DOCTOR AND PATIENT: INTEGRATING THE ART AND SCIENCE OF MEDICINE

INTRODUCTION TO CLINICAL THINKING

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CONTEXT

Clinical thinking (also called clinical reasoning or diagnostic reasoning) is a skill central to physicians who deal with undifferentiated clinical problems. Patients present to physicians with symptoms, not diagnoses; clinical thinking refers to the process of translating a constellation of symptoms into a diagnosis. The ability to clinically reason is among the most important skills a physician possesses - in most cases more helpful in solving clinical problems than lab tests, procedures, or imaging studies. Unfortunately, clinical thinking is also among the most difficult skills to understand and master – and to teach. Many physicians cannot coherently describe how they came to a correct diagnosis, and most physicians had no formal training in how to think clinically. The process was learned by most of us experientially and is intuitive only after much practice. The purposes of the Clinical Thinking activities in years 1 and 2 are to raise your awareness of the importance of clinical thinking, give you some tools to help start the process, and allow you to practice and build your skills before you start your clinical rotations. It will be a long time before you feel comfortable with the process, but an early start will help you care for your patients, and maybe even make confronting ambiguous clinical problems fun!

HOW DOES AN EXPERT CLINICIAN ARRIVE AT A DIAGNOSIS?

For experienced clinicians, the clinical thinking process starts immediately upon learning the chief complaint and basic demographic information about the patient. With this information,
the experienced clinician (whether consciously or not) is already generating a differential diagnosis, prioritized from most to least common. For example, the prioritized differential diagnosis for a complaint of difficulty breathing is different in a 7 year old child (asthma, pneumonia, foreign body aspiration, etc.) than in a 60 year old adult (heart failure, chronic obstructive lung disease, pulmonary embolus, pneumonia, etc.) The clinician is able to generate this differential diagnosis quickly from education and experience. The clinician then uses the remaining elements of the history and physical exam to continually revise and re-prioritize the differential diagnoses, adding and removing possibilities and re-prioritizing the list based on specific elements of the history and physical exam. The history and physical are therefore very active processes. An astute physician is not only going through the motions of a memorized sequence for the history and physical exam; he or she is actively looking for specific information that will help narrow the differential diagnosis, while being alert for unexpected information that may expand the differential diagnosis. This process is continually running in the background, all while the physician is fully engaged with the patient to better facilitate the process and enhance the physician-patient relationship. In the ideal situation, the differential diagnosis is shortened considerably after a careful, active history and physical is performed, allowing the physician to either have arrived at a clinical diagnosis or be able to order a very select series of tests to differentiate between the most likely possibilities.

**HOW DO BEGINNING LEARNERS ARRIVE AT A DIAGNOSIS?**

Unlike their experienced counterparts, beginning students are not yet able to formulate long differential diagnoses based on the chief complaint and do not know which pertinent positive and negative elements of the history and physical to focus on to help refine or re-prioritize the differential diagnoses. Thus, the clinical thinking process is much different. While an experienced clinician, as described above, is able to use clinical thinking skills in a prospective manner while performing the history and physician, less experienced clinicians and learners will often have to use clinical thinking skills in a retrospective manner. This usually involves gathering accurate and complete data from the history and physical and then later considering what the differential diagnoses are and how certain elements from the history and physical can help refine the list. This approach clearly requires a very broad and comprehensive history and physical as the ability to know which elements to focus is not yet developed. In fact, the learner may have to go back to the bedside one or more times to ask more questions and/or perform more elements of the physical exam as the differential diagnosis is generated.
Fortunately, there are tools that can help learners as they start the clinical thinking process.

THE CLINICAL THINKING PROBLEM LIST

This is a list of any of the elements of the history and physical exam (and laboratory, imaging and other test results, if available) that you believe are important features of the case. These elements can include demographic information, the presence or absence of specific symptoms, important past medical history, social history, present or absent physical exam findings – anything that you believe has relevance to the current complaint. Remember that the absence of specific symptoms or physical exam findings (pertinent negatives) may be as important as the presence of specific symptoms or findings (pertinent positives); review the document "Writing a History and Physical" for more information. The Clinical Thinking Problem List is not a list of differential diagnoses – that comes later, as described below. Please see the document describing the Clinical Problem List for more information; how to use the list will become clearer after our Clinical Thinking Lecture.

THE VINDICATES MNEMONIC

The VINDICATES mnemonic (see separate document for full description) is one method of organizing your differential diagnoses by system. By going through the categories listed in VINDICATES systematically, it will be less likely that you have not considered the correct diagnosis. The information listed in the Clinical Problem List will help you populate the VINDICATES mnemonic and generate your differential diagnoses. Again, how to use the VINDICATES mnemonic will become clearer after our Clinical Thinking Lecture and with practice.

THE STEPS OF CLINICAL THINKING

1. Carefully listen to the patient’s story and gather accurate and complete data. If this is not done you will not have the information needed to generate a Clinical Thinking Problem List or a differential diagnosis.
2. Perform an accurate, thorough physical exam.
3. Review any tests or laboratory data that are available to you. Such objective data will not be stressed early on, and often there will be no data available (out-patient visits or initial evaluations in the emergency department).
4. Make an initial Clinical Thinking Problem List: go through your history, physical exam, and other objective data if present and identify those items you feel are most relevant to the case.

5. Use the Clinical Thinking Problem List to populate your VINDICATES list, which will be your initial differential diagnoses. Think broadly, and include all potential etiologies.

6. Go back to your Clinical Thinking Problem List and identify the top three to five items that must be explained by your diagnosis.

7. With these three to five items in mind, prioritize your VINDICATES differential diagnoses and pick your top choices.

8. If needed, order selected tests to differentiate between your top diagnostic possibilities. When ordering tests, always consider why you are ordering them and anticipate how the results – positive or negative – will influence your decision making process.