

Clinical Examination and Diagnosis in Internal Medicine (module code II02000)

Is a core module of the 5th semester awarded 6,00 ECTS (Module leader Dr EI Rigopoulou, Associate Professor of Medicine)

Duration: 14 weeks

Hours/week: 6 hours, including 3 hours lectures and 3 hours clinical practice in the Department of Internal Medicine

Mode of assessment: Written exam

Module objectives: systematic approach in clinical history taking, development of clinical skills to undertake clinical examination in different groups, evaluate and interpret clinical signs and symptoms during clinical examination

The module's objectives can be specified as follows:

- The student must understand the importance of history taking and comprehend its structure. In addition, the student must get acquainted with the technique of taking, writing and presenting the clinical history of a patient.
- The student must learn to coordinately perform general clinical examination, to get familiar with clinical examination in healthy individuals, recognize abnormal signs obtained during clinical examination and learn to assess their implication in the evaluation of a patient.
- The student must gain knowledge of basic symptoms and their variations, their pathophysiological basis and their value in the diagnosis of various diseases

Structure of knowledge the student must obtain from this module

- Knowledge obtained from this module, as analyzed below, is not adapted to a specific textbook and the student can use different sources of his/her choice.
- Essential knowledge, experience and skills interrelate and fundamental for the subject's comprehension is the systematic attendance, study and educational practice.
- The importance of gaining experience in taking history and performing clinical examination must be underscored

Knowledge

1. Obtaining medical history

- 1.1. Understanding the importance of medical history in the diagnosis and treatment of a patient.
- 1.2. Structure of medical history (basic complain, present history, past medical and surgical history, family history, medications, smoking and alcohol history, overview of systems).
- 1.3. Recognize the importance of age, sex, geographical region, ethnicity and social history
- 1.4. Recognize difficulties and pitfalls during assessment of information obtained.
- 1.5. Understanding that medical history is an active process that requires knowledge and experience. Along this line, techniques in obtaining history must improve towards the final medical years.

2. Description of main symptoms

- 2.1. Classification of headaches and description of their basic clinical features.
- 2.2. Thoracic pain: Main characteristics of pleuritic pain, of angina pectoris, pain related to pericarditis, to esophageal dysfunction, to dissection of aortic aneurysm etc.
- 2.3. Abdominal pain: Main characteristics of abdominal pain related to peritoneal irritation, to intestinal obstruction, to ischemia, to metabolic disturbances.
- 2.4. Back pain and neck pain: Description of main characteristics of pain according to commonest causes.
- 2.5. Pathophysiology and clinical types of cough.
- 2.6. Description of main types of dyspnoea and discrimination between different types.
- 2.7. What are palpitations? How is syncope defined and which are the basic types and their characteristics?
- 2.8. How are nausea, constipation and diarrhea defined? Discrimination between acute and chronic inflammatory diarrheas.

3. Evaluation of findings during clinical examination

- 3.1. Growth disorders
- 3.2. Nutrition disturbances
- 3.3. Pathophysiology of fever regulation. Types of fever and accompanying symptoms.

- 3.4. Characteristic faces
- 3.5. Description of primary and secondary skin lesions.
- 3.6. Definition of hemorrhagic skin lesions
- 3.7. Definition and pathophysiological mechanisms of cyanosis. Discrimination between peripheral and central cyanosis.
- 3.8. Definition and pathophysiological mechanisms of oedema. Aetiology of oedema.
- 3.9. Clinical characteristics of congestive heart failure
- 3.10. Physical examination of valvular heart disease
- 3.11. Physical examination of lung consolidation, lung emphysema, atelectasis, pleural effusion and pneumothorax
- 3.12. Definition of jaundice and pathophysiological types of jaundice
- 3.13. Physical examination of ascitic fluid
- 3.14. Lymphadenopathy: Topography of lymph node enlargement. Assessment of lymphadenopathies according to the size, consistency and presence of tenderness. Main causes of lymphadenopathy.
- 3.15. Splenomegaly: Importance of size, consistency and presence of tenderness during palpation. Main causes of splenomegaly.
- 3.16. Physical examination of arthritis. Description of basic characteristics of types of arthritis
- 3.17. How we are assessing level of consciousness and classification of relative disorders. How we define confusion and delirium.
- 3.18. Speech disorders. What is dysarthria and aphasia. Clinical types of aphasia and modes of assessment.
- 3.19. Manifestations of extrapyramidal system and peripheral/central neuron disease. Gait disturbance and types.
- 3.20. Common involuntary pathological movements: Tremor, chorea, athetosis, etc.
- 3.21. Muscle disturbances: muscle strength and tone, muscle atrophy.

4. Semiology and basic laboratory evaluation of body fluids and secretions

- 4.1. Evaluation of sputum (color, consistency, quantity and odor). Clinical implication of bloody sputum.

- 4.2. Evaluation of 24 hour-urine volume: definition and clinical implication of oliguria and polyuria.
Clinical evaluation of color and urine odor. Clinical implication of urine's specific gravity and urine pH.
- 4.3. Evaluation of urine biochemical parameters (protein, glucose, ketones, urobilinogen)
- 4.4. Evaluation of urine sediment: hematuria, urinary casts
- 4.5. Clinical evaluation of stool frequency and color. Definition and clinical implication of melena and stool discoloration.
- 4.6. Discrimination of pleural effusion into transudate and exudate. Clinical implication of hemorrhagic pleural effusion, empyema, and chylous pleural effusion.
- 4.7. Micro- and macroscopic features of pericardial effusion.
- 4.8. Discrimination of ascitic fluid based on serum-ascites albumin gradient. Clinical implication of hemorrhagic, purulent and chylous ascites.
- 4.9. Indications and contraindications of lumbar puncture for collection of cerebrospinal fluid. Clinical implication of bloody cerebrospinal fluid. Biochemical features and cytology of normal and abnormal cerebrospinal fluid.
- 4.10. Definition of anemia and erythrocytosis. Definition and evaluation of erythrocytic parameters, classification of anemias.
- 4.11. Leukocyte disorders

Development of clinical skills and gaining experience

1. Obtaining history

Practice in taking history in inpatients and gaining experience in writing up medical history

2. Basic and oriented physical examination

2.1. The student must learn to perform basic systematic physical examination. This should be done in every patient independent of his/her medical history and basic symptoms. Physical examination should be performed in systematic basis. As a consequence, the student gains experience and carries out physical examination with consistency.

2.2. Physical examination is being performed in a specific sequence, as follows:

- General inspection of the patient
- Examination of head and neck

- Examination of upper extremities
- Examination of lung and thorax
- Examination of the abdomen
- Examination of lower extremities

2.3. A standard basic physical examination is being described below.

2.4. The presence of specific symptoms or specific information from the patient's medical history arise, a detailed and oriented examination of this particular system must be carried out (oriented physical examination).

2.5. Prerequisite for a proper physical examination is basic medical equipment.

3. General inspection and observation of the patient

3.1. Measurement of vital signs

3.2. General observation of the skin

3.3. Appearance of hands and fingers as well legs and toes (color of skin, color and shape of nails, bone deformities, tremor)

4. Examination of head and neck

4.1. Shape and size of the head, face characteristics, skin lesions, face edema

4.2. General eye examination

4.3. Eyelid examination

4.4. Conjunctiva and cornea examination. Examination of eye pupil: size, shape, symmetry, papillary eye reflex, recognition of Horner's syndrome

4.5. Examination of eye movement

4.6. Examination of nose and salivary glands

4.7. Examination of lips, mouth, gingiva, tongue, oropharynx

4.8. Neck examination: Assessment of neck rigidity, examination of thyroid, blood vessels, and palpation of cervical lymph nodes

5. Respiratory system

5.1. Inspection of the thorax

- Chest or spine deformities
- Breathing patterns (disorders of breathing rhythm, rate and breadth).

5.2. Palpation of the thorax

- Movement of the thorax
- Assessing fremitus
- Presence of abnormal pulse

5.3. Percussion of the thorax

- Get familiar with the technique of percussion
- Sounds produced with percussion (resonant, hyper-resonant and dull)

5.4. Auscultation of the thorax

- Technique of auscultation according to different regions
- Breathing sounds (vesicular breath sound and bronchial breath sound and its subcategories, including bronchial murmur, amphoric breath sound)
- Adventitious breath sounds (crackles also called rales, wheezes also called rhonchi, pleural rubs and stridor)

5.5. Examination of breasts

- Inspection and palpation of breasts

6. Cardiovascular system

6.1. Examination of vessels

- Examination of jugular vein (assessment of central venous pressure, hepato-jugular reflux)
- Examination of arterial pulse (carotid pulse, radial pulse- frequency, rhythm and rhythm disturbance and pulse types)
- Measuring the blood pressure (technique and pitfalls)

6.2. Inspection-palpation of the precordium

- Examination of cardiac impulse

6.3. Auscultation of the heart

- Auscultatory sites of the heart
- Normal heart sounds and variations of their intensity

- Extra heart sounds (3rd, 4th), clicks
- Cardiac murmurs (systolic, diastolic). Determination of auscultation site, quality and quantity of murmur and variations according to inspiration and expiration.
- Pericardial friction rub

7. Examination of the abdomen

7.1. Topography of the abdomen

7.2. Inspection of the abdomen

7.3. Percussion of the abdomen (normal percussion sound, percussion of the liver and spleen, percussion of the abdomen to assess the presence of peritoneal fluid)

7.4. Auscultation of the abdomen

- Normal peristalsis sounds and differences in pathological situations.
- Abdominal bruits

7.5. Palpation of the abdomen

- Types of palpation (superficial abdominal palpation, guarding)
- Deep abdominal palpation
- Palpation of the liver (size, consistency of liver edge, tenderness)
- Palpation of the gall bladder (Murphy's sign, Courvoisier's sign and gallbladder hydrops)
 - Palpation of the spleen (size, tenderness, consistency)

7.6. Examination of the rectum

- Inspection and digital rectal examination

8. Examination of the genitourinary system

8.1. Inspection and palpation of lumbar area (costovertebral angle tenderness, Giordano's sign)

- Palpation of kidneys
- Examination of urinary bladder (inspection and percussion)

8.2. Examination of the femoral area (femoral artery pulse, enlarged lymph nodes, hernias).

8.3 Examination of male genitalia (examination of penis, inspection and palpation of testicles and epididymis)

9. Examination of musculoskeletal system

9.1. Examination of the spine

- Spine inspection and recognition of spine disorders (kyphosis, scoliosis, lordosis, etc.)
- Palpation and percussion of the spine to discover localized pain and muscle spasm
- Range of motion testing (forward flexion, hyperextension, lateral flexion, and rotation)
- Examination of sacroiliac joints
- Lasegue's sign

9.2. Examination of peripheral joints (signs of inflammation or injury)

- Recognition of swollen joint (synovial thickening, joint swelling)
- Assess tenderness during joint palpation
- Range of motion testing

9.3. Examination of individual joints

- Examination of the temporomandibular joint
- Examination of the shoulder
- Examination of the elbow
- Examination of the hand
- Examination of the hip
- Examination of the knee
- Examination of the ankle joint

10. Nervous system

10.1. Examination of levels of consciousness and familiarity with levels of consciousness

10.2. Examination of cognitive function

- Memory assessment
- Speech assessment (dysarthria, aphasia and discrimination between aphasia types)
- Examination of cognitive functions (agnosia and apraxia)

10.3. Examination of cranial nerves

- Examination of olfactory nerve (anosmia, dysosmia)

- Examination of optic nerve (visual acuity, disorders in the perception of colors, visual field examination for the recognition of hemianopsias)
- Examination of cranial nerves III, IV and VI that control extra ocular movements
- Examination of trigeminal nerve (examination of sensory function: facial skin including the scalp, corneal reflex)
- Examination of facial nerve (inspection for symmetry of the face and movement of facial muscles)
- Examination of acoustic nerve (assessing for nystagmus, Romberg's test, finger-to-nose test)
- Examination of glossopharyngeal and vagus nerve (hoarseness, movement of soft palate and gag reflex, autonomic nervous system disorders)
- Examination of spinal accessory nerve (examination of trapezius and sternocleidomastoid muscle)
- Examination of hypoglossal nerve

10.4. Examination of sensory function (get familiar with the following terms: hypesthesia- anesthesia-dysesthesia, hypalgesia-analgesia, hyperalgesia-thermoanesthesia)

- Examination of superficial sensation and specifically assessment of perception of pain, temperature, light touch and pressure.
- Examination of deep sensation (position sense and awareness of joints at rest, movement awareness and vibration).

10.5. Sensory function disorders according to the site of injury

- Injury of peripheral nerves
- Injury of nerve root
- Injury of spinal cord: complete spinal cord injury, incomplete spinal cord injury (Brown Sequard syndrome)
 - Injury of posterior roots
 - Injury of the spinothalamic tract
 - Central cord injury/syndrome
 - Injury at the brainstem and optic thalamus
 - Injury at the sensory cortex and subcortical areas

10.6. Examination of motor function

- Examination of voluntary movements: gait and gait disturbances, recognition of characteristic types of gaits

- Examination of synergistic movements: heel-to-toe walking, Romberg's test
- Finger-to-nose test, heel to shin coordination test, pronation and supination of forearm

10.7. Involuntary abnormal movements

- Get familiar with different types of tremor
- Chorea, athetosis, muscle spasms

10.8. Muscle examination

- Assessment of muscle atrophy
- Assessment of muscle strength
- Assessment of muscle tone (hypertonia, hypotonia, dystonia)

10.9. Examination of reflexes

- Examination of superficial reflexes
- Gag and soft palate reflexes
- Plantar response

10.10. "Deep tendon" (muscle stretch; myotatic) reflexes and "pathologic" reflexes (Babinski's sign)

Assessment and grading of students

Students are being assessed during their clinical practice by their instructors in their ability to take and write the patient's history and also to coordinately perform clinical examination of the patient.

At the end of the semester students are being assessed by written exams

Recommended bibliography for reading:

- 1. Bates' Guide to Physical Examination and History Taking- by Lynn S. Bickley**
- 2. Textbook of Physical Diagnosis: History and Examination**
- 4. Medical bibliography from internet (PubMed and other sources)**