

Propaedeutics as an Introduction to the Clinic of Internal Medicine

LECTURE IN INTERNAL MEDICINE PROPAEDEUTICS

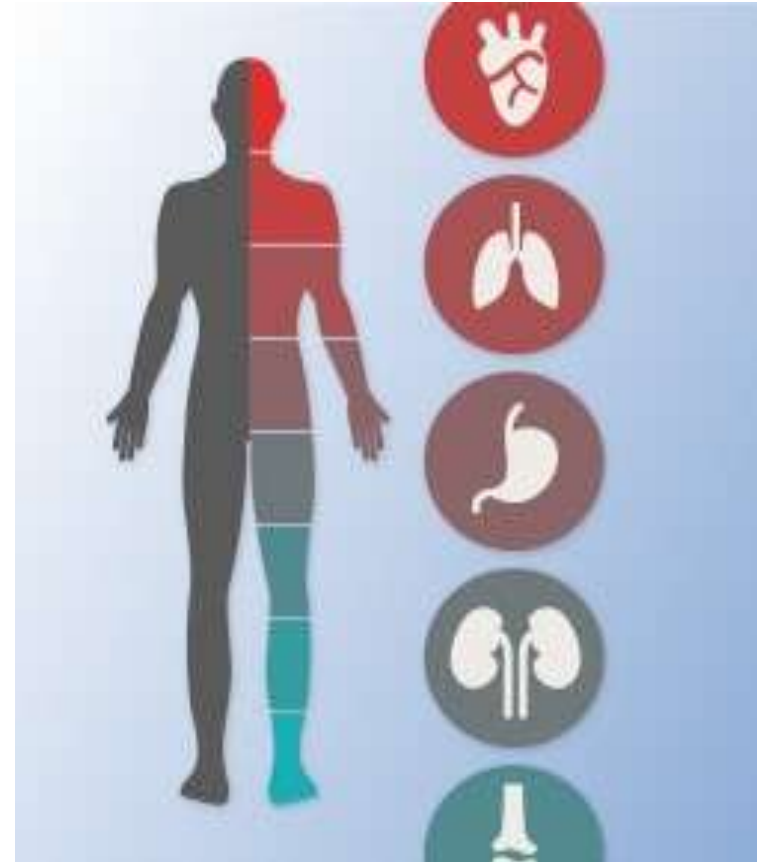
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Plan of the lecture

- Definition, purpose, objectives, method
- Foundation
- Basic Concepts
 - health, disease, epidemiology, etiology, risk factors, pathogenesis, sanogenesis, course of the disease, compensation, decompensation, outcomes of disease, diagnosis, symptoms, prognosis, treatment, prevention, quality of life, life expectancy, medical ethics, deontology
- Nomenclature *and* Classification of Diseases
- Historic foundation, present, future

Definition

- Propaedeutics (preliminary training - Gr.) - an introductory course in a specialty
- Propaedeutics of the Internal Medicine - an introductory course in the Internal Medicine



Purpose

- Epidemiology, etiology, pathogenesis, semiotics, diagnosis, prognosis, conservative (non-surgical) treatment and prevention of diseases
- Diseases of the respiratory, cardiovascular, digestive, urinary, blood, endocrine and connective tissue systems



Objectives



- Prepare students for the study of the Internal Medicine and for the work with a patient
- Form the clinical thinking of students as the basis of their professional activity

Method

- Self-education, hard work not only during the study of the subject, but also throughout the medical practice



Foundation



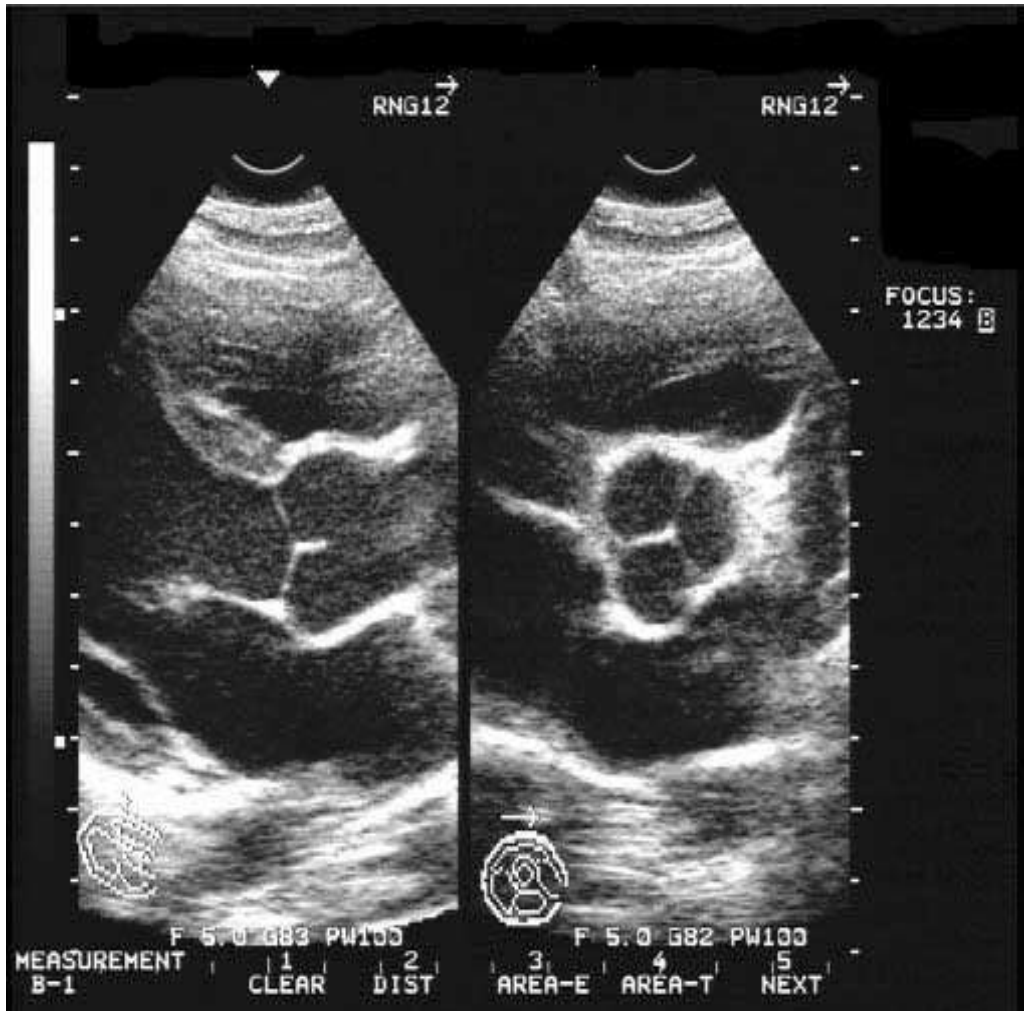
Multiplicity of medical and border knowledge, from the anatomy, histology, physiology, general pathology to the neuroscience, psychology, psychiatry, sociology, hygiene, specialized branches of the Internal Medicine

Foundation

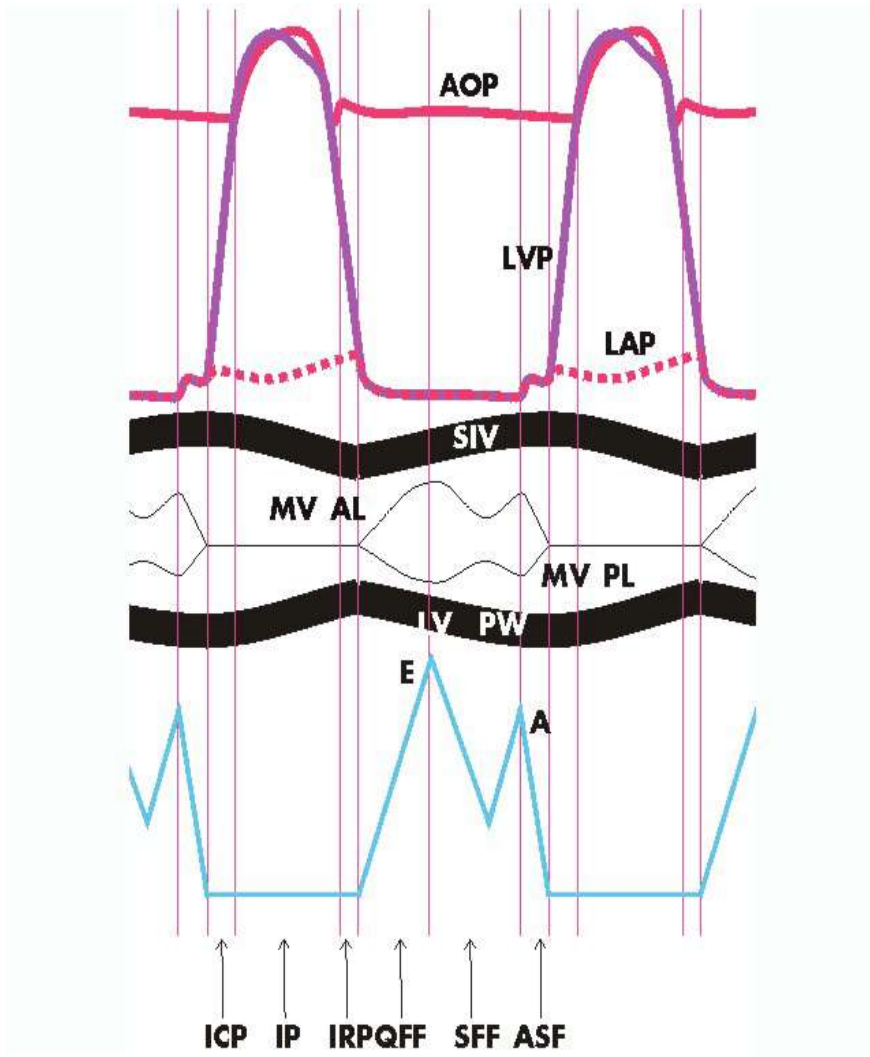
Two-dimensional echocardiography

The two mutually-perpendicular sections at the mouth of the aorta and its tricuspid valve

Good knowledge of human heart anatomy is necessary to understand the image



Foundation

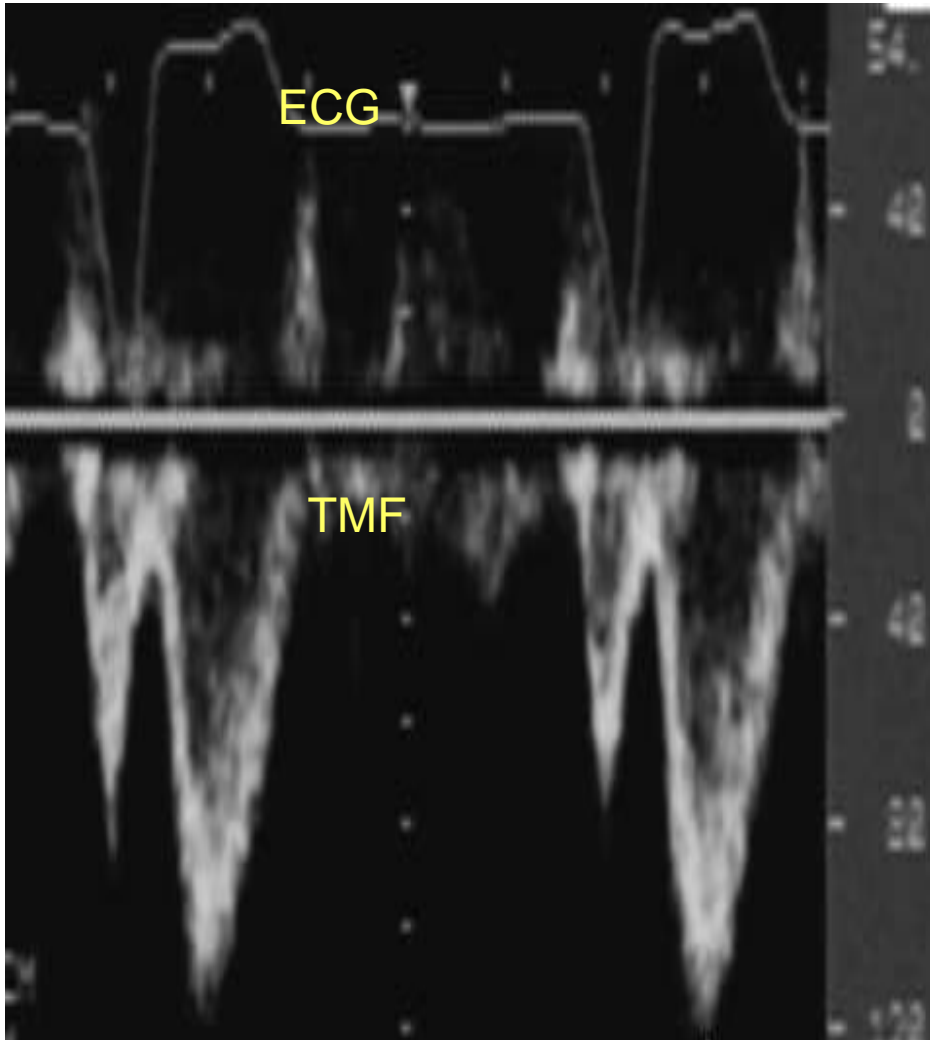


Functional curves of blood pressure changes in the aorta (red continuous line), left ventricle (violet continuous line) and atrial (red dotted line)

M-Echo of left ventricular wall motion (bold black), bicuspid valve flaps (thin black), blood flow through the mitral valve (blue)

Good knowledge of human cardiovascular physiology is necessary to understand the image

Foundation

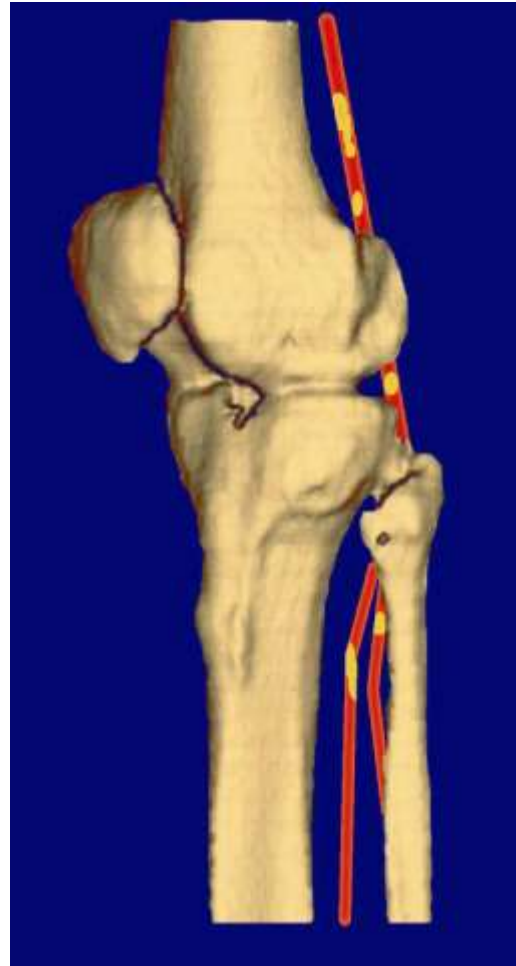
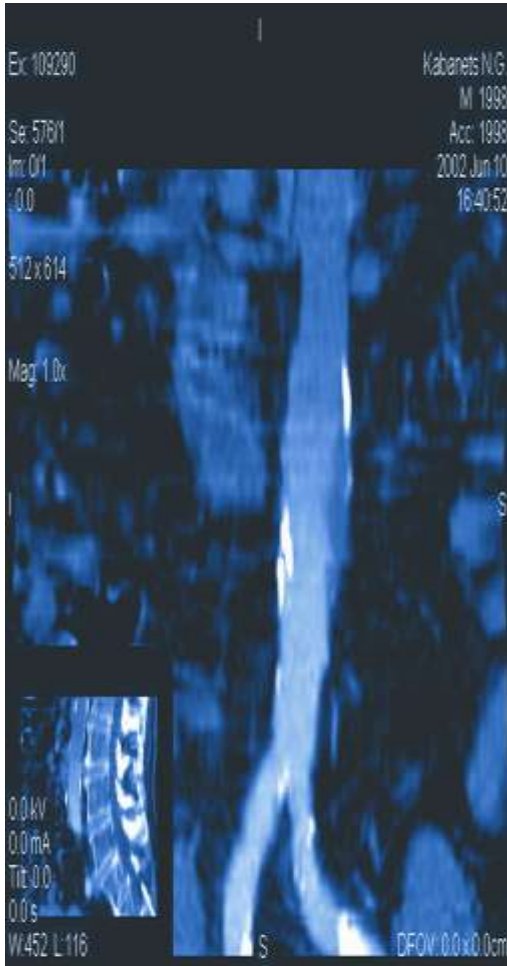


The electrocardiogram (ECG) and the Doppler echocardiographic transmittal flow (TMF)

We should not only see acute transmural changes in the left ventricular wall and violation of its diastolic stiffness, but relate these abnormalities to each other

Good knowledge of human heart physiology is necessary to understand the image

Foundation

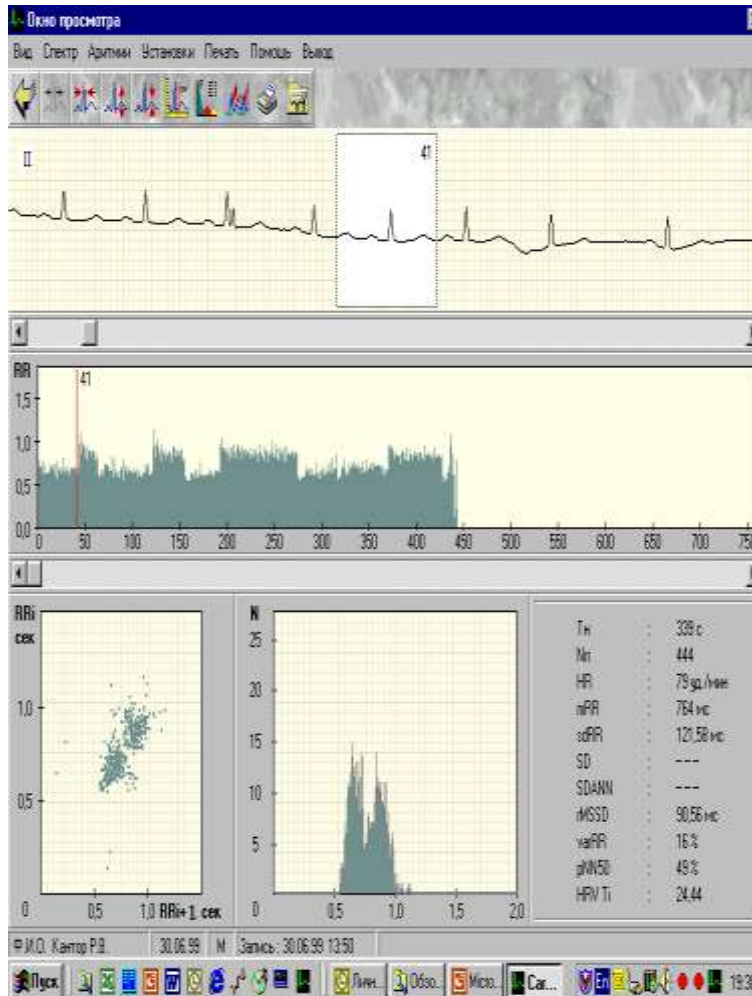


Spiral Computed tomography

Virtual geometry of anatomical structures from the cross sections to the three-dimensional reconstruction with visualization of atherosclerotic plaques affecting blood vessels

Good knowledge of human body anatomy is necessary to understand the image

Foundation



Cardiointervalography

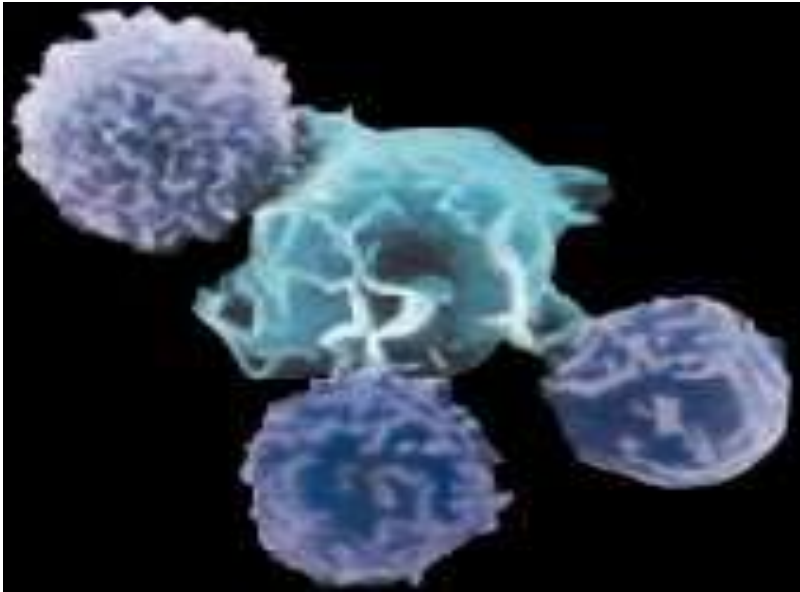
From the top to the bottom:

- the electrocardiogram
- RR-intervalogram
- bottom left – scattergram
- bottom right - the distribution of the lengths of RR-intervals

It is a functional fractalization of the sinus node, which, by the way, has not been described yet

Good knowledge of human heart electrophysiology is necessary to understand the image

Foundation

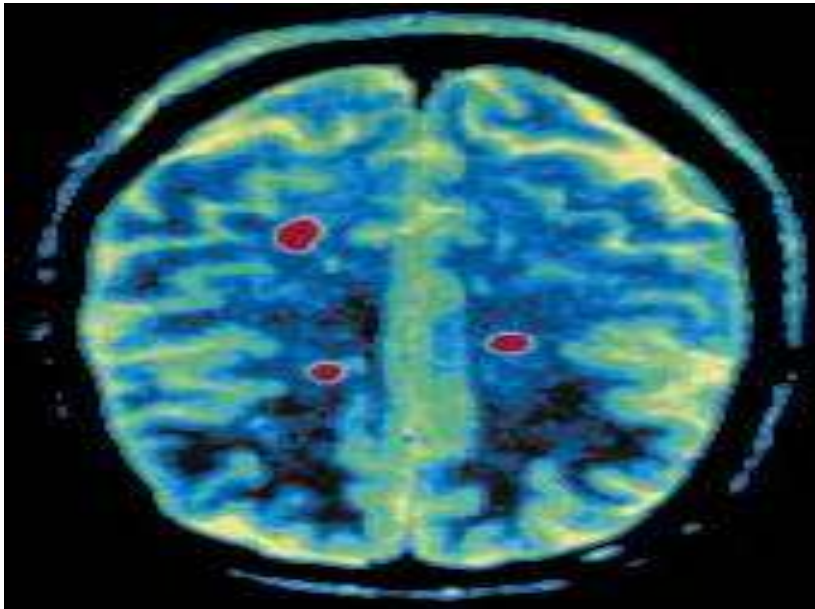


Immunocytology

Cooperating in the
immune response
cells

Good knowledge of
human immunology
is necessary to
understand the image

Foundation



Computed X-ray imaging of the brain

Clearly visible anatomical structures in the brain slice

Good knowledge human brain anatomy is necessary to understand the image

Basic Concepts: Health

- WHO definition: health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity
- Do you agree?



Basic Concepts: Disease



- A particular abnormal condition of a structure or function, that affects a part or the whole organism resulting from various causes, such as infection, inflammation, environmental factors, or genetic defect, and **is** characterized by an identifiable group of signs, symptoms, or both
- Do you agree?

Basic Concepts: Health or Disease?

Thomas Quasthoff is a German bass-baritone.

Quasthoff was born on November 9, 1959 in Hildesheim, West Germany, with serious birth defects caused by his mother's exposure during pregnancy to the thalidomide which was prescribed as an antiemetic to combat her morning sickness.

Quasthoff's height is 1.34 m (4' 4 $\frac{3}{4}$ "') due to shortening of the long bones in his legs, and he has phocomelia of the upper extremities with very short or absent long bones.



Basic Concepts: Health or Disease?

- Just one of 20 people worldwide (4.3%) had no health problems in 2013, with a third of the world's population (2.3 billion individuals) experiencing more than five ailments, according to a major new analysis from the Global Burden of Disease Study (GBD) 2013, published in *The Lancet*.
- Moreover, the research shows that, worldwide, the proportion of lost years of healthy life (disability-adjusted life years; DALYS [1]) due to illness (rather than death) rose from around a fifth (21%) in 1990 to almost a third (31%) in 2013.

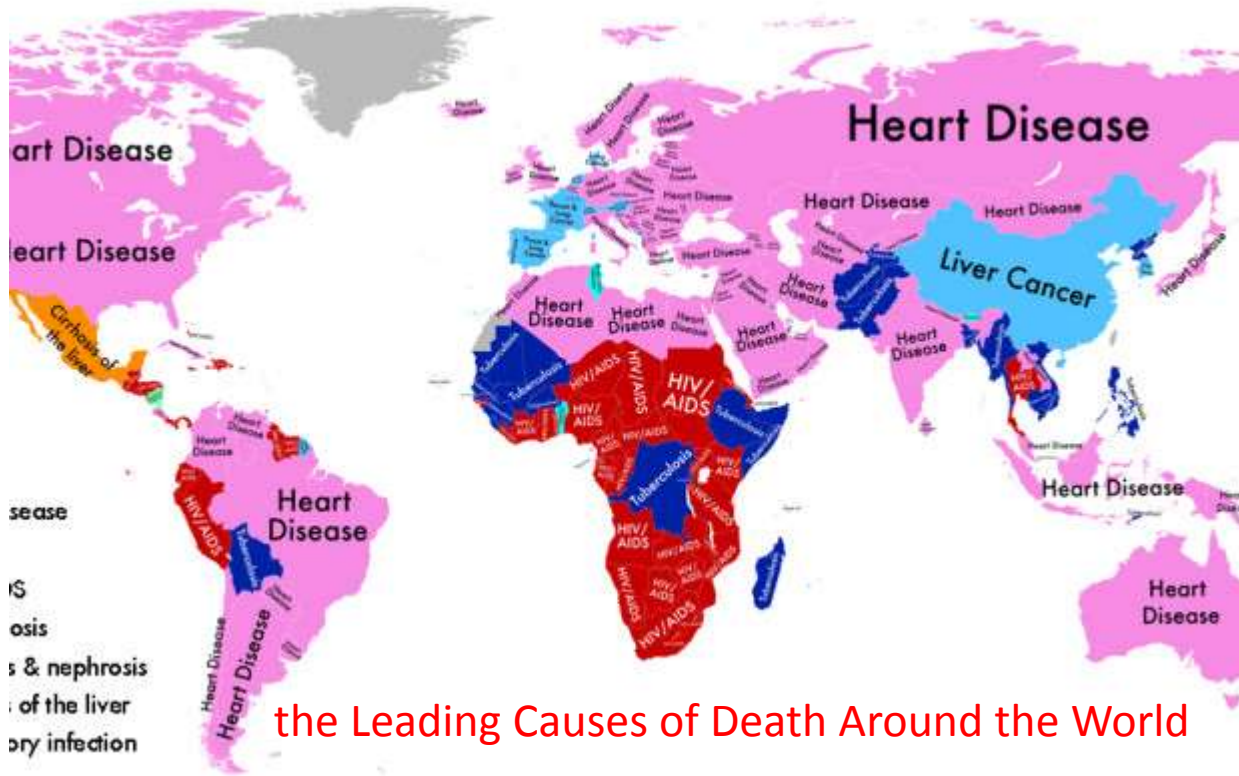


Basic Concepts: Health & Disease?

- Stephen William Hawking (born on 8 January 1942) is a British theoretical physicist, cosmologist. He was the first to set forth a theory of cosmology explained by a union of the general theory of relativity and quantum mechanics.
- Hawking suffers from a rare early-onset, slow-progressing form of amyotrophic lateral sclerosis (ALS), that has gradually paralysed him over the decades.
- Now he communicates using a single cheek muscle attached to a speech-generating device. Hawking was married twice and has three children.



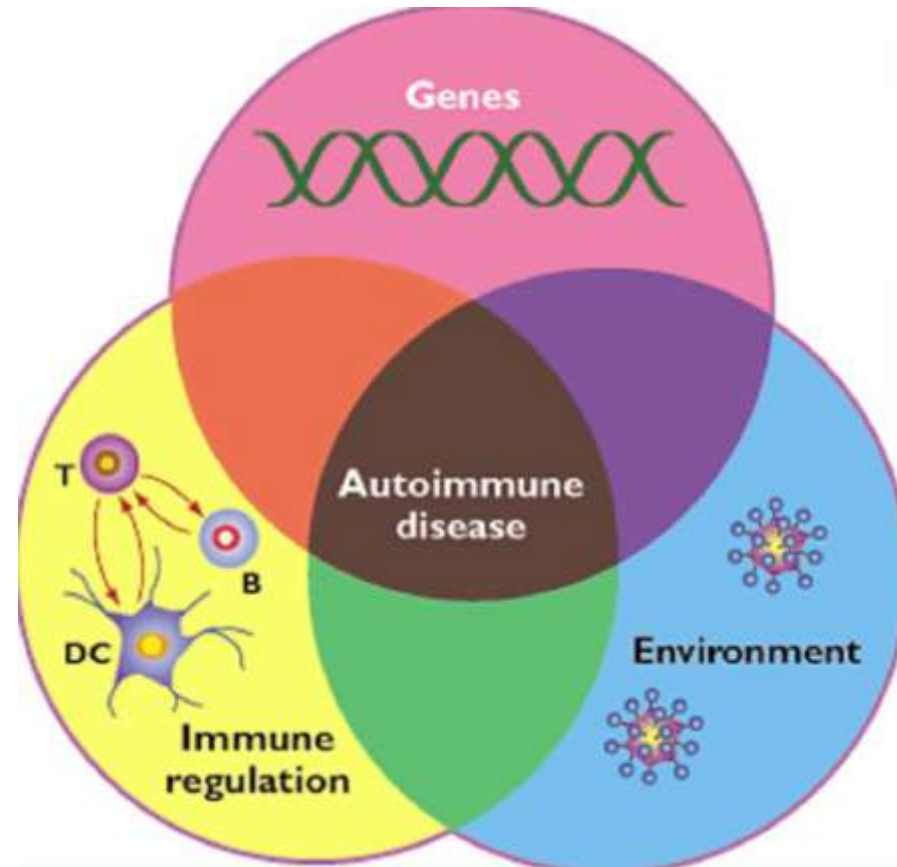
Epidemiology



- Epidemiology is the study of how often diseases occur in different groups of people and why
- Epidemiological information is used to plan and evaluate strategies to prevent disease and as a guide to the management of patients in whom disease has already developed

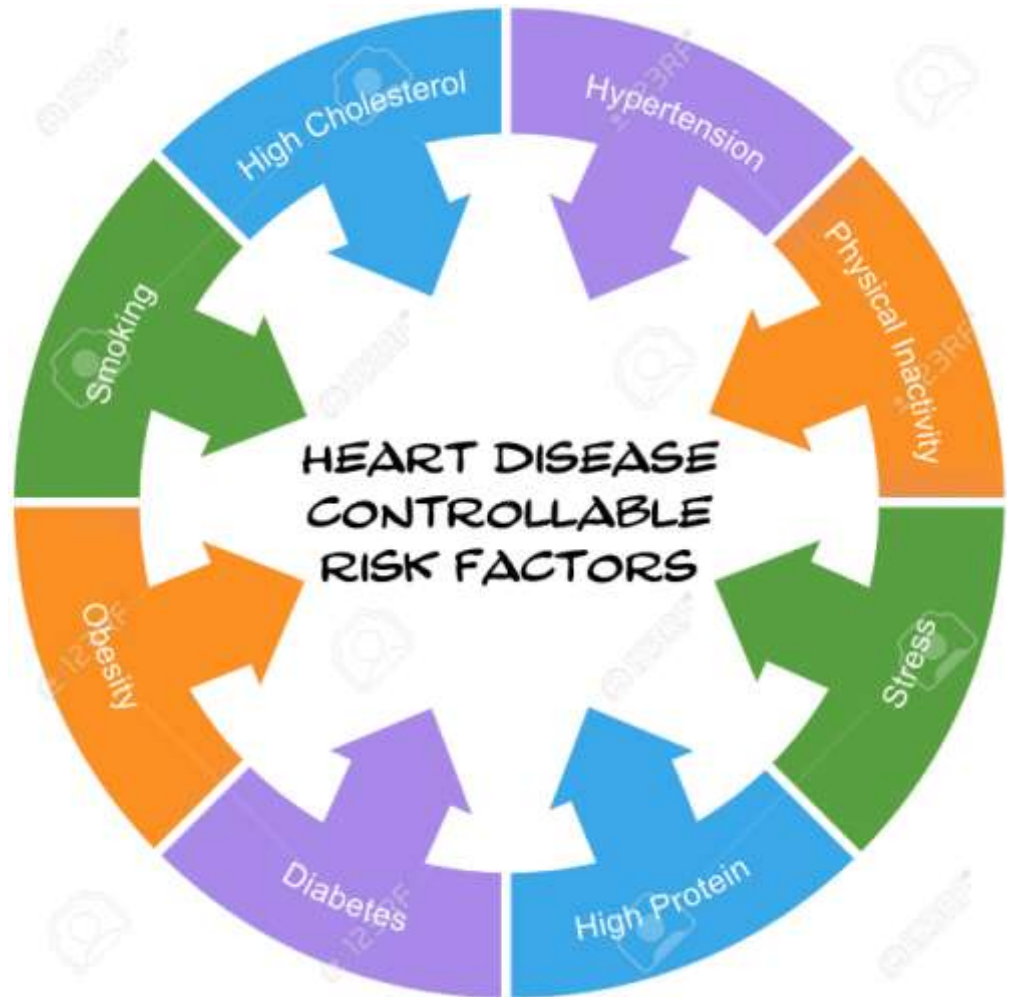
Etiology

- The cause of a disease or abnormal condition
- Where no etiology can be ascertained, the disorder is said to be idiopathic
- Usually disease' cause is determined by many factors, as in this example with an autoimmune disease



Risk factor

- A risk factor is any attribute, characteristic or exposure of an individual that increases the likelihood of developing **of** a disease or injury.
- Some examples of the more important risk factors are underweight, unsafe sex, high blood pressure, tobacco and alcohol consumption, and unsafe water, sanitation and hygiene



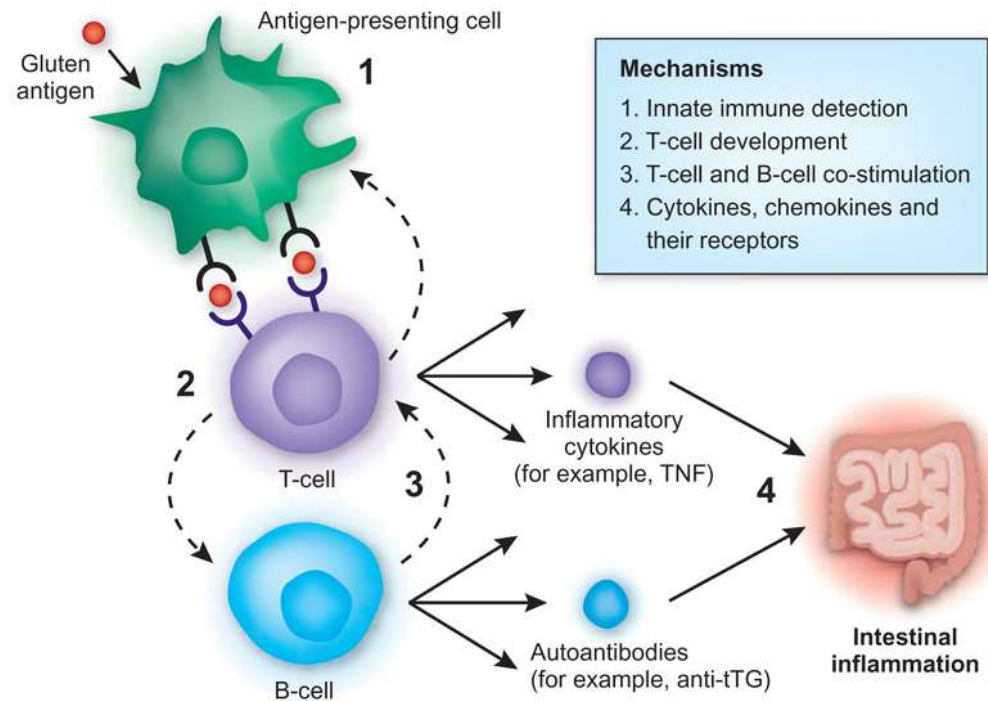
The time of the Global Somatic Risk

Blood pressure (mmHg)					
Other risk factors, OD or Disease	Normal SBP 120–129 or DBP 80–84	High normal SBP 130–139 or DBP 85–89	Grade 1 HT SBP 140–159 or DBP 90–99	Grade 2 HT SBP 160–179 or DBP 100–109	Grade 3 HT SBP ≥180 or DBP ≥110
No other risk factors	Average risk	Average risk	Low added risk	Moderate added risk	High added risk
1–2 risk factors	Low added risk	Low added risk	Moderate added risk	Moderate added risk	Very high added risk
3 or more risk factors, MS, OD or Diabetes	Moderate added risk	High added risk	High added risk	High added risk	Very high added risk
Established CV or renal disease	Very high added risk	Very high added risk	Very high added risk	Very high added risk	Very high added risk

- Due to a significance of combination of various risk factors on the development of disease, a term risk factors has been accepted for general use instead of a singular risk factor term
- Combination of risk factors significantly exacerbates the risk of development of the disease, its severity, a possibility of early complications, and adverse outcomes

Pathogenesis

- The mechanism of disease development and the chain of events leading to that disease
- Types of pathogenesis include microbial infection etiology, inflammation, malignancy and tissue breakdown
- Most diseases are caused by multiple processes



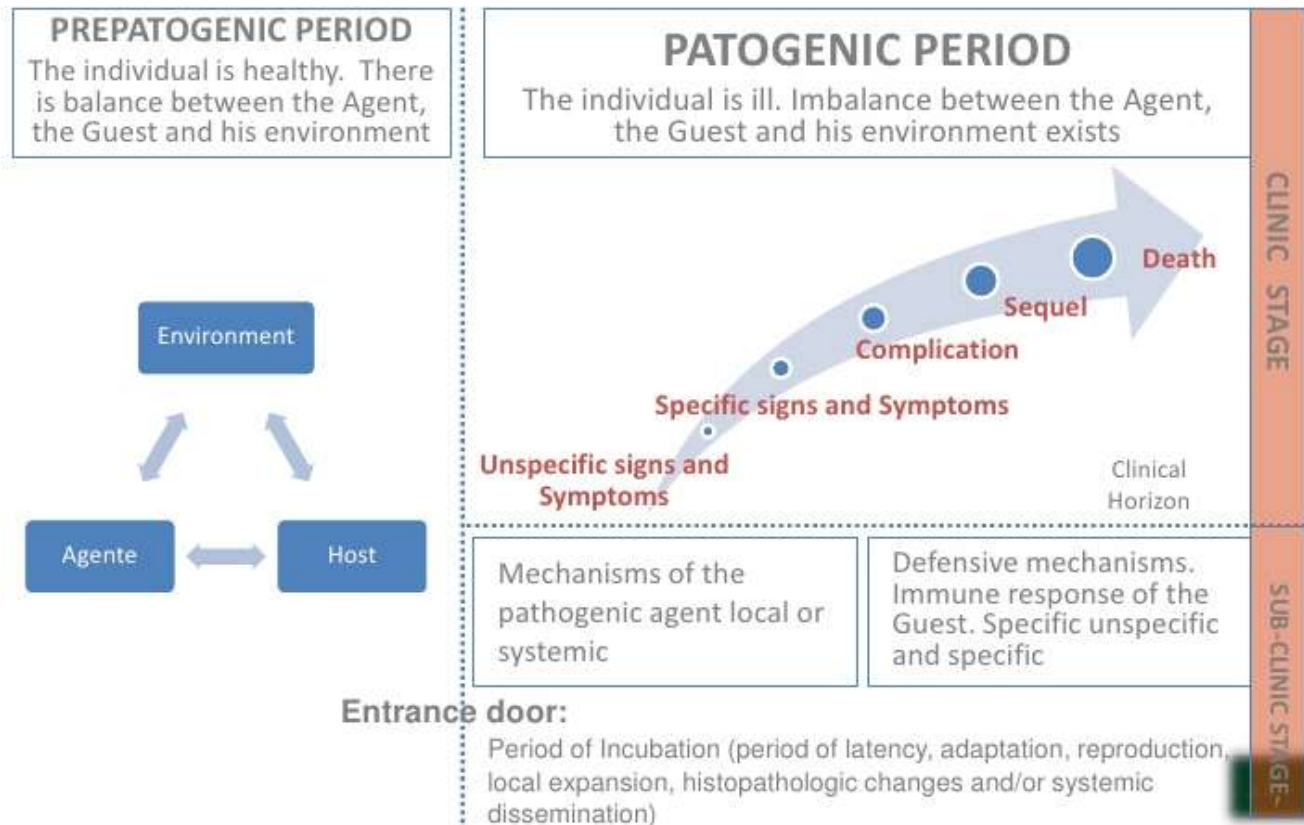
Mechanisms underlying celiac disease pathogenesis

Sanogenesis



- The mechanism of recovery from the disease
- The sanogenesis is inseparable from the pathogenesis
- Every sign of the disease is pathogenic and sanogenic in origin

Course of disease



- The natural history of the disease
- It refers to its development in a patient, including the sequence and speed of the stages and forms which they take

Typical courses of disease

- Chronic
- Recurrent or relapsing
- Subacute (between an acute and a chronic)
- Acute
- Fulminant or peracute (particularly acute, especially if unusually violent)



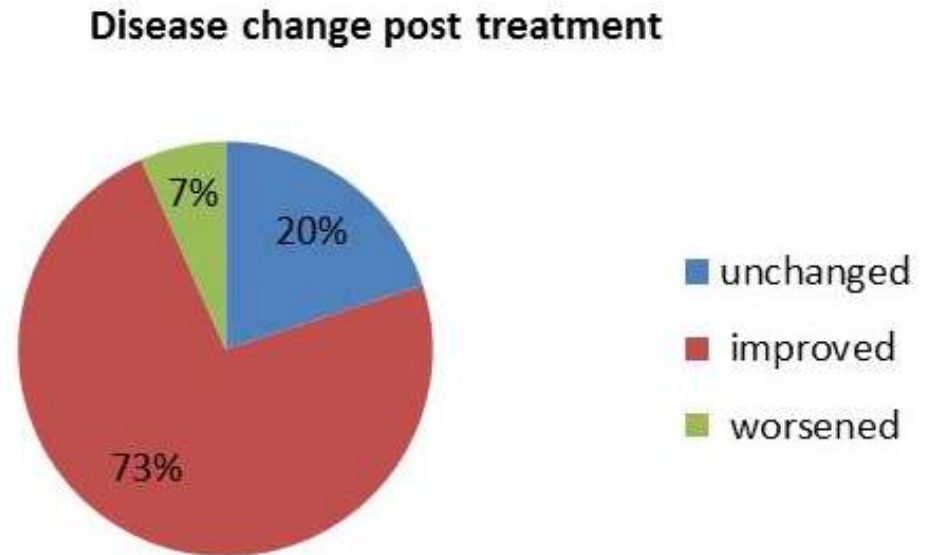
Compensation & decompensation in disease

	Compensated Cirrhosis		Decompensated Cirrhosis	
Stage	Stage 1	Stage 2	Stage 3	Stage 4
Clinical	No Varices No Ascites	Varices No Ascites	Ascites +/- Varices	Bleeding +/- Ascites
Death (at 1 Year)	1%	3%	20%	57%

- Phases of disease: compensation, subcompensation, decompensation
 - Compensation - adaptive processes fully reimburse broken or lost functions
 - Subcompensation - adaptive processes partially reimburse broken or lost functions
 - Decompensation - compensation is exhausted
- Forms of compensation
 - short-term
 - long-term

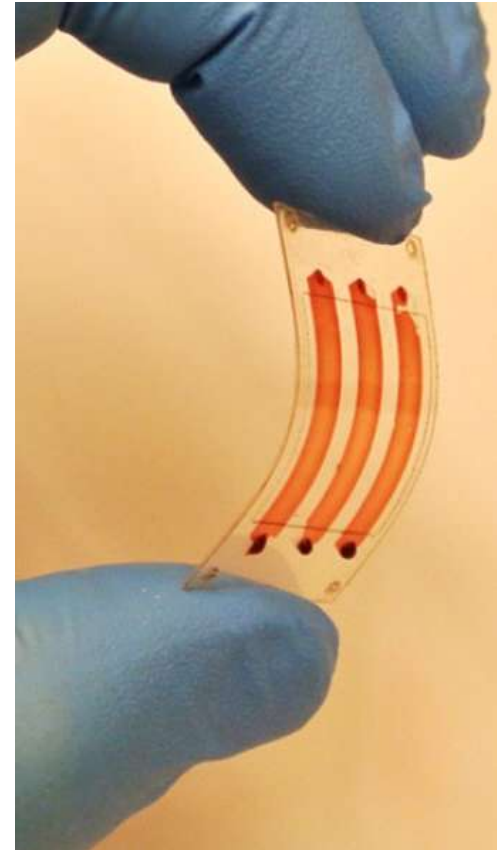
Outcomes of disease

- Recovery, relief, lack of improvement, deterioration, death
- Quality and degree of recovery are varied:
 - Complete recovery
 - Incomplete recovery
- Death is the most serious notion in clinic



Diagnosis of disease

- Diagnosis is the identification and labeling of a disease based on its signs and symptoms
- A diagnosis, in the sense of diagnostic procedure, can be regarded as an attempt of classification of an individual's condition into separate and distinct categories that allow medical decisions about treatment and prognosis to be made.
- A diagnostic procedure may be performed by various health care professionals such as a physician, physical therapist, optometrist, healthcare scientist, chiropractor, dentist, podiatrist, nurse practitioner, or physician assistant



Symptoms & signs of disease

- A symptom is generally subjective while a sign is objective
- Stomachache, lower-back pain, fatigue, etc. can only be detected or sensed by the patient and they are symptoms
- Any objective evidence of a disease, such as blood in the stool, a skin rash, is a sign – although some of them can be recognized by the patient or family members but in such case it must be confirmed by the doctor, nurse to be considered as objective sign
- Both symptom and sign are deviations from patient's normal state or feeling, reflecting the presence of an unusual state, or of a disease



www.Senior-Care-Resources.com

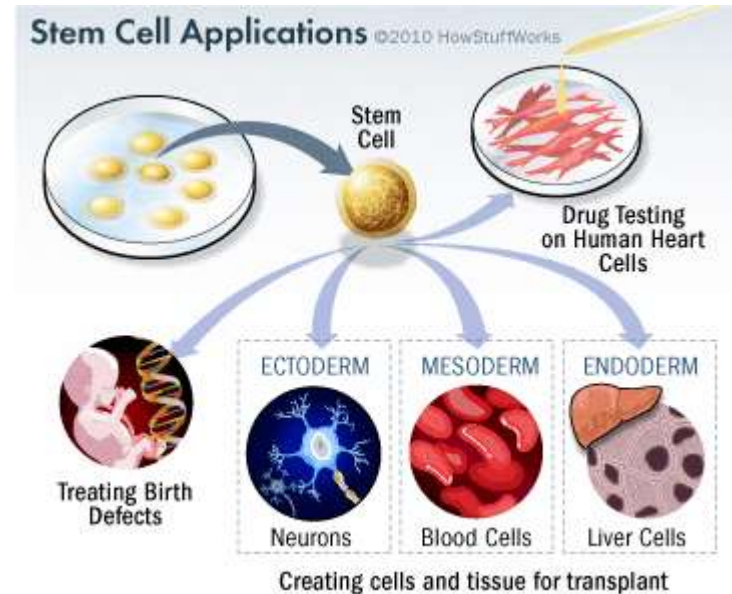
Prognosis of disease

- A prediction of the probable course and outcome of a disease
- A complete prognosis includes the expected duration, the function, and a description of the course of the disease, such as progressive decline, intermittent crisis, or sudden, unpredictable crisis
- Prognosis:
 - for life
 - for recovery
 - for work capacity (disability)



Treatment of disease

- The use of an agent, procedure, or regimen, such as a drug, surgery, or exercise, in an attempt to cure or mitigate a disease, condition, or injury



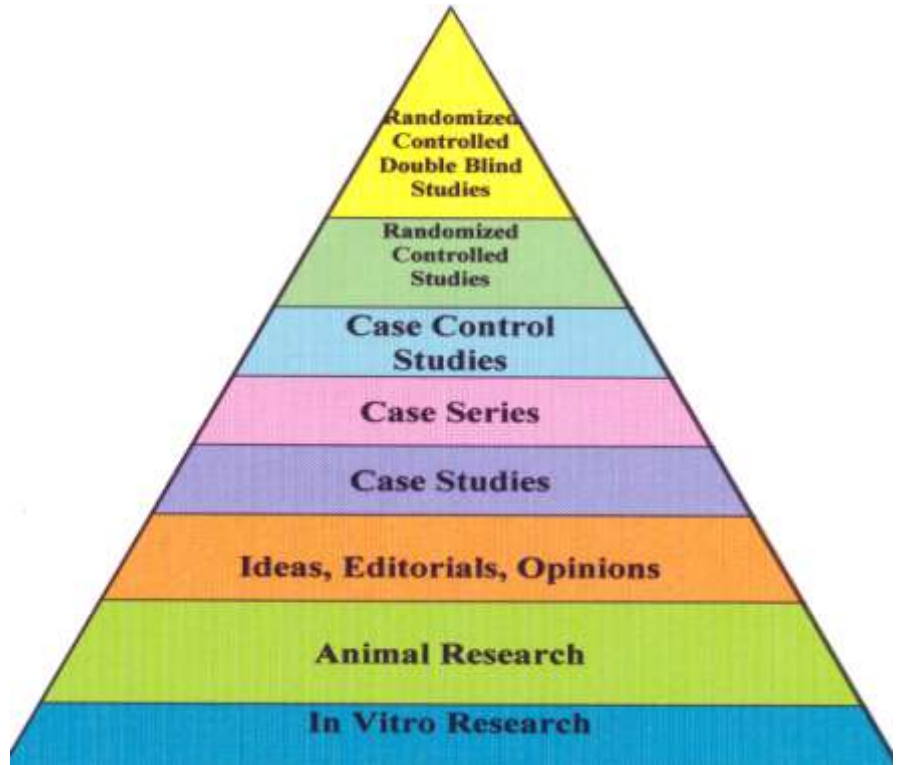
Prevention of disease

- Activities designed to protect patients or other members of the public from actual or potential health threats and their harmful consequences
- Disease prevention covers measures not only to prevent the occurrence of disease, but also to arrest its progress and reduce its consequences once established
- Primary prevention is directed towards preventing the initial occurrence of a disorder. Acts on the Prepathogenesis (Risk Factors)
- Secondary prevention acts on Pathogenesis. Includes early diagnosis , prompt treatment and prevention of associated disability
- Tertiary prevention acts on Resolution stage of the disease. Includes rehabilitation, reducing degree of disability/damage from crisis and reducing risk of future crisis



Evidence based medicine

Evidence-based medicine is the conscientious explicit and judicious use of current best evidence in making decisions about the care of individual patients



Quality of life

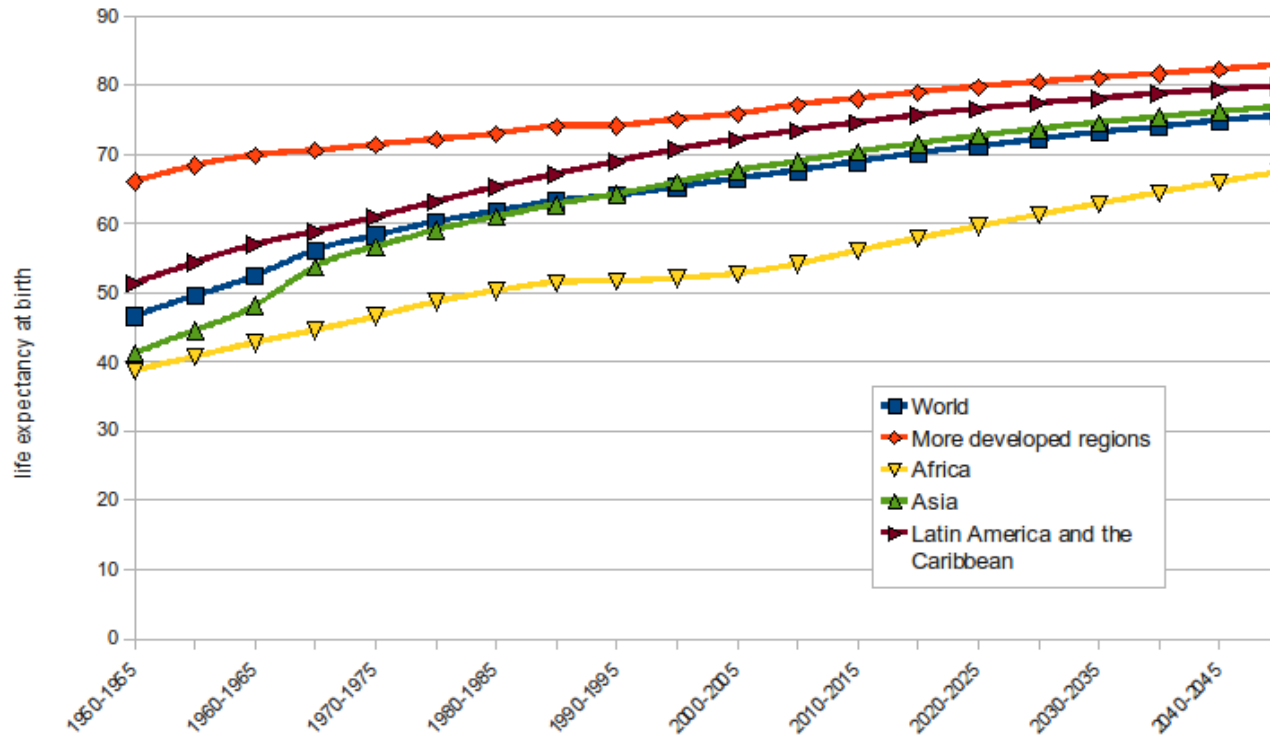
- Quality of life (QoL) is a ubiquitous concept that has different philosophical, political and health-related definitions
- Health-related QoL (HRQoL) includes the physical, functional, social and emotional well-being of an individual
- HRQoL is a patient-reported outcome usually measured with carefully designed and validated instruments such as questionnaires or semi-structured interview schedules
- These assessments are increasingly important when evaluating the benefits and harms of new treatments being tested in clinical trials
- They can also be used via touch screen technology to help monitor the impact of disease and its treatment on individual patients in the clinic.



Life expectancy

Life Expectancy at Birth by Region, 1950-2050.

Source: UN World Population Prospects, 2008.



The probable number of years remaining in the life of an individual or class of persons determined statistically, affected by such factors as heredity, physical condition, nutrition, and occupation.

Medical ethics

- Medical ethics is a system of moral principles that apply values and judgments to the practice of medicine
- As a scholarly discipline, medical ethics encompasses its practical application in clinical settings as well as work on its history, philosophy, and sociology



Principles of medical ethics

- I. A physician shall be dedicated to providing competent medical care, with compassion and respect for human dignity and rights
- II. A physician shall uphold the standards of professionalism, be honest in all professional interactions, and strive to report physicians deficient in character or competence, or engaging in fraud or deception, to appropriate entities
- III. A physician shall respect the law and also recognize a responsibility to seek changes in those requirements which 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 and privacy within the constraints of the law
- V. A physician shall continue to study, apply, and advance scientific knowledge, maintain a commitment to medical education, 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 care
- VII. A physician shall recognize a responsibility to participate in activities contributing to the improvement of the community and the betterment of public health
- VIII. A physician shall, while caring for a patient, regard responsibility to the patient as paramount
- IX. A physician shall support access to medical care for all people

Medical deontology

- Medical deontology means professional ethics of medical workers and principles of behavior of medical personnel, directed toward maximum benefit of patient' treatment
- Medical deontology includes problems of observing medical confidentiality, the problem of the extent of the medical worker's responsibility for the life and health of the patient, and problems of relationships of medical workers to each other
- In accordance with medical deontology, in relation to the patient, the medical worker must evince maximum attention and apply all his knowledge in order to restore the patient to health or bring relief to him in his sufferings; he must convey to the patient only information about his health that will be beneficial to him and establish contact between the patient and the physician
- The physician must avoid in the presence of the patient conversations and discussions with colleagues, personnel, and with the patient himself concerning his illness, which sometimes produce the development of iatrogenic diseases

International Classification of Diseases (ICD)

- ICD is the standard diagnostic tool for epidemiology, health management and clinical purposes
- ICD includes the analysis of the general health situation of population groups
- ICD is used to monitor the incidence and prevalence of diseases and other health problems, providing a picture of the general health situation of countries and populations.
- ICD is used by physicians, nurses, other providers, researchers, health information managers and coders, health information technology workers, policy-makers, insurers and patient organizations to classify diseases and other health problems recorded on many types of health and vital records, including death certificates and health records
- Finally, ICD is used for reimbursement and resource allocation decision-making by countries
- All Member States use the ICD which has been translated into 43 languages
- Most countries (117) use the system to report mortality data, a primary indicator of health status
- ICD-10 was endorsed by the Forty-third World Health Assembly in May 1990 and came into use in WHO Member States as from 1994. ICD is currently under revision, through an ongoing [Revision Process](#), and the release date for ICD-11 is 2017.

International Classification of Diseases (ICD) in Internal Medicine

- Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (D50-D89)
- Endocrine, nutritional and metabolic diseases (E00-E90)
- Diseases of the circulatory system (I00-I99)
- Diseases of the respiratory system (J00-J99)
- Diseases of the digestive system (K00-K93)
- Diseases of the skin and subcutaneous tissue (L00-L99)
- Diseases of the genitourinary system (N00-N99)



Historic foundations of Internal Medicine

- Historically, some of the oldest traces of internal medicine can be traced from Ancient India and Ancient China. Earliest texts about internal medicine are the Ayurvedic anthologies of Charka
- The terms "internal medicine, internal diseases" came from the XVIII-XIX centuries
- Hippocrates (Ancient Greece) gave the method of observation at the bedside, showed the importance of environmental and social factors in diseases, developed a personal approach to the patient
- Soranus of Ephesus (Ancient Rome) developed symptomatology of diseases
- Galen (Ancient Rome) laid the basis for healing on the grounds of achievements in ancient anatomy and physiology, built and developed the ideas of integrity of the structure and function in biology and medicine
- Ibn Sina (Ancient East) developed clinical semiotics
- Paracelsus (Switzerland) introduced the chemical drugs into treatment

The base of modern Internal Medicine

XVIII-XIX centuries: the base of modern medicine with three approaches that are integrated within a single entity:

- British doctors' approach – creation of general theory of disease, based on the ideas of balance of body fluids and development of the conception of disease as a violation of this balance
- French doctors' approach - development of modern physical examination techniques for recognition of the anatomic localization of disease in the living patient
- German doctors' approach - clinical observations were completed with experimental studies

On the way to modern Internal Medicine in Ukraine

- XIX century : establishment of internal medicine clinic
- one of the first medical schools in the Kharkiv University: LL Ghirshman, VF Grube, VY Danilevsky, IO Kalinichenko, IP Lazarevic, DF Giardia, IA Sviridov, NP Trinkler, AI Khodnev, PM Shymlanskaya were among the first teachers
- XX -XXI centuries in Ukraine: VA Bobrov, GI Burchinsky, VH Vasilenko, AV Vinogradov, MS At all, MM Gubergrits, NA Gvatua, AL Crest, AI Gritsyuk, AJ Gubergrits, NF Deyneko, VN Dzyak, G.V.Dzyak, AI Dyadyk, VF Zelenin, SS Zimnitsky, IA Kassirskii, VN Kovalenko, FI Komarov, MG Kurlov, Y. Linevsky, PE Lukomskii, LT Malaya, NS Molchanov, AL Myasnikov, NS Pilipchuk, DD Pletnev, L. Rozenshtrauh, ND Strazhesko, MI Frankfurt, EI Chazov, MV Chernorutskii, BS Shkliar, FG Janowski and others

Easy way to learn Internal Medicine

- In the most institutions, Internal Medicine is organized as a Department of Internal Medicine
- Although the structure of Departments of Internal Medicine may vary, particularly in schools that have more than one teaching hospital, they typically are made up of multiple divisions, often based on the different subspecialties of internal medicine
- In Medical School you only need to look around you to see internists and what they do
- If you are interested, this may be one of the best ways to learn about the breadth and depth of Internal Medicine!
- Learn Internal Medicine online every day too, for example with <https://www.youtube.com/watch?v=danNTelK7fw>