Clinical Thinking: From Data to Plan

CHAPTER 20

Like colors on an artist's palette, clinical data lack form and meaning. The clinician must not only gather data through interviewing and examination; he or she must also analyze them, identify the patient's problems, evaluate the patient's responses to the illness, and, together with the patient, formulate a plan to deal with the situation. This chapter describes this sequence of activities and focuses on the clinical thinking that underlies it.

From Data Base to Plan

Since the introduction of the problem-oriented system of recordkeeping, certain terms have gained wide acceptance. Information given by the patient, or possibly by family members or significant others, is called *subjective data. Objective data* include two kinds of information: physical findings and laboratory reports. Since both physical examination and laboratory work are human activities, they too involve subjective elements, and, as we shall see later, all kinds of data are subject to error. A comprehensive set of subjective and objective data, such as you might gather in evaluating a new patient, makes up a *data base* for that patient.

In recording the data base you should describe your findings as accurately as possible, whether they relate to what the patient tells you or to what you observe. Although inference and interpretation inevitably affect the organization of your materials, statements in the data base should describe, not interpret. Thus, "late inspiratory crackles at the bases of both lungs" is appropriate, while "signs of congestive heart failure" is not.

In the *assessment* process, however, you go beyond perception and description to analysis and interpretation. Here you select and cluster relevant pieces of data, think about their possible meanings, and try to explain them logically. For example, a patient's complaint of a "scratchy throat" and "stuffy nose," together with your observations of a swollen nasal mucosa and slight redness of the pharynx, give you the subjective

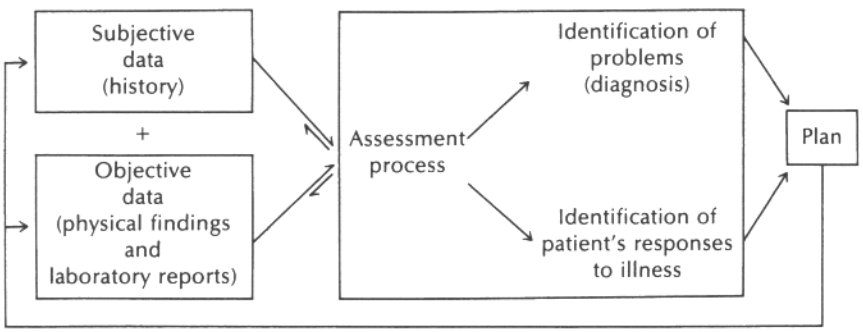
and objective data on which to base a presumptive diagnosis of viral nasopharyngitis.

Assessment also includes the patient's responses to the illness and to your diagnostic and therapeutic ideas. What are the patient's feelings, concerns, questions, and goals?

Once you have made these assessments, you are ready to work out a *plan* with the patient. In the problem-oriented record system, this plan has three parts: diagnostic, therapeutic, and educational. For example, you might decide on a throat culture, a decongestant for the patient's stuffy nose, cautionary advice against overfatigue, and a brief review of upper respiratory infections, their causes, and their modes of transmission.

Defining part of the plan as "educational" has one misleading connotation—that the process of communication is unidirectional. It should not be. The patient should participate in making the plan. Appropriate "education" depends on what the patient already knows and wants to know. Give the patient an opportunity to tell you. Other parts of the plan may well be influenced by the patient's goals, economic means, and competing responsibilities, and the opinions of family or friends—to name just a few variables. Establishing a successful plan requires interviewing skills and interpersonal sensitivity, along with knowledge of diagnostic and therapeutic techniques.

The diagram below summarizes the sequence from data base to plan. The effects of the assessment process on the data base, as implied by the bidirectional arrows between them, are discussed later in the chapter.



After a plan has been implemented, the process recycles. The clinician gathers more data, assesses the patient's progress, modifies the problem list if indicated, and adjusts the plan appropriately.

Assessment: The Process of Clinical Thinking

Because assessment takes place in the clinician's mind, its processes often seem inaccessible, even mysterious, to the beginning student. Experienced clinicians, moreover, think so quickly, with little overt or conscious effort, that they sometimes have difficulty in explaining their own logic. They also think in different ways, with different, individualistic personal styles. Some general principles underlie this analytic

process, however, and certain explicit steps may help you to think constructively and purposefully about your data. The thinking process starts at the beginning of your patient encounter, not at the end, but assume for the moment that you already have a data base to consider. You must answer the questions, "What is wrong with the patient? What are the problems?" To do so, try the following steps:

- *Identify the-abnormal findings* in the patient's data base. Make a list of the *symptoms* noted by the patient, the *signs* that you observed on physical examination, and any *laboratory reports* that are available to you.

- *Localize these findings anatomically.* This step may be easy. The symptom of scratchy throat and the sign of a reddened pharynx, for example, clearly localize a problem in the pharynx. Other data, however, present greater difficulty. Chest pain, for example, might originate in the heart, the pleural surfaces, the esophagus, or the musculoskeletal system. If the pain consistently occurs with exercise and disappears with rest, either the heart or the musculoskeletal system is probably involved. If the patient notes pain only when carrying groceries with the left arm, the musculoskeletal system becomes the likely culprit. Be as explicit in your localization as your data allow, but no more so. You may have to settle for a body region (e.g., the chest) or a body system (e.g., the musculoskeletal system), or you may be able to define the exact structure involved (e.g., left pectoral muscle). Some symptoms and signs, such as fatigue or fever, have no localizing value but may be useful in the next step.

- *Interpret the findings in terms of the probable process.* A patient's problem may stem from a *pathological* process involving a body structure. There are a number of such processes, variably classified, including congenital, inflammatory, immunologic, neoplastic, metabolic, nutritional, degenerative, vascular, traumatic, and toxic. Other problems are *pathophysiological,* such as increased gastrointestinal motility or congestive heart failure, while others still are *psychopathological,* such as a disorder of mood or of thought processes. Redness and pain are two of the four classic signs of inflammation, and a red, painful throat, even without the other two signs—heat and swelling—strongly suggests an inflammatory process in the pharynx.

- *Make one or more hypotheses about the nature of the patient's problem.* Here you will have to draw on all the knowledge and experience you can muster, and it is here that reading will be most helpful in learning about abnormalities and diseases. Until your experience and knowledge broaden you may not be able to reach highly explicit hypotheses, but proceed as far as you can with the data and knowledge you have. The following steps should help:

  1. *Select the most specific and central findings* around which to construct your hypothesis. If a patient reports loss of appetite, nausea, vom-

iting, fatigue, and fever, for example, and if you find a tender, somewhat enlarged liver and mild jaundice, build your hypothesis around jaundice and hepatomegaly rather than fatigue and fever. Although the other symptoms are useful diagnostically, they are much less specific.

2. Using your inferences about the structures and processes involved, *match your findings against all the conditions you know that can produce them.* For example, you can match your patient's red throat with a list of inflammatory conditions affecting the pharynx; or you can compare the symptoms and signs of the jaundiced patient with the various inflammatory, toxic, and neoplastic conditions that might produce this kind of clinical picture.

3. *Eliminate the diagnostic possibilities that fail to explain the findings.* You might consider conjunctivitis as a cause of the patient's red eye, for example, but eliminate this possibility because it does not explain the dilated pupil or decreased visual acuity. Acute glaucoma would explain all these findings.

4. *Weigh the competing possibilities and select the most likely diagnosis* from among the conditions that might be responsible for the patient's findings. You are looking, of course, for a *close match* between the patient's clinical presentation and a typical case of a given condition. Other clues help in this selection too. The *statistical probability* of a given disease in a patient of this age, sex, ethnic group, habits, lifestyle, and locality should have major impact on your selection. You should consider the possibilities of osteoarthritis and metastatic prostatic cancer in a 70-year-old man with back pain, for example, but not in a 25-year-old woman with the same complaint. The *timing of the patient's illness* also makes a difference. Productive cough, purulent sputum, fever, and chest pain that develop acutely over 24 hours suggest quite a different problem than do identical symptoms that develop over 3 or 4 months. In making a tentative diagnosis, you can seldom reach certainty but must often settle for the most probable explanation. Such is the real world of applied science.

5. Finally, in considering possible explanations for a patient's problem, *give special attention to potentially life-threatening and treatable conditions* such as meningococcal meningitis, bacterial endocarditis, or subdural hematoma. Here you are trying to minimize the risk of missing conditions that may occur less frequently or be less probable but that, if present, would be particularly important.

- Once you have made a hypothesis about a patient's problem, you will usually want to *test that hypothesis.* You may need further history, additional maneuvers on physical examination, or laboratory studies to confirm or rule out your tentative diagnosis. When the diagnosis seems clear-cut—a simple upper respiratory infection, for example, or a case of hives—this step may not be necessary.

- You should then be ready to *establish a working definition of the problem.* Make this at the highest level of explicitness and certainty that the data allow. You may be limited here to a symptom, such as "pleuritic chest pain, cause unknown." At other times you can define a problem explicitly in terms of structure, process, and cause. Examples include "pneumococcal pneumonia, right lower lobe," and "hypertensive cardiovascular disease with left ventricular enlargement, congestive heart failure, and sinus tachycardia."