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To The Reader:
Pray thee, take care, that tak'st my book in hand
To read it well: that is to understand.
—Ben Jonson

Far beyond being a text describing how to perform a history and physical exam, *DeGowin’s Diagnostic Examination* is, uniquely, a text to assist clinicians in thinking about symptoms and physical signs to facilitate generation of reasonable, testable diagnostic hypotheses. The clinician’s goal in performing a history and physical examination is to generate these diagnostic hypotheses. This was true for Hippocrates and Osler and remains true today. The practice of medicine would be simple if each symptom or sign indicated a single disease. There are enormous numbers of symptoms and signs (we cover several hundred) and they can occur in a nearly infinite number of combinations and temporal patterns. These symptoms and signs are the rough fibers from which the clinician must weave a clinical narrative, anatomically and pathophysiolgically explicit, forming the diagnostic hypotheses. To master the diagnostic process, a clinician must have four essential attributes:

1. **Knowledge**: Familiarity with the pathophysiology, symptoms, and signs of common and unusual diseases.
2. **Skill**: The ability to take an accurate and complete history and perform an appropriate physical examination to elicit the pattern of symptoms and signs from each patient.
3. **Experience**: Comprehensive experience with many diseases and patients, each thoroughly evaluated, allows the skilled clinician to generate a probabilistic differential diagnosis, a list of those diseases or conditions most likely to be causes of this patient’s illness.
4. **Judgment**: Knowledge of medical science and the medical literature combined with experience reflected upon hones the judgment necessary to know when and how to test these hypotheses with appropriate laboratory tests or clinical interventions [Reilly BM. Physical examination in the care of medical inpatients: an observational study. *Lancet*. 2003;362:1100–1105].

*DeGowin’s Diagnostic Examination* has been used by students and clinicians for over 40 years precisely because of its usefulness in this diagnostic process:

1. It describes the techniques for obtaining a complete history and performing a thorough physical examination.
2. It links symptoms and signs with the pathophysiology of disease.
It presents an approach to differential diagnosis, based upon the pathophysiology of disease, which can be efficiently tested in the laboratory.

It does all of this in a format that can be used as a quick reference at the “point of care” and as a text to study the principles and practice of history taking and physical examination.

In undertaking this ninth edition of a venerable classic, my goal is once again to preserve the unique strengths of previous editions, while adding recent information and references, reducing redundancy and improving clarity. The second edition is one of the few books I have retained from medical school, 35 years ago. The reason is that DeGowin's Diagnostic Examination emphasizes the unchanging aspects of clinical medicine—the symptoms and signs of disease as related by the patient and discovered by physical examination.

Pathophysiology links the patient’s story of their illness (the history), the physical signs of disease, and the changes in biologic structure and function revealed by imaging studies and laboratory testing. Patients describe symptoms, we need to hear pathophysiology; we observe signs, we need to see pathophysiology; the radiologist and laboratories report findings, we need to think pathophysiology. Understanding pathophysiology gives us the tools to understand disease as alterations in normal physiology and anatomy and illness as the patient’s experience of these changes.

A discussion of pathophysiology (highlighted in blue) occurs after many subject headings. The discussions are brief and included when they assist understanding the symptom or sign. Readers are encouraged to consult physiology texts to have a full understanding of normal and abnormal physiology [Guyton AC, Hall JE. Textbook of Medical Physiology. 10th ed. Philadelphia: W.B. Saunders Company: 2000. Lingappa VR, Farey K. Physiological Medicine: A Clinical Approach to Basic Medical Physiology. New York, NY: McGraw-Hill; 2000]. In addition, each chapter discusses common syndromes associated with that body region, to provide you with a sense of the common and uncommon but serious disease patterns.

DeGowin's Diagnostic Examination is organized as a useful bedside guide to assist diagnosis. Part I introduces the conceptual framework for the diagnostic process in Chapter 1, the essentials of history taking and documentation in Chapter 2, and the screening physical examination in Chapter 3. Part I and Chapter 17, which introduces the principles of diagnostic testing, should be read and understood by every clinician.

Part II, Chapters 4 through 14, forms the body of the book. Two introductory chapters discuss the vital signs (Chapter 4) and major physiologic systems that do not have a primary representation in a single body region (Chapter 5). Chapters 6 to 14 are organized around the body regions sequentially examined during the physical examination and each has a common structure outlined in the Introduction and User’s Guide. To avoid duplication, the text is heavily cross-referenced. I hope the reader will find this useful and not too cumbersome.

References to articles from the medical literature are included in the body of the text. We have chosen articles that provide useful diagnostic information including excellent descriptions of diseases and syndromes, thoughtful discussions of the approach to differential diagnosis and evaluation of common and unusual clinical problems, and, in some cases, photographs illustrating key findings. Most references are from the major general medical journals, the New England Journal of Medicine, the Lancet, the Annals of Internal Medicine, and the Journal of the
American Medical Association. This implies that a clinician who regularly studies these journals will keep abreast of the broad field of medical diagnosis. Some references are dated in their recommendations for laboratory testing and treatment; they are included because they give thorough descriptions of the relevant clinical syndromes, often with excellent discussions of the approach to differential diagnosis. Tests and treatments come and go, but good thinking has staying power. The reader must always check current resources before initiating a laboratory evaluation or therapeutic program.

Evidence-based articles on the utility of the physical exam are included, mostly from the Rational Clinical Examination series published over the last 15 years in the Journal of the American Medical Association. They are included with the caveat that they evaluate the physical exam as a hypothesis-testing tool, not as a hypothesis generating task; their emphasis on transforming the qualitative hypothesis generating task of the history and physical examination into a quantitative hypothesis testing task is misguided [Feinstein AR. Clinical Judgement revisited: the distraction of quantitative models. Ann Intern Med. 1994;120:799–805].

Each chapter was independently reviewed by faculty members of the University of Iowa Roy J. and Lucille A. Carver College of Medicine. Their feedback and assistance is gratefully acknowledged. Reviewers for this edition are Hillary Beaver MD, Associate Professor Clinical Ophthalmology (Chapter 7); Jane Engelgelder, MD, Professor, Clinical Obstetrics and Gynecology (Chapters 10 and 11); John Lee, MD, Assistant Professor, Department of Otolaryngology (Chapter 7); Christopher J. Goerd, MD, MPH, Associate Professor, Clinical Internal Medicine, Division of General Internal Medicine (Chapters 1–3, 16, and 17); Vicki Kijewski, MD, Assistant Professor of Clinical Psychiatry and Internal Medicine (Chapter 15); Victoria Jean Allen Sharp, MD, MBA, Clinical Associate Professor, Departments of Urology and Family Medicine (Chapters 10 and 12); William B. Silverman, MD, Professor, Clinical Internal Medicine, Division of Gastroenterology and Hepatobiliary Diseases (Chapter 9); Haraldine A. Stafford, MD, PhD, Associate Professor, Clinical Internal Medicine, Division of Rheumatology (Chapter 13); Marta Vanbeek, MD, MPH, Clinical Assistant Professor, Department of Dermatology (Chapter 6); and Michael Wall, MD, Professor of Neurology and Ophthalmology (Chapters 7 and 14).

For the first time color photographs are included to supplement the drawings. Dr. Hillary Beaver supplied the eye and fundus photographs, courtesy of the University of Iowa Department of Ophthalmology. The other photos were taken by the author (RFL) in his office practice.

Once again, Mr. Shawn Roach has done an excellent job of revising many of the illustrations for this edition. I greatly appreciate his patience and cooperation. Mrs. Denise Floerchinger was instrumental in coordinating my schedule and keeping me on task. Her support in this and my many other projects and clinical activities is essential to my success and is gratefully acknowledged.

My co-authors for this edition, Donald D. Brown, MD, and Richard L. DeGowin, MD, have been instrumental in seeing that the ninth edition maintains the strengths of previous editions. Dr. Brown directed the history taking and physical examination course at the University of Iowa for over 25 years. He is annually nominated for best teacher awards by the students in recognition of his knowledge and enthusiasm for teaching these essential skills. As a practicing cardiologist, he is the primary editor for Chapters 8 and 16.

I am especially thankful for the continuing contributions and encouragement of Dr. Richard L. DeGowin during the extensive revisions for eighth edition and
preparations for this ninth edition. He is a wonderful colleague and friend to whom I am ever thankful for the opportunity to edit this edition of DeGowin’s Diagnostic Examination.

Mr. James Shanahan, our editor at McGraw-Hill, has been actively involved from the beginning in the planning and execution of the ninth edition. His encouragement and support are deeply appreciated. The McGraw-Hill editorial and publishing staff under his direction, especially Samir Roy, have been prompt and professional throughout manuscript preparation, editing, and production.

I wish to thank my colleagues who have encouraged me throughout the course of this project. I have incorporated many suggestions from my co-authors and each of the reviewers; any remaining deficiencies are mine. Ultimately, you, the reader, will determine the strengths and weaknesses of this edition. I welcome your feedback and suggestions. Email your comments to richard-leblond@uiowa.edu (please include “DeGowin’s” on the subject line).

Richard F. LeBlond, MD, MACP
Iowa City, Iowa
To carefully observe the phenomena of life in all its phases, normal and perverted, to make perfect that most difficult of all arts, the art of observation, to call to aid the science of experimentation, to cultivate the reasoning faculty, so as to be able to know the true from the false—these are our methods.

— Sir William Osler

Don’t strain for arrangement. Look and put down and let your sensibility be the sieve.

— Theodore Roethke
“Poetry and Craft”

...the framing of hypotheses is the most difficult part of scientific work, and the part where great ability is indispensable. So far, no method has been found which would make it possible to invent hypotheses by rule. Usually some hypothesis is a necessary preliminary to the collection of facts, since the selection of facts demands some way of determining relevance. Without something of this kind, the multiplicity of facts is baffling.

— Bertrand Russell
“A History of Western Philosophy”
Why is Diagnosis Important?

The history and physical examination are the basis for diagnostic hypothesis generation; the first step in the diagnostic process. Accurate diagnosis precedes the three tasks central to the healing professions: explanation, prognostication, and therapy. These three tasks have been consistently performed by physicians throughout time and across cultures, regardless of the belief system or theory underpinning the practice: magic, faith, rationalism, or science. They provide answers to the patient’s three fundamental questions: (1) What is happening to me and why? (2) What does this mean for my future? (3) What can be done about it and how will that change my future? [Cohen JJ. Remembering the real questions. *Ann Intern Med*. 1998;128:563–566; Kravitz RL, Callahan EJ. Patients’ perceptions of omitted examinations and tests: A qualitative analysis. *J Gen Intern Med*. 2000;15:38–45].

Failure to pursue a diagnosis may permit a disease to progress from curable to incurable. On the other hand, for many complaints, in otherwise healthy people with no alarm symptoms or signs, a good prognosis can be ascertained without knowing the exact cause of the complaint, as, for instance, an upper respiratory infection. The experienced clinician can reassure the patient that further testing is unnecessary and will not change the prognosis or treatment. It takes experience, knowledge of the medical literature, good judgment, and an understanding of the fundamentals of clinical epidemiology and decision making to determine when pursuit of specific symptoms and signs is warranted. For an excellent review of the principles of epidemiology in a highly readable format, see Fletcher et al. [Fletcher RH, Fletcher SW, Wagner EH. *Clinical Epidemiology, the Essentials*. 3rd ed. Baltimore, MD: Williams & Wilkins; 1996].

Diseases and Syndromes: Communication and Entry to the Medical Literature

For thousands of years, physicians have recorded recurring patterns of disordered bodily structure, function, and mentation that suggest a common cause. Each pattern receives a specific name. When a common etiology and pathophysiology are confirmed, we designate the condition a disease. Other clusters of attributes, known by a combination of features not clearly related to a single cause, are called syndromes. Diseases and syndromes are intellectual constructs allowing the physicians to study groups of patients with relatively homogeneous physiologic disorders; they do not exist independently of the patients who manifest them. The
diagnosis of a disease or syndrome provides an entry to the medical literature to obtain information about etiology, diagnostic findings, treatment, and prognosis.

An accurate diagnosis is indispensable to offering your patients evidence-based therapy, that is, therapy validated in clinical trials based upon accurate diagnosis of participating subjects who are similar to your patient.

The Diagnostic Examination

To reach accurate and comprehensive diagnoses the clinician must catalog each abnormality of the patient’s anatomic structure, physiologic function, and mentation. Every disease has a temporal sequence of clinical and laboratory features that differentiate it from similar conditions. During the diagnostic examination, the clinician is performing two parallel tasks: (1) developing a problem list of the symptoms and signs requiring explanation; and (2) generating physiologic, anatomic, and etiologic hypotheses regarding the diagnoses.

Use a recursive process to work your way toward the diagnosis. First, from the history and physical examination, generate a problem list. Then make a list of possible diagnoses based upon the most probable anatomic sites and pathophysiologic process explaining the problems. Next, using the specific characteristics of this patient, differentiate the probabilities of each disease on your list for this patient: this is the differential diagnosis, each with a pretest probability. Now, choosing tests with appropriate likelihood ratios, these hypotheses are tested using laboratory and imaging tests (this is why they call them “tests,” they test the hypothesis). The results of the testing changes the probability of each hypothesis to the post-test probability: some are now much more probable, while others are much less probable. The clinician returns to the patient, reviews the history, and repeats specific parts of the examination to reach a new, refined differential diagnosis to be tested more specifically. This process repeats, each time returning to the patient for their ongoing history and to search for new or changing physical findings, until one or more specific diagnoses are established that fully explain the patient’s illness.

Stories: Listen, Examine, Interpret, Explain

The patient tells us a story of their illness. Our job is to create a story of their disease process that is congruent with their illness narrative. The key elements of a good medical story are the same as a good newspaper story: who, what, when, where, how, and why. The first three items you get directly from the patient:

**WHO?:** We need a history of “who this person is?” including their personal history (religion, beliefs, priorities), social history (education, sexual preferences, habits, demographics, employment, leisure activities), family history and past medical and surgical history. Without this information, we do not know this person.

**WHAT?:** Let them tell us what has happened to them. This is the narrative of their illness, starting with the chief complaint but going back to the beginning of the illness. Include any thoughts they have about what might be wrong and why, and any attempts at remedies they have tried. No symptom is irrelevant; often patients will dismiss symptoms or occurrences that they have thought
irrelevant but which may be the key to the diagnosis. Encourage them to speak freely by not interrupting or demanding clarity prematurely.

**WHEN?**: Timing is everything. The sequence of events and the pattern and duration of symptoms are critical to differentiating the etiology of symptoms common to many diseases. Make sure you understand the time line for each problem.

The second set of story elements you have to construct from the history and your physical examination:

**WHERE?**: All disease processes take place somewhere. Your job is to precisely envision the anatomy of the problem. Where is the seat of illness: which organ(s), tissues, cells. Is it localized or diffuse? If diffuse, what is the pattern of tissues or fluids; which is most consistent with the story of illness?

**HOW?**: This is the pathophysiologic question. How, by what physiologic mechanism(s), did this illness come about? There are only a limited number of ways people become ill. A useful way of parsing pathophysiology is used in this text. Ask which of the following mechanisms is most likely: congenital, idiopathic, endocrine, inflammatory/immune, infection, metabolic/toxic, mechanical, neoplastic, psychosocial, or vascular. If we understand how the patient became ill, we can better hypothesize why.

**WHY?**: This is the etiologic hypothesis. We strive to have an exact diagnosis that explains the illness history and all the findings of the examination and laboratory. In addition, we want to explain why it happened to this patient at this time and make an accurate prognostic statement.

Our brains are designed to be facile with stories and images; you should use this to advantage in everyday medical practice. We are much more adept at capturing and recalling visual images than recalling words verbatim. When the patient is telling you their story, picture it and them over time experiencing the illness they describe. During the examination, create visual images of what you see, feel and hear; see the patient in imaginary 3D X-ray vision. Do not try to translate your findings into words, especially into medical jargon, until you have captured the images. You may then struggle finding the correct words, but you will be less likely to distort the image to conform to the words. Disease is a four-dimensional story, which follows the biologic imperatives of its particular pathophysiology in specific anatomic sites as influenced by the unique characteristics of this patient. Your task is not verbal, but cinematic; construct a pathophysiologic and anatomic movie of the onset and progression of the illness: the words are generated from the images, not the images from the words. After all, a picture is worth a thousand words.

**Finding Clues to the Diagnosis**

The diagnostic examination has four components: (1) history taking, where clues are symptoms (abnormalities patient perceives), (2) physical examination, where the clues are physical signs (abnormalities detected by the examiner), (3) laboratory examinations, and (4) special anatomic and physiologic examinations, such as imaging studies, electrocardiograms, electromyograms, nerve conduction studies, or polysomnography. Our focus is on the history and physical examination and the process of hypothesis generation [Boland B], Wollan PC, Silverstein MD. Review of systems, physical examination, and routine tests for case-finding

The diagnostic examination begins with the first patient contact. The patient’s age and sex are surrogates for diseases more or less common in that group. The duration of illness is important; for example, a disease lasting more than 3 years is unlikely to be cancer. Ethnicity is important for diagnosing some diseases; for example, sickle cell anemia rarely occurs in northern European whites. Sex-linked diseases such as hemophilia are rarely encountered in females. Males do not get pregnant. Although obvious, it is important to make each of these categorical probability decisions explicit. Sometimes, it is a disease that was excluded by using one of these criteria (usually without consciously recognizing it) that turns out to be the diagnosis, such as appendicitis in the 80-year-old with abdominal pain.

Each clue is examined closely. If it is a symptom, assess the reliability of the observer: Are the observer’s perceptions accurate and consistent or are they colored by secondary considerations? Is the observer’s memory accurate? What importance does the patient attach to the symptom? Does the patient regard it fearfully or with relative unconcern? Obtain history from collateral observers, family, and friends, whenever possible. Do they corroborate the patient’s history?

If the clue is a sign, is it within the range of normal, has it changed from previous examinations or is it clearly abnormal? Is it constantly present or does it vary with position or motion? With laboratory findings, one must constantly suspect the mixing of specimens and laboratory error. Do the reports accord with what you expected? Was there opportunity for the adulteration of specimens? If the clue was found on imaging, was it present in previous studies? Was the patient properly identified when obtaining the images? Were the images interpreted by competent persons?

**The Problem List: A List of Problems Needing Explanation**

This is one of the most important and most frequently omitted steps in the diagnostic algorithm: list all of the problems you have identified in the history, physical examination, and initial laboratory studies. Only lump them together when you are certain they are congruent (common examples are nausea and vomiting, fever and chills), but be cautious of lumping too soon.

**Select Hypotheses: Generate a Differential Diagnosis**

**Anatomic, Physiologic, and Diagnostic Hypotheses**

Your task is to make an anatomic and physiologic story that matches in time and tempo the patient’s narrative of their symptoms. Do not forget to look at the past medical and family histories for clues; the past is a good predictor of the future.

Working from your anatomic and physiologic hypotheses, select diseases that are known to cause these specific symptoms, signs, and pathophysiology. A list of all possible diagnoses is rarely of much benefit, and does not provide a guide for efficient evaluation. Rather, from this list, we use the specific findings from the history and examination of this patient to differentiate the relative probabilities of
the potential conditions to create a short list of the most likely conditions, the differential diagnosis.

Because the clues that allow us to differentiate between disease of high and low probability for this patient are unique to this patient, a differential diagnosis is only possible for an individual patient, not a problem. For an isolated symptom or sign, we can generate a list of potential diagnoses, but have no means to differentiate their probabilities other than their population prevalence. In this book, under many symptoms and signs, we have placed a list of such clinical occurrences. It is up to the clinician, perhaps using this list as an organizational tool, to generate a meaningful differential diagnosis for her patient. When specific clues will help in generating the differential diagnosis, we have listed them after the DDX: symbol in the text.

The differential diagnosis is a list of the disease hypotheses to be tested. Each disease or condition is more or less probable based upon how well it explains the full range of the patient’s problems. Studies show that the clinicians carry 4 or 5 diseases on their differential list a any one time, but often 13 to 15 diseases will have appeared on the list at some time during the examination.

Many patients have an acute problem occurring on the background of two or more chronic disorders. In this situation, grouping problems into clusters with a common pathophysiology is a useful technique in forming your differential diagnosis. The challenge is to account for the current problems, especially any new symptoms and signs, either by one of the known existing disorders (an exacerbation of the underlying disease process) or by a new superimposed disorder.

Hypothesis Generation

The process by which skilled clinicians arrive at hypotheses has attracted the attention of physicians, mathematicians, and psychologists. As the Bertrand Russell quote at the beginning of this section indicates, this is still a mysterious cognitive process, even to the clinician performing the task.

Pattern recognition. The whole of the patient’s illness is greater than the sum of its parts and a simple mathematical summing of the sensitivity and specificity of each finding is probably far less accurate than the pattern formed in the mind of the skilled examiner by the totality of the observations. For example, it is unlikely that we could accurately identify a person by seeing separately each ear and eye, the hair, the forehead, the cheeks, the nose, the lips, or the chin. Each examination would lack the sensitivity and specificity we desire for identification. But, with just a glance at the pattern of the whole, we can identify with great accuracy literally hundreds of distinct faces. We use this powerful cognitive ability in everyday life and in medical practice. It is not an exercise in reductionism: the whole is greater than the sum of the parts. This ability to recognize patterns is one of the most powerful properties of the human brain, which no computer or algorithm can match.

Most clinicians believe that composite pictures of disease, although comprising many signs, strike them at a glance. The Germans recognize this concept when they refer to Augenblick diagnoses (literally, “a blink of the eye”). Pattern recognition is the current English term describing this concept.
Among the many clinical reasoning strategies, branching, matching and probability estimates are the most commonly used conscious processes when pattern recognition has not already occurred.

**Branching hypotheses.** Clinicians sequentially form anatomic and physiologic hypotheses which are tested at the bedside or in the laboratory. As specific characteristics of the disease process are confirmed, etiologic hypotheses are generated and tested. The differential diagnosis is thus revised and reviewed and each new clue may hint at other diseases for consideration. The process is iterated until all the problems have been explained and the whole story of the illness is clear.

**Decisions based on probability.** The clinician must be familiar with the incidence and prevalence of all the diseases they may encounter in the general population. This is a start for determining the probability of each disease for this patient, but never the actual probability; if the examiner rigidly applied the incidence and prevalence numbers, a rare disease would never be considered. Using each individual patient’s unique characteristics, you must adjust the general population probabilities to those for a population made up exclusively of patients similar to yours (age, gender, ethnicity, past history, concurrent conditions, etc.), an estimate at best. This is the list of pretest probabilities for each diagnostic hypothesis. Post-test probabilities are determined after applying tests with appropriate positive and negative likelihood ratios (see Chapter 17).

A very useful book that summarizes what is currently known about the sensitivity, specificity, and positive and negative likelihood ratios for specific physical findings is *Evidence-Based Physical Diagnosis* [McGee S. Evidence-Based Physical Diagnosis. Second Edition. Philadelphia, PA: WB Saunders; 2007].

**Matching hypotheses.** The patient’s symptoms and signs are matched with those of the hypothesized diseases. For example, suppose the examination yields findings a, d, e, k, and n. The differential begins with a list of diseases having some or all of the same attributes, adekn. The more problems that are common to the patient and the hypothesized diagnosis, the more likely that particular diagnosis. This method can be a useful adjunct to the branching pathway described above. However, with this process, it is easy to overlook the importance of temporal sequences and it easily degenerates into matching words. This strategy is based upon the abstractions of language (“word space”) rather than the physiologic processes observed in the patient and is to be discouraged.

**Soft Focus and Hard Focus**

Pattern recognition results from a soft focus, taking in the observations without undue emphasis on any one; the observer lets the pattern emerge as their systematic observations are filtered through the lens of their knowledge and experience. Performance of the screening physical examination in a structured and relatively stereotypic sequence allows the examiner to observe each patient in a similar manner so that the repetitive patterns between patients become more evident. When the examination process becomes a routine, little or no thought is required to perform or sequence the physical acts of the examination, so the mind is free to observe. When the focus of attention is sharp, as is often the case with beginners, one thing may be seen, while much is missed.

One of the most important observations made by the experienced clinician using pattern recognition with a soft focus is the overall assessment of severity.
of illness: How sick is the patient? Although one could list many attributes of severe illness, for example, abnormal vital signs, pallor, diaphoresis, anxious or frightened expression, the global assessment of severity made by the experienced clinician also includes many intangibles, often based upon prior knowledge and experience with the patient. Severity of illness scores, such as Acute Physiology and Chronic Health Evaluation II scores, are attempts to systematize this global assessment. Your experience-based emotional cues are an important part of this assessment.

Use of Computers for Diagnosis

There are several areas in which computers have proven valuable in the diagnostic examination. One of these, is in the rapid communication of laboratory results and radiologic images and interpretations to clinicians. Another is in the comprehensive search of the medical literature to evaluate findings and hypotheses generated during an examination. Computer literature searches should be available on the clinical floors of every hospital and in the offices and homes of physicians.

A computer output listing the rank order of disease probability based upon a simple list of symptoms and signs may reassure physicians who fear they will forget a disease for inclusion in the differential diagnosis. Such a list might be valuable in solving complex problems of differential diagnosis, or identifying rare diseases, but its utility for an experienced clinician is probably too low to encourage its use for most problems. Moreover, you still must have the experience and judgment to evaluate the list and determine which items to pursue and how. If you have those skills, you probably do not need the computer-generated list.

Undoubtedly, technologic progress will provide physicians with new opportunities for computer assistance in the diagnostic examination. Satisfactory answers to a few basic questions should precede the adoption of a computer-assisted diagnostic system: Who developed the program and with which data? How frequently will the program be updated and by whom? Will it save time? Is it portable? How will access to confidential information be controlled? How expensive is it?

Cognitive Tests of the Diagnostic Hypotheses

In ranking your list or possible diagnoses, matching of the patient’s attributes with those of the hypothetical disease is usually inconclusive. Several additional criteria should be applied to help identify the most likely diagnosis.

 Parsimony

A diagnosis has a higher probability of being correct if it can account for all of the symptoms and signs. This is Occam’s razor: the simplest solution is likely to be correct. When one diagnosis does not explain all the findings, those that are able to account for the greatest proportion of the patient’s signs and symptoms are more likely to be correct. Parsimony is most applicable to the previously well patient with an acute or subacute disease, the most common clinical challenge faced by Sir William Osler who introduced Occam’s razor to medicine. As we care for more patients with one or more chronic disease on multiple medications, bear in mind that more than one pathologic process may be occurring in your patient;

**Chronology**

It is possible to have a perfect match of attributes between patient and disease, but if the epidemiology, onset, tempo and course of illness are not appropriate to the disease, the hypothesis is probably wrong.

**Severity of Illness**

Not infrequently, an inexperienced clinician will diagnose the patient’s condition as, for instance, an upper respiratory infection, whereas a more experienced clinician will look at the patient and suggest the diagnosis of pneumonia, explaining that the patient looks “too sick” for the first condition. The severity of illness is valid and diagnostically useful, but it is difficult to explain or describe.

**Prognosis**

Often, the diagnosis is uncertain and the testing process to reach the correct diagnosis is anticipated to be prolonged. Since your initial hypothesis may be wrong, err on the side of safety: don’t make the wrong mistake. The clinician should proceed first to lower the probability of life and function-threatening conditions to below a reasonable probability, then proceed in a more leisurely evaluation to the correct diagnosis. It is more important not to miss a serious condition than to make the right diagnosis at the initial visit: the wrong mistake is one from which recovery is unlikely. For instance, acute severe pelvic pain in fertile women is an ectopic pregnancy until proven otherwise; all other diagnoses can wait a little bit. The right mistake is erring on the side of preserving life and function.

**Therapeutic Trials**

If there is uncertainty between an untreatable morbid disease and one with potentially successful therapy, a therapeutic trial should be considered. Although experience shows that such trials are often inconclusive or difficult to interpret, they may save a life; for example, when appendicitis cannot be excluded, perform an appendectomy accepting that some normal appendices will be removed. Therapeutic trials, particularly medication trials, should explicitly state the drug and dose to be used, the duration of the trial, the objective and subjective end points for interpretation of the trial at the end of the stated time and the planned response to both a negative evaluation and a positive evaluation of the therapeutic trial. Failure to be explicit in stating and adhering to these parameters is a not infrequent cause of prolonged exposure of patients to hazardous treatments of little or no benefit under the poor excuse of “doing something.”

**Selection of Diagnostic Tests**

Experienced clinicians select diagnostic tests indicated to test hypotheses generated from the history and the physical examination. They have learned that routine testing or an uncritical search for unlikely diagnostic possibilities
frequently yield results that appear to require more testing, all without answering the primary diagnostic question. This “cascade effect” heightens the patient’s anxiety, is hazardous, expensive and delays treatment. See Chapter 17 for a discussion of the appropriate selection of diagnostic tests. Testing should be done to answer specific diagnostic, prognostic, or therapeutic questions, and should not be a response to idle curiosity.

Rare Diseases

Some physicians, especially the inexpert, have a tendency to diagnose rare diseases with uncommon frequency. It is well to recall that rare diseases occur rarely. The old saying is, “when you hear hoofbeats think of horses, not zebras.” Just remember, this works in America, not Africa, (or the zoo, perhaps an analogy for teaching hospitals which collect a disproportionate number of rare diseases). You need to know the epidemiology and demographics of your patient and the population this patient represents before you really know what is common and what is rare.

Certainty and Diagnosis

How certain should the examiner be that a diagnosis is correct before it is accepted? Unfortunately, there is no accepted scale for degrees of certainty whereby the examiner can express the extent to which the diagnosis has been established. On the one hand, the diagnosis may be defined by the image, the laboratory test, the culture, or the biopsy result. For instance, a fracture of the tibia is diagnosed when the fracture can be seen on the X-ray film with absolute assurance. Many types of neoplasia and inflammatory diseases are diagnosed by biopsy. Culture, serology or polymerase chain reaction identification of specific organisms establishes the diagnosis of specific infectious diseases. Laboratory tests are specific for endocrine and metabolic diseases. On the other hand, we speak of a diagnosis of rheumatoid arthritis, where there is much less certainty, and no definitive diagnostic tests. The diagnosis is supported by the clinical picture, and by such nonspecific tests as X-ray examinations and tests for rheumatoid factor and citrullinated proteins.

In each clinical situation, the clinician must consciously establish a “stopping rule.” That is, the clinician must decide how much certainty is required, and stop further investigation when that point is reached. This decision is based upon the severity of the illness, an estimate of the prognosis (based upon the severity of illness and the patient’s comorbidities), and whether a specific diagnosis is needed to guide a decision between mutually exclusive interventions which would harm the patient if applied to the wrong disease; for example, antibiotics or corticosteroids.

Prognostic Uncertainty

If two hypotheses with widely differing prognoses seem equally probable and neither can be proved or disproved immediately, the patient should be informed of the diagnostic and prognostic possibilities and encouraged to discuss this with his family. In these situations, we have found it best to help the patient prepare for the worst and hope for the best. Regular follow-up and frequent reevaluation are required. Often, referral to a specialist will help both the patient and the physician deal with the uncertainty.
Deferred Diagnoses

When a satisfactory diagnosis cannot be made, the clinician still must act. The following five supplementary steps should be considered.

Repeat the History and the Physical Examination

The patient or a family member may recall additional information stimulated by the first inquiry. Talk to more relatives and attendants to confirm or deny the original story and to add details. Obtain copies of patient records from all previous caregivers. Carefully repeat the physical examination to confirm your previous evaluation and to search for signs that were originally overlooked.

Repeat Laboratory Tests

Specimens may have been mixed on the initial occasion, or an error in the first test may be uncovered. As always, each test should provide the answer to a specific question; do not blindly search in the laboratory for diagnostic ideas.

Make a Provisional Diagnosis

It may be appropriate to make a provisional diagnosis, but it is difficult to avoid diagnosis creep: provisional diagnosis often become assumed diagnosis over time. Even though the meticulous physician may have qualified the diagnosis by the word “probable” or a question mark, these modifiers often get dropped when the patient has passed through several consultations. Always go back to the original information to be sure that diagnoses carried by the patient have been appropriately confirmed. Some statements of uncertainty are preliminary diagnosis, diagnostic impression, tentative diagnosis, working diagnosis, provisional diagnosis, and probable diagnosis.

Defer Diagnosis

Carefully explain the situation to secure the patient’s confidence so that a return examination may be made when new symptoms or signs have appeared or time has given more perspective to the case. Retain the problem list, but mark the record “Diagnosis Deferred”; do not let medical record rules or the insurance company force a premature diagnosis.

Seek Wise Consultation

Often presenting the case to colleagues as an unknown and asking for their input, or seeking consultation with an excellent generalist or appropriate subspecialist will assist in making the diagnosis, and, even if not, may reassure the patient and physician. It is better to offer this option to the patient than to wait for the patient to insist out of frustration. However, avoid excessive consultation or visits to multiple physicians. Like excessive laboratory testing, this is more likely to add confusion than clarity.

A Summary of the Diagnostic Process

Step 1: Take a History

Elicit symptoms and the pattern of the illness to begin a problem list.
Step 2: Develop **Hypotheses**
Generate a mental list of anatomic sites of disease, pathophysiologic processes and diseases that might produce the symptoms.

Step 3: Perform a **Physical Examination**
Look for signs of the physiologic processes and diseases suggested by the history, and identify new findings for the problem list.

Step 4: Make a **Problem List**
List ALL the problems found during the history and physical that require an explanation.

Step 5: Generate a **Differential Diagnoses**
List the most probable diagnostic hypotheses with an estimate of their pretest probabilities.

Step 6: **Test the Hypotheses**
Select laboratory tests, imaging studies, and other procedures with appropriate likelihood ratios to evaluate your hypotheses.

Step 7: **Modify Your Differential Diagnosis**
Use the results of all of the tests to evaluate your hypotheses, perhaps eliminating some and adding others and adjusting the probabilities.

Step 8: **Repeat Steps 1 to 7**
Reiterate your process until you have reached a diagnosis or decided that a definite diagnosis is neither likely nor necessary.

Step 9: **Make the Diagnosis or Diagnoses**
When the tests of your hypotheses are of sufficient certainty that they meet your stopping rule, you have reached a diagnosis. If uncertain, consider a provisional diagnosis or watchful waiting. Decide whether more investigation (return to step 1), consultation, treatment, or watchful observation is the best course based upon the severity of illness, the prognosis, and comorbidities. If the diagnosis remains obscure, retain a problem list of the unexplained symptoms and signs, as well as laboratory and imaging findings, assess the urgency for further evaluation and schedule regular follow-up visits.

**Caveat**
The complex process we have discussed is primarily suited to the problems of chronic and relatively obscure diseases commonly encountered in the fields of internal medicine and pediatrics. A majority of patients seen by most physicians do not require such a comprehensive process. Although the principles of diagnosis hold for all patients, variations from the described process may be appropriate for a given patient’s condition and the medical or surgical specialty involved. Many conditions need few or no symptoms to make a diagnosis; the situation is obvious
by noting the anatomic derangement or by taking X-ray films. The dermatologist can make many diagnoses without hearing about any symptoms. On the other hand, the psychiatrist relies exclusively on the history given by the patient, friends, relatives, and attendants. It follows that the scope and length of the history vary greatly among medical specialties and with the patient’s presenting complaints.

An Example of the Diagnostic Process

The objective of the diagnostic examination is to discover the physiologic cause of the patient’s complaint, identify the specific disease, and determine the severity and prognosis of the disease. You need these data to counsel your patient regarding the indications for treatment.

A 21-year-old woman consults you about a painless lump in her neck (symptom). You consider her age and select hypotheses that include lymphoma, infection, and collagen vascular disease, which lead to questions about fever, itching, weight loss, exposure to pets, tuberculosis, arthralgias, and Raynaud phenomenon. Your examination reveals a single, firm, 3-cm nontender lymph node in the right cervical chain (sign), but the spleen is not palpable and there are no other signs of disease. The patient’s blood counts are normal (laboratory), and a biopsy of the enlarged node (supplemental test) discloses Hodgkin disease. Bone marrow biopsy and imaging studies of the chest and abdomen fail to reveal more disease (prognosis and staging tests).

You make a diagnosis of stage I Hodgkin disease and discuss the diagnosis with your patient, informing her of the prognosis without treatment. The possibility for radiotherapy and/or chemotherapy is discussed and consultation with an oncologist is requested so the patient can have a fully informed choice of therapy taking into account the risks and benefits of each treatment program.

Other Examinations

The Autopsy

The gold standard since the mid-nineteenth century for diagnostic accuracy has been the autopsy, and it remains so today. Unfortunately, autopsy rates have declined in recent decades, and with them valuable learning experiences for physicians. The autopsy is necessary to validate or correct our diagnostic impressions. With the decline in autopsy rates, many physicians have not learned the value of an autopsy and many families have not received a full explanation of the diseases of their loved ones. Despite the abundance of laboratory tests and imaging technologies, there is considerable evidence that clinical diagnoses in difficult cases are frequently wrong, that significant disease is missed, and that the addition of technology has not substantially altered these facts [Kirch W, Schafi C. Misdiagnosis at a university hospital in 4 medical eras. Medicine (Baltimore). 1996;75:29–40; Sonderegger-Iseli K, Burger S, et al. Diagnostic errors in three medical eras: A necropsy study. Lancet. 2000;355:2027–2031].

Physicians should work closely with patients’ families to encourage autopsies in most in-hospital deaths. This is a critical part of our professional development and the continuous struggle to improve our clinical skills [McPhee SJ. The autopsy. An antidote to misdiagnosis. Medicine (Baltimore). 1996;75:41–43; Combes A, Mokhtari M, et al. Clinical and autopsy diagnoses in the intensive care unit.
Arch Intern Med. 2004;164:389–392]. The issue is not one of assigning blame or responsibility; it is one of improving our diagnostic abilities through learning from our experience and that of our colleagues.

**Other Varieties of Medical Examinations**

There are at least seven additional forms of medical examinations that differ from one another in their purposes, their stereotyped procedures, and their diagnostic tests.

The first six examinations involve special, stereotyped routines for persons having no symptoms and who are presumed to be well. Recommendations based on yield and cost are periodically revised by various professional groups. The absence of symptoms makes the performance and interpretation of these examinations different from that of a diagnostic examination.

1. Examination of young schoolchildren: The examination usually emphasizes tests of vision and hearing, physical and social development, coordination, and language skills.
2. Examination of athletes: The examiner stresses tests of cardiopulmonary function, muscle performance, flexibility, and injury prevention.
3. Examination for military service: This resembles the examination for athletes but adds testing of the special senses and emotional stability.
4. Examination for life insurance: The routine is generally established by the insurance company; it usually consists of a history form, an abbreviated physical examination, and a few laboratory tests to exclude the presence of chronic diseases that affect longevity, substance abuse, and HIV infection.
5. Periodic health examination: For infants, follow the recommendations of the American Academy of Pediatrics for well-child examinations and immunizations. The clinician especially searches for birth defects and measures growth and social development. Annual examinations of sexually active adults with new sexual partners should be performed with Pap testing of women and screening for sexually transmitted diseases in women, and possibly men. In persons older than age 45 years, annual examinations seek to detect the early onset of cardiovascular disease, diabetes mellitus, hypercholesterolemia, hypertension, and cancer. In addition, the clinician provides counseling about age-related life changes, diet and exercise, and appropriate immunizations. The visits may foster optimal patient-physician relationships.
6. Industrial examinations: Specialized procedures detect the hazards of particular industries.
... There is no more difficult art to acquire than the art of observation, and for some men it is quite as difficult to record an observation in brief and plain language.

— Sir William Osler

Proper care of a patient for more than a single episode of care requires a medical record documenting the data specific to the patient and their care. Ideally, this record should be available to all providers at any site of care at any time, an ideal within grasp with electronic medical records. The record should contain, preferably in standardized formats, basic patient data, such as their demographics, list of active and past medical problems, surgical history, injury history, medication history, allergies, and drug intolerances, sexual history, family history (FH), social history (SH), personal habits, prostheses used, preventive care services, and specific counseling provided. Using standardized forms for data acquisition and filing enables the information to be recorded in a uniform way for each patient, allowing rapid review of the pertinent information at each visit. It is important to enter information in such a way that it is always current; for example, in the FH list the first names of children and siblings with their year of birth (rather than age).

Outline of the Medical Record

The parts of the medical history follow a standardized sequence, differing only in small details from one institution to another. The following sequence is suggested for adult patients. A different order giving prominence to the birth history is often preferred by pediatricians.

I. Identification
II. Informant
III. Chief complaints (CC)
IV. History of present illness (HPI)
V. Past medical and surgical history
   A. General health
   B. Chronic and episodic illnesses
C. Operations and injuries
D. Previous hospitalizations

VI. Family History (FH)
VII. Social History (SH)
VIII. Review of systems (ROS)
IX. Medications
X. Allergies and medication intolerances
XI. Preventive care services
XII. Physical examination (PE)
XIII. Laboratory and imaging studies
XIV. Assessment/Problem list
XV. Plan

Procedure for Taking a History

Definition of the Medical History

The medical history is an account of the events in the patient’s life that have relevance to the patient’s mental and physical health. The elements of the medical history are: (1) sensations that can never be observed by the examiner, (2) abnormalities noted by the patient at some past time so they cannot be confirmed by the PE, (3) events in the past, not readily verifiable, such as former diagnoses or treatments, and (4) the patient’s FH and description of their social situation.

Much more than the patient’s unprompted narrative, it is a specialized literary form in which the physician writes an account of the perceptions and events as related by the patient or other informants. The history may be offered spontaneously or secured by skillful probing. Often, the history is best elaborated by repeat questioning after a time, as the patient is encouraged to reflect on their experience. In taking the history, the clinician should record key statements in the patient’s words. The history is the patient’s story of their illness, not the physician’s interpretation of the patient’s history. The clinician should take particular care to establish the sequence of events. The clinician’s task at this time is to try to understand the patient’s experience and their interpretation of the illness.

Scope of the History

When patients consult their physicians for dermatitis, the necessary diagnostic history is very brief, possibly only a few sentences. For a person brought into the hospital with a fractured tibia, a long diagnostic history is unnecessary and even inhumane. In contrast, a chronic, obscure disease may require a long, careful history, perhaps repeated and expanded, with supplements from time to time as the results of further studies open new diagnostic possibilities. Writings on history taking always discuss the extended history, which is complicated and demands maximal skill. However, it would be folly to insist on an extended history for every patient; in many situations, it is unnecessary, and unnecessarily time consuming. The experienced clinician adjusts their technique to the patient’s problem.

Methods in History Taking

The most accurate history is obtained by an empathetic clinician who knows the manifestations of disease and understands how patients describe the symptoms of various diseases. History taking skill improves as you learn more of people,
Taking a History

Life, and disease. The face-to-face interaction while taking a good history permits you to see the emphasis your patient puts on her symptoms, allows you to learn about your patient’s personality, and provides an opportunity to develop a supportive physician-patient relationship. Use of medical intake questionnaires is encouraged to assist in obtaining a complete medical history, FH, and SH within the time constraints of practice [Ramsey PG, Curtis JR, Paauw DS, et al. History-taking and preventive medicine skills among primary care physicians: An assessment using standardized patients. Am J Med. 1998;104:152–158].

We believe that extensive written instructions about patient interrogation are unrewarding; you can only become proficient at history taking by actually interviewing patients. A few guidelines are useful: (1) listen actively, (2) do not interrupt, (3) ask open-ended questions, and (4) be patient, give the patient time to think and speak. Most important is to be a real person yourself; have a conversation.

Clinical experience and reflection upon your experience are necessary to link, without conscious thought, your knowledge of diseases with the history being obtained from the patient. When a disease or syndrome comes to mind, it should recall a cluster of symptoms and signs and chronologic data about which to ask the patient. When you have acquired this knowledge and experience, you can face the patient confidently and readily improvise methods of interrogation.

Taking a diagnostic history has four objectives: (1) discovering symptoms, (2) obtaining accurate quantitative descriptions, (3) securing a precise chronology of events, and (4) determining how the illness has changed the patient’s life.

Conducting the Interview

Arrangement

The following describes taking an extended history in the physician’s clinic, with the following caveats: the patient is not in acute distress, time limitations are not critical, and the disease is relatively obscure. Circumstances often vary greatly from these stipulations.

Address patients formally, do not use their first name unless they request it. The conversation should not be overhead by others, although the presence of the patient’s spouse or a relative is often helpful in confirming the narrative and supplementing the patient’s observations. Limit the interview to the patient and one other informant; more informants waste time in their disagreements on details that outweigh the slight extra yield of information.

Physician’s Manner

To obtain the patient’s confidence and rapport, present yourself as unhurried, interested, and sympathetic. Sit at eye level without a desk between you. In no way should you express a moral judgment on the patient’s actions or beliefs. Permit patients to begin their story in their own way; listen for several minutes before gradually injecting questions to guide the interview. Gently, but firmly, keep the discussion centered on the patient’s problems. By all means, avoid discussing your own health, even when a patient invites you to do so.

Note Taking

Write sparingly, while the patient talks. After you have recorded some routine data, sit back and listen to the narrative for a while, interjecting only a few questions.
Avoid writing the patient’s narrative verbatim; it is usually too lengthy and poorly organized. Use of standardized forms for recording the past medical history, FH, and SH (which can be filled out by the patient before the interview) will greatly decrease the need for making notes. Remember that the patient is telling you a story; you should try to understand their story jotting down key words and phrases to assist recall.

Language

From the beginning, gauge the patient’s meaning of the words they use; words may have different meanings for different people. Put your questions in simple, nontechnical terms. Even lay words may be misunderstood. The English vocabulary is vast and formidable, even to the scholar. Excluding your scientific and medical vocabulary, you may be able to use 100,000 words, while the adult with average education gets along with 30,000 to 60,000. So, the patient may not know half the words you use in English. Patients may leave the interview with the fear that they have presented their symptoms poorly because they have answered questions they did not understand.

Belief Systems

Physicians are trained in the scientific method and in science-based rules of evidence. For many patients, if not most, this is not the structure of their belief system. Other belief systems include magic, faith, and rationalism. It is essential to understand how the patient views cause and effect, to what sources they attribute disease and illness. The clinician’s task is to understand the patient; it is not, primarily, the patient’s task to understand the clinician. Education to reach a mutual understanding becomes an important part of providing proper care for many chronic diseases.

Patient’s Motivation

The usefulness of the history for diagnosis depends on the assumption, frequently forgotten, that the patient’s sole motive is to assist the physician in diagnosis and treatment, and, therefore, the descriptions of the patient’s symptoms are complete and truthful. This is a necessary and important assumption to make, but, if the patient’s history conflicts with supportive documentation or the findings of your evaluation, you must consider other motives that might prompt misrepresentation. Some patients, entirely truthful, present symptoms that are baffling until the physician learns of their resemblance to those of a friend or relative who has died of cancer, and the patient fears the same fate. The physician must ascertain whether the patient is contemplating a lawsuit for damages, claiming worker’s compensation, or applying for veteran’s benefits. Substance abusers may present symptoms calculated to obtain drugs. Lacking discernible motives, a few patients fabricate medical histories that may lead to extensive diagnostic examinations.

Procedure

After introducing yourself and confirming the patient’s identifying data, start the patient’s narrative by saying, “Tell me about your problem,” or “Give me your story.” Do not ask, “What is the matter with you?” or “What is troubling you?” because the patient is likely to respond, “That’s what I came here to find out.” Listen to the story without interruption for several minutes; use
open-ended questions to encourage the patient to speak. After the general outline becomes apparent, you may need to ask specific directed questions to explore the symptoms, medications, chronology, and the extent of disability. Ask about symptoms not mentioned but that are relevant to the systems and sites likely involved with the illness. You may pause periodically to write notes, including key words and phrases.

Next, record any remaining information to complete the past medical history, surgical history, injury history, review of medications and allergies, FH, SH, sexual, obstetrical, and gynecologic history, ROS and preventive care history including procedures (e.g., mammography, colonoscopy), tests (e.g., Pap smears, tuberculin skin tests) and immunizations.

**Completion of the Medical Record**

It is the clinician’s responsibility to see that the medical record is complete and accurate. Your signature attests to the accuracy of the information and that you have verified it to your satisfaction. *Once entered and signed, the information in the medical record cannot be altered*, although addendums and corrections can be added.

**Identification**

These data are frequently provided for the clinician, but should be checked for accuracy.

**Patient’s Name**

Record the complete name, including the family and given names, being careful to obtain correct spelling and birth date. Fatal errors have occurred when patients with the same name have received treatment intended for the other. Personal identification numbers and birth date should be verified before a treatment is given. Barcoding of both patients and drugs is helping to reduce these errors.

When a married woman who has taken her husband’s name, place her husband’s given names in parentheses, as Brown, Mary Elizabeth (Mrs. Edward Charles), since she may sign her name as Mrs. Edward C. Brown in correspondence. Determine whether she wishes to be addressed as Ms. or Mrs.

**Sex and Gender**

Sex is determined by genetics, gender is the sexual identity assumed by the patient. Usually, this is obvious, but specific questions sensitively put may be required.

**Residence**

The address should be confirmed and recorded; occasionally, addresses are used to distinguish patients with the same name.

**Birth Date and Age**

Record the patient’s birth date and stated age. The birth date may help distinguish between patients with the same name.
Source of Referral

When the patient was referred by another physician, confirm the name, address, telephone and FAX numbers of the referring clinician, and the reason for referral.

The Informant

Sources of the History

The history is best obtained from the patient with supportive information from others. Record your judgment of the historian’s accuracy and credibility. Do not assume a normal mental status from a casual conversation. Despite conversing normally, on direct questioning the patient may be unable to tell the day, date, or even name the city.

Interpreters

Try to avoid interpreters who are not medically trained. The following is a frequent experience with a lay interpreter: You ask, “Do you have pain?” The interpreter engages the patient in animated conversation incomprehensible to you, and after 3 or 4 minutes, the interpreter turns back to you and says, “No, she doesn’t have any pain.” It is reasonable to assume that the interpreter has interpreted the patient’s story using their own concepts of illness, as well as his words. You cannot evaluate the patient’s story or specific answers unless you know what questions were asked. Your only recourse is to ask short concrete questions and insist that the resulting conversation be no longer than you judge necessary.

Chief Complaints (CC)

When recording the patient’s history, begin with the CC. This is a list of the one or more symptoms of most concern to the patient and that motivated them to seek attention. The complaints should be listed as single words or short phrases with the approximate length of time they have been present: for example, nausea for 2 months; vomiting for 1 week. Always use the patient’s own words free of interpretation. Do not accept a previous diagnosis as a chief complaint; patient probing may be needed before the patient relates their symptoms rather than their diagnoses or those of previous providers and family members. CC are the starting place from which to begin making a differential diagnosis; the details of these symptoms should always be fully delineated. Furthermore, these are the symptoms that made the patient seek treatment; they require therapy or an explanation of why therapy is not given. The patient’s chief complaint should be the first problem on your problem list. This would seem obvious, but occasionally the physician finds an interesting disease, unrelated to the CC; the medically attractive condition receives all the attention, and the CC are ignored.

Do not press the patient for a chief complaint too early in the interview. After they have told some of their story, they may be better able to articulate their complaints and concerns. Occasionally, when asked for their symptoms, the patient produces a long detailed list of notes. The French label this la maladie de petit papier, which may signal an inappropriate level of concern or obsession with their symptoms. However, it is appropriate for many patients to keep track of symptoms, signs, temperature, blood pressure, weight, or blood sugars to get a more accurate picture of their illness.
History of Present Illness (HPI)

The **history of present illness** is the patient’s story of their illness experience; *it is the most important part of the diagnostic examination*. It should be written in complete sentences as a lucid, succinct, chronologic narrative. Ideally, the HPI should be brief, so that it is easily read and digested. This is only possible if the history is relatively straightforward. **When story is more complex and the diagnostic possibilities broad, include more details, you cannot be certain what is pertinent and what superfluous.** Because of this uncertainty, you **must avoid premature interpretation** of the history such as replacing their words with medical terminology or failing to record seemingly irrelevant symptoms or events.

Searching for Diagnostic Clues

The **chief purpose of the history** is to help you form hypotheses regarding the process unfolding in the patient. As the narrative unfolds, you should be simultaneously performing **three operations**: (1) **accumulating data** (obtaining the history), (2) **evaluating the data** (assessing the credibility of symptoms, seeking more details of time and quantity), and (3) **preparing three sets of hypotheses**. The hypotheses are anatomic (where is the problem?), physiologic (what is the pathophysiology?) and diagnostic (what diseases could account for this pathophysiology in that place?). Having formed a list of hypotheses, question the patient about other symptoms specific for processes and diseases on your lists, either to support or undermine a hypothesis. For example, when the patient complains of chest pain, ask if it is related to respiratory movements. A positive answer prompts questions about inflamed muscles, fractured ribs, and pleurisy. If the answer is negative, ask for an association with exertion or radiation suggestive of angina pectoris. Thus, **each step leads to another, resulting in refinement of your hypotheses.**

Symptoms

A symptom is an abnormal sensation perceived by the patient, in contrast to a physical sign that can be seen, felt, or heard by the examiner. **Evaluation** of a symptom can be straightforward, as when the patient says, “I’ve found a lump in my neck” (symptom), and the examiner can palpate a mass (physical sign). **However,** when the patient complains of a **nonspecific symptom**, such as chest pain, and no physical signs are detected, **more information is required** for the symptom to be diagnostically useful. Identify the attributes of each symptom, asking specifically about **Provocative or Palliative maneuvers**, symptom **Quality**, the **Region** involved, the **Severity** and **Temporal pattern** of the symptom. The acronym PQRST is useful mnemonic for these questions (see the discussion of pain, Chapter 4, page 85).

**Insist that the patients describe their symptoms, do not accept diagnoses or medical jargon as a substitute.** Record the symptoms using the patient’s words. When the symptoms suggest several conditions, note the absence of concomitant symptoms, ascertained by direct questioning, whose presence would favor one or another of the possibilities (pertinent negatives). For example, if the patient has had attacks of right upper abdominal quadrant pain, you should ask about jaundice, dark colored urine, pruritus, and pain radiating to the right scapula, all suggestive of hepatobiliary disease.
Nature of the Symptoms

The patient’s symptoms must be clearly described and quantified; you should be forming mental images of their illness experience.

Clarification. Question the patient until sufficient details are obtained to categorize the symptom. Do not accept vague complaints such as “I don’t feel well.” If the patient complains of weakness, ascertain if she is weak in one or more muscle groups or if she experiences lassitude, malaise, or myalgia. When a patient says she is dizzy, have her describe the experience without using the word “dizzy.” Determine whether dyspnea occurs at rest or with exertion.

Quantification. Quantification is important to the evaluation of symptoms; always record symptoms with a statement of quantity. For instance, pain cannot be measured, but the severity can be estimated by how it affects the patient. A patient may have a “terrible pain,” but if the pain has never interfered with work, sleep, or other activities, “terrible” acquires a clearer meaning. Exertional dyspnea can be assessed by the amount of exertion required to produce it; for example, ask, “Can you climb a flight of stairs? Can you walk two blocks without stopping?” Neither you nor your reader can interpret what “heavy smoker” means. Heavy is a value judgment whose meaning varies from one person to another, but a record of smoking 20 cigarettes a day is a measure everyone understands. The patient who had hemoptysis should be instructed to estimate the amount of blood lost in household measures, such as teaspoonfuls or cupfuls. The amount of sputum raised should be recorded; the volume serves as an important consideration in differential diagnosis.

Chronology. The duration of a symptom and the time of its appearance in the course of illness are significant for diagnosis. When the disease is chronic and the course complicated, the patient may be unable to place events in chronologic sequence. A time-line can assist the patient in clarifying the details: draw a vertical line demarcated in appropriate units of time, days, weeks, months, or years. Indicate on the time-line the certain dates supplied by the patient, as well as anchoring dates such as birthdays, New Year’s and holidays. Seeing the chart, the patient frequently recalls further details and can place the onset of symptoms more accurately. The sequence and doses of medication can also be recorded.

Current activity. Include this in the HPI. Determine how the illness has diminished the patient’s quality of life and whether therapy has improved it. Obtain a detailed picture of the patient’s average work and weekend day to evaluate the patient’s reaction to illness, severity of the disease, and response to therapy.

Summarization. Review your understanding of the history and ask the patient for corrections and confirmation. Test the completeness of your history by asking whether your summary conveys a clear picture of the patient’s experience of their illness, that is, how the illness has affected them and their family, how it has interfered with their work, and how the symptoms have progressed.

Past Medical and Surgical History

The past history helps you to understand the person you are evaluating and the preconditions that may substantially alter current and future risks for specific health conditions. When relevant, specific facts may be included in the HPI, but they must be recorded again in this section. The significance of past illnesses may
be only appreciated after future developments in the patient's condition or as newly recognized disease associations are reported.

General Health

The patient's lifetime health, before the present illness, is sometimes revealing. Factors to consider include body weight (present, maximum, and minimum, with dates of each), previous physical exams (dates and findings), and any periods of medical disability.

Chronic and Episodic Illnesses

Chronic medical illness. List all illnesses, diseases or conditions for which the patient receives, or has received, chronic medical treatment.

Infectious diseases. Infectious diseases have had an important history in medicine. Knowledge of past infections is important to understand current and future infection risk. List dates and complications of measles, German measles, mumps, whooping cough, chickenpox, smallpox, diphtheria, typhoid fever, malaria, hepatitis, scarlet fever, rheumatic fever, pneumonia, tuberculosis, sexually transmitted diseases, and HIV. Give dates of chemotherapy and antibiotic treatment. Include reactions to antibiotics under the heading, “Allergies and Medication Intolerances.”

Operations and Injuries

Give dates and nature of injuries, operations, operative diagnoses, and infection, hemorrhage or other complications.

Previous Hospitalizations

Record each hospitalization, including the dates and names of hospitals and their locations. If the hospital records are available, summarize the dates and diagnoses for each admission.

Family History (FH)

A FH is essential for all patients receiving more than the most cursory of care. This should include four generations, when available: grandparents, parents, aunts and uncles, siblings, and children. For parents and grandparents, record the birth year and current health or age at death and causes. For aunts, uncles, siblings, and children, record the birth year, first name, and current health or cause of death and age at death. Make note of any family history of hypertension, heart disease, diabetes, kidney disease, autoimmune diseases, gout, atopy, asthma, obesity, endocrine disorders, osteoporosis, cancer (particularly breast, colon, ovarian and endocrine cancers), hemophilia or other bleeding diseases, venous thromboembolism, stroke, migraine, neurologic or muscular disorders, mental or emotional disturbances, substance abuse, and epilepsy.

Social History (SH)

Place of birth. This information may be useful in assessing social or national incidence of disease. The examiner may gain some insight into the probability
of the patient’s understanding the nuances of the English language in giving a history.

**Nationality and ethnicity.** The correct classification may require considerable knowledge of geography, history, and anthropology. The patient may not be able to give a precise answer. It may be helpful to learn the nationality and ethnicity of the parents. Ethnic and genetic backgrounds are of some importance in diagnosis, for example, of diseases such as hemoglobinopathies and familial Mediterranean fever.

**Marital status.** Note whether the patient is single, married, divorced, or widowed, and the duration of each marriage or long term relationship and an explanation of its termination.

**Occupations.** Precise knowledge of the patient’s work history sheds light on education, social status, physical exertion, psychologic trauma, exposure to noxious agents, and a variety of conditions that may cause disease. Some diseases produce symptoms years after exposure, so tabulate past occupations as well as current work. Do not accept the patient’s categorization of an occupation without detailed questioning about what is actually done at work. The manual laborer may actually engage in little heavy physical work on the job but may be exposed to heavy-metal poisons or silica dust. Ask the patient if coworkers recognize some disease connected with their surroundings. Some women may give their occupation as “housewife,” neglecting to mention additional part-time or full-time employment. When a woman says she is a housewife, ascertain the number of rooms in the house, how many persons she cares for, and if she has assistance with her work. If the woman lives on a farm, how much fieldwork does she perform? For farmers of both sexes, learn about contacts with agricultural chemicals. With factory workers, ascertain, if other workers in the same plant or department have symptoms similar to those of the patient. Determine how much anxiety and tension accompany the job, the attitudes of superiors, and the degree of fatigue from work.

**Military history.** Note admissions to the armed services, branch of service, geographic locations of service, discharge (honorable or dishonorable), and eligibility for veteran’s benefits.

**Gender preference.** Labels such as heterosexual, homosexual, and bisexual are often more confusing than helpful. Ask each patient if they have had sex with anyone of the same sex. For example, ask men, “Have you ever had sex with men?” If the patient answers “yes,” you should ask further questions about sex with women and the patient’s past and current practices and preference. Nonjudgmental inquiry about exchange of sex for drugs, money, or services can disclose high-risk behaviors.

**Social and economic status.** Record the patient’s years of formal education, vocational training, current housing type, living arrangements, and any special financial problems.

**Habits.** Determine the patient’s former and current use of tobacco, coffee, alcohol, sedatives, illicit drugs (especially any injection drug use), placement of tattoos, and body piercing.

**Violence and safety.** Record the patient’s use of vehicle restraints, helmets with bicycling or motorcycling, and the presence of smoke and carbon monoxide alarms in the home.
Domestic, child, and elder abuse are common problems that go unidentified unless they are asked about explicitly and discreetly. In complete privacy, inquire whether the patient has ever been in a relationship in which she felt unsafe. If the answer is “yes,” ask if she feels safe in her current situation. If she answers “no,” ask if she wishes you to help her find a safe environment. At no time, try to explicitly identify the individual whom the patient finds threatening, unless this information is volunteered by the patient [Felhaus KM, Koziol-McLain J, Amsbury HL, et al. Accuracy of 3 brief screening questions for detecting partner violence in the emergency department. JAMA. 1997;277:1357–1361].

**Prostheses and in-home assistance.** Record the patient’s use of eyeglasses, dentures and dental appliances, hearing aides, ambulation assistance devices (cane, walker, scooter, wheelchair), braces, prosthetic footwear, and any aide or assistance received in the home (visiting nurse, physical therapy, homemaker services).

**Review of Systems (ROS)**

The following outline can help you make a careful review of the history by inquiring for salient symptoms associated with each system or anatomic region. Symptoms related to the patient’s current problem, discovered during your ROS inquiry, should be recorded under “present illness.” Become familiar with these symptoms and learn their diagnostic significance. In practice, the patient’s answers are not written down except when they are positive, or when a negative response is particularly pertinent to the differential diagnosis. We suggest that you ask the questions while examining the part of the body to which the questions pertain. In taking the HPI, when one of the symptoms emerges, inquire about the associated symptoms in this outline. Use of a standardized patient questionnaire will greatly facilitate identification of positive items on a thorough system review and saves the clinician’s valuable time.

**Skin, Hair and Nails**

**Skin:** Color, pigmentation, temperature, moisture, eruptions, pruritus, scaling, bruising, bleeding.  **Hair:** Color, texture, abnormal loss or growth, distribution.  **Nails:** Color changes, brittleness, ridging, pitting, curvature.

**Lymph Nodes**

Enlargement, pain, tenderness, suppuration, draining sinuses, location.

**Bones, Joints, and Muscles**

Fractures, dislocations, sprains, arthritis, myositis, pain, swelling, stiffness, migratory distribution, degree of disability, muscular weakness, wasting, or atrophy, night cramps.

**Hemopoietic System**

Anemia (type, therapy, and response), lymphadenopathy, bleeding or clotting (spontaneous, traumatic, familial).

**Endocrine System**

History of growth, body configuration, and weight; size of hands, feet, and head, especially changes during adulthood; hair distribution; skin pigmentation; goiter,
exophthalmos, dryness of skin and hair, intolerance to heat or cold, tremor; polyphagia, polydipsia, polyuria, glycosuria; libido, secondary sex characteristics, impotence, sterility.

**Allergic and Immunologic History**

Dermatitis, urticaria, angioedema, eczema, hay fever, vasomotor rhinitis, asthma, migraine conjunctivitis; known sensitivity to pollens, foods, danders, X-ray contrast agents, bee stings; previous skin tests and their results; results of tuberculin tests and others; desensitization, serum injections, vaccinations, and immunizations.

**Head**

Headaches, migraine, trauma, vertigo, syncope, convulsive seizures.

**Eyes**

Loss of vision or color blindness, diplopia, hemianopsia, trauma, inflammation, glasses (date of refraction), discharge, excessive tearing.

**Ears**

Deafness, tinnitus, vertigo, discharge from the ears, pain, mastoiditis, operations.

**Nose**

Coryza, rhinitis, sinusitis, discharge, obstruction, epistaxis.

**Mouth**

Soreness of mouth or tongue, symptoms referable to teeth.

**Throat**

Hoarseness, sore throats, tonsillitis, voice changes, dysphagia, odynophagia.

**Neck**

Swelling, suppurative lesions, enlargement of lymph nodes, goiter, stiffness, and limitation of motion.

**Breasts**

Development, lactation, trauma, lumps, pains, discharge from nipples, gynecomastia, changes in nipples, skin changes, warmth.

**Respiratory System**

Pain, shortness of breath, wheezing, dyspnea, nocturnal dyspnea, orthopnea, cough, sputum, hemoptysis, night sweats, fevers, pleurisy, bronchitis, tuberculosis (history of contacts), pneumonia, asthma, other respiratory infections.

**Cardiovascular System**

Palpitation, tachycardia, irregularities or rhythm, pain in the chest, exertional dyspnea, paroxysmal nocturnal dyspnea, orthopnea, cough, cyanosis, ascites, edema;
intermittent claudication, cold extremities, thromboses, postural or permanent changes in skin color; hypertension, rheumatic fever, chorea, syphilis, diphtheria; drugs such as digitalis, quinidine, nitroglycerin, diuretics, anticoagulants, antiplatelet agents, and other medications.

**Gastrointestinal System**

Appetite, changes in weight, dysphagia, nausea, eructation, flatulence, abdominal pain or colic, vomiting, hematemesis, jaundice (pain, fever, intensity, duration, color of urine and stools), stools (color, frequency, incontinence, consistency, odor, gas, cathartics, pain or difficulty with passage, urge to stool), hemorrhoids, change in bowel habits.

**Genitourinary System**

Color of urine, polyuria, oliguria, nocturia, dysuria, hematuria, pyuria, urinary retention, urinary frequency, incontinence, pain or colic, passage of stones or gravel. **Gynecologic History:** Age of onset, frequency of periods, regularity, duration, amount of flow, leukorrhea, dysmenorrhea, date of last normal and preceding periods, date and character of menopause, postmenopausal bleeding; pregnancies (number, abortions, miscarriages, stillbirths, chronologic sequence), complications of pregnancy; birth control practices (oral contraceptive medications, barrier methods, etc.). **Male History:** Erectile dysfunction, premature ejaculation, blood in the semen, contraceptive methods and condom use. **Venereal Disease History:** Sexual activity (sex of partners and practices), chancre, bubo, urethral discharge, treatment of venereal diseases.

**Nervous System**

**Cranial Nerves (CNs):** Disturbances of smell (CN I), visual disturbances (CN II, III, IV, VI), orofacial paresthesias and difficulty in chewing (CN V), facial weakness and taste disturbances (CN VII), disturbances in hearing and equilibrium (CN VIII), difficulties in speech, swallowing, and taste (CN IX, X, XII), limitation in motion of neck (CN XII). **Motor System:** Paralyses, muscle wasting, involuntary movements, convulsions, gait, incoordination. **Sensory System:** Pain, lightning pain, girdle pain, paresthesia, hypesthesia, anesthesia, allodynia. **Autonomic System:** Control of urination and defecation, sweating, erythema, cyanosis, pallor, reaction to heat and cold, postural faintness.

**Psychiatric History**

Describe difficulties with interpersonal relationships (with parents, siblings, spouse, children, friends and associates), sexual adjustments, school and employment success and difficulties, impulse control, sleep disorders, mood swings, difficulty with concentration, thought or the presence of hallucinations.

**Medications**

In a separate section, list all medications being taken: their names, doses, effects, reason for taking, and duration. Ask the patient to bring the pharmacist’s containers with the specific data on the labels. If the labels are absent, identify tablets, pills, capsules, and suppositories by asking the pharmacist who issued the drug. Be sure to list all nonprescription drugs, herbal remedies, supplements, and vitamins.
**Allergies and Medication Intolerances**

A notation of past medications and untoward drug reactions should be as explicit as possible. Ask for the type of reaction or intolerance experienced with each medication. Many patients list as allergies common side effects they experienced, not allergic reactions: for example, stomach upset with codeine or erythromycin. Identify all known or suspected causes of anaphylaxis, including drugs, stings, and foods (e.g., peanuts). This summary of allergies and medication intolerances must be consulted when any drugs are prescribed in the future.

**Preventive Care Services**

Record the patient’s history of preventive care services. List the dates and results of screening tests (e.g., mammograms, Pap smears, colorectal cancer screening, tuberculin tests), insurance examinations, and immunizations using age- and sex-specific national guidelines as your standard.

**Advance Directives**

Each adult should be asked if they have a living will and/or durable power of attorney for health care and, if so, who is their surrogate decision maker. Each adult should be given information about advance directives and be given an opportunity to record their wishes concerning resuscitation, mechanical ventilation, and prolonged life support. Although these discussions are more likely to be particularly relevant to the frail older adults, you should initiate this discussion with all adults more than 50 years of age, before the anticipated time of need.

**Physical Examination (PE)**

Here you should record the finding from your PE in a systematic fashion. The sequence of presentation below is suggested as a common and practical method:

- Vital signs
- General appearance
- Head, eyes, ears, nose, and throat
- Neck and spine
- Chest: breasts
- Chest: chest wall and lungs
- Chest: heart, major arteries, and neck veins
- Abdomen
- Genitourinary examination, including inguinal hernias
- Rectal examination
- Extremities
- Lymph nodes
- Neurologic examination, including the mental status examination
- Skin

**Laboratory**

Record the results of the initial laboratory finding which you have used to assist in the development of your differential diagnosis.
Completion of the Medical Record

Assessment

Case Summary

After recording the history and PE, analyze the chronology, symptoms, signs, and laboratory findings of the illness. It is advisable to write a brief summary of your findings as an abstract of the significant observations.

The Problem List and Assessment

Write down your list of all the diagnostic and management problems the patient presents (variously labeled as problem list, initial assessment, impression, or diagnosis). A diagnostic problem may be a symptom, a sign, a laboratory finding, or a complex of several items that experience has taught are associated with disease. A previously diagnosed disease, or one under consideration for diagnosis, may be listed as a problem. When the diagnosis is obscure, beware of lumping problems together prematurely; this may serve to obscure rather than to clarify the diagnosis.

Generate a differential diagnosis for each medical problem. As discussed in Chapter 1, the differential diagnosis can be pathophysiologic, diagnostic, or both. It is a good practice to keep the patient’s chief complaint the first problem on your problem list. Beyond that, we do not feel that attempts to number the problem list in a prioritized or numerically consistent fashion is useful, because priorities change as the evaluation and treatment proceed and problems disappear or consolidate as more information is acquired.

A working problem list should be maintained as a separate page in the hospital or clinic chart to record the problems with notes and dates indicating the status of each. It is important to maintain, update, and revise this problem list. By constantly reviewing the problem list, you can see that every problem is being evaluated and managed. Often, the key to the diagnostic puzzle is finding how the odd problem fits the pattern. Diagnostic problem solving is much like putting together a jigsaw puzzle without the picture and with only a few pieces provided at a time. To get the pieces together correctly, you have to have all the pieces on the table at the same time and keep looking at them, as new pieces appear to see the pattern emerge. The problem list is your table full of pieces; your hypotheses are attempts to explain the pattern. It is often the odd piece that does not seem to fit anywhere that is the key to the puzzle.

The Plan

For each problem, and the patient as a whole, you need to develop a plan. The plan for each problem has three parts: (1) plans for testing your hypothesis or differential diagnosis, (2) therapy to be considered or given, and (3) education for the patient and family.

A plan is only as good as the diagnostic hypotheses that generated it. Our emphasis in this text is to help you think about the information acquired in the performance of the history and physical exam so that you can generate sound, testable hypotheses. Once you have generated a concise and thoughtful differential diagnosis, you can consult textbooks of medicine, for example, Harrison’s Principles of Internal Medicine [Kasper DL, Braunwald E, Fauci AS, et al. eds. Harrison’s Principles of Internal Medicine. 17th ed. New York, NY: McGraw-Hill, 2008], or directly search the medical literature to assist in the most economical and efficient methods for testing your hypotheses.
The Oral Presentation

The optimal oral presentation holds your listener’s attention for 5 to 7 minutes while you identify your patient and briefly summarize the case. Start with a statement of the patient’s problems or diagnoses so your listeners can analyze your subsequent narrative for the evidence used to support the diagnosis and therapeutic plan you propose. Then summarize the history and presentation, review the vital signs, and pertinent physical findings and laboratory test results, state the diagnostic impressions or problems, and then recommend a diagnostic and therapeutic plan. Excellent presentations require that you edit and organize the information you have collected, to tell the story of the illness as it appears to you. If you regurgitate all of the extensive information that you place in the medical record, you will quickly lose your audience.


Other Clinical Notes

Inpatient Progress Notes

Progress notes are made daily and whenever necessary. Each note should be dated and the time of day recorded. Each note has four subheads. Use the mnemonic SOAP to remember them: Subjective data (symptoms and changes in symptoms, their appearance and disappearance, and their response to therapy); Objective data (changes in or new physical signs and laboratory findings and response to therapy); Assessments (updates to your problem list and hypotheses); and Plans (diagnostic tests, therapeutic interventions and instructions to the patient and nursing staff). When a problem is resolved by inclusion in another diagnosis, or by cure or disappearance, it should be so noted in the progress note and in the working problem list.

The full and legible name of the writer should be appended to each progress note. The name should be followed by a slash mark and an abbreviation indicating hospital role, that is, MD (resident), RN (student nurse or graduate), S (staff), etc.

Off-Service Note

Write a note in the chart when you leave a service and turn over the care of the patient to your successor. Customarily, a brief résumé of the case is recorded, stating the diagnosis or problems, the treatment, and response, suggestions for continuing treatment are included. Do not include statements like, “Good luck!”

Discharge Summary

When the patient leaves the hospital, the physician should enter a final note containing an abstract of the case, with the diagnosis or problem list and the
treatment given in the hospital, future plans, and each medication, dose and schedule. Note the patient’s condition and functional status at discharge and any information or instructions given to the patient and attendants for home and follow-up care.

**Clinic Notes**

Clinic notes follow the same SOAP format described for progress notes in the hospital. If the chart contains standardized forms as part of the medical record, the note may refer the reader to those forms for current information so that it need not be repeated in the written note. All clinic notes should state the expected response to interventions, when that response is anticipated and when the patient is to be seen in follow up.

### The Patient’s Medical Record

The patient’s medical record is a document containing: (1) the medical history, (2) the findings from the physical exam, (3) the reports of laboratory tests, (4) the findings and conclusions from special examinations, (5) the findings and diagnoses of consultants, (6) the diagnoses of the responsible physician, (7) notes on treatment, including medication, surgical operations, radiation, physical therapy, and (8) progress notes by physicians, nurses, and others.

### Purposes

The purposes of the patient’s medical record may be classified as follows:

**Medical Purposes**

1. To assist the physician in making diagnoses.
2. To assist physicians, nurses, and others in the care and treatment of the patient.
3. To serve as a record for teaching medicine and for clinical research.

**Legal Purposes**

1. To document insurance claims for the patient.
2. To serve as legal proof in cases of malpractice claims for injury or compensation, cases of poisoning, and cases of homicide.

### Reimbursement

The federal government has developed documentation guidelines for evaluation and management services that define the standards that Medicare carriers employ in reviewing documentation physicians must use to bill for history taking, PEs, and medical decision making.

Usually, the physician composes the patient’s record with attention focused on the medical purposes of making diagnoses, caring for the patient, teaching medicine, and furthering research. After the illness, sometimes years later, the medical record may be consulted to fulfill the legal purposes in support of claims and the demonstration of facts in litigation. In these contingencies, the physician may belatedly discover omissions and inaccuracies. To prevent late
recriminations, always completely document each patient encounter at the time of service. Addendums may be added at a later date, but the original note must never be altered.

Attempts at grading diagnoses are encountered in some hospitals and in some insurance forms that call for a primary diagnosis and a secondary diagnosis. At face value, this request seems rational but an absurdity appears, when the same records are graded by different specialists. The primary diagnosis is often different from the view of the internist, the surgeon, the orthopedist, or the otolaryngologist. Each selects the disease pertaining to his or her own specialty. The confusion is diminished when the form states that the primary diagnosis is the reason for the clinic visit or hospitalization.

The primary purposes of enabling a physician to document his or her care in the medical record are to serve the memory of the caregiver and communicate these data to other physicians caring for the patient. Uses of the record for legal and billing purposes are secondary and should not distract or interfere with good patient care. Lawyers and insurers insist on written documentation as evidence of performance, but guidelines that encourage treating charts instead of patients are bad medicine.

**Physician’s Signature**

Each sheet, brief entry, and doctor’s order composed by the physician for the medical record should be accompanied by the physician’s signature and the date and time of signing as proof of authorship. In the hospital record, the physician’s initials are inadequate; the complete written signature should be legible. All dates should include the month, day of the month, year and time of day. In teaching hospitals, where many persons contribute to the record, the entries of medical students and nurses should be dated and accompanied by their signatures, affixed with suitable abbreviations indicating their status in the medical organization.

**Custody of the Record**

The record may rest in the physician’s locked office files, or it may be in the custody of the hospital where the patient received medical care. The contents of the medical record must be guarded against access by unauthorized persons. The recorded facts are privileged communications under the law; they cannot be revealed to another person without the written consent of the patient.

The medical record should be composed with the constant realization that at some future time the patient may read it or that it may become a legal document; the date and authorship of each entry may be important. The record should not contain flippant or derogatory remarks.

**Electronic Medical Records**

Over the past 30 years, enthusiasts of medical informatics have continued to develop the electronic medical record. Technologic advances allow recording of all patient information, including clinical documentation, laboratory tests and imaging studies directly into the electronic record. Access to the record is password protected and encrypted information is readily transmitted electronically within an institution and around the world. Multiple providers can have simultaneous
access to the record from any computer terminal, allowing improved patient care simultaneously by multiple clinicians. Systems are being installed that allow referring physicians to access the records of patients they have referred to another institution, allowing them to stay involved with the daily flow of information. In addition, decision support modules allow the clinician ready access to guidelines and literature searches pertinent to the patients under their care. The use of computer-generated reminders also facilitates preventive care. Physician order entry programs avoid common transcription errors and automatically search for drug interactions and suggest dosing changes for impaired renal function. The hope is for standardization of information domains and ultimately the sharing of patient information in a nationwide medical information network so that complete patient records are accessible at the point of care, wherever that may be, any time day or night. Issues of security, standardization of computer languages and information acquisition formats and the large and uncompensated expense for hardware and software are still major obstacles to achieving the vision.

An increasing problem encountered with the electronic record is the “cut and paste” phenomena: documentation from one day is cut and pasted to the next rather than constructed anew, and a deluge of laboratory and radiologic information is pasted into daily progress notes and discharge summaries. These are both abuses of the electronic format that are to be condemned. Neither requires that the cutter-paster has actually read the material, given it any thought, or reflected upon the whole of the information to form a new and evolving clinical assessment and management plan.

Each daily note should be constructed in its entirety each day, with appropriate references to existing records. The physical findings must be ascertained and recorded daily as they change and evolve. Test results should be succinct summaries of key radiographic findings and the few key chemistry and microbiologic reports used today to make diagnoses or change the management plan. All the detailed radiologic and laboratory information is readily available to everyone reading the note in another part of the record and it need not be duplicated.

Electronic records are a boon to patient care when generated and used correctly. Unfortunately, they also facilitate sloppy, expedient but unprofessional and potentially dangerous documentation practices that discourage thought and reflection and perpetuate misstatements, erroneous conclusions and frank errors.