Concept Mapping in 5 Easy Steps
INTENDED LEARNING OUTCOMES

• After this presentation a medical student will
  • Appreciate the potential benefits of concept mapping to her or his medical education.
  • Be able to create a basic concept map to work through a course learning objective, question, or problem s/he is trying to learn, answer, or solve.
WHAT IS CONCEPT MAPPING?

• “Concept maps are graphical tools for organizing and representing knowledge” (Cañas, 2009).
• Concept mapping is an ideal technique for organizing and thinking about complex information and ill-structured medical problems.
• Medical students can effectively use concept mapping as a study method while striving to assimilate vast amounts of medical knowledge for the ultimate purpose of being able to make an accurate diagnosis of a patient’s medical problem.
• All types of learners can potentially benefit from concept mapping to help think through complex problems or as a method of creating review/summary sheets for course exams or boards.
WHAT ARE THE BASIC STEPS TO CREATING A CONCEPT MAP?

1. Begin with a “focus question” or problem, such as “how to diagnose chest pain?” or “how do antibiotics work?”

2. Brainstorm and create a “parking lot” of 15-30 key concepts that relate to the focus question. Try to list these in an approximate rank-order from most general to most specific.

3. On a sheet of unlined paper*, write the main concept near the top or middle of the paper, and construct a preliminary map by moving the concepts from the parking lot into the map in a hierarchical fashion (from general to specific).

4. Connect the concepts with arrows and identify the relationships between the concepts using “linking words” or “linking phrases.”

5. Evaluate the map and revise as needed to flesh out the details: Do the pieces fit together and make sense? Have you included everything pertinent? Have you identified all the relationships and interconnections (cross links)?

*Concept mapping software is available, but even PowerPoint works well because of the relative ease of creating and manipulating design elements, such as textboxes and arrows.
DON’T BE INTIMIDATED*…

- There is no necessarily right or wrong way to create a concept map, the important thing is to include key concepts and attempt to identify as many relevant relationships as possible.
  - Generally speaking, the more branched and interconnected the map, the more the sophisticated the creator’s level of knowledge about the problem (West, 2000).

*The author of this document went to the ER in a full-blown panic attack following her first introduction to concept-mapping, but it’s really not that difficult! 😊
What follows is an example of a basic concept mapping exercise...
WHAT IS THE FOCUS QUESTION?

• What is involved in a physician’s ability to provide an accurate diagnosis to explain a patient’s chief complaint?
WHAT ARE THE KEY CONCEPTS?  
“PARKING LOT”

• Phases of diagnosis
  • Information gathering
    • History
    • PE
    • Ancillary tests
  • Integration of information
  • Confirmation of diagnosis

• Cognitive processes
  • Pattern matching
    • Experts
      • Past experience
      • Illness scripts
        • Mental schema
  • Hypothesis testing
    • Novice
    • Atypical presentations

• Cognitive errors
  • Causes
    • Inadequate information gathering
    • Inadequate knowledge
    • Cognitive biases
  • Types
    • Wrong synthesis
    • Inadequate synthesis
    • Premature closure
    • Omission
    • Anchoring
  • Misdiagnosis
    • Medical errors

(Kuhn, 2002)
Move concepts from the “parking lot” into the map maintaining a hierarchical structure – feel free to play around with their arrangement / location
Add arrows and linking words or phrases to describe the relationships between concepts
It may take several iterations to get to an end product you like, but the whole process, including revision, really helps you think through the information, thereby building long-lasting memories and transferable knowledge!
ADDITIONAL RESOURCES

• Constructing Your First Concept Map
  http://cmap.ihmc.us/docs/ConstructingAConceptMap.html

• Concept Maps: What the Heck Is This?
  https://www.msu.edu/~luckie/ctools/
REFERENCES

