V. N. Karazin Kharkiv National University
School of Medicine
Department of Propaedeutics of internal medicine
and physical rehabilitation

Internal Medicine. Propaedeutics as an introduction to the clinic of internal medicine. Basic concepts. Medical ethics and deontology in the clinic of internal medicine. Approach to the patient. Interviewing. Objective examination of the patient. Instrumental and laboratory methods for evaluating of the patient status.

Lecture for 3rd year medical students

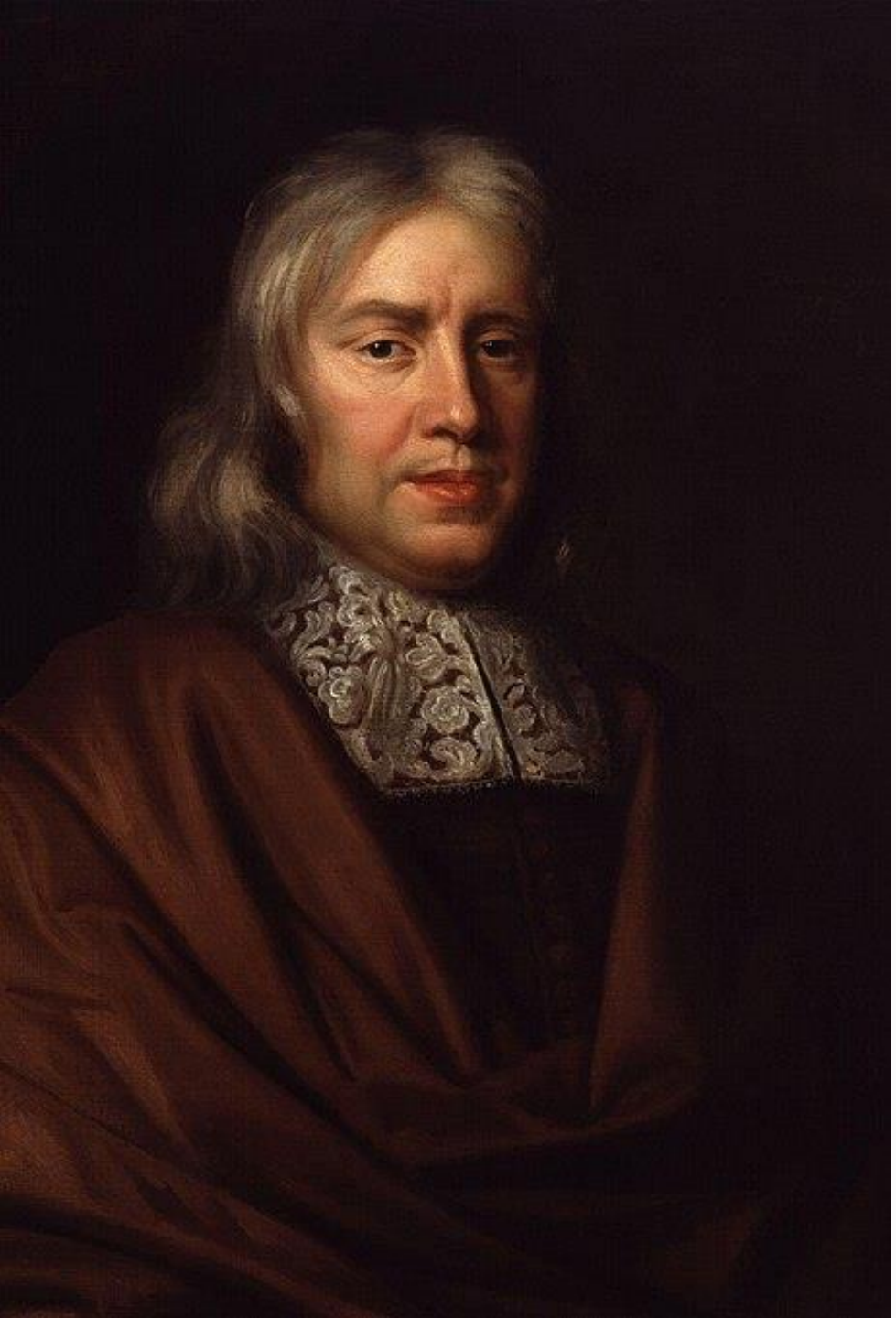
Autors: ass. prof. Dr. Iryna I. Oktiabrova; ass. prof. Dr. Iryna V. Shokalo;
Head of department, PhD, associate professor Dr. Mariia S. Brynza.

Internal medicine is

the medical specialty dedicated to the diagnosis and medical treatment of adults. A physician who specializes in internal medicine is referred to as an internist. Subspecialties of internal medicine include cardiology (heart diseases), endocrinology (hormone disorders), hematology (blood disorders), infectious diseases, gastroenterology (diseases of the gut), nephrology (kidney diseases), oncology (cancer), pulmonology (lung disorders), and rheumatology (arthritis and musculoskeletal disorders).

Propaedeutics

or **propedeutics** is a historical term for an **introductory course** into an art or science.



History

- The development of internal medicine as a scientific discipline begins with Thomas Sydenham's concept of disease, articulated in the 17th century. Sydenham closely observed clinical phenomena at the patient's bedside and conceived for the first time the possibility of a variety of distinct "diseases," as opposed to general illness caused by the imbalance of "humours," which was then the prevailing theory of disease causation. Sydenham's work created a framework for the classification of diseases, which was built upon by François Boissier de Sauvages, who in 1763 published the first methodical nosology, or description of disease symptoms. Sauvages emphasized symptomatology as the basis for disease classification, since there was no information then available about the causes of diseases.

From the time of Sauvages until the 20th century, internists could do little to treat diseases. Unlike surgeons, who could remove the offending organ, internists had no specific therapies; most of the “treatments” that physicians could offer made the patient worse, not better. The measure of an internist’s skill was the accuracy of his diagnosis and the reliability of his advice about the probable outcome of the disease. Only with the development of disease-specific therapies at the beginning of the 20th century did internal medicine become effective in the cure, rather than just the supportive care, of patients. As more and more specific medications and courses of therapy became available and the volume of medical knowledge increased, more and more subspecialties devoted to particular organ systems split off, leaving internal medicine as the specialty of physicians dealing with all problems of the adult patient.

Basic concepts

Health is a state of physical, mental and social well-being in which disease and infirmity are absent.

A **disease** is a particular abnormal condition that negatively affects the structure or function of all or part of an organism, and that is not due to any immediate external injury.[1] Diseases are often known to be **medical conditions** that are associated with specific symptoms and signs.

Basic concepts

- Diagnostic - the science of methods by which disease is identified. Diagnostics consists of clinical examination of the patient and diagnosis basing.

- Diagnosis is a short conclusion of a doctor about the essence of the disease and patient’s condition, expressed in terms of modern medical science, and resulted from the examination of the patient.

Basic concepts

- Preliminary diagnosis is based on the patient's present complaints, the history of present disease (anamnesis morbi)? The past history (anamnesis vitae), and physical examination data – inspection, palpation, percussion and auscultation.
- Clinical diagnosis is based on the subjective examination of patient (inquiry: complaints, anamnesis morbi and vitae) and objective examination; physical, instrumental and laboratory.
- Final diagnosis is based on the subjective examination and treatment.

Basic concepts

Diagnosis has the following structure:

1. The main disease
2. Complication of the main disease
3. Concomitant (concurrent) disease

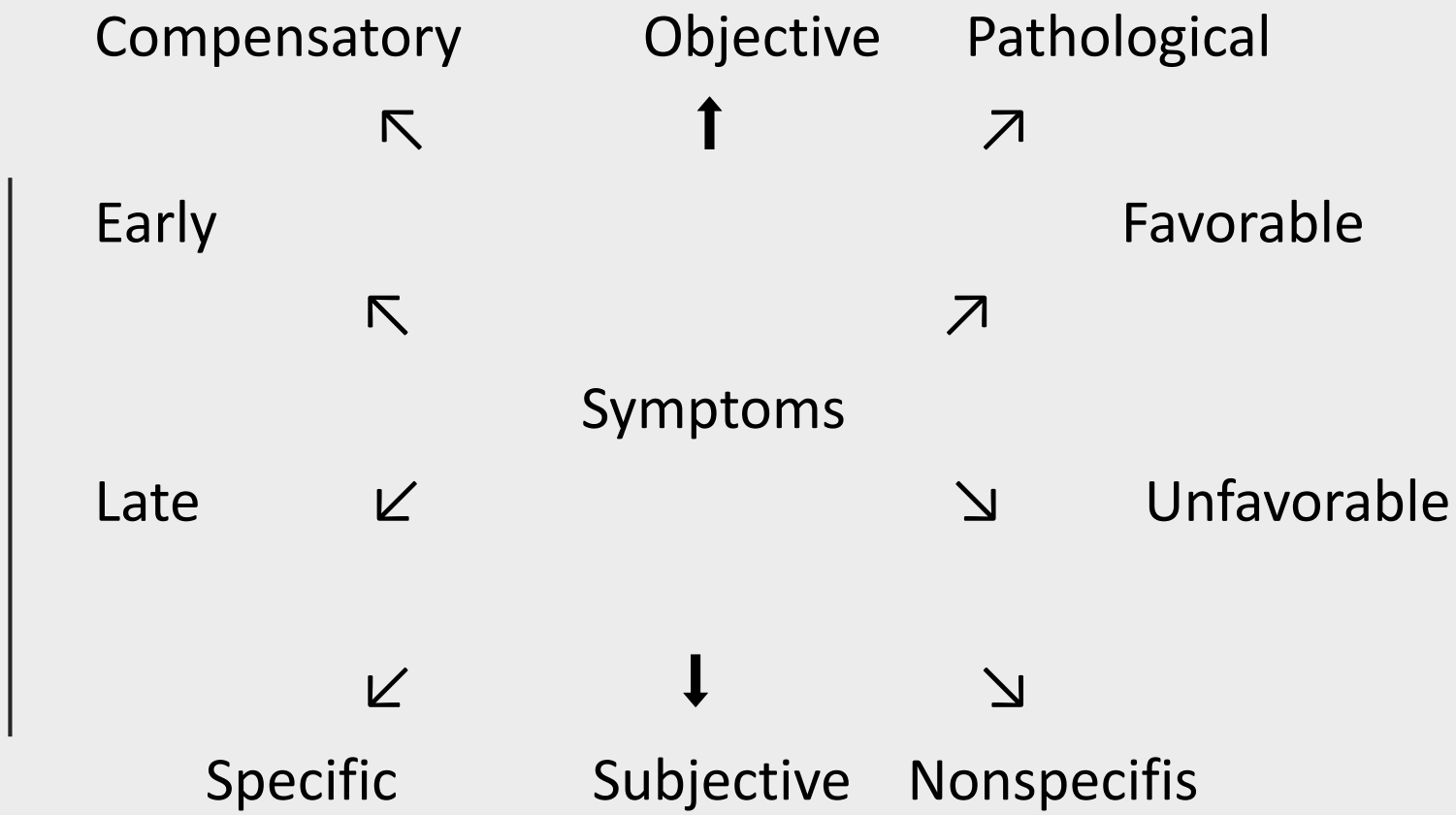
Basic concepts

Symptom is a sign of the disease and pathological changes in the patient's organism.

Symptom can be:

- Subjective symptoms are those that can't be found on examination of the patient.
- Objective symptoms are those that can be found on examination of the patient.

Basic concepts



Basic concepts

- Syndrome is defined as combination of symptoms that are interrelated and give rise ton one another
- Syndromocomplex is defined as symptoms that are not interrelated and do not give rise to one another

Ethics and Deontology

- Deontology is
professional ethics of medical workers and principles of b
ehavior of medical personnel, directed toward maximum
benefit of treatment.

Ethics and Deontology

- Medical ethics is the study of moral values and judgments as they apply to medicine.

Ethics and Deontology

Ethical Principles :

Beneficence and Non-maleficence

Autonomy and Consent

Truth-telling

Confidentiality

Preservation of life

Justice

Beneficence and Non-maleficence

Beneficence is the act of "doing good" while **non-maleficence** is the act of "not doing bad". In practical terms, medical practitioners have an ethical responsibility to strive to do what is in the best interests of their patients. However, it is important to remember that some medical interventions may seem beneficial but may also carry with them the possibility of causing harm. In fact, nearly all medical treatments and procedures, it could be argued, harm the patient in some way, but it is more to do with the magnitude of the benefit versus the magnitude of potential risks

Autonomy and Consent

Autonomy is the right of a patient to make an informed, uncoerced decision about their own health management. If this principle is disregarded by a medical professional because he/she believes another decision would be better for the patient, then it is termed paternalism. An autonomous decision should **never** be overruled by a medical professional, but not all decisions are autonomous. For patients to have autonomy, they must have the **capacity** to receive, retain and repeat the information that is given to them, provided the information is complete and given to them in a manner that they can understand.

Autonomy and Consent

Consent is an extension of autonomy and has many types. **Implied consent** is when a doctor assumes that certain actions or body language from a patient imply that the patient has consented to the planned action of the doctor. **Expressed oral consent** is when a patient has verbally given the doctor permission to proceed with the intended action. **Expressed written consent** is documented evidence that the patient has, usually with a signature, given consent to a procedure. Written consent should only be obtained after oral consent. **Fully informed consent** is consent given after being given all the information about the procedure. When possible, fully informed consent, both written and oral, should be obtained before any procedure, examination or treatment

Truth-telling

The ethical principle of **Truth-telling** is the process in which a doctor gives the patient all known information about their health. It allows the patient to be fully-informed and, therefore, allows for the ethical principles of autonomy and consent. A point of note that always needs to be considered is the fact that some patients do not want the information. Therefore it is important to ask the patient if they want to know or not. The only other (extremely rare) occasion when it is acceptable not to tell the patient the truth is when the patient may come to harm when being told, e.g. "If you tell me I have cancer I will kill myself!"

Confidentiality

The ethical principle of **confidentiality** ensures that the medical information held about a patient is accessible only to those to whom the patient has given access via autonomous and full-informed consent. In order to achieve trust between medical professionals and their patients, confidentiality must be maintained. Confidentiality may be broken if information shared by the patient refers to a potential danger to public safety or if it is ordered by a cour

Preservation of life

The ethical principle of **preservation of life** is a will to treat a patient's illness with the aim of prolonging life. After all, most patients want to live longer; most doctors may have joined the profession to save lives. This principle may be overruled if the patient has made a living will stating their desire not to be resuscitated

Justice

Justice refers to the distribution of things and positions of people within society. In a medical setting, justice involves the allocation of health-care resources in a fair way. This may be an equal distribution or a maximization of the total or average welfare across the whole society.

Approach to the patient. Interviewing

Interviewing of patient

The medical interview is the practicing physician's most versatile diagnostic and therapeutic tool. However, interviewing is also one of the most difficult clinical skills to master. The demands made on the physician are both intellectual and emotional. The analytical skills of diagnostic reasoning must be balanced with the interpersonal skills needed to establish rapport with the patient and facilitate communication.

Interviewing is often considered part of the "art" in contrast to the "science" of medicine. There are many reasons to dispute this distinction. Perhaps the most compelling is that labeling it an "art" removes interviewing from the realm of critical appraisal and suggests that there is something magical or mysterious about interviewing that cannot be described or taught. This chapter will demonstrate the validity of interviewing as a clinical science based on critical observation and analysis of the patient without diminishing its excitement as a clinical activity. It provides a guide to conducting initial interviews and making sense of what happens. It will outline the knowledge, attitudes, and skills that lead to effective interviewing. The discussion will focus on the problem-oriented diagnostic interview, but the health promotion interview and interviews during follow-up visits will also be mentioned.

Nature and Goals of the Interview

Most clinicians rate the patient's medical history as having greater diagnostic value than either the physical examination or results of laboratory investigations (Rich, 1987). The clinical adage that about two-thirds of diagnoses can be made on the basis of the history alone has retained its validity despite the technological advances of the modern hospital. An accurate history also provides focus to the physical examination, making it more productive and time efficient. Clinical hypotheses generated during the interview provide the basis for a cost-effective utilization of the clinical laboratory and other diagnostic modalities.

The diagnostic utility of the interview is complemented by its therapeutic power. As the medium through which a positive relationship is established between the doctor and the patient, an empathic, patient-centered interview can bolster the patient's sense of self-esteem and lessen the feelings of helplessness that often accompany an episode of illness. The therapeutic alliance forged during the clinical encounter provides the foundation for ongoing patient care and education.

Nature and Goals of the Interview

Fundamentally, the medical interview is a purposeful conversation undertaken with a set of goals and priorities clearly maintained in the physician's mind. Its direction reflects the respective needs of both participants—patient and physician. The patient enters the interview seeking relief from the discomforts and uncertainties of illness, while the physician actively conducts the interview in order to clarify the patient's problems and derive diagnostic and therapeutic plans for the patient's benefit. During the interview the patient's need to have his or her story heard and suffering understood is balanced by the physician's need to know and understand as much as possible about the patient and his or her problems

The Problem-Oriented and the Health Promotion Interviews

Medical interviews are of two basic types: *the problem-oriented* and the *health promotion* interviews (Levinson, 1987). The goals of the problem-oriented interview reflect the patient's request for help with specific problems. The health promotion interview establishes a data baseline concerning the patient's current and past health problems, assesses current health risk factors (e.g., smoking, diet, alcohol consumption, heritable diseases in the family), and can detect early evidence of disease (e.g., change in bowel habits, weight loss, chest discomfort) that the patient did not consider severe enough to warrant a problem-specific visit to the doctor. In reality, most medical encounters combine the problem-oriented and health promotion approaches. Issues of health promotion are important to all patients, and patients who come to the doctor for a "routine check-up" may have hidden concerns about specific symptoms. In fact, careful questioning about why and when a patient schedules a routine check-up often uncovers significant health concerns

Diagnostic Functions: Process and Content

The medical interview provides two categories of information unavailable from any other source: *what* the patient says about the illness and *how* it is said. What the patient tells the physician provides the factual *content* of the medical history. The factual content is what the physician edits and records in the written record—the medical history. It should include a comprehensive, chronological report of the patient's illness with enough information, both positive and negative, for accurate and inclusive diagnostic reasoning regarding possible etiologies of the patient's problem(s). The *process* of the interview is what actually happens between physician and patient during their encounter.

Observation of process, both verbal and nonverbal, provides important information about the patient as a person. Through the patient's behavior during the interview (e.g., facial expressions, posture, gestures) he or she communicates emotional concerns, reactions to illness, and style of relating to others. Sudden shifts of topic, avoidance of certain issues, and the flow of spontaneous associations may point to concerns that are not expressed directly. The physician's communication style and behavior during the interview is also a critical element of the interviewing process.

The distinction between content and process highlights the dual skills required in the medical interview—analytical and interpersonal. Although these skills can be discussed separately, they must be practiced together. The clarity and validity of information gathered during the interview (its content) may be critically determined by the quality of the relationship that develops between patient and physician (its process). A candid disclosure of patient concerns is most likely to come about in the context of a nonjudgmental interviewing style.

Diagnostic Functions: Process and Content

A final comment on process and content may be helpful to the beginning student. The content and organization of the written medical history is often confused with the process by which the clinician actually collects information during the interview. The written medical history is actually a journalistic endeavor in which the clinician edits and organizes the patient's spontaneous report into a formal, organized presentation. The final product in the medical chart may bear little resemblance to the work the clinician performs at the bedside. Patients rarely report their symptoms in an organized and logical fashion comparable to the descriptions of disease in medical texts. In fact, patients complain of illness or sickness rather than stating their problems in terms of the pathophysiologic categories of disease. Students who expect their patient's to present classic symptom complexes in an organized fashion experience considerable frustration and may become rapidly disillusioned with clinical medicine. The complaint that, "The patient was a poor historian," may reflect unrealistic expectations on the interviewer's part.

In clinical practice, the interview is a collaborative effort between physician and patient. Reiser (1980) states that, "The physician, no matter how skilled, cannot simply extract a history from his patient. The patient, no matter how articulate, cannot give a history in final form without help and guidance from the physician." To say that we "take a history" from the patient implies that the story of illness can be extracted from the patient like shaking a coin from a piggy bank. This erroneous conception of the medical interview leads to frustrated attempts at shaking out the history as if the patient was willfully keeping this valuable coin hidden.

Therapeutic Tasks: Establishing a Helping Relationship

The helping relationship is a cornerstone of medical care (Rogers, 1961). In the practice of medicine, the medical interview provides perhaps the most important avenue for establishing a helping relationship built on trust and commitment. This does not occur magically. The physician actively employs interviewing techniques to promote the relationship. Nonjudgmental interest in the patient's problems (active listening), empathy (communicating to the patient an accurate assessment of emotional state), and concern for the patient as a unique person are among the most important tools in the physician's interpersonal repertoire. These techniques not only strengthen the therapeutic bond, they improve the interview's diagnostic power by providing the patient with an attentive and receptive audience.

By helping the patient describe and sort out experiences, the physician can provide explanations and meaning to events and feelings that were formerly perplexing and threatening. The patient's sense of control can be re-established in a realistic fashion, and feelings of helplessness and hopelessness can be addressed in the context of the helping relationship. Problems can be reframed and prioritized to help the patient develop his or her own solutions. Obviously, the goals of the medical interview have much in common with psychotherapy. Furthermore, patients who sense that their story is taken seriously may feel encouraged to become more active participants in their medical care. Patient compliance and cooperation with future diagnostic and therapeutic plans often hinge on the physician's skill in developing and negotiating a management plan that encourages patient involvement and initiative.

The method a physician uses to establish rapport differs with each interview. Each encounter is unique. One patient may respond best to a reassuring touch, one to a well-timed interpretation of emotional concerns, another to a moment of shared silence. Observation of the patient's responses serve as the physician's guide to which techniques to employ and provides feedback about when and how to change course. Patients demonstrate a remarkable variety of responses to the medical interview reflecting the range of human personality types and responses to illness. Anger, anxiety, denial, vagueness about detail, emotional embellishment, and unreasonable expectations or demands are but a few of the difficult but common challenges in the medical interview.

Objective examination of the patient

Physical examination is the process of evaluating objective anatomic findings through the use of observation, palpation, percussion, and auscultation. The information obtained must be thoughtfully integrated with the patient's history and pathophysiology. Moreover, it is a unique situation in which both patient and physician understand that the interaction is intended to be diagnostic and therapeutic. The physical examination, thoughtfully performed, should yield 20% of the data necessary for patient diagnosis and management.

The Physician–Patient Interaction

Aside from the hospital room and office, physical examination may occur in a variety of other settings where it is difficult to establish privacy and quiet. The best resource available to the physician to set the stage for the physical examination is to communicate respect and a genuine interest in the patient's welfare. The patient should be addressed politely and asked to perform the required maneuvers of the examination, a technique far preferable to imperative language such as, "I want you to. …" Patients should be prepared for unpleasant portions of the examination.

Aside from explanations and reassurance, it is not necessary to maintain a continuous conversation with the patient during the examination. Avoid embarrassing the patient. Be certain that draping material is used appropriately and that personal areas are not subjected to undue exposure. An examination that ends abruptly may diminish the value of the doctor–patient relationship and may destroy its therapeutic content. The patient may benefit from a brief summary of relevant findings and may require reassurance about what has and has not been found.

The Materials

The single most useful device for optimal performance of the physical examination is an inquisitive and sensitive mind. Next most useful is mastery of the techniques of observation, palpation, percussion, and auscultation. Less important are the tools required for the examination (Table 1)

Table 1. Equipment Required for the Physical Examination

Cotton wisp	Sphygmomanometer
Flashlight	Stethoscope
Lubricating jelly	Tape measure
Mydriatic solution	Thermometer
Oto-ophthalmoscope	Tissues
Paper towels	Tongue depressors
Pocket eye chart	Tuning fork (128 Hz)
Rectal gloves	Vials of coffee and cinnamon
Reflex hammer	

The Examination

As the environment affects the quality of the physical examination, it is wise to arrange for quiet and privacy, darkening the room for parts of the examination, and comfort for the patient and examiner.

The complete examination should proceed in an orderly fashion with a minimum of required position shifts by the patient (Table 2). On the other hand, the physician must be able to ascertain the integrity of the various organ systems from regional examinations. For instance, from examination of the head and neck, the physician must identify the vascular, neurologic, lymphatic, skeletal, and integumentary components and must relate them to their complements in other body regions. It would be tedious, by contrast, to examine the vascular system in its entirety, followed by a complete neurologic examination and the other organ systems each in turn. When examining an anatomic region, the observer must be alert to the appearance of any abnormality and question at the time the morphologic aspects of the abnormality and its clinical significance.

Table 2. Positions of Patient and Examiner during the Physical Examination

Anatomical area or activity	Patient	Examiner
Vital signs, general inspection	Sitting or reclining	Standing before patient or at bedside
Head and neck	Sitting	Standing before patient
Anterior torso	Sitting	Standing before patient initially, later behind the patient
Posterior torso	Sitting	At patient's side
Anterior chest and abdomen	Supine	Before the patient
Male genitalia	Standing	Before the patient
Gait, station, coordination	Variable positions	Behind the patient
Female genitalia	Reclining on examining table, draped, knees flexed, legs adducted, feet in stirrups	Sitting on stool at times or standing

The Examination

The general physical examination can take many forms depending upon circumstances. Most often, the examiner evaluates body regions in a general way, looking for abnormalities. Clues derived from the history signal the need for a more precise and detailed examination of a given system. A thorough physical examination often includes the sequence presented in Table 3.

Table 3. Steps of the Physical Examination

Patient's comfort
Be certain that the patient is in a relaxed position, properly gowned or draped.

The optimal environment
The examination surface should be at a height appropriate for the examiner. Light sources and curtains should be optimally arranged. Television sets, radios, and other noisy distractions should be eliminated.

Vital signs and general inspection
Evaluate the radial pulse for rate and rhythm. Measure brachial blood pressure. Inspect nails, skin, and hair. Note the general appearance, body habitus, hair distribution, muscle mass, movement coordination, odors, and breathing pattern.

Head

Eyes: Examine the conjunctiva, sclera, cornea, and iris of each eye. Test pupils for irregularity, accommodation, and reaction. Evaluate visual fields and visual acuity (cranial nerve II). Assess extraocular movements (cranial nerves III, IV, VI). Test the corneal reflex (cranial nerve V).

Ears: Examine the pinnae and periauricular tissues, Test auditory acuity, perform Weber and Rinne maneuvers (cranial nerve VIII).

Ophthalmo-otoscopy: The ophthalmoscope can now be used after darkening the room to examine the interior of the eye through the pupillary aperture. Particular emphasis should be placed on the retina, optic disc, vessels, and macula lutea. Attention must be given to the media, lens, and cornea. Keeping the room darkened, attach the otoscope head and observe the auditory canals and tympani.

Nose: Connect the nasal speculum to the otoscope and examine the nares, noting the condition of the mucosa, septum and turbinates.

Mouth: Examine the vermilion border, the oral mucosa, the tongue. Identify the salivary duct papillae. Assess the dentition for decay, repair, condition of bite. View the pharynx. Evaluate the function of cranial nerves IX, X, and XII. If appropriate, evaluate sensory divisions of cranial nerves V, VII.

Face: Evaluation of symmetry, smile, frown, and jaw movement will provide information about motor divisions of cranial nerves V and VII.

Table 3. Steps of the Physical Examination

Neck
Palpate the neck with emphasis on the salivary glands, lymph nodes, and thyroid. Look for tracheal deviation. Identify the carotid arteries and auscultate for bruits. Note jugular venous distention. Reexamine the thyroid from behind the patient. Certain parts of evaluation of this area, jugular venous filling, may warrant review with the patient reclining. Test shoulder strength of the sternocleidomastoid and trapezius muscles (cranial nerves XI and XII).

Anterior torso
With the patient sitting, examine the epitrochlear and axillary nodes. Examine the breasts. Define the PMI and examine the heart, having the patient lean forward if necessary.

Posterior torso
Observe for spinal curvature or chest deformity. Evaluate the vertebral column and the costovertebral areas. Auscultate the posterior and lateral lung fields.

Completion of the "sitting" portion of the examination
Evaluate proximal and distal motor strength, deep tendon reflexes, distal pulses and sensation.

With the patient supine

Thorax: Examine the breasts; reexamine the heart, turning the patient to the left lateral decubitus position if appropriate. Auscultate the anterior lung structures.

Abdomen: After inspection, auscultate, listening for bowel sounds and bruits. Next inspect, percuss, and palpate the abdomen, taking special notice of hepatic or splenic enlargements.

Proximal lower extremities: Examine the inguinal, femoral, and popliteal regions for adenopathy and pulses. Evaluate range of motion of hips, knees, and ankles.

With the patient standing
Examine external genitalia of the male. In both male and female, evaluate station and gait.

Pelvic and rectal examination
In females, the pelvic examination should be performed on an examining table provided with stirrups. Rectal examination and occult blood testing should be done simultaneously. In males, the rectal examination is best performed with the patient in the bent forward position.

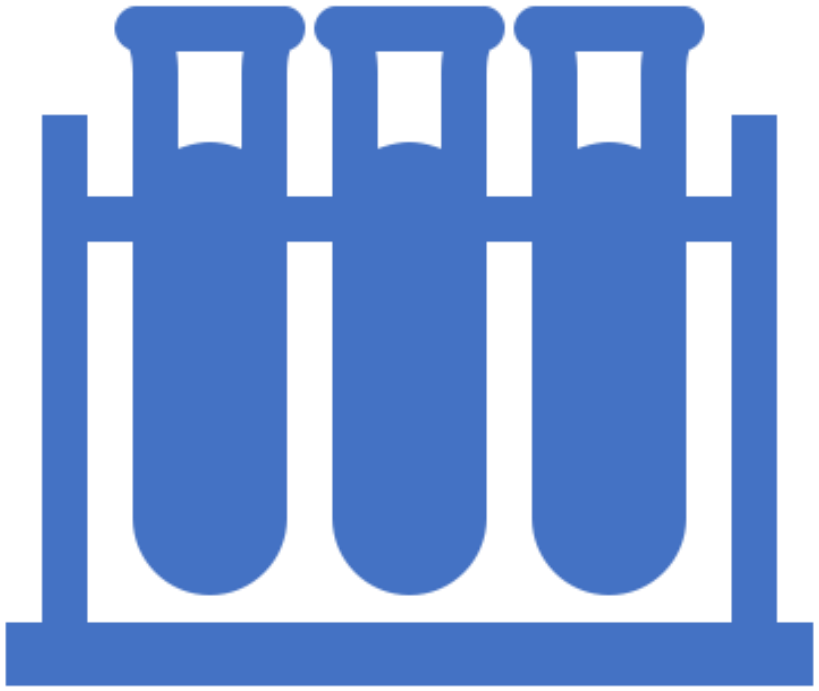
The Examination

The clinically significant physical examination is a flexible entity that should vary with the needs of the patient. Periodic examinations for health assessment need to be comprehensive, as do most hospital admission examinations. In contrast, it will not be cost effective to undertake a complete physical examination in most patients presenting with symptoms of an upper respiratory tract infection or a urinary tract infection.

The Examination

Because of the large degree of variability in observing many physical signs, the following recommendations can be made when reporting and interpreting physical findings.

1. Emphasis should be placed on dichotomous variables (i.e., presence or absence of râles) rather than on graded variables (i.e., intensity of breath sounds).
2. Some physical signs (i.e., clubbing of the fingers) represent a continuum from obviously normal to obviously abnormal. Emphasis should be placed on those findings which represent the extremes rather than the "borderline" cases.
3. Recognition of those physical findings which have a high degree of interobserver variability is important. Good examples of this include detection of moderate or small amounts of ascitic fluid and detection of diaphragmatic movement by percussion. These findings should be deemphasized in favor of those with better reproducibility.
4. It is beneficial to use the body's "symmetry" to advantage. Differences auscultated in breath sounds between similar area of the right and left lung are far more clinically important than an overall decrease in breath sounds.



Instrumental and laboratory methods for evaluating of the patient status.

Laboratory tests

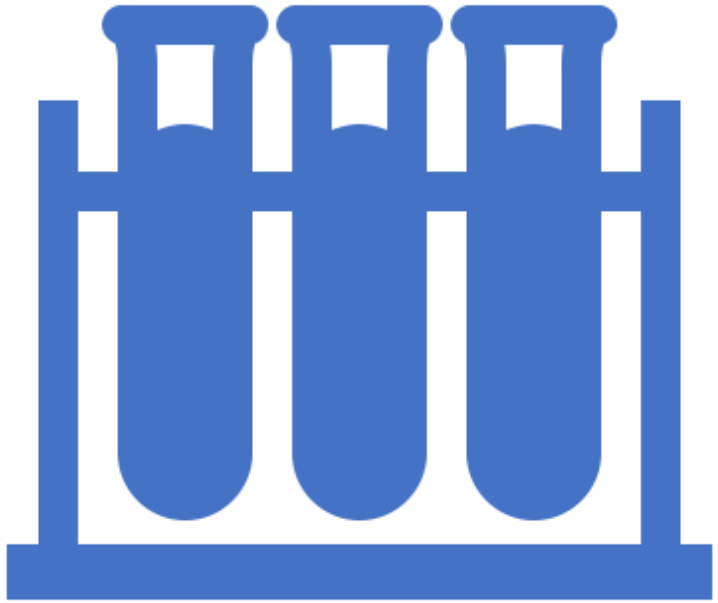
Laboratory tests include a range of blood and urine tests. Blood work may include testing for genetics (inherited disorders) or to determine the amount of oxygen in the blood. Urine tests may be performed to check blood, chemicals, bacteria, and cells for infection or other abnormalities.

Types

- Urine test
- Blood tests
- Tumor markers

Urine test

Urinalysis is a laboratory examination of urine for various cells and chemicals, such as red blood cells, white blood cells, infection, or excessive protein. Urinalysis breaks down the components of urine to check for the presence of drugs, blood, protein, and other substances. Blood in the urine (hematuria) may be the result of a benign (noncancerous) condition, but it can also indicate an infection or other problem. High levels of protein in the urine (proteinuria) may indicate a kidney or cardiovascular problem.



Blood tests

Blood tests are offed used to check cell counts, measure various blood chemistries and markers of inflammation, and genetics.

Types of Blood Tests

- Antinuclear antibody
- Blood chemistry study
- Blood lipid profile
- BNP testing
- Complement
- Complete blood count (CBC)
- Creatinine
- C-reactive protein (CRP)
- Erythrocyte sedimentation rate (ESR)
- Fecal occult blood test (FOBT)
- Genetic studies
- Hematocrit
- Liver function tests
- Peripheral blood smear
- Rheumatoid factor (RF)
- Sedimentation rate

Tumor Markers

Tumor markers are substances either released by cancer cells into the blood or urine or substances created by the body in response to cancer cells.

Tumor Markers

Tumor markers are substances either released by cancer cells into the blood or urine or substances created by the body in response to cancer cells. Tumor markers are used to evaluate how well a patient has responded to treatment and to check for tumor recurrence. Research is currently being conducted on the role of tumor markers in detection, diagnosis, and treatment of cancers.

According to the National Cancer Institute (NCI), tumor markers are useful in identifying potential problems, but they must be used with other tests for the following reasons:

People with benign conditions may also have elevated levels of these substances in their blood.

Not every person with a tumor has tumor markers.

Some tumor markers are not specific to any one type of tumor.

Instrumental methods of diagnostic

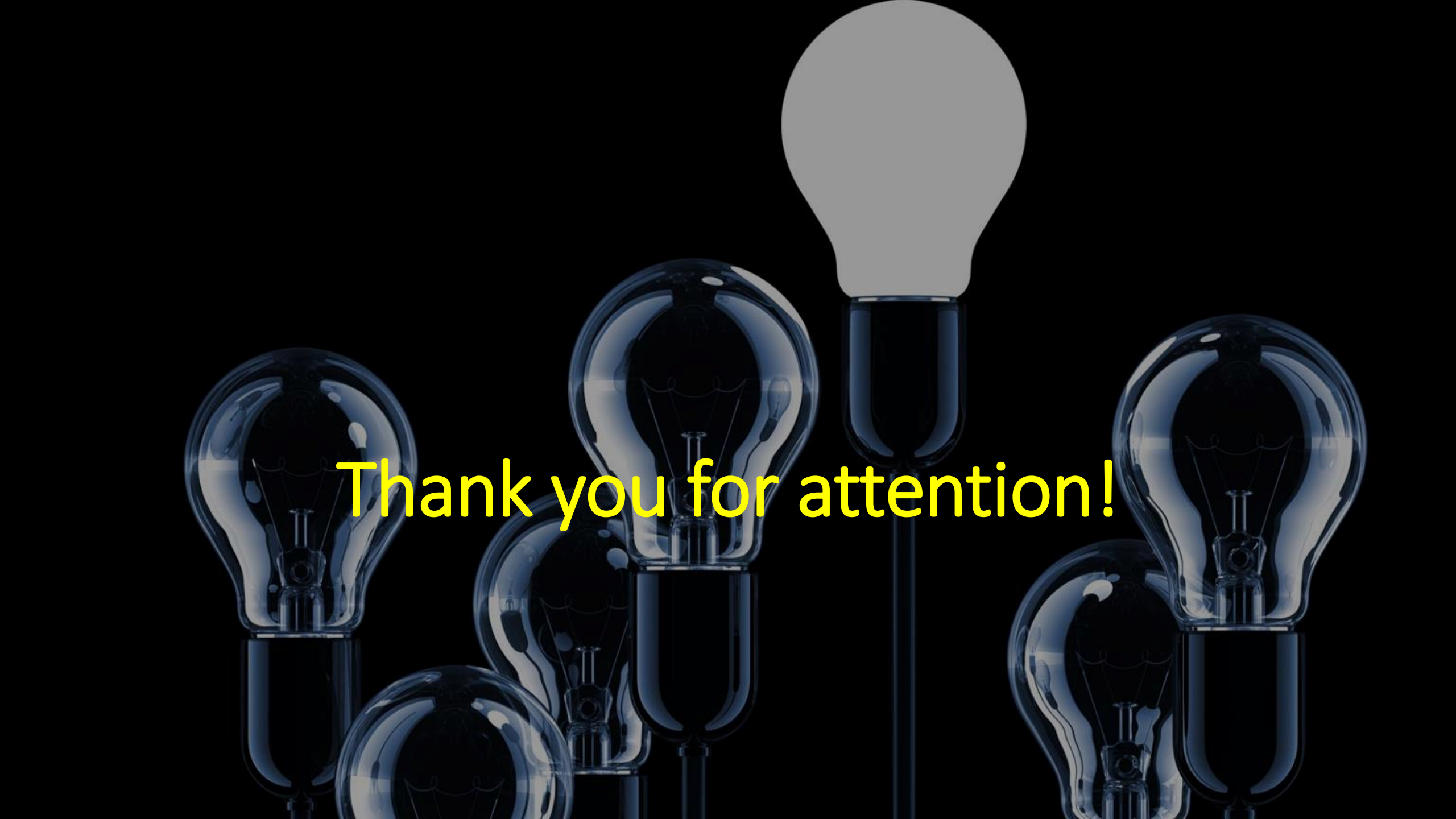
Instrumental methods of diagnostic are widely used to more accurately determine pathological changes in the body and conduct an early diagnosis. This allows timely and maximum effective therapy and predict the course of the disease.

- Endoscopy, biopsy, cytological analysis
- Functional methods
- Electrocardiography
- Spirography
- Pneumotachography
- Roentgenologic methods:
  - Roentgenoscopy (X-raying)
  - Roentgenography (X-ray study)
- Tomography
- Ultrasonic methods

Self-control questions

Difference between symptom and syndrome?
What is the meaning of disease?
Examination methods and their diagnostic value
Diagnosis. Structure and types.
What is the diagnostic value of interviewing the patient.

Your questions


Thank you for attention!