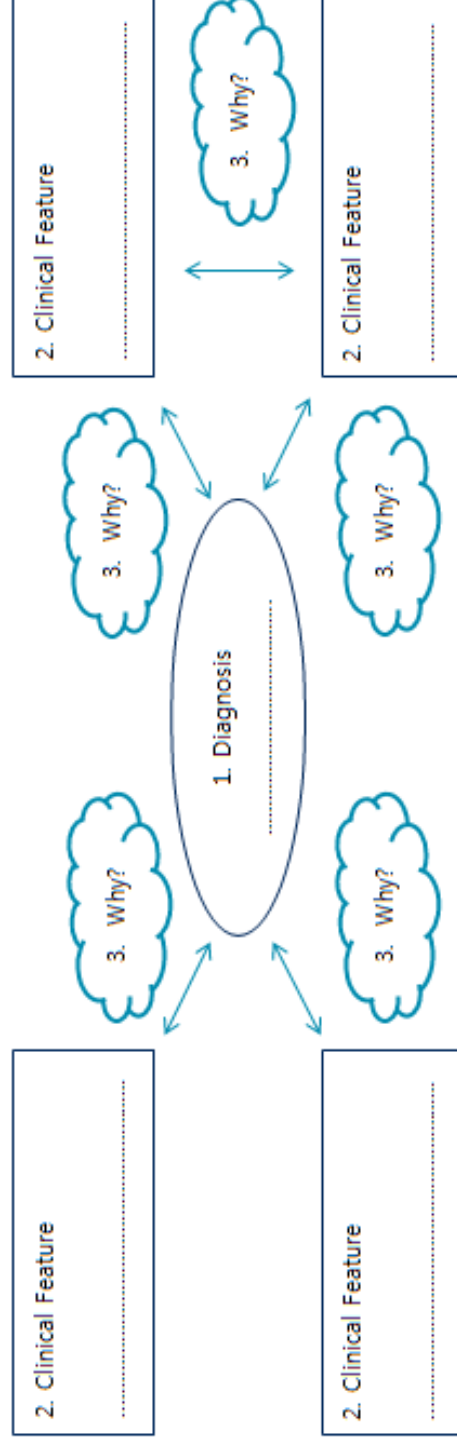
Step 4

Map it out (See Figure 1 on page 2). The “Why” Question! Write out the **cause and effect** story or narrative that links clinical concepts or clinical features and underlying basic science concepts in a causally related manner. Use the attached figure to create your own diagram and mechanistic explanations.

Figure 1 – Create a mind map

1. Select a diagnosis
2. List key clinical features
3. Why?: For each connection between the diagnosis and a clinical feature write out the mechanistic explanation for the cause and effect relationship.
4. If relevant, write out a mechanistic explanation for the cause and effect relationship between two clinical features.

Food for Thought: Why does the specific clinical feature occur in a particular diagnosis? Is there are mechanistic explanation between two clinical features? If the mechanism is not clear or unknown indicate this as well.



1. *Martimianakis MA, Mylopoulos M, Whitehead CR, Woods NN. Cognition before curriculum: rethinking the integration of basic science and clinical learning. Acad Med. 2013; 88(10):1578-85).*