
C O N C I S E T E X T B O O K O F

Medicine

Second Edition

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Medicine

Second Edition

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Foreword

Dealing with an already massive and rapidly expanding body of biomedical information poses opportunities and problems for students and practitioners of medicine. Access to the full array of that information will become increasingly easy as the libraries of today are transformed into electronic information storehouses directly accessible to personal computers in home, office, hospital, and school. While such systems have the potential power to advance medical capability and quality, they could also overwhelm and confuse unless a framework is provided for their use. The collective experience and wisdom of experts in the many subfields of medicine will be required to separate out the information that is valid and useful from that which is not.

Medical education needs to prepare students to utilize these new resources productively during their education and as a source of ongoing educational enrichment throughout their professional careers. There is a growing opportunity to rethink the medical curriculum with deemphasis of memorized minutia and focus on broad concepts and principles and on independent study. More time should become available to both student and practitioner to deal with the uniquely human aspects of medicine—listening to, understanding, and caring for our patients.

A broad overview of medicine remains an essential entry point for all practitioners, whether they pursue careers in primary care or narrower subspecialties. It is a critical component of the framework needed to use all of the new resources being developed. The editors of this *Concise Textbook of Medicine* superbly address that need. They are both very highly regarded by their peers at the Medical College of Wisconsin as outstanding clinicians as well as teachers. Drawing on the expertise of many distinguished contributors, they provide a highly readable summary of the current best understandings of the field of internal medicine. The presentations do not pretend to be exhaustive, but rather focus on basic concepts, a feature clearly in accordance with their stated objective of providing a textbook that a student can read from cover to cover during an 8- to 12-week rotation in medicine. The text provides a background from which individual issues can be explored in greater depth intelligently and efficiently. It is a valuable and praiseworthy resource for students, practicing physicians and allied health professionals.

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Preface

Conventional wisdom tells us that the clinician arrives at a bedside diagnosis by careful history taking, thorough clinical examination, assimilation of the available information, and, finally, by reflective reshaping of the resultant product on the anvil of prior experience. However, as stated by Dr. Roman Yanda, experience alone is a poor teacher: by the time one has enough, success or failure no longer matters. The background of organized learning—theoretical knowledge—should supplement experience if one were to succeed. Providing that necessary supplementation is the prime function of a textbook. As was the case with the first edition, published as *Textbook of General Medicine*, our objective in writing and editing this second edition is to provide the student with a course in internal medicine that could be read cover to cover during a 12-week rotation in medicine and to acquire knowledge in that field considered essential to graduation from a medical school. Even though the book is directed to medical students, it will also serve as a quick reference source for internal medicine and family practice residents as well as nurses and other health professionals. The success of the first edition indicated that we had attained our objective. Its reviews in peer reviewed journals were extremely favorable, and we came to the inescapable conclusion that a second edition was in order.

Once again each chapter begins with an outline that defines the scope of the subject matter presented and ends with multiple choice questions meant to assist in self-evaluation. Liberal use of headings and use of simple, yet precise, language should make it easier to read. Almost half the contributors to the second edition are new. As was the case with the first edition, they are

among today's leading teachers of medicine, all being board certified in their specialties and, where applicable, in the respective subspecialties as well.

Two new chapters, Psychiatry and Medical Genetics, have been added, and a whole section on alcoholism and substance abuse has been added to the chapter on clinical toxicology.

To say that medical practice is being reshaped is perhaps an understatement. At times it is hard to discern whether technology is driving medicine or vice versa. Medicine has made tremendous strides and seen new developments since 1983 when the first edition was published—the advent of magnetic resonance imaging, proliferation of antibiotics, calcium channel blockers, entry of AIDS as the greatest scourge of humankind, refinements in critical care and fibrinolytic therapy, just to name a few. To reflect the current advances, every chapter in the book has been thoroughly revised to reflect the current understanding of the subject, yet at the same time the book has been kept concise and the price affordable to the student.

The use of detailed references has been deliberately avoided, but a selected bibliography is provided at the end of each chapter for further reading. If the reader wishes to study a subject in greater detail, after studying the relevant portion from *Concise Textbook of Medicine*, he or she is encouraged to seek from a medical library an up-to-date computer printout of recent literature on the subject and then to read the most recent review articles on the subject.

**Mahendr S. Kochar
Kesavan Kutty**

Preface to the First Edition

"To study the phenomena of disease without books is to sail an uncharted sea; while to study books without patients is not to go to sea at all," wrote Sir William Osler in 1901.¹

There is only one way to learn clinical medicine, and that is at the bedside participating in diagnosis and treatment of the patient's illness; however, no one can expect to acquire even the essential knowledge of internal medicine without books. With intensive biomedical research, there has been a knowledge explosion in medicine in the last three decades; there is too much to learn in a limited amount of time. It is impossible for a medical student to read the standard textbooks of medicine from beginning to end, but the student must acquire knowledge of the essentials of internal medicine in order to become a Doctor of Medicine.

The purpose of this book is to provide the student with a course in internal medicine that can be read from cover to cover during an 8- to 12-week rotation in medicine; it contains the essentials of internal medicine that the student must know before graduating. The book will also serve as a source of concise information for family practice and internal medicine residents desiring a rapid review of internal medicine. Allied health

professionals, particularly nurse practitioners and physicians' assistants, will find the book readable and understandable.

Each chapter begins with an outline that defines the scope of the subject matter that one needs to learn and ends with multiple-choice questions, which should help in recapitulating what has been learned. Liberal use of headings and use of simple yet precise language should make the reading of this book an enjoyable experience.

This text has been written by specialists who are among today's leading teachers of internal medicine. All of the authors are board certified in both internal medicine and their subspecialties and have written their chapters with the objective of presenting all relevant information in the most lucid manner. The use of references has been deliberately avoided, but a selected bibliography is provided at the end of each chapter for further reading.

I would like to take this opportunity to thank Daniel J. McCarty, MD, Professor and Chairman of the Department of Medicine at the Medical College of Wisconsin, Milwaukee, for writing the foreword to this book.

Mahendr S. Kochar
September 1982

¹Olsen W: Books and men. *Boston Med Surg J* 1901; 144:60-62.

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The Art and Science of Medicine

Mahendr S. Kochar

THE ART AND SCIENCE OF MEDICINE

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THE ART AND SCIENCE OF MEDICINE

Medicine is both an art and a science. Diagnosis of illness is based on clinical methods and laboratory tests, sometimes requiring the application of the most modern technology. Eliciting a good history, performing a thorough physical examination, and selecting the most crucial laboratory tests without subjecting the patient to undue risk or expense require skill. Laboratory, x-ray, endoscopic, and electrophysiologic tests constitute the application of science in medicine; however, extracting the relevant information from a mass of conflicting physical signs and laboratory data to arrive at a correct diagnosis requires application of the art of medicine. Similarly, whereas pharmaceutical modalities and surgical procedures are highly developed from the scientific standpoint, the decisions on when or how to use them require experience and judgment.

Prior to the Diagnostic Related Group (DRG) method of reimbursement to the hospitals, the method of reimbursement was cost based and therefore, hospital administration had little incentive in controlling costs of medical care. They installed the latest, and often very expensive, machines for investigations and encouraged their use by the physicians. Under the DRG system of prospective pricing, the hospital receives a fixed amount of money for the care of a patient based on the diagnosis, patient's age, and whether or not surgery was performed. This system of payment is forcing the physicians to use their clinical acumen more than before, to order only the necessary tests, and to treat the patients expeditiously so that they can be discharged from the hospital as soon as possible. In addition, the system also forces hospitals to cut costs.

Primary Care Physician

Internists, family practitioners, and pediatricians are often referred to as primary care physicians. Such physicians usually are the first health care professionals consulted when a patient enters the health care system. These physicians are able to take care of as many as 80% of all illnesses, usually in an outpatient setting. A primary care physician also acts, if need be, as the patient's spokesperson and adviser in health and medical matters and coordinates the work of specialists and consultants in the event the patient is afflicted by a serious illness requiring such expertise. Once health is restored and the patient leaves the hospital and returns home and to work, the primary care physician provides follow-up care, referring the patient back to the specialist(s) only if necessary.

Approach to the Patient — Special Situations

Physicians must be tactful, sympathetic, and understanding in their approach to patients. The patient should never be regarded as a case with a collection of symptoms, signs, damaged organs, and disturbed emotions but as a fellow human being seeking relief, cure, and reassurance. The physician is expected to be knowledgeable, courteous, courageous, and wise. Today's patient is more intelligent and better informed than in earlier generations; often the patient is techno-

logically oriented, busy, and sometimes skeptical. Because any departure from good health involves a potential threat of dependence, disability, or death, even the most intelligent and best-informed patients are often more concerned about these eventualities than about their diseases. The physician should therefore establish good communication with patients, be truthful, and attempt to allay anxiety. Certain patients require special attention and skills. A few examples follow.

Adolescent Patients The adolescent patient needs special attention, emotional support, and understanding. The physician can act as a confidant and an adviser. The physician should encourage adolescent patients to ask questions and provide them with detailed and relevant information. Information regarding the use of contraceptives and prevention of sexually transmitted diseases (STDs) is extremely important to this age group.

Alcoholic Patients As much as 15% of the American population is estimated to consume an excessive amount of alcohol. Working alcoholics are not easy patients to deal with because they exhibit a great deal of denial of alcoholism. Although many of these patients are successful in their professions, they are destined to experience emotional, social, and physical complications unless they can be convinced to reduce or give up drinking. The alcoholic patient not only is susceptible to the complications of alcoholism but also has low resistance to various infections. Alcoholism makes it difficult to control common disorders such as diabetes and hypertension.

Drug-Dependent Patients The drug of dependence can vary from nicotine and caffeine to narcotic analgesics or opiates. Dependence on central nervous system depressants, such as diazepam (Valium), and central nervous system stimulants, such as amphetamines and their congeners, is much more common than opiate dependence. Opiate-dependent patients are extremely manipulative and may have a criminal record. In dealing with drug-dependent patients, physicians should be sympathetic and understanding; however, they also need to be firm and should not allow themselves to be manipulated by such patients.

Homosexual Patients Homosexual men are more often exposed to various types of STDs and serious systemic disorders, such as acquired immunodeficiency syndrome (AIDS) and viral hepatitis, than are heterosexual men. Physicians should warn such patients about the risks of homosexuality without imposing their own moral and social values. Counseling and psychiatric referral for changing to heterosexual behavior should only be offered on request by the patient. Blood testing for human immunodeficiency virus (HIV) antibodies should be encouraged, and if found positive, appropriate

precautions described in the chapter on "Infectious Diseases" should be followed.

Geriatric Patients Although old age is often associated with illness and greater dependency, the elderly, like the young, wish to be well regarded, listened to, and respected as worthwhile people. The effects of aging on the body must be differentiated from illness. The physician's attitude toward the aged should be humane and supportive, but it should at the same time not be nihilistic. Functional capacity rather than the absolute age should be the deciding factor in determining the extent of diagnostic evaluation as well as treatment.

Terminally Ill Patients Among the most difficult tasks of the physician is that of dealing with a terminally ill patient. A sustaining, supportive relationship between the patient, the family, and the physician is of crucial importance to all three. Good physicians do not attempt to preserve life regardless of pain, misery, and expense. Modern techniques of maintaining respiration and circulation can prolong the length of a terminal illness and therefore should be used with caution and discretion. In a comatose patient who has no chance of recovery, serious consideration should be given to discontinuation of life-sustaining measures. Involvement of the patient's family and the hospital's ethics committee is essential in making such decisions.

Approach to the Patient's Family

The structure and importance of the family are undergoing major changes. Divorce and cohabitation are common, and the society is increasingly tolerant to these. Physicians must avoid imposing their own values on the patient. One should find out the names and relationships of the significant others in the patient's life, include them when communicating with the patient, and seek their support in restoring the patient to health. When a patient is seriously ill, the physician should comfort the family and allay any guilt that the family members may feel. When a patient dies, the physician must inform the family gently, offering such comfort as may be possible. If an autopsy is contemplated, the physician should tactfully seek the family's permission, explaining the reasons for the autopsy.

Maintenance of Health and Prevention of Disease—Health Education

Few areas of medicine are of greater benefit to any one person or to the community than health maintenance and preventive medicine. Social, economic, and geographic factors are all important in maintaining the health of the population. More skill is required to recognize the early signs of ill health than to diagnose an illness after it is well established. The discovery and cure of a potentially serious disease represent a service

of paramount importance to the patient. Regular and frequent recording of blood pressure, breast examination, and the Papanicolaou (Pap) smear for detection of cervical cancer are examples of preventive care. It is not always easy to persuade asymptomatic persons to accept the diagnosis of illness and follow medical advice that may entail changes in life-style and/or diet.

Health education wherein the patient and the family are informed of preventive health measures conducive to a beneficial modification of behavior can be effective in preventing illness and prolonging life. Appropriate immunizations should always be a part of routine health care of all patients. *The Guide for Adult Immunization* published by the American College of Physicians is a very useful source of information in this regard. The Canadian Task Force report on the periodic health examination contains recommendations on health screening.

Physician as a Healer—Iatrogenic Disorders

With advances in therapeutics, potent medications are now available for the treatment of many illnesses for which in the past only symptomatic relief could be offered. These drugs, however, have a potential for harm and can produce iatrogenic disorders. The physician must take precautions to minimize the dangers of therapy. Drugs or surgery alone can seldom provide maximal benefit. Physicians must learn to treat the patient as a person who is ill and not the illness for which the patient seeks relief. Patients must be encouraged to feel that their individuality is respected and appreciated. The caring attitude of the physician should supplement and complement the drugs and/or surgical procedure in restoring the patient to health and happiness.

Role of a Consultant

When a diagnosis or prognosis is uncertain, the physician should say so honestly and seek consultation with a specialist. No physician loses respect or confidence by admitting ignorance and seeking help. The primary care physician must select the best consultant available, depending on what the patient's problem may be and, with the help of the consultant, take appropriate measures to make a diagnosis and provide treatment. The primary care physician should also make use of this opportunity to learn from the consultant about the latest advances in treating the illness in question and related matters. Whenever the patient desires another opinion, the physician should respect the patient's wishes and assist in obtaining a second opinion without hesitation.

When called on as a consultant by another physician, the consultant should serve both the physician and the patient. Consultants should be both honest and tactful. They must display confidence without conveying the inference of superiority over the physician who consulted them. They should answer all the patient's ques-

tions. If the primary care physician has made errors in diagnosis and treatment, consultants must courteously point these out to the primary care physician and suggest corrective measures. If the patient persists in asking questions whose answers may be embarrassing to the primary care physician, consultants should answer them honestly and tactfully, keeping the primary care physician fully informed. A consultant should continue to follow the patient as long as the referring physician wants him to do so.

Role of Allied Health Care Professionals in Medical Practice

Because of increasing demands from patients and society at large, as well as technologic advances and social changes, a variety of trained professionals other than physicians and nurses are involved in the treatment of patients. These professionals include physician's assistants, dietitians, physical therapists, respiratory therapists, biochemists, psychologists, and other health care personnel. Both the patient and the primary care physician can greatly benefit from such collaboration, but the physician must maintain responsibility as the team leader; be familiar with the techniques, skills, and objectives of the allied health care professionals; and oversee the total care delivered to the patient.

Multispecialty Clinics and Health Maintenance Organizations

Increasing numbers of patients are being cared for by groups of physicians, clinics, hospitals, and health maintenance organizations (HMOs) rather than by solo practitioners. Even if patient care is rendered in a clinic setting, the identity of the physician who is primarily and continuously responsible for each patient must be clearly defined. The responsibility of overseeing the patient's total care rests with the primary care physician. Patients receiving health care through HMOs are assigned or select a primary care physician who often acts as a "gatekeeper," thereby controlling utilization of services. A preferred provider organization (PPO) is a hospital, clinic, or a group of physicians who may agree to provide health care services to a company's employees or group of individuals at lower fees. An independent practice association (IPA) is a group of physicians who are usually members of a certain hospital's medical staff and agree to comply with such contractual agreements regarding their fees.

Medical Records

It is imperative that the physician promptly and accurately commit all pertinent data relating to the patient's clinical and laboratory examinations and treatment to the patient's permanent medical record. This is particularly important in the present-day practice of medicine in that, at any one time, several physicians and allied

health care professionals may contribute to the care of a particular patient. Also, patients as well as physicians are becoming increasingly mobile. Furthermore, medical records are good indicators of the quality of care and are presently being used for recertification of family practitioners. Many a malpractice suit can be prevented or won by assuring good documentation of the patient's care.

The system of problem-oriented medical records (POMR) is quite helpful in enhancing the communication, education and rapid retrieval of stored information. The problems as stated by the patient or identified by the physician are central to its formulation. As the diagnosis emerges, current problems are replaced by the diagnoses on the problem list. The progress notes are recorded under the subheadings of subjective complaints (S), objective findings (O), assessment (A), and plan (P), or SOAP, for each problem. The critics of the POMR system contend that it is time-consuming and may cause the medical record rather than the patient to become the primary focus of attention.

Role of Computers in Medicine

The uses of the computer in managing the economics of medical practice are well established. Computers are also being increasingly used in the clinical laboratory for processing automated chemical and microbiologic data. Automated information systems are also being used in pharmacies and for maintaining patient's hospital and outpatient records. Computers are available at several large centers to facilitate differential diagnosis and to evaluate clinical decision making. Computers can save much time and effort; they can quickly supply accurate and reliable information to use for the benefit of the patient. Many physicians, however, express concern that computers may destroy whatever is left of the patient-physician relationship and also subvert the patient's right to confidentiality. Their concern is valid, and present and future physicians must guard against the misuse of computers while encouraging their use to enhance patient care.

Accountability in Medical Practice

Physicians are being held increasingly accountable for their actions in terms of the quality and cost-effectiveness of care. Review of medical records, mandatory continuing education for relicensure, and recertification by examination are examples of government measures and voluntary efforts by physicians to demonstrate competence. The Joint Commission on Accreditation of Health Care Organizations (JCAHO) oversees the quality assurance programs of hospitals and large clinics. For the patient, it has become essential to reduce costly hospital admissions as much as possible and to keep the cost of medical care affordable. In the final analysis, the public must look to the medical profession for leadership and guidance in matters of health-related legislation. While maintaining concern for the welfare

of their patients, physicians must also make every possible effort to alleviate the socioeconomic problems of health care delivery.

Human Research

If the science of medicine is to progress, research must be performed on human beings. It is incumbent upon the physician engaged in human research to explain to the patient, in clear and understandable language, the nature, risks, and benefits of all diagnostic and therapeutic procedures that are not well established or are considered experimental and obtain the patient's informed consent. When performing research, the physician must take extraordinary precautions to protect the patient's interests and to minimize risks. Only by using these safeguards can human research be undertaken for the progress of medicine without jeopardizing the patient's health.

Physician's Responsibilities to Themselves, Their Families, and the Community

Despite the fact that most physicians accumulate material wealth, they often lead stressful lives. The suicide rate among physicians is one of the highest compared to that of other professions. Every physician must devote time to recreation and family and engage regularly in physical exercise.

The physician's responsibility does not end with the care of patients. As an outstanding and respected member of society, the physician should participate regularly in civic affairs and the democratic process of electing leaders for the benefit of the community and the nation. This can be done only by prioritizing intelligently and using time wisely.

American Medical Association's Principles of Medical Ethics

The medical profession has long subscribed to a body of ethical statements developed primarily for the benefit of the patient. As a member of this profession, a physician must recognize responsibility not only to patients, but also to society, to other health professionals, and to self. The following principles adopted by the American Medical Association are not laws, but standards of conduct that define the essentials of honorable behavior for the physician.

I. A physician shall be dedicated to providing competent medical service with compassion and respect for human dignity.

II. A physician shall deal honestly with patients and colleagues and strive to expose those physicians deficient in character or competence or who engage in fraud or deception.

III. A physician shall respect the law and also recognize a responsibility to seek changes in those requirements that are contrary to the best interests of the patient.

IV. A physician shall respect the rights of patients, colleagues, and other health professionals and shall safeguard patient confidences within the constraints of the law.

V. A physician shall continue to study, apply, and advance scientific knowledge; make relevant information available to patients, colleagues, and the public; obtain consultation; and use the talents of other health professionals when indicated.

VI. A physician shall, in the provision of appropriate patient care except in emergencies, be free to choose whom to serve, with whom to associate, and the environment in which to provide medical services.

VII. A physician shall recognize a responsibility to participate in activities contributing to an improved community.

CLINICAL METHODS

Clinical information is obtained from the patient by taking a history; by observations made during physical examination; and from investigations such as laboratory tests, radiographic examinations, and other procedures as applicable. This whole body of clinical information enables the physician to make a diagnosis, decide on the best therapy, and give a prognosis. The term *clinical methods* encompasses all the ways of obtaining clinical information. The history and physical examination are inexpensive and extremely productive ways to obtain relevant information about the patient's illness. In addition, they provide a means of interaction with the patient. They should be performed in a meticulous manner; one should take time to analyze and reflect on the information so obtained prior to ordering tests that are often expensive, may pose a hazard to the patient, and may be unnecessary. Ordering of the tests should never be a knee-jerk reaction. Despite the technological advances, such as computed tomography (CT) scanning and magnetic resonance imaging (MRI), the bedside evaluation remains the most important and cost-effective way to diagnose most illnesses.

History

Obtaining an accurate and comprehensive history is the most fruitful of all the techniques used in the appraisal of a clinical problem; the patient's history is the key to diagnosis. The history summarizes the evolution of the patient's illness and describes symptoms; it should suggest certain diagnostic possibilities and help exclude others. It should also point to investigations that should be considered. The history may, at times, provide the only clue to a diagnosis. All data must be as accurate and specific as possible.

It is essential that the physician adopt a form and style for the medical history, adhering to this pattern until it becomes a habit. The advantages are that no intellectual effort is devoted to the act of history taking itself and full attention can be devoted to interpreting the meaning of each response. In addition, it is much

less likely that a topic will be overlooked. The following outline for taking a history is used by most physicians. Many a time it may be necessary to go back and obtain further history after the physical examination and laboratory tests are performed if unexpected findings are detected. This additional history should be carefully recorded in the patient's chart.

Demographic Information

Demographic information includes the patient's name, age, race, sex, marital status, address, hospital number, date of examination, and source and reliability of the informant.

Presenting Complaints and Their Duration

Information on the patient's complaints includes the answer to the question, "What prompted you to seek medical attention?" The complaints are usually listed, each on a separate line, followed by their approximate duration. The patient's symptoms provide clues to the differential diagnosis, and the list also reminds the physician that these are the symptoms that concern the patient the most.

History of Present Illness

Information on the patient's present illness should be written as an orderly and chronologic account. It should be a lucid and succinct narrative. If the patient is not sure when the illness began, the physician should ask "When did you last feel well or normal?" Each symptom should be described in detail, including specifics about intensity and location, accompanying symptoms, factors that relieve or aggravate the symptom, and the course (progression or regression). When a symptom suggests several conditions, statements about the lack of concomitant symptoms that often accompany the original symptom should be included. If the present illness has progressed in attacks separated by symptom-free intervals, a typical attack should be described in terms of onset, duration, and associated symptoms. In both acute and chronic illnesses, the date that the patient stopped work or assumed bedrest should be noted. When there is a conspicuous disturbance of a particular organ or system, direct questions should be asked about all possible symptoms referable to the particular organ system. Specific inquiry should be made of past affliction of the specific organ system that is implicated in the present illness. Details of previous treatment should be noted, including over-the-counter medications that the patient may have taken. Inquiry should also be made about general abnormalities, such as pain, chills, fever, night sweats, and loss of weight. Finally, mention should be made of the patient's level of activity at work and during leisure time. Current medications and their dosage should be noted.

Past History

The patient's past history includes a description of previous illnesses, general health, operations, injuries, hospitalizations, and allergies.

Family History

The family history includes a statement on similar illness or symptoms in the family or the lack thereof; it notes the age and state of health of parents, siblings, and children or the cause of their death and the age at death. It also includes the family history of common heritable diseases, such as diabetes, hypertension, heart disease, kidney disease, cancer, allergy, and mental illness. A family tree is helpful if the same illness has appeared in several members of the family.

Personal and Social History

Personal and social history includes information on diet and nutrition, smoking, alcohol consumption, use of illicit drugs, sleep and exercise habits, education and occupation, marital status and sex life, and home and environmental conditions. A chronologically arranged occupational history is sometimes useful.

Review of Systems

The patient should be asked about salient symptoms pertaining to each organ system. All the symptoms reported by the patient should be described, and the lack of significant symptoms noted.

Physical Examination

The physical examination is conducted by means of the four basic methods of inspection, palpation, percussion, and auscultation. Often there are aspects of the patient's illness that are revealed only by physical examination. Thoroughness is therefore essential. Physical examination is indispensable in obtaining the following information about a patient: general appearance, including mental status; vital signs (temperature, pulse rate, respiratory rate, and blood pressure); visible lesions on the body; palpable lesions, such as masses, local tenderness, deformities, and pulsations; signs of respiratory difficulty; auscultatory findings, such as murmurs, friction rubs, and alteration in breath and/or bowel sounds; and neurologic signs.

The environment in which the patient is examined should be quiet and well lighted, preferably by daylight. The physician should be considerate in examining the patient, paying heed to the patient's need for privacy and avoiding discomfort to the patient as much as possible. A systematic approach is essential. The physician's aim is to maintain objectivity and record observations instead of interpreting them. For the routine physical examination, a full complement of equipment includes stethoscope, penlight, tongue blades, otoscope and

ophthalmoscope, reflex hammer, sphygmomanometer, tuning fork, gloves, lubricating jelly, guaiac test reagents, and a pelvic speculum.

The following is an outline for performing the physical examination and recording the findings.

General appearance. The physical examination begins with observations on the patient's nutritional state, habitus, apparent age, state of health, comfort, emotional state, and ability to cooperate; obvious mental disease is noted, as well as striking findings, such as pallor, frequent coughing, respiratory distress, voice abnormality, or cyanosis. Temperature, pulse rate, respiratory rate, height, weight, and recumbent and upright blood pressure are recorded.

Skin. Note the skin color, texture, moisture, temperature, and scars. Describe in detail any eruption, abnormal pigmentation, skin tumors, or Raynaud's phenomenon. Note the condition of the nails and hair.

Lymph nodes. Check for enlargement, consistency, mobility, and tenderness of the lymph nodes. If enlarged, record the approximate size of nodes in centimeters and their location.

Head. Determine the size, shape, and contour of the head. Note asymmetry, tenderness over the sinuses or mastoids, the facial expression, and any abnormal movements.

Eyes. Check the conjunctivae, the sclerae, and the pupillary size and reaction. Note any protrusion, ptosis, arcus senilis, nystagmus, lid lag, or icterus. Use finger tension for intraocular pressure. Check extraocular movements and gross visual fields. Do an ophthalmoscopic examination.

Ears. Note any topi or discharge. Describe the eardrums and hearing acuity.

Nose. Check for septal deviation, obstruction, polyps, and discharge. Note the condition of the mucosa and turbinates. Transillumination of the sinuses should be performed if indicated.

Mouth and throat. Note the odor of the breath and the color and appearance of the lips, tongue, and gums. Check the condition of the teeth or dentures and the appearance of the mucosa. Describe the palate, uvula, tonsils, and posterior pharynx.

Neck. Check the neck for rigidity or limitation of motion, abnormal pulsations, scars, masses, and enlarged salivary glands or lymph nodes. Describe the thyroid gland (size, consistency, tenderness, and nodules). Note the position of the trachea. Also note any vascular thrills, bruits, or abnormal pulsations of veins. Note if the jugular veins are distended and if so, the extent.

Back. The back should be checked for mobility, kyphosis, lordosis, and scoliosis. Note any tenderness on palpation or percussion.

Thorax. Check the thorax for configuration, symmetry, and respiratory movements. Estimate tactile fremitus.