Veklenko G.V.

THE OBJECTIVE STRUCTURED CLINICAL EXAMINATION FOR CLINICAL SCILLS ASSESSMENT IN INTERNAL MEDICINE

Educational and methodical manual
for medicine faculty students

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The introduction of OSCE at the Internal Diseases Propaedeutics Department West Kazakhstan Medical University made it possible to obtain a real clinical competence of 3rd year students of the Faculty of General Medicine, to identify failures in training and, therefore, to improve it. The methodical manual provides recommendations for conducting the exam and drawing up evaluation criteria, an examiner's score sheet, and provides step-by-step instructions for students. The manual contains materials for conducting OSCE in three languages (Kazakh, Russian and English), which will allow it to be widely used in the educational process by both students and teachers.

The textbook was approved and recommended for publication by the Academic Council of the West Kazakhstan Marat Ospanov Medical University as additional educational literature.

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CONTENT

INTRODUCTION TO THE ENGLISH EDITION

The main problem of higher education in the 21st century is the insufficient practical training of graduates. This problem is acute in all economic spheres of activity, but is especially relevant and vital for medical education.

Bedside teaching has been and remains the most important element of medical education, but it has a significant drawback: the patient's rights to receive quality medical care may be violated. Secondly, as a rule, the teacher does not control this process sufficiently. As a result, there is no certainty that the student has mastered the correct technique, and not its similarity.

The OSCE (objective structured clinical examination) technique, which has been conducted at the Internal Diseases Propaedeutics Department West Kazakhstan Marat Ospanov Medical University more than 15 years, allows you to make the process of mastering practical skills structured and controlled for. This clinical discipline is the best suited for the methodology used, since the educational context of the discipline is initially structured into parts. The entire patient examination technique is studied sequentially by system (module) ("respiratory system", "cardiovascular system", "digestive system", "genitourinary system", etc.) Each system, in turn, is also studied sequentially: questioning, inspection, palpation, percussion and auscultation. At the end of each module, practical skills are assessed using the OSCE method; at the end of the course, an annual certification of the practical skills of 3rd year General Medicine students is carried out.

The OSCE procedure provides for the organization of so-called stations - classrooms where a specific skill is tested (questioning, examination, palpation, percussion, auscultation).

Each station has one skill task. The number of students assessed in one session does not exceed the number of stations. At each station there is a teacher equipped with a set of criteria (instructions for the examiner) for assessing the quality of the practical skill.

A practical skill is divided into simple steps and it is the teacher's responsibility to conclude which steps have been completed and which have not. Each student has his own individual answer sheet (check-list), which indicates his last and first name, as well as the group number. If necessary, it is possible to encode exam sheets.

At the signal (bell), students distributed among stations begin to complete the task. The time allotted for demonstrating the skill and answering is strictly regulated and is the same for all stations. The time depends on the completed tasks, which are comparable in the time spent on answering (from 5 to 10 minutes).

After the allotted time has elapsed, a signal (bell) is given, by which students move to the next "station" to complete the next task. Thus, each student tested must complete all stations.

The maximum score for each scill is 4.0 points (A - "excellent") by score-rating system evaluations. The scores received by the student at each station is added up and divided by the number of stations, thus the average score point is determined.

To analyze the results for each individual station, the "price" of the task is standardized in advance, indicating the maximum and minimum number of points. The student's score for each task depends on how complete his answer was.

In the manual presented in English, we tried to take into account all the features of the practical training of students who use English-language sources of information in the learning process.

SYMBOLS AND ABBREVIATIONS

AV arteriovenous malformations
BMI body mass index
BP blood pressure
Ps pulse
BR breathing rate
COPD chronic obstructive pulmonary disease
CC chief complaint
CVP central venous pressure
CVS cardiovascular system
CNS central nerves system
EJV external jugular vein
GIT gastrointestinal tract
HPI History of the present illness
ICS Intercostal space
IJV internal jugular vein
IVC inferior vena cava
JVP jugular venous pressure
LVHF left ventricular heart failure
LUQ left upper quadrant
NSAID non-steroidal anti- inflammatory drug
OS Mitral valve opening snap
PA pulmonary artery
PMH Past medical history
PMI point of maximum impulse
PND paroxysmal nocturnal dyspnea
SOB shortness of breath
SVC superior vena cava
STI Sexually transmitted infections
ROS Review of systems

Section 1. History and Physical Examination of Respiratory System

Section 1. History and Physical Examination of Respiratory System
Station №1. Patient interview
Assignment for the student: demonstrate your communication skills, the ability to establish contact with the patient, the ability to collect Personal information, to identify and detail the patient's complaints, to collect History of the present illness (HPI) /anamnesis morbi and Past medical history (PMH)/Life history/anamnesis vitae. Determine a history of the patient's life risk factors for the development of the respiratory system diseases.
Time: 5 minutes.

Section 1. History and Physical Examination of Respiratory System
Station №2. Systemic inspection (check-up/survey) of the patients with respiratory system diseases. Thorax Exam.
Assignment for the student: Describe general approach to check-up (survey) of the patients with respiratory system diseases (according to Scheme of patient's Systemic inspection). Conduct a survey of the chest, briefly explaining your actions. Briefly describe the possible changes and their causes.
Time: 5 minutes.

Section 1. History and Physical Examination of Respiratory System
Station №3. Palpation of the chest
Assignment for the student: Refine the general approach to the chest palpation. Determine the chest palpation purposes. Perform palpation of the chest and briefly explan the results of exam.
Time: 5 minutes.

Section 1. History and Physical Examination of Respiratory System
Station №4. Lungs percussion: comparative and topographic percussion.
Assignment for the student: Refine the general approach to the lung percussion. Give a brief description of the notes produced by percussion over the human body. Define the goals and perform comparative percussion of the lungs. Identify goals and perform topographic percussion of the lungs, calling the main topographic lines and anatomical landmarks. Evaluate the result in the normal and possible pathology.
Time: 5 minutes.

Section 1. History and Physical Examination of Respiratory System
Station №5. Lungs auscultation in norm and pathology.
Assignment for the student: Refine the general approach to the lung auscultation . Give a description of the type of breath sounds and there characteristics. Breath sounds and Adventitious sounds.
Time: 5 minutes.

Section 1. History and Physical Examination of Respiratory System
Instructions for the examiner
Station №1. Patient interview
Please rate the student's ability to interview the patient with respiratory system diseases.

<table>
<tr><td>№</td><td>criteria for job steps</td><td></td></tr>
<tr><td>1</td><td>Greeting</td><td>Has greeted, named himself, the purpose of conversation</td></tr>
<tr><td>2</td><td>Clarification of the Personal information</td><td>Has found out Personal information and age (number of full years) of the patient (Age, sex, marital status, occupation. and the reason for which the patient does not work (disability, etc.)
Clarifying the date of receipt, the order of admission to hospital (planned, emergency, self-reversal).</td></tr>
<tr><td>3</td><td>Clarifying complaints (beginning with the preferred types of questions)</td><td>1.General questions: What are you complaining about? What worries you?
Can you tell me what the problem is? What bothers you? "
2. Direct questions: Where does it hurt? "When did hemoptysis appear? How did you feel before the temperature rose?
The patient is given the opportunity to express all the unpleasant sensations.</td></tr>
<tr><td rowspan="2">4</td><td>Detailing the chief (CC)/ main complaints submitted to patients</td><td rowspan="2">Has defined the chief (CC) /main complaint (the CC, as a rule, coincides with the reason for seeking medical help, the diagnosis is based on the CC, the CC characterize the pathology of a certain organ system).
With regard to the main complaint, it should be clarified:
• Localization • Characteristics (quantitative, qualitative)
• Severity • Chronology(timing)/ Onset and duration
• Exacerbating and relieving factors (context, modifying factors,associated symptoms and signs)
The CC of patients with pathology of the respiratory system
• Cough (dry, wet, paroxysmal) • Chest pain
• Sputum (mucous, purulent, rusty) • Shortness of breath(SOB)/ dyspnea/ suffocation/asthma
• Hemoptysis • Wheeze • Fever</td></tr>
<tr><td>Are there any other CC?
List and details them.</td></tr>
<tr><td>5</td><td>Clarifying Secondary /additional/non-principal complaints</td><td>Complaints characterizing the general reaction of the body to the pathological process are called non-principal (additional)/
For example, weakness, malaise,ets. These complaints cannot t be the basis of a diagnosis.</td></tr>
<tr><td>6</td><td>History of the present illness (HPI) /anamnesis morbi</td><td>History of the present illness (HPI) /anamnesis morbi
• When did the illlness start?
• How did it start?
• How has the problem progressed over time?
• What kind of analysis has been taken and there results?
• What treatment has been taken and its effect?
Reason (s) of the present request for medical assistance</td></tr>
<tr><td>7</td><td>Past medical history (PMH)/Life history/anamnesis vitae</td><td>
<table>
<tr><td>1. Conditions in which the patient lived and developed
• Place of Birth
• Development in childhood and adolescence
• Education
• Military service</td><td>2. Heredity
• Atherosclerotic vascular lesions
• Kidney Diseases
• Stroke
• Alcoholism • Tuberculosis
• Mental disorders • Malignant tumors</td></tr>
<tr><td>3. Medical history (what? When?)
• Diseases
• Operations • A nesthesia
• Allergic anamnesis
• Treatment • Medical anamnesis</td><td>4. Social anamnesis
• Family status
• Gynecological anamnesis in women
• Professional anamnesis
• Conditions of life, hobbies</td></tr>
<tr><td>5. Risk factors
• Risk factors for external and internal environment, which increase the risk of developing the disease
• Their elimination reduces the risk of developing the disease</td><td>6. Harmful habits
• Smoking and associated clinical problems:
Diseases of the lungs (COPD, cancer)
Cardiovascular diseases Malignant tumors
Gastrointestinal tract Drug Interactions Pregnancy
• Signs of alcohol dependence
• Signs of drug dependence</td></tr>
</table>
</td></tr>
</table>

8	Review of systems(ROS)/ Documents presence or absence of common symptoms related to each major body system	

Check list for Systems Review (ROS)

GENERAL Fatigue/malaise Fever/rigors/night sweats Weight/appetite Skin: rashes/bruising Sleep disturbance CARDIOVASCULAR Chest pain/angina Shortness of breath (including on exercise) Orthopnoea PND Palpitations Ankle swelling RESPIRATORY Chest pain Shortness of breath/wheeze Cough/sputum/haemoptysis Exercise tolerance	GASTROINTESTINAL Appetite/weight loss Dysphagia Nausea/vomiting/haematemesis Indigestion/heart burn Jaundice Abdominal pain Bowels: change/constipation/diarrhoea/ description of stool/blood/mucus/flatus GENITO-URINARY Frequency/dysuria/nocturia /polyuria/oliguria Haematuria Incontinence/urgency Prostatic symptoms Impotence Menstruation (if appropriate): menarche (age at onset) duration of bleeding, periodicity menorrhagia (blood loss) dysmenorrhoea, dyspareunia menopause, post-menopausal bleeding	MUSCULOSKELETAL Pain/swelling/stiffness – muscles/joints/ back Restriction of movement /function Power Able to wash and dress without difficulty/Able to climb up and down stairs ENDOCRINE Menstrual abnormalities Hirsutism/alopecia Abnormal secondary sexual features Polyuria/polydipsia Amount of sweating Quality of hair SKIN Rash Pruritus Acne	CNS Headaches Fits/faints/loss of consciousness Dizziness Vision – acuity, diplopia Hearing Weakness Numbness/tingling Loss of memory /personality change Anxiety/depression

Section 1. History and Physical Examination of Respiratory System
Instructions for the examiner
Station №2. Systemic inspection (check-up/survey) of the patients with respiratory system diseases. Thorax Exam.
Please evaluate the student's ability to inspect a patient with respiratory system diseases (Check-up and The thorax exam).

№	criteria for job steps	
1	General approach to check-up	Good lighting, warm room, warm& clean hands of the doctor (Wash your hands!). - Introduce yourself to the patient if you have not already done so and check the identity of the patient. - Ask the patients permission to carry out the examination. - Give a brief explanation to the patient before you start. Further explanation/instructions can be given as you proceed. Patient position • Ideally the patient should be sitting at 45 degrees with the whole of the chest exposed. • Respiratory patients may be short of breath, and it may be easiest to examine them sitting at the edge of the bed instead of in the classic position of sitting back at 45 ˚. Choose a position comfortable to you both. • In female patients the bra will need to be removed for you to carry out the examination effectively. Do not expose the patient's chest until you are ready to examine. • Look at the patient from the end of the bed. • Examine from side to side.
2	General inspection/ check-up (survey): typical signs of respiratory system diseases. Systemic Signs of Pulmonary Disease/ Clues to Increased Work of Breathing.	General inspection: • Assess the consciousness (the continuous spectrum of quantitative disorders (oppression) of consciousness in connection with a hypoxia of a brain in respiratory failure in which torpor, sopor, hypoxemic coma are distinguished. Hallucinations (hypoxia, irritative disorders of intoxication) • The general condition of a patient is estimated as -satisfactory, -medium gravity or -grave (heavy) -extremely heavy -terminal • Position of patient - active -passive (hypoxemic coma) -forced • The forced lateral recumbent (edgewise) position (lateral decubitus) (in pneumonia, tuberculosis, exudative and dry pleurisy, pulmonary abscess or gangrene, bronchiectases) • forced sitting/ortopnoe (pneumothorax, an attack of bronchial asthma, emphysema). • Cyanosis in respiratory failure (central, diffuse, general, warm, respiratory cyanosis). • Herpetic eruption on and around the lips is sometimes seen in a patient with a respiratory infection. • Drumstick (clubbed, Hippocratic) fingers (COPD, chronic purulent conditions such as bronchiectasia, lung abscess and empyema , lung cancer). • «Nicotine» stained fingers occur in heavy smokers. • Significant swelling of the cervical veins due to increased intrathoracic pressure, a violation of the outflow of blood through the veins to the right atrium and, respectively, the growth of CVP. • Systemic Signs of Pulmonary Disease/ Clues to Increased Work of Breathing -Nasal flaring. -Intercostal/supraclavicular retractions. -Accessory muscle use. -Pursed-lipped breathing. -Disrupted speech. -Thoraco-abdominal dissociation.
3	Vital Signs	• Temperature • Blood Presure (BP) • Pulse (Ps) • Respiration (BR)

4 Thorax Exam:
the shape of the chest at quiet respiration.

Chest examinations include	The shape of the chest can be
• definition of form, • symmetry of the chest, • characteristic of breathing	• correct • incorrect (for diseases of the lungs, pleura, and also for rickets, trauma of the chest and spine, tuberculosis of bones).

The form is defined

- the state of the supra- and subclavian fossae,
- the coarse of the ribs, the width of the intercostal spaces,
- the anteroposterior and lateral diameter ,
- adherence of the shoulder blades to the thorax,
- the epigastric angle

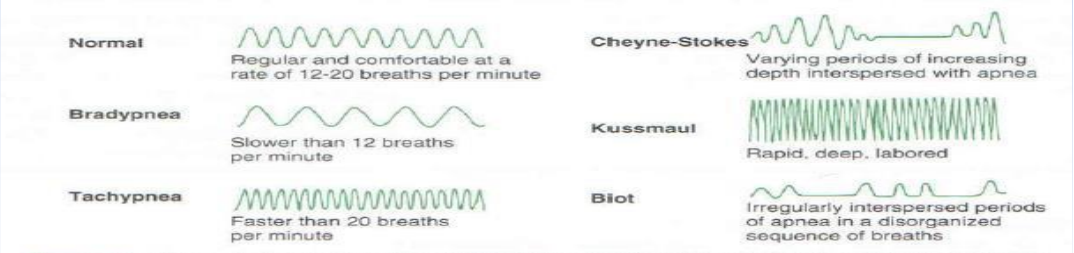
Characteristics of the correct forms of the chest

indicators	Normostenich (conical)	Astenich (flat)	Hypersthenic (shape of a cylinder)
Anteroposterior (sternovertebral) and lateral (transverse) diameter ratio	The anteroposterior diameter of the chest is smaller than the lateral one (as 2: 3)	both the anteroposterior and transverse diameters are smaller than normal (1: 2)	The anteroposterior diameter is about the same as the transverse one (as1: 1)
The supra- and subclavicular fossae	the supraclavicular fossae are slightly pronounced	distinctly pronounced	the supraclavicular fossae are absent (level with the chest).
The course of the ribs in the lateral sections of the chest	moderately inclined as viewed from the side;	Almost vertical	nearly horizontal
Intercostal spaces	moderate width	increased	narrow
Epigastric angle	the epigastric angle nears 90°	less than 90°	exceeds 90°
Chest and abdomen height	the chest is about the same height as the abdominal part of the trunk	the chest is longer than the abdominal part of the trunk	the thoracic part of the trunk is smaller than the abdominal one
General characteristics of the chest	a truncated cone	elongated, narrow	broad

The irregular shape of the chest (Pathological chest)

indicators	Emphysematous (barrel-like) chest	Paralytic	Pectus carinatum/ Rachitic (keeled or pigeon chest)	funnel-shaped (pectus excavatum)	Foveated (navicular) Chest scaphoid
Anteroposterior (sternovertebral) and lateral (transverse) diameter ratio	1: 1	1: 2	Markedly greater anteroposterior diameter (compared with the transverse diameter) due to the prominence of the sternum (which resembles the keel of a boat)	The depression in the lower part of the sternum. This is a developmental defect, usually a normal variant with no signifi cance to pathology.	The depression is found mostly in the upper and the middle parts of the anterior surface of the chest. This abnormality occur in syringomyelia, a rare disease of the spinal cord.
The supra- and subclavicular fossae	supraclavicular fossa bulges	asymmetry of the clavicles and dissimilar depression of the supraclavicular fossae			
The course of the ribs in the lateral sections of the chest	almost horizontal	almost vertical	The anterolateral surfaces of the chest are as if pressed on both sides and therefore the ribs meet at an acute angle at the sternal bone		
Intercostal spaces	enlarged	wide recessed	the costal cartilages thicken like beads at points of their transition to bones (rachitic beads).		
Epigastric angle	obtuse (exceeds 90°)	Less than 60 °			
General characteristics of the chest	The lungs seem to be as if at the inspiration phase	depleted	pigeon chest	cobbler chest	scaphoid

5	Participation of accessory respiratory muscles in the act of breathing. Scars.	• The involvement of the accessory respiratory muscles in the act of breathing (neck muscles, pectoral muscles, the widest back muscle during an attack of asthma). • Scars: from previous operat'n or chest drains or cautery marks or radiotherapy markings.
6	Visible abnormalities of the thoracic cage. Respiratory expansion and symmetry: localised bulge or retraction.	• Causes and types of spinal deformities: trauma, tuberculosis of the spine, ankylosing spondylitis, etc. ✓ Scoliosis (curvature in the lateral direction), ✓ kyphosis (backward curvature ✓ lordosis (forward curvature) ✓ kyphoscoliosis – combination of scoliosis and kyphosis. Kyphosis results in anterior concavity of thoracic spine and thereby leads to shortening of the chest. Kyphosis is frequently seen in erdely people with osteoporosis, chronic obstructive airways disease. • The cause of reduced 1/2 chest: pleural adhesions, pulmonary fibrosis, lung carnification,pulmonary infarction,lung abscess, tuberculosis, pneumonectomy or lobectomy, obstructive atelectasis. • The reasons for increase of 1/2 chest: fluid in the pleural cavity, a pneumothorax (the flattening and bulging of the intercostal spaces, asymmetry of the clavicles and the shoulder blades, lag 1/2 of the chest during breathing). • Movement Observe chest wall movement during breathing at rest. Also, ask the patient to take a couple of deep breaths in and out, and watch closely. • Look for asymmetry. ↓ Movement indicates lung disease on that side. • ↓ Movement globally is seen in COPD, along with a "pump handle" movement of the ribs (hinged posteriorly only), compared with the normal "bucket handle" (hinged at the front and back). • • Harrison's sulcus is a depression of the lower ribs just above the costal margins and indicates severe childhood asthma.
7	Breathing pattern: physiological types of breathing,BR, depth and rhythm of breathing	• Physiological types of breathing: thoracic (mostly in women), abdominal (more common in men), mixed. • The breathing rate should be counted when the patient is not conscious of it can be done during the earlier part of the inspection (Vital Signs). • The normal rate is between 14-16 and 18-20 breaths a minute.In opiate or barbiturate poisoning this may fall to below eight breaths a minute (bradypnoe) whereas in acute bronchopneumonia the rate may exceed 40 a minute (tahypnoe). • The relationship between inspiration and expiration should be determined. Normally, the inspiration is active and longer whereas expiration is shorter and accomplished by the passive recoil of the lungs. The deep inspiration and shorter expiration which follows immediately gives the respiration its normal rhythm. • Prolonged expiratory phase = marker of outflow limitation, a sign of smoking-related lung disease if coupled with pursed-lip breathing. In small airways obstruction the expiration becomes active and prolonged, due to a greater pressure gradient from small to major airways. • Shallow breathing with short inspiration and expiration occurs either when breathing is restricted (e.g. obesity, pulmonary fibrosis) or is painful as in chest wall disease and pleurisy, or in anxiety states. • Fast, deep breaths are seen in anxiety states. • Deep, sighing breaths are Kussmaul's respiration = systemic acidosis. Typically occurs in metabolic acidosis (e.g. diabetic ketoac-idosis, renal failure, methyl alcohol poisoning, etc.). • Cheyne–Stokes breathing has an alternating pattern of deep, regular breathing with very slow, shallow breaths. It is due to failure of the normal respiratory regulation in response to blood CO 2 levels. Occurs in advanced cardiac and respiratory failure, narcotic drug poisoning and in cerebrovascular disease. • Biota breathing (deep and rhythmic respiratory movements equal in amplitude + breathing pauses). It is observed in inflammatory lesions of the brain and pia mater.



Pattern of abnormal breathing

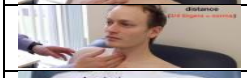
Seidel HM, Ball JW, Dains JE,et al. Mosbys Guide to Physical Examination 5th ed. St.Louis: Mosby: 2003.

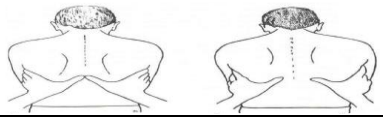
8 Explanation of the Thorax exam results

Explanation of the Thorax exam results (Strutynsky A.V. et al., 2018)

Symmetry of chest wall movement during deep breathing	Symmetry of chest wall movement during breathing at rest	Changes in the intercostal spaces	Syndromes /diseases
Chest wall movements are symmetrical	The thorax is symmetrical	No changes	1. The norm
		Intercostal spaces widened, (barrel-like) chest	1. Bronchoobstructive Syndrome 2. Hyperinflated lung syndrome (emphysema)
Chest wall movements are asymmetrical: 1/2 chest lags behind when breathing	The thorax is symmetrical	No change more often	1. Massive lung consolidation 3. Large cavity in the lung
	Increase of 1/2 chest	Smoothing or bulging of the intercostal spaces (Litten's symptom)	1. Hydrothorax 2. Pneumothorax
	Reduced 1/2 chest	Reducing the intercostal spaces or the absence of their retraction during breathing	1. Obturative atelectasis 2. Pleural thickening (Fibrothorax) 3. Reduction of lung tissue (lung resection, cirrhosis of the lung)

Section 1. History and Physical Examination of Respiratory System.
Instructions for the examiner.
Station №3. Palpation of the chest.
Please evaluate the student's ability to perform palpation of the chest and to explan the results of exam.

<table>
<tr><td>№</td><td>criteria for job steps</td><td></td></tr>
<tr><td>1</td><td>General approach to the chest palpation</td><td>• Warm room, warm hands of the doctor
• Wash hands
• Introduce yourself
• Confirm patient details – name / DOB
• Explain the examination
• Gain consent
Patient position
• Convenient position of the doctor and patient. Ideally the patient should be sitting at 45°.
• Expose the patient’s chest. In female patients the bra will need to be removed for you to carry out the examination effectively. Do not expose the patient’s chest until you are ready to examine.
• Ask patient if they have pain anywhere before you begin!</td></tr>
<tr><td>2</td><td>The chest palpation purposes</td><td>The chest palpation purposes are :
• Position of mediastinum
• Intercostal space tenderness
• Resistance (elasticity) of the chest
• Chest expansion
• Vocal fremitus or fremitus pectoralis (vocalis)</td></tr>
<tr><td>3</td><td>Position of mediastinum
a. Trachea
b. Apex
c.Tracheal tug</td><td>a. Trachea b. Apex beat c. Tracheal tug
• Palpate tracheal position: it should be midline. Trachea& Tracheal tug: normally central, slight Rt displacement could be N. Check for gross displacement.
• Before doing this warn the patient that this might be slightly uncomfortable and apply a gentle technique.
• Palpate the trachea by placing a finger either side of the trachea and judging whether the distance between it and the sternomastoid tendons are equal on both sides.
- Ensure patient’s neck musculature is relaxed – chin slightly downwards
- Dip index finger into the thorax beside the trachea.
- Then gently apply side pressure to locate the trachea
- Compare this space to the other side of trachea using the same process
- A difference in the amount of space between the sides suggests deviation
• The trachea deviates away from a tension pneumothorax and large pleural effusions (air or effusion outside one lung pushing it to the other side).
• The trachea deviates towards lobar collapse and pneumonectomy.
• Tracheal tug means the N distance between sternal notch & cricoid cartilage is < 3-4 finger breadths in full expiration & occurs in chest overexpansion as COPD.
• Apex beat or PMI (point of maximum impulse)& mediastinum: Check for displacement normal position is 5th intercostal space – mid-clavicular line.
<table><tr><td>  </td><td>Assess tracheal position</td></tr><tr><td>  </td><td>Assess crico-sternal distance</td></tr><tr><td>  </td><td>Palpate apex beat</td></tr><tr><td colspan="2">Figure from . Lewis Potter/ RESPIRATORY EXAMINATION – OSCE GUIDE.</td></tr></table></td></tr>
<tr><td>4</td><td>The chest local pain determination (Intercostal space tenderness)</td><td>• The intercostal space tenderness determination is carried out in the sitting or standing position of the patient; more often palpation is carried out with both hands simultaneously, applying both hands to symmetrical areas of the chest. sequentially palpate the supraclavicular areas, clavicles, subclavian areas, sternum, ribs and intercostal spaces, then the lateral sections of the thorax and further - over, between and subscapular areas.
• The causes of chest local pain are trauma of chest, neuralgia, myositis.
In rib fracture, pain is localized over a limited site, namely at the point of the fracture. Displacement (careful) of bone fractures will be attended in this case by a specific sound (crunch). Inflammation of the intercostal nerves and muscles also causes pain, but it can be felt during palpation over the</td></tr>
</table>

<table>
<tr><td></td><td></td><td>entire intercostal space. Such pain is called superficial. It is intensified during deep breathing, when the patient bends to the affected side, or lies on this side.</td></tr>
<tr><td>5</td><td>Resistance (elasticity) of the chest</td><td>• Resistance (elasticity) of the chest is determined by exerting pressure of the examining hands from the front to the sides of the chest or on the back and the sternum, and also by palpation of the intercostal spaces.
• The chest of a healthy person is elastic. The chest of a healthy person may be compressed on 2-3 cm under the moderate pressure in both the anteroposterior and lateral directions.
• In the presence of pleurisy with effusion, or pleural tumour, the intercostal space over the affected site becomes rigid.
• Rigidity of the chest increases in general in the aged due to ossification of the costal cartilages, development of the lung emphysema, and also with filling of both pleural cavities with fluid.
• Increased resistance of the chest can be felt during examining the chest by compression in both the anteroposterior and lateral directions.</td></tr>
<tr><td>6</td><td>Chest / respiratory expansion</td><td>Test for respiratory expansion
• Place hands on the lower posterior chest wall with thumbs at about the level of the 10th rib and parallel to the 10th rib.
• As you grasps the lower chest wall, you should slide your thumbs medially so that they raise a vertical skin fold medial to your thumbs and lateral to the patient’s spine.
• Ask the patient to take a deep breath. As the patient breathes deeply, your hands and thumbs should move laterally and equally about 5–12 cm as the chest expands.
• The skin fold you created should also decrease in size as the chest wall expands. If the student starts too close to the midline over the spine, there is usually not enough loose skin available to create a skin fold.
 
Fig. Placement of the hands for testing chest expansion. Anchor with the fingers and leave the thumbs free-floating.</td></tr>
<tr><td>7</td><td>Tactile vocal fremitus / fremitus pectoralis (vocalis)</td><td>Tactile vocal fremitus
This is the vibration felt on the chest as the patient speaks. Each part of the chest is tested, as for percussion.
• Test the vocal fremitus by placing palms or more sensitive ulnar border of your hand on the chest while the patient repeats «ninety nine» or “1, 1, 1” in a deep clear voice.
• The corresponding areas on the chest must be tested simultaneously by both palms in symmetrical areas.
• This should be performed in a systematic fashion, comparing each side and covering all areas of the front and back of the thorax (including the axilla).
• You should feel the vibration against your hand.
• Causes of physiological voice fremitus increase: over upper lobes of the lungs compared to the lower, in men with a low voice, at asthenics with a thin intercostal spaces.
• Causes of physiological voice fremitus weakening: increase of subcutaneous tissue in women and children with high tone of voice, over the lower lung lobes than the upper.
• ↑Vibration in consolidation and cavity in the lung
• ↓ In pneumothorax, collapse, COPD and pleural effusion
• It is useful in distinguishing consolidation from pleural effusion, both of which produce a dull note on percussion.</td></tr>
<tr><td>8</td><td>Explanation of the Tactil vocal fremitus exam results</td><td>Explanation of the Tactil vocal fremitus exam results (Strutynsky A.V. et al.)
<table>
<tr><td>Tactil vocal fremitus</td><td>Syndromes</td></tr>
<tr><td>Not changed</td><td>1.Norm
2. Bronchial obstruction</td></tr>
<tr><td>Decreased vocal fremitus
occurs if something gets between the lung and chest wall</td><td>1. Hydrotorax
2.Pneumothorax
3. Obturative atelectasis
4. Pleural thickening (Fibrothorax)</td></tr>
<tr><td>Increased vocal fremitus:</td><td>1. Lung consolidatrion
2.Cavity in the lung
3. Compression atelectasis (or "collapsed lung")</td></tr>
<tr><td>Symmetric two-sided decreased vocal fremitus</td><td>Hyperinflated lung syndrome (emphysema)</td></tr>
</table></td></tr>
</table>

Section 1. History and Physical Examination of Respiratory System
Instructions for the examiner.
Station №4. Lungs percussion: comparative and topographic percussion.
Please evaluate the student's ability to perform comparative and topographic lungs percussion and to explain the results of exam.

№	criteria for job steps	
1	Rules of Lungs percussion	Rules of Lungs percussion 1. The patient should be in a comfortable posture and relaxed. The best position is standing or sitting. Patients with grave diseases should be percussed in the lying position. 2. When the patient is percussed from his back, he should be sitting on a chair, his face turned to the chair back. The head should be slightly bent forward; his arms should rest against his lap. In this position muscle relaxation is the greatest and percussion thus becomes more easy. 3. Ideally, the student should ask the patient to grab their opposite shoulders with their hands so as to move the scapulae laterally and increase the examinable area of the lung fields. 4. The room should be warm and protected from external noise. 5. The physician should be in a comfortable position as well. The physician's hands should be warm. 6. Must be done on skin, not over a gown or an article of clothing/ 7. The aim is to tap the chest by the standard method and listen to and feel for the resultant sound. For a right-handed provider: • Place the left hand on the chest wall, fingers separated and lying between the ribs. A pleximeter or the middle finger of the left hand, which is normally used in the finger-to-finger percussion, should be pressed firmly to the examined surface. • Using the middle finger of the right hand, strike the middle phalanx of the middle finger of the left hand (Fig.). • The striking finger should be moved away again quickly, as keeping it pressed on the left hand may muffle the noise. • The percussion sound should be produced by the tapping movement of the hand alone. The sound should be short and distinct. Tapping should be uniform, the force of percussion strokes depending on the object being examined. • The right middle finger should be kept in the flexed position, thes triking movement coming from the wrist (much like playing the piano). 6. Comparative percussion should be carried out on exactly symmetrical parts of the body. 7. In topographic percussion, the finger-pleximeter should be placed parallel to the anticipated border of the organ. Organs giving resonant note should be examined first: the ear will better detect changes in sound intensity. The border is marked by the edge of the pleximeter directed toward the zone of the more resonant sounds.
2	Identification of the chest and topographic lines	1. Locate and identify the surface markings of the trachea and major bronchi tion of trachea bifurcation into right and left mainstem bronchi: ✓ Anteriorly: at sternal angle=angle of Louis ✓ Posteriorly: at spinous process of T 4 Trachea should be in the midline or just slightly to the right of midline, and it runs from the base of the neck inferiorly and then behind the manubrium of the sternum. 2. Locate and identify the suprasternal notch. Above manubrium of the sternum, and between the two sternal heads of the sternocleidomastoid 3. Locate and identify the sternal angle of Louis. The boney ridge joining the manubrium to the body of the sternum The second costal cartilages are adjacent to the sternal angle. 4. Locate and identify the xiphoid process. The boney tip from the bottom of the body of the sternum in the midline 5. Counting ribs. Anteriorly - The second costal cartilage is adjacent to the sternal angle. An intercostal space is named by the rib above it. Posteriorly, the lowest rib is the twelfth rib. The inferior angle of the scapula is located horizontally at the seventh rib or seventh intercostal space. 6. Locate and identify the spinous process of C7 and T1. These are the 2 most prominent spinous processes on the neck if the patient flexes the neck. 7. Locate and identify the vertebral line. A vertical line that runs over the middle of the spinous processes posteriorly 8. Locate and identify the inferior angle of the scapula. Lowest part of the scapula, normally located horizontally at the 7th rib or 7th intercostal space 9. Locate and identify the scapular line.

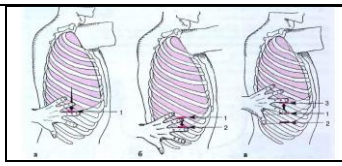
<table>
<tr><td></td><td></td><td>A vertical line that runs through the inferior angle of the scapula
10. Locate and identify the anterior axillary line.
A vertical line running inferiorly from the anterior axillary muscle fold
11. Locate and identify the posterior axillary line.
A vertical line running inferiorly from the posterior axillary muscle fold
12. Locate and identify the midaxillary line.
A vertical line that runs inferiorly from the dome of the axilla
13. Locate and identify the midsternal line.
A vertical line that runs through the middle of the sternum and xiphoid process
14. Locate and identify the midclavicular line.
A vertical line running through the midpoint of the clavicle and inferiorly
(H:\Ipm_1\Thorax_Exam_details.doc - 1 - Introduction to the Practice of Medicine 1 Revised: 8/7/03)</td></tr>
<tr><td>3</td><td>State five percussion notes produced by percussion over the human body and their characteristics</td><td>The five percussion notes and their characteristics
<table>
<tr><td>Percussion Note</td><td>Intensity</td><td>Pitch</td><td>Duration</td><td>Example of Location</td></tr>
<tr><td>Flatness:</td><td>Soft</td><td>High</td><td>Short</td><td>Thigh</td></tr>
<tr><td>Dullness:</td><td>Medium</td><td>Medium</td><td>Medium</td><td>Liver</td></tr>
<tr><td>Resonance:</td><td>Loud</td><td>Low</td><td>Long</td><td>Normal lung</td></tr>
<tr><td>Hyperresonance:</td><td>Very loud</td><td>Lower</td><td>Longer</td><td>None normally</td></tr>
<tr><td>Tympany:</td><td>Loud</td><td>High</td><td></td><td>Gastric air bubble or puffed-out cheek</td></tr>
</table></td></tr>
<tr><td>4</td><td>Purpose of comparative percussion</td><td>Purpose of comparative percussion:
• to compare symmetrical space by space and rib by rib in both sides
• to determine if the tissues 5-7 cm deep to/underlying the percussed site are
✓ air filled (normal lung),
✓ fluid filled (e.g., pleural effusion),
✓ or solid (e.g., tumor/mass).</td></tr>
<tr><td>5</td><td>Technique of comparative percussion</td><td>Always start at the top of the lungs and compare right side to left at a given level.
Percuss the following areas, comparing side to side:
• Supraclavicular (lung apices)
• Infraclavicular
• Chest wall (3-4 locations bilaterally)
• Axilla
• The back of the chest : Supra-scapular, scapular and infrascapular areas
Percussion of the anterior chest
The patient stands or sits, arms lowered along the torso, muscles tense, breathing smooth and shallow. The doctor performs the percussion, usually standing to the right of the patient. Finger-plessimeter is parallel to the ribs, but it is tightly pressed against the patient's body.
To percuss the front of the chest, you should start by percussing over the clavicle on one side, then on the other side, and then percuss on each ribspace and compare the note elicited over the corresponding note on the other side.
Then put the direct percussion blows to the collarbone, using it as plessimeter.
Further percuss in the first, second and third right and left intercostal spaces at the level of the midclavicular line.
Below level III intercostal space on the left cardiac dullness, so further research is carried out in the pits of Maranham.
For percussion axillary region finger-plessimeter put vertically in the upper part of the right, and then left arm. The doctor is beside the patient, opposite the axillary region. Then comparative percussion is carried out by comparing the percussion blows in the third intercostal space of the axillary region on the right and left, and then the percussion continue in the fourth intercostal space of the axillary region on the right and left. The doctor is in front of the patient.
When performing comparative percussion on the posterior surface of the chest at the beginning percuss suprascapular region, the finger-plessimeter set slightly above the spine of the scapula and parallel to it, percussion is applied consistently blows right and left with the patient standing with his hands at his sides, muscles tense.
Then percuss "alarm" zones and interscapular region. Finger-plessimeter is parallel to the spine at the edge of the blades, sequentially from right to left. Hands patient is asked to cross on his chest, putting hands on shoulders, with the blades of the supplies are provided, expanding the interscapular space.
Further percuss subscapular area. Finger-plessimeter is placed horizontally below the angle of the scapula, alternately right and left. The arms of the patient are lowered along the body, the muscles are relaxed.</td></tr>
<tr><td>6</td><td>The clinical significance of</td><td>Types of percussion note
• Normal lung sounds resonant (clear pulmonary sound)</td></tr>
</table>

<table>
<tr><td></td><td>comparative lungs percussion</td><td>
✓ is heard in a healthy person over the lungs with unchanged pulmonary tissue.
✓ The standard is sound, as determined by percussion in the axillary and subscapular areas in a healthy person.
• Dullness – this suggests increased tissue density – consolidation / fluid / tumour / collapse/ pleural thickening. Clear pulmonary sounds become shorter and higher (i.e. duller) in the mentioned pathological conditions.
• Stony dullness – the unique extreme dullness heard over a pleural effusion
• Hyperresonant = areas of ↓ density (emphysematous bullae or pneumothorax).
COPD will create a globally hyperresonant chest (Bandbox Sound).
• Tympanic sound resembles the sound of a drum (hence its name: Gk tympanon drum). Tympany differs from a non-tympanic sound by higher regularity of vibrations and therefore it approaches a musical tone.
A tympanic sound appears when the tension in the wall of an air-containing organ decreases. Tympany is heard over large caverns and in open pneumothorax (the sound is resonant).
</td></tr>
<tr><td>7</td><td>Technique of topographic lung percussion:
The lower border of the lungs;
The upper borders (apices) of the lungs;
The active respiratory mobility</td><td>
1. Topographic lungs percussion determines the position of the upper, lower border of the lung, as well as the active respiratory mobility of lower pulmonary border.
2. Percussion is carried out exactly along the topographic lines.
3. The force of the percussion strokes is quiet (3-4 cm deep into the tissues).
4. Percussion is carried out along the intercostal space in the direction from resonance(clear pulmonary sound) to dull sound.
5. The boundaries of the lung are marked from the side of a resonance sound(clear pulmonary sound).

The lower border of the lungs. The normal limits of pulmonary resonance correspond accurately to the anatomic boundaries of the lung. With light percussion the inferior limits of the lung are found at the level of the sixth rib in the mediclavicular line, the eighth rib in the midaxillary line and the tenth rib in the scapular line.
The position of the lower border of the lungs can vary in various pathological conditions that develop in the lungs, the pleura, the diaphragm, and the abdominal viscera. The border can both rise and lower from the normal level. This displacement can be uni- or bilateral.

<table>
<tr><td colspan="3">The lower border of the lungs (N)</td></tr>
<tr><td>Vertical lines on the chest</td><td>Right lung</td><td>Left lung</td></tr>
<tr><td>The parasternal line</td><td>IV ICS</td><td>-</td></tr>
<tr><td>the midclavicular line</td><td>VIth rib</td><td>-</td></tr>
<tr><td>the anterior axillary line</td><td>VIIth rib</td><td>VIIth rib</td></tr>
<tr><td>the midaxillary line</td><td>VIIIth rib</td><td>VIII rib</td></tr>
<tr><td>the posterior axillary line</td><td>IXth rib</td><td>IX Rib</td></tr>
<tr><td>the scapular line</td><td>Xth rib</td><td>X edge</td></tr>
<tr><td>the paravertebral line</td><td colspan="2">spinous process of the 11th thoracic vertebra</td></tr>
<tr><td colspan="3">In hypersthenics, the lower edge can be one rib higher, and in asthenics, the rib is below the norm</td></tr>
</table>

The position of the upper borders (apices) of the lungs is determined both anteriorly and posteriorly. In order to locate the apex of the lung, the pleximeter finger is placed parallel to the clavicle and percussion is effected from the middle upwards and slightly medially along the edge of m. scalenus med. to dullness.
The upper level of the apices in healthy persons is 3-4 cm above the clavicles.
The upper posterior border of the lungs is always determined by their position with respect to the spinous process of the 7th cervical vertebra. The pleximeter finger is placed over the supraspinous fossa parallel to the scapular spine and stroked from the middle. The pleximeter finger is moved gradually upward to the point located 3—4 cm laterally to the spinous process of the 7th cervical vertebra, at its level, and percussion is then continued until dullness.
Normal height of the lung apices (posterior) is about at the level of the spinous process of the 7th cervical vertebra.
Active respiratory mobility. After determining the lower border of the lungs at rest, active respiratory mobility of pulmonary borders should be determined by percussion during forced inspiration and expiration.
Measurements are done by three lines on the right side (midclavicular, axillary, and scapular lines) and two lines on the left side (midaxillary and scapular lines). The normal mobility of the lower border of the lungs is described by the figures given in Table 3. Mobility of the lower border of the left lung by the midclavicular line cannot be determined because of the interference of the heart.
</td></tr>
</table>

<table>
<tr><td></td><td></td><td>
<table>
<tr><td>  </td><td>Fig.Measuring the respiratory mobility of the right lung at posterior axillary line</td></tr>
</table>
The respiratory mobility of the lungs is determined as follows. The lower border of the lungs in normal respiration is first determined and marked by a dermograph. Further the patient is asked to make a forced inspiration and to keep breath at the height. The pleximeter finger should at this moment be held at the lower border of the lung (determined earlier). Percussion is now continued by moving the pleximeter downwards to complete dullness, where the second mark should be made by a dermograph at the upper edge of the pleximeter finger. Next the patient is then asked to maximum air from the lungs and to keep breath again. The percussion is now continued in the downward direction from starting point until the clear vesicular resonance disappears. The third dermographic mark should be made at the point where relative dullness is heard. The distance between the extreme marks is measured). It corresponds to the maximum respiratory mobility.
Normally the difference in space between these two extremes measures 3 to 4 cm. This space represents the complemental pleural space, and by this means the degree of respiratory mobility is attained. This respiratory mobility is diminished or absent in diseases of the lung such as emphysema, pleural diaphragmatic adhesions and conditions that interfere with movement of the diaphragm.
</td></tr>
<tr><td>8</td><td>The clinical significance of topographic lungs percussion</td><td>
<table>
<tr><th colspan="2">Lungs topographic percussion abnormalities (lower lung borders)</th></tr>
<tr><td>Elevation</td><td>Depression</td></tr>
<tr><td>Shrinking of the lung</td><td>Emphysema</td></tr>
<tr><td>Thickening of pleura</td><td>Asthma</td></tr>
<tr><td>Exudative pleuritis and hydrothorax</td><td>Chronic pulmonary congestion</td></tr>
<tr><td>High diaphragm</td><td></td></tr>
<tr><td>Flatulence(meteorism)</td><td></td></tr>
</table>
</td></tr>
</table>

Section 1. History and Physical Examination of Respiratory System
Instructions for the examiner.
Station №5. Lungs auscultation in norm and pathology.
Please rate the student's ability to perform auscultation of the lungs and to explain the results of exam

№	criteria for job steps	
1	General approach to the Lungs auscultation	• The room should be quiet and warm. • Explain what you're doing (" why) before doing it . • Position the patient: ask the patient to lean forward or sit upright in order to examine posteriorly. Asking the patient to fold arms or place hands on opposing shoulders also helps to get maximal exposure to the lung fields. • If the patient cannot sit up (e.g. in cases of neurologic disease, post-operative states, etc.), auscultation can be performed while the patient is lying on their side. Get help if the patient is unable to move on their own. In cases where even this cannot be accomplished, a minimal examination can be performed by listening laterally/posteriorly as the patient remains supine. • Area to be examined must be reasonably exposed - yet patient kept as covered as possible. Expose the chest only to the extent needed. For lung exam, you can listen to the anterior fields by exposing only the top part of the breasts.
2	Technique of the Lungs auscultation	• Listen over the same areas percussed, comparing left to right. Auscultate at five levels posteriorly and anteriorly, comparing side by side. Listen to both inspiration and expiration. • While the patient relaxed and breathes normally with mouth open, auscultate the apices and middle and lower lung fields posteriorly, laterally and anteriorly. • Alternate and compare both sides at each site. • Listen to at least one complete respiratory cycle at each site. • First listen with quiet respiration. If breath sounds are inaudible, then have him take deep breathing. This forces the patient to move greater volumes of air with each breath, increasing the duration, intensity, and thus detectability of any abnormal breath sounds that might be present. • First describe the breath sounds and then the adventitious sounds. • The diaphragm should be used, except where better surface contact is needed in very thin or hairy patients. • Sometimes it's helpful to have the patient cough a few times prior to beginning auscultation. This clears airway secretions and opens small atelectatic (i.e. collapsed) areas at the lung bases. • Listen for the breath sounds and any added sounds, and note at which point in the respiratory cycle they occur. • Requesting that the patient exhale forcibly will occasionally help to accentuate abnormal breath sounds (in particular, wheezing) that might not be heard when they are breathing at normal flow rates. • Note the presence and location of abnormal (adventitious) extra breath sounds, such as crackles, wheezing, rhonchi, stridor, or pleural friction rub. • Note the following characteristics of any abnormal breath sounds (if present): loudness, quality, duration, and whether they occur during inspiration or expiration (i.e., timing in the respiratory cycle). Many abnormal breath sounds are best heard after asking the patient to cough.
3	Purpose of lung auscultation	Auscultation of the lungs involves 1.listening to the sounds generated by breathing, 2.listening for any adventitious (added) sounds, 3.if abnormalities are suspected, listening the sounds of the patient´s spoken or whispered voice as they are transmitted through the chest wall.
4	Breath sounds: Type of breath sounds and there characteristics. Distribution of breath sounds in normal	Normal breath sounds Normal Breath sounds • Vesicular Breath Sounds: Produced by air flow in the large airways and larynx and altered by passage through the small airways before reaching the stethoscope. Often described as rustling. This is heard especially well in inspiration and early expiration. Classical sites for hearing vesicular sounds: ✓ Infra-axillary, ✓ Infra-mammary, ✓ Infra-scapular. • Bronchial Breath Sounds: Produced by passage of air from the larynx through the tracheo-bronchial tree, to the stethoscope unchanged, has a hollow, blowing quality, heard equally in inspiration and expiration, often with a brief pause between.

Classical site for hearing bronchial sound- Over the larynx and trachea.

- Broncho-vesicular Breath Sounds: often in the 1st and 2nd ICS anteriorly and between the scapulae because normal bronchial breathing comes from the bifurcation of the trachea against the background of normal vesicular breathing.

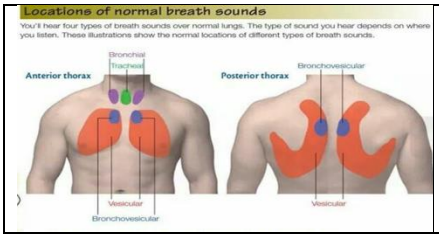


Fig.Distribution of breath sounds. Left,anteriior. Right,Posterior.

Normal lung sounds

Breath sound	Quality	Inspiration-expiration (I:E) ratio	Location	
Tracheal	Harsh, high-pitched	I = E	Above supraclavicular notch, over the trachea	
Bronchial	Loud, high-pitched	I < E	Just above clavicles on each side of the sternum, over the manubrium	
Bronchovesicular	Medium in loudness and pitch	I = E	Next to sternum, between scapulae	
Vesicular	Soft, low-pitched	I > E	Remainder of lungs	

5 Variations of vesicular breath sounds. Variations of Bronchial breath sounds.

Changes in vesicular breathing

Changes in vesicular breathing (Strutynsky A.V. et al.)

The nature of the changes	Mechanism	Syndrom or disease
Physiological weakening of vesicular respiration	thicker chest wall due to excessively developed muscles or subcutaneous fat	
Patological weakening	1. "Obstacle" syndrome	- Hydrothorax - Pneumothorax - Pleural thickening (fibrotorax)
	2. Reduced elasticity of the alveoli	- emphysema - early stages of inflammation of the pulmonary parenchyma - interstitial pulmonary edema
	3. Obturation of large bronchi	- Obturative atelectasis
Physiological intensification of vesicular respiration	1.Hyperthermia 2.Hyperthyroidism 3. Physical activity	- unchanged pulmonary tissue in hyperventilation conditions
	• underdeveloped muscles or subcutaneous fat. • Intensified vesicular breathing is characteristic of children with a thin chest wall, good elasticity of the alveoli and the interalveolar septa.	This respiration is called "puerile (childish/silly) respiration"
Harsh vesicular respiration (Expiration becomes louder and longer)	obstruction to the air passage through small bronchi or their contracted lumen (inflammatory edema of the mucosa, bronchospasm).	bronchitis
Cogwheel or jerky (Saccardic) vesicular breathing	Uneven narrowing of the smallest bronchi	- tuberculous bronchiolitis - hysteical, -nervous or crying patient.

Bronchial breathing is heard above the lungs only in pathological conditions

- ✓ over consolidation,
- ✓ lung abscess,
- ✓ with dense fibrosis,
- ✓ at the upper border of a pleural effusion.

6 Definition of bronchophonia and Egophony

Definition of bronchophonia

• Assess for whispering pectoriloquy (bronchophony). While auscultating with the stethoscope, ask the patient to whisper "99" or "1-2-1." In the consolidated lung, the sound will actually be heard better and more clearly with the stethoscope.

Normally, the patients sound is gentle,indistinct and hard to understand on stethoscope during auscultation. But if there is positive bronchophony, there is loudness of voice over the affected lobe. Causes of

bronchophony- Consolidation (eg.pneumonia), fibrosis, interstitial lung disease, lung cancer.

- Egophony is when an "E" sound changes to an "A" over consolidated lung.

In normal lungs, it is heard as E only due to clear transmission of sound through clear lungs. However, positive egophony occurs when the word “E” is heard as “A” like “aaaaaa”. This transition of E to A is due to dampening effect of sound transmission that occurs due to Consolidation, Pleural effusion or Fibrosis of lung lobe(s).

7 Definition of Adventitious sounds

Acoustic properties Акустические свойства	Definitions of the American Thoracic Society	Widely used synonyms (old terminology)	Examples from Laennec
Interrupted noncontinuous (less than 250 msec) Кратковременные (меньше 250 мс)	**Coarse crackles**	**Large bubbles wet rales** Крупнопузырчатые влажные хрипы	**Water pouring into a bottle** Вода, вливающаяся в бутылку
	Fine crackles/ crepitation	**Small bubbles wet rales; crepitation** Мелкопузырчатые влажные хрипы; крепитация	**A crunch of salt on a hot frying pan** Хруст соли на раскаленной сковородке
long continuous Продолжительные (больше 250 мс)	**Wheezes**	**Whistling (dry) Rhonchus** Свистящие (сухие) хрипы	**Twitter of small birds** Щебет мелких птиц
	Rhonchus	**Bass (dry) Rhonchus** Басовые (сухие) хрипы	**Cooing of forest pigeons** Воркование лесных голубей

Evaluate for adventitious sounds

Sound	Intensity/ Pitch	I/E	Quality	Clear with Cough
Crackles/ Rales	Soft (fine)/ High Loud (coarse)/ Low	I	Discontinuous, nonmusical, brief	Possibly
Wheeze	High	E	Continuous musical sounds	Possibly
Ronchi	Low	E	Continuous snoring sounds	Possibly
Pleural Friction Rub		I & E	Continuous or discontinuous creaking or brushing sounds	Never
Stridor		I	Continuous, crowing	Never

8 Techniques for assessing Adventitious breath sounds

Techniques for assessing Adventitious breath sounds (breathing with halfmouth open)

1	2		3			4
1. Character of Adventitious breath sounds	Continuous (wheezes)		looks like the bubbling of air (cracles)			looks like a crunch of snow, (rub)
2. Height and caliber	Low	High	Large or medium bubbles	Small-bubbly		High or low
3. Respiratory phase (inhalation/ exhalation)	On inhalation and exhalation	On inhalation and exhalation	On inhalation and exhalation	On inhalation and exhalation	Only at the height of inspiration	On inhalation and exhalation
4. Changes after coughing	Change	Change	Change	Change	Do not change	Do not change
5. Definition of the Adventitious breath sounds	Rhonchus/ Bass dry rhonchus	Wheezes/ whistling dry rhonchus	Coarse cracles/ Large or medium bubbles wet rales	Fine cracles/ Small bubbles wet rales	Crepitation/ Crepitus	Pleural friction rub

Additional techniques for assessing Adventitious breath sounds

1	2		3			4
6. In the presence of cracles (wet rales) to assess their sonority	-	-	sonorous/ unsonorous	sonorous/ unsonorous	-	-
7. Increased Adventitious breath sounds with stethoscope pressure	do not increase	do not increase	do not increase	do not increase	do not increase	increase
8. The appearance or accentuate of Adventitious breath sounds due to forced exhalation	No or little	Yes (latent bronchial obstruction)	No	No	No	No

OSCE check -list
Section 1. History and Physical Examination of Respiratory System
Station № 1. Patient interview
FULL NAME student_____group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	Greeting			
2	Clarification of the Personal information			
3	Clarifying complaints (beginning with the preferred types of questions)			
4	Detailing the chief (CC)/ main complaints submitted to patients Are there any other CC? List and details them.			
5	Clarifying Secondary /additional/non-principal complaints			
6	History of the present illness (HPI) /anamnesis morbi			
7	Past medical history (PMH)/Life history/anamnesis vitae			
8	Review of systems(ROS)/ Documents presence or absence of common symptoms related to each major body system			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter)

Signature examiner _____
Date_____

OSCE check -list
Section 1. History and Physical Examination of Respiratory System
Station № 2. Systemic inspection (check-up/survey) of the patients with respiratory system diseases. Thorax Exam.
FULL NAME student_____group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	General approach to check-up			
2	General inspection/ check-up (survey): typical signs of respiratory system diseases. Systemic Signs of Pulmonary Disease/ Clues to Increased Work of Breathing.			
3	Vital Signs			
4	Thorax Exam: the shape of the chest at quiet respiration.			
5	Participation of accessory respiratory muscles in the act of breathing. Scars.			
6	Visible abnormalities of the thoracic cage. Respiratory expansion and symmetry: localised bulge or retraction.			
7	Breathing pattern: physiological types of breathing,BR, depth and rhythm of breathing			
8	Explanation of the Thorax exam results			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter)

Signature examiner _____
Date_____

OSCE check -list
Section 1. History and Physical Examination of Respiratory System.
Station № 3. Palpation of the chest.
FULL NAME student_____group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	General approach to the chest palpation			
2	The chest palpation purposes			
3	Position of mediastinum a. Trachea b. Apex c.Tracheal tug			
4	The chest local pain determination (Intercostal space tenderness)			
5	Resistance (elasticity) of the chest			
6	Chest / respiratory expansion			
7	Tactile vocal fremitus / fremitus pectoralis (vocalis)			
8	Explanation of the Tactil vocal fremitus exam results			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter) Signature examiner _____
Date_____

OSCE check -list
Section 1. History and Physical Examination of Respiratory System
Station № 4. Lungs percussion: comparative and topographic percussion.
FULL NAME student_____group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	Rules of Lungs percussion			
2	Identification of the chest and topographic lines			
3	State five percussion notes produced by percussion over the human body and their characteristics			
4	Purpose of comparative percussion			
5	Technique of comparative percussion			
6	The clinical significance of comparative lungs percussion			
7	Technique of topographic lung percussion: The lower border of the lungs; The upper borders (apices) of the lungs; The active respiratory mobility			
8	The clinical significance of topographic lungs percussion			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter)

Signature examiner _____
Date_____

OSCE check -list
Section 2. History and Physical Examination of Respiratory System
Station № 5. Lungs auscultation in norm and pathology.
FULL NAME student_____group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	General approach to the Lungs auscultation			
2	Technique of the Lungs auscultation			
3	Purpose of lung auscultation			
4	Breath sounds: Type of breath sounds and there characteristics. Distribution of breath sounds in normal			
5	Variations of vesicular breath sounds. Variations of Bronchial breath sounds.			
6	Definition of bronchophonia and Egophony			
7	Definition of Adventitious sounds			
8	Techniques for assessing Adventitious breath sounds			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter) Signature examiner _____
Date_____

Section 2. History and Physical Examination ofCardiovascular System (CVS)

Section 2. History and Physical Examination ofCardiovascular System (CVS)
Station №1. Patient interview
Assignment for the student: demonstrate your communication skills, the ability to establish contact with the patient, the ability to collect Personal information, to identify and detail the patient's complaints, to collect History of the present illness (HPI) /anamnesis morbi and Past medical history (PMH)/Life history/anamnesis vitae. Determine a history of the patient's life risk factors for the development of the CVS diseases.
Time: 5 minutes.

Section 2. History and Physical Examination of Cardiovascular System (CVS)
Station №2. Systemic inspection /peripheral examination (check-up/survey) of the patients with CVS diseases.Neck vessels Exam.The examination of the precordium.
Assignment for the student: Refine the general approach to Systemic inspection /peripheral examination (check-up/survey) of the patients with CVS diseases. Neck vessels Exam. The examination of the precordium, any visible pulsations. Perform and briefly explan the results of exam.
Time: 5 minutes.

Section 2. History and Physical Examination of Cardiovascular System (CVS)
Station №3. Palpation of the the precordium. The arterial pulse palpation
Assignment for the student: Refine the general rules of the heart area palpation. Define the goals and perform palpation of the precordium and neck vessels, as well as the patient's arterial pulse. Briefly describe the PMI and other pulsations all over precardium. Perform and briefly explan the results of exam.
Time: 5 minutes.

Section 2. History and Physical Examination of Cardiovascular System (CVS)
Station №4. Heart percussion **:** relative and absolute heart dullness.
Assignment for the student: Refine the general rules of heart percussion. Determine the goals of the heart percussion , relative and absolute dulness of the heart, the width of the vascular bundle. Evaluate the result in the normal and possible pathology.
Time: 5 minutes.

Section 2. History and Physical Examination of Cardiovascular System (CVS)
Station №5. Heart auscultation.
Assignment for the student: Refine the general rules of Heart auscultation. Listen to the heart and comment on your actions: at what points of auscultation, what did you listen to and why. Briefly describe the possible changes: change in sonority and number of sounds, possible heart murmurs and their origin.
Time: 5 minutes.

Section 2. History and Physical Examination of Cardiovascular System (CVS)
Instructions for the examiner .
Station №1. Patient interview.
Please rate the student's ability to interview the patient with CVS diseases.

№	criteria for job steps	
1	Greeting	Has greeted, named himself, the purpose of conversation
2	Clarification of the Personal information	Has found out Personal information and age (number of full years) of the patient (Age, sex, marital status, occupation. and the reason for which the patient does not work (disability, etc.) Clarifying the date of receipt, the order of admission to hospital (planned, emergency, self-reversal).
3	Clarifying complaints (beginning with the preferred types of questions)	1.General questions: What are you complaining about? What worries you? Can you tell me what the problem is? What bothers you? " 2. Direct questions: Where does it hurt? "When did hemoptysis appear? How did you feel before the pain started? The patient is given the opportunity to express all the unpleasant sensations.
4	Detailing the chief (CC)/ main complaints submitted to patients Are there any other CC? List and details them.	Has defined the chief (CC) /main complaint (the CC, as a rule, coincides with the reason for seeking medical help, the diagnosis is based on the CC, the CC characterize the pathology of a certain organ system). With regard to the main complaint, it should be clarified *(in addition toChest pain*): • Location • Irradiation • Characteristics (quantitative, qualitative): Nature (crushing, burning, aching, stabbing, etc.) • Severity • Chronology(timing)/ Onset and duration (Mode and rate of onset. What was the patient doing at the time?) • Exacerbating and relieving factors (context, particularly, is it affected by respiration or movement?, emotions, modifying factors) • Relieving factors (including the use of nitroglycerin) •Associated symptoms and signs(nausea, vomiting, sweating, belching, etc.) *The CC of patients with pathology of the CVS:* • Chest pain • heart palpitations/heart intermissions/syncope (tap out rhythm, any dizziness or blackouts/loss of consciousness) • Dyspnea /breathlessness (exercise tolerance, orthopnoea(shortness of breath when lying flat.), paroxysmal nocturnal dyspnea/PND) • Cough, hemoptysis • Ankle edema • Dyspeptic disorders(nausea, vomiting, sweating, belching, etc.) • Other pain (headaches, intermittent claudication, etc. due to hypertension, peripheral ischemia, etc.) There are 4 main cardiovascular symptoms: 1. Chest pain (character, radiation) 2. Shortness of breath (exercise tolerance, orthopnoea, paroxysmal nocturnal dyspnoea) 3. Presence and extent of oedema (ankle, leg or sacral) 4. Palpitations (tap out rhythm, any dizziness or blackouts)
5	Clarifying Secondary /additional/non-principal complaints	Complaints characterizing the general reaction of the body to the pathological process are called non-principal (additional). For example, weakness, malaise,ets. These complaints cannot t be the basis of a diagnosis. *Attention please! Sometimes non-principal (additional). complaints, such as weakness in cardiogenic shock, become major!*
6	History of the present illness (HPI) /anamnesis morbi	History of the present illness (HPI) /anamnesis morbi • When did the illlness start? • How did it start? • How has the problem progressed over time? • What kind of analysis has been taken and there results? • What treatment has been taken and its effect? •Reason (s) of the present request for medical assistance
7	Past medical history (PMH)/Life history/anamnesis vitae	1. Conditions in which the patient lived and developed • Place of Birth • Growth and development in childhood and 2. Heredity • Atherosclerotic vascular lesions • Kidney Diseases

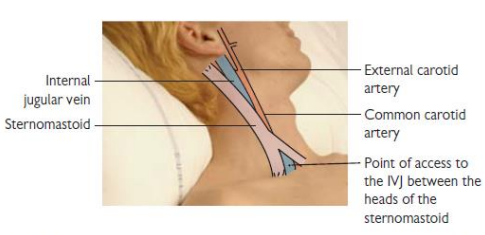
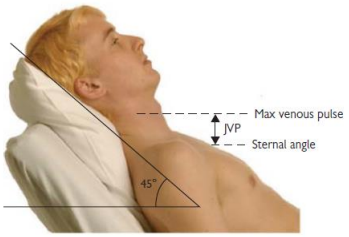
		adolescence • Education • Military service • Stroke • Alcoholdependence • Tuberculosis • Mental disorders • Malignant tumors
		3. Medical history (what? When?) • Diseases • Treatment • Operations • Anesthesia • Allergic anamnesis • Medical history Ask especially about the following: • Angina/• MI/ Ischemic heart disease/ Cardiac surgery • Atrial fi brillation (AF) or other rhythm disturbance/On warfarin? • Rheumatic fever/• Endocarditis • Thyroid disease 4. Social anamnesis • Family status • Gynecological anamnesis in women • Professional anamnesis • Conditions of life, hobbies
		5. Risk factors for cardiovascular disease • Age: ↑ risk with age • Gender: risk in males > females • Obesity: (BMI) • Smoking: Quantify in pack-years. • Hypertension: Find out when it was diagnosed. How was it treated? Isit being monitored? • Hypercholesterolemia: When was itdiagnosed? How is it being treated and monitored? • Diabetes: what type? When was it diagnosed? How is it being treatedand monitored? What are the usual glucose readings? • Familial Hypercholesterolemia (FH): particularly first-degree relatives who have had cardiovascularevents or diagnoses before the age of 60 6. Harmful habits • Smoking and associated clinical problems: *Diseases of the lungs (COPD, cancer)* *Cardiovascular diseases* *Malignant tumors* *Gastrointestinal tract* *Drug Interactions* *Pregnancy* • Signs of alcohol dependence • Signs of drug dependence
8	Review of systems(ROS)/ Documents presence or absence of common symptoms related to each major body system	Check list for Systems Review (ROS)

GENERAL	GASTROINTESTINAL	MUSCULOSKELETAL	CNS
Fatigue/malaise Fever/rigors/night sweats Weight/appetite Skin: rashes/bruising Sleep disturbance CARDIOVASCULAR Chest pain/angina Shortness of breath (including on exercise) Orthopnoea PND Palpitations Ankle swelling RESPIRATORY Chest pain Shortness of breath/wheeze Cough/sputum/haemoptysis Exercise tolerance	Appetite/weight loss Dysphagia Nausea/vomiting/haematemesis Indigestion/heart burn Jaundice Abdominal pain Bowels: change/constipation/diarrhoea/ description of stool/blood/mucus/flatus GENITO-URINARY Frequency/dysuria/nocturia /polyuria/oliguria Haematuria Incontinence/urgency Prostatic symptoms Impotence Menstruation (if appropriate): menarche (age at onset) duration of bleeding, periodicity menorrhagia (blood loss) dysmenorrhoea, dyspareunia menopause, post-menopausal bleeding	Pain/swelling/stiffness – muscles/joints/ back Restriction of movement /function Power Able to wash and dress without difficulty/Able to climb up and down stairs ENDOCRINE Menstrual abnormalities Hirsutism/alopecia Abnormal secondary sexual features Polyuria/polydipsia Amount of sweating Quality of hair SKIN Rash Pruritus Acne	Headaches Fits/faints/loss of consciousness Dizziness Vision – acuity, diplopia Hearing Weakness Numbness/tingling Loss of memory /personality change Anxiety/depression

Section 2. History and Physical Examination of Cardiovascular System (CVS)
Instructions for the examiner
Station №2. Systemic inspection/peripheral examination (check-up/survey) of the patients with CVS diseases.Neck vessels Exam.The examination of the precordium.
Please evaluate the student's ability to inspect a patient with CVS diseases (Check-up and the patient'sprecordium Exam. Neck vessels Exam.

№	criteria for job steps	
1	General approach to check-up	Good lighting, warm room, warm& clean hands of the doctor. W - Wash your hands. I - Introduce yourself to the patient. P - Permission. Explain that you wish to examine their heart. Obtain consent for the examination. Pain. Ask the patient if they are in any pain and to tell you if they experience any during the examination. E - Expose the necessary parts of the patient. Ideally the patient should be undressed from the waist up taking care to ensure the patient is not cold or unnecessarily embarrassed. Do not expose the patient's chest until you are ready to examine the precordium. R - Reposition the patient. In this examination the patient should be supine and reclined at 45 degrees.
2	Peripheral Examination	Peripheral Examination Examine from the right side. First examine the patient at the end of the bed for signs of breathlessness or distress. Look at the surrounding environment for oxygen, fluid restriction signs or GTN spray. Appearance • Level of consciousness (altered mental status): the continuous spectrum of quantitative disorders (oppression) of consciousness in connection with a hypoxia of a brain in CVS failure or ischemic stroke, due to cerebral edema in hemorrhagic stroke which torpor, sopor, hypoxemic coma are distinguished. Hallucinations (hypoxia, irritative disorders of intoxication)(endocarditis). • The general condition of a patient is estimated as -satisfactory, -medium gravity or - grave (heavy) -extremely heavy - terminal • Position of patient - active -passive (hypoxemic/hemorrhagic coma) -forced (forced sitting/ortopnoe (LVHF). • Skin and mucous membrane (color changes, temperature, dehydration) ✓ Central /peripheral cyanosis (peripheral, acrocyanosis, cold, cardiovascular cyanosis). ✓ Pallor (e.g., anemia) ✓ Plethora (e.g., polycythemia) ✓ Xanthomas (e.g., dyslipidemia) • Features of rheumatic fever: migrating polyarthritis, erythema marginatum, subcutaneous nodules. • Signs of left-sided heart failure (blood congestion in the lesser circulation circle) • Signs of right-sided heart failure (blood congestion in the greater circulation circle,e.g. cyanosis,swelling, cavities gydrops: ascites,hydrothorax,hydropericardium) • Hands and nails ✓ Perfusion (venous obstruction, conditions associated with a decreased cardiac output): -Temperature -Capillary refill time/ Check the capillary refill (press the end of the finger for 5 seconds, release and see how long it takes the colour to return. It should be less than 2 seconds) - Quincke's pulse: Exaggerated sequential reddening and blanching of the fingernail beds whenlight pressure is applied to the tip of the fingernail. - Peripheral Cyanosis Palms: Osler nodes, Janeway lesions ("Clinical features" of infective endocarditis) ✓ Nails: clubbing(congenital cyanotic heart disease, particularly Fallot´s tetralogy, subactive infective endocarditis)., splinterhemorrhages (subactive infective ✓ endocarditis).

<table>
<tr><td></td><td></td><td>
• Palpate the radial pulse and assess the rate and rhythm.
• Locate and palpate the brachial pulse and assess its character.
• Measure the blood pressure. If the blood pressure is raised compare both arms
• Face: Face and neck
✓ Facial expression:
- Corvisars facies /Swollenface – opened mouth,sticky eyes, general appearance of suffer and tideness (heart failure)
- Mitral facies –rosy, red cheeks (Malar flush/,,mitral butterfly") (mitral stenosis)
✓ Eyes:
-Signs of dyslipidemia (xanthelasmas: yellow, raised lesions found particularly around the eyes, indicative of high serum cholesterol. Arcus lipoides corneae: a yellow ring seen overlying the iris. This is significant in patients <40 years but not in older persons.arcus lipoidescorneae)
-Signs of hypertensive retinopathy (ophthalmologic exam)
- Inspect the conjunctiva for jaundice, pallor
✓ Mouth and tongue: hydration status, fetor, central cyanosis, ulcers, pallor, jaundice, traces of scratching, hemorrhages, dryness or humidity.
✓ Poor dental hygiene: periodontal disease is a common source of organisms causing endocarditis.
✓ High arched palate (Marfan syndrome)
• Neck
✓ Carotid pulse
✓ Jugular venous pulse (see clinical assessment of central venous pressure)
• Legs: ankle oedema, signs of venous insufficiency (e.g., varicosis) (ankle pigmentation, bruising)
Attention!
1. Edema in CVS diseases first appears on the feet and legs.
2. Edema in CVS diseases is combined with peripheral cyanosis.
3. Edema in CVS diseases appear or increase in the evening, decrease in the morning.
</td></tr>
<tr><td>3</td><td>Vital Signs</td><td>• Temperature • Blood Presure • Pulse • Respiration</td></tr>
<tr><td>4</td><td>Neck vessels Exam.Carotid pulsations.</td><td>
Inspect for carotid pulsations: look medially from the sternocleidomastoid muscle.
This is the best place to assess the pulse volume and waveform.
• Find the larynx, move a couple of centimeters laterally, and press backward medial to the sternomastoid muscle.
• Be sure not to compress both carotids at once, for fear of diminishing blood flow to the brain, particularly in the frail and elderly.
You should know how the JVP can be differentiated from carotid pulsation.
Differentiating jugular and carotid pulsations.
The rules for differentiating the jugular and carotid pulsations are guides only and not always true. For example, in severe tricuspid regurgitation, the jugular pulse is palpable and is not easily abolished by compression. If proving difficult, test the hepatojugular reflex.
<table>
<tr><th colspan="2">Characteristics of normal jugular and carotid pulsations</th></tr>
<tr><td>Jugular pulsation</td><td>Carotid pulsation</td></tr>
<tr><td colspan="2">Site</td></tr>
<tr><td>Lateral to sternomastoid</td><td>Medial to sternomastoid</td></tr>
<tr><td colspan="2">Hepatojugular reflux</td></tr>
<tr><td>• Watch the neck pulsation.
• Exert pressure over the liver with the flat of your right hand.
•The JVP should rise by approximately 2 cm; the carotid pulse will not.</td><td>The JVP should rise by approximately 2 cm; the carotid pulse will not.</td></tr>
<tr><td>2 peaks (in sinus rhythm)/double waveform)</td><td>1 peak</td></tr>
<tr><td>Impalpable/not pulsatile</td><td>Palpable/pulsatile</td></tr>
<tr><td>Obliterated by pressure (occludable)</td><td>Hard to obliterate</td></tr>
<tr><td colspan="2">Moves with respiration/ change on inspiration</td></tr>
<tr><td>The JVP will ↓ during inspiration in the normal state.
The JVP will rise during inspiration (Kussmaul's sign) in the presence of pericardial constriction, right ventricular infarction, or, rarely, cardiac tamponade.</td><td>Little movement with respiration</td></tr>
<tr><td colspan="2">Upper level</td></tr>
<tr><td>JVP is raised if vertical height is >3cm above sternal</td><td>No upper level</td></tr>
</table>
</td></tr>
</table>

		notch. Adapted from Oxford American Handbook of Clinical Examination and Practical Skills/Oxford American handbook of clinical examination and practical skills / edited byElizabeth A. Burns, Kenneth Korn, James Whyte IV ; with James Thomas, TanyaMonaghan. • Corrigan's sign: Visible increased pulsations of the supraclavicular and carotid arteries look medially from the sternocleidomastoid muscle (aortic insufficiency, high pulse pressure) • DeMusset's sign: Visible oscillation or bobbing of the head with each heartbeat (aortic insufficiency, high pulse pressure)
5	Neck veins Inspection: Jugular venous pulse(JVP). Jugular venous pressure (JVP) or abnormal waves.	The jugular veins connect to the superior vena cava (SVC) and the right atrium without any intervening valves. Therefore, changes in pressure inthe right atrium will transmit a pressure wave up these veins that can beseen in the neck at the internal jugular vein (IJV).. By measuring the height of the impulse, the pressure inthe right side of the circulation can be expressed in centimeters. It is often said that the JVP must only be measured in the internal jugular vein (IJV). This is not strictly the case. The external jugular vein (EJV) is easily seen as it makes a winding course down the neck (see Fig.). Its tortuous course means that impulses are not transmitted as readily or as reliably. It is for this reason that the IJV is used. The center of the right atrium lies ˜5 cm below the sternal angle, whichis used as the reference point. The normal JVP is ˜8 cm of blood (therefore 3 cm above the sternal angle). With the patient tilted back to 45*, the upper border of the pulse is just hidden at the base of the neck. This, therefore, is used as the standard position for JVP measurement. - Remember, it is the vertical distance from the sternal angle to theupper border of the pulsation that must be measured.  Fig. 7.3 The surface anatomy of the vasculature in the neck. Note that the IJV is partly hidden by the sternocleidomastoid at the base of the neck.  Fig. 7.4 Measuring the JVP. Measure the vertical distance from the top of the pulsation to the sternal angle and then add 5 cm to get the JVP. Figure from . Lewis Potter/ CVS EXAMINATION – OSCE GUIDE Check Jugular Venous Pressure (JVP) • With the head resting back on the pillow ask the patient to turn the head to the left • Look for pulsation along the right internal jugular vein. • The height of the pulsation is measured vertically in cm from the sternal angle. Add 5cm to get the JVP. In a normal euhydrated individual, the neck veins (internal and external jugular) may be distended to the angle of the jaw with the patient lying flat. • Raise the head and trunk of the patient to an approximate angle of 30°. If internal jugular neck vein distention is not visible with patient at 45°, it can be assumed that central venous pressure is not abnormally elevated. • If internal jugular neck vein distention is present, attempt to estimate the central venous pressure by noting the distance in centimeters between the highest point of oscillation and the sternal angle. This distance plus 5-7 cm (the distance between the sternal angle and right atrium) is a good estimation of the central venous pressure. • Conditions associated with elevated JVP: e.g., right heart failure, fluid overload, tricuspid valve dysfunction, SVC syndrome, pericardial effusion, tamponade, pulmonary hypertension • In a healthy patient, the veins collapse during ventricular systole when the carotid arteries fill (pulsate). Thus, the normal venous pulse is negative and invisible. • The veins may fill during ventricular systole if a backflow of blood from the right ventricle into the right atrium develops, which is characteristic of tricuspid valve insufficiency. This visible swelling of the jugular veins during ventricular systole is called a "positive venous pulse" (a sign of tricuspid insufficiency).

<table>
<tr>
<td>6</td>
<td>Examination of the precordium :
Visual identification and characterization.</td>
<td>Inspect the precordium for: visible pulsations, apical impulse (apex beat), masses, scars, lesions, signs of trauma and previous surgery (e.g. median sternotomy),permanent
<table>
<tr><td colspan="2">Inspect the chest wall for</td></tr>
<tr>
<td>

Previous scars
Pacemaker
Precordium bulge/enlargement/cardiac harm back /swelling of the precordial region.(heart enlargement since childhood, hydropericardium)
Inspection of theprecordium should reveal any abnormalities of the bony structures (e.g.,pectus excavatum) that may displace the heart.
Dilated veins.

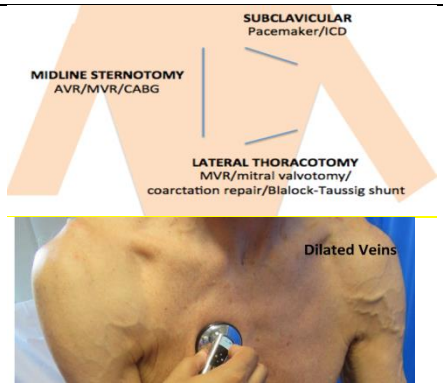
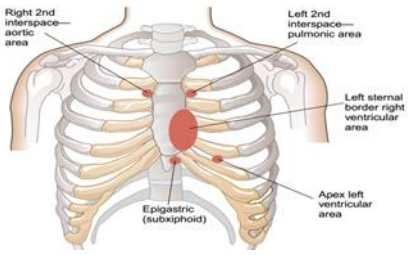
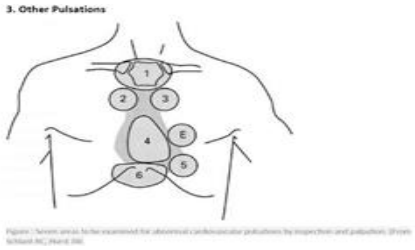
</td>
<td> 

Figure from . Lewis Potter/ CVS EXAMINATION – OSCE GUIDE</td>
</tr>
</table>
Pace Maker, praecordial bulge.</td>
</tr>
<tr>
<td>7</td>
<td>Examination of the precordium.
Any visible pulsations-
Apex beat (PMI).</td>
<td>• A visible apex beat /apical impulse (PMI)
The normal PMI is located within an area approximately 1 -2 cm^2 in the 4^{th} to5th left ICS 1-2 cm medially from the MCL. PMI are not normally observed in any other area.
Cardiac causes of displacement:
PMI shifts to the left with right ventricular dilatation, to the left and down with left ventricular hypertrophy and dilatation.
Extracardiac causes of displacement:
- masses in the lungs or in the mediastinum
-fluid or gas in the pleural cavity
- fluid or gas in the abdominal cavity.</td>
</tr>
<tr>
<td>8</td>
<td>Examination of the precordium:
Any visible pulsations -heart beat and other pathological pulsations.</td>
<td>Abnormal pulsations :

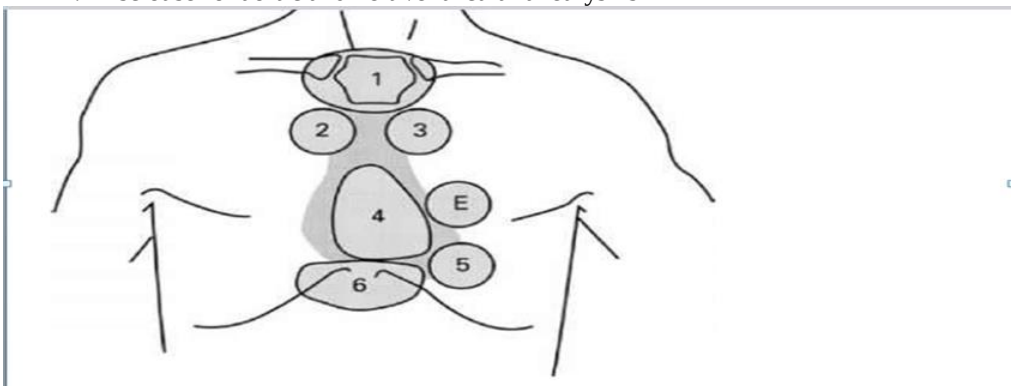
retrosternal/ heart beat/parasternal/ heavy/ epigastric pulsations (heart beat due to RV enlargement)
presence of pathological pulsations in the presence of aneurysms of the aorta, pulmonary artery or left ventricular aneurysm.





- Epigastric Pulsation : Right Ventricle , Aorta Or Left lobe of the liver (Differentiated By Palpation) .
- Lt Parasternal Pulsation : Right Ventricle Enlargement.
- Aortic Area Pulsation (2nd Right ICS) : Aortic Aneurysm , Systemic Hypertension .
- Pulmonary Area Pulsation (2nd Left ICS) : Pulmonary Hypertension .
- Suprasternal / Carotid Pulsation : Aortic Regurgitation (Corrigan's Sign) .</td>
</tr>
</table>

Section 2. History and Physical Examination of Cardiovascular System (CVS)
Instructions for the examiner .
Station №3. Palpation of the the precordium. The arterial pulse palpation.
Please rate the ability of the student to palpate the area of the heart and large vessels.

№	criteria for job steps	
1	Observance of general rules the area of the heart	• Warm room, doctor´s warm, soft and clean hands, convenient position of the doctor and the patient. Always to the right of the patient! • Expose the necessary parts of the patient. Ideally the patient should be undressed • from the waist up taking care to ensure the patient is not cold or unnecessarily • embarrassed. Do not expose the patient's chest until you are ready to examine the precordium. • Reposition the patient. In this examination the patient should be supine and reclined • at 45 degrees. • Before starting the exam, explain what you are going to do and how you will do it, particularly to female patients. • Enlist patient's assistance, asking them to raise their breast to a position that enhances your ability to listen to and palpate the heart.
2	Main goals of heart palpation and Seven areas to be examined for adnormal cardiovascular pulsation and paipation	• The main goals of heart palpation are 1. disclouser of ventricular myocardial hypertrophy 2. disclouser of ventricular dilation 3. disclouser of main vessels dilations (indirectly) 4. Disclouser of aortic and left ventricular aneurysms  Figure : Seven areas to be examined for abnormal cardiovascular pulsations by inspection and palpation. (From Schlant RC, Hurst JW. • Palpate the precordium. Using the palmar surface of the hand at the base of the fingers, systematically palpate the apical (5), parasternal(4), epigastric (6), pulmonic (3), and aortic (2) areas for pulsation, thrills or lifts (heaves). Palpate the suprasternal notch(1) for abnormal pulsations or thrills. *The valve areas are palpated for abnormal pulsations (known as thrills) and precordial movements (known as heaves).* *E area - possible pulsation with left ventricular aneurysm.*
3	Apex Beat (PMI) Palpation	Apex Beat (PMI) (Left Ventricle Area) -Definition: Lower most and Outer most visible and palpable pulsation over the chest. -Normal Site: 5th left intercostal space, 1-2 cm medial to left MCL. -Normal Size: less than 2 ICS and localized. -Normal Character: Gentle Tap. • The apex beat is typically palpable in the left fifth intercostalspace and 1-2 cm medial to the mid-clavicular line. • The palm of your right hand is placed across the patient's left chest so that it covers the area over the heart. The heel should rest along the sternal border with the extended fingers lying below the left nipple. • To accurately determine the location of an apex beat which can be felt across a large area, feel for the lowermost lateral and inferior position of pulsation. • PMI, their peculiarities: location, square,height, force, resistance.

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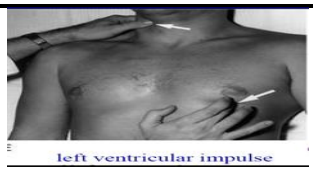
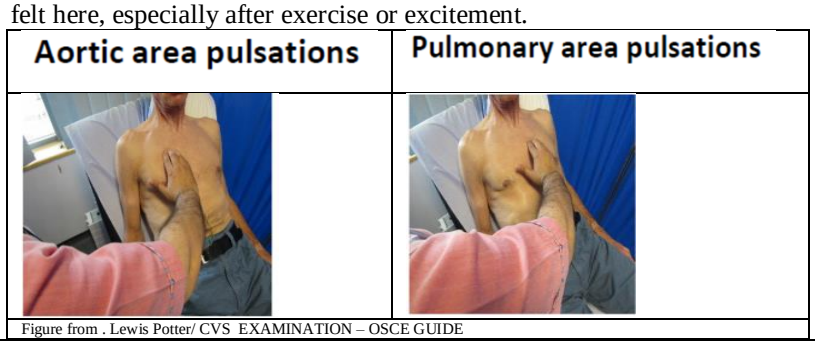
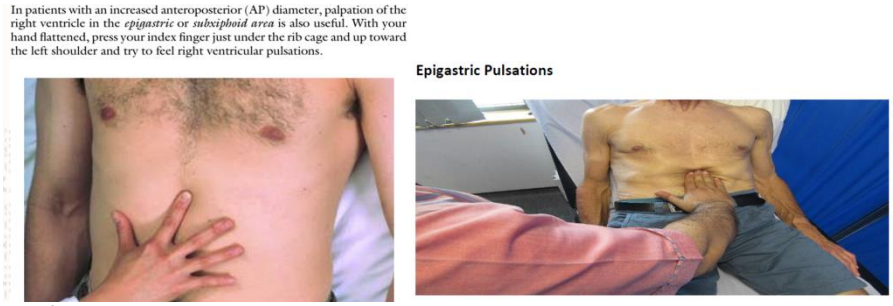


Palpation of the Precordium to Determine the Location of the PMI https://meded.ucsd.edu/clinicalmed/heart.html
Note the character of the apex beat. Apex beat, note the location and assess the quality of impulse felt. Is it forceful,diffuse, tapping?
You should be able to recognise and know the significance of common abnormalities.
Findings
• No apex beat felt: usually caused by heavy padding with fat or internalpadding with an overinflated emphysematous lung. It is not palpable in some patients due to obesity or emphysema.
• It can sometimesbe felt by asking the patient to lean forward or laterally.If unable to feel the apex beat, roll the patient to the left bringing the heart into closer proximity to the chest wall and try again (however you cannot now comment on the location).
• Abnormal position of the apex beat: usually more lateral than expected.This is caused by an enlarged heart or disease of the chest wall. An apex beat in the axilla would indicated cardiomegaly or mediastinal shift.
• With chronic lung disease, the apex may be more midline.
Character of the apex beat
Some common abnormalities are as follows:
• Stronger, more forceful: hyperdynamic circulation (e.g., sepsis, anemia)
• Sustained: impulse longer than expected (left ventricular hypertrophy,aortic stenosis, hypertrophic cardiomyopathy or hyperkinesia)
• Double impulse: (palpable atrial systole) characteristic of hyptertrophicCardiomyopathy
•Tapping: the description given to a palpable first heart sound in severemitral stenosis
• Diffuse: a poorly localized beat caused by left ventricular aneurysm
• Unpalpable: emphysema, obesity, pericardial effusion, or death
• Beware of dextrocardia. If no beat is felt, check the right side.
Identify the apical impulse (point of maximum impulse, PMI) and note its size. If the PMI cannot be identified, attempt to estimate heart size by percussing for cardiac dullness in the left fourth and fifth intercostal spaces
• Will be displaced in hypertrophy
Cardiac causes of displacement:
PMI shifts to the left with right ventricular dilatation, to the left and down with left ventricular hypertrophy and dilatation.
Extracardiac causes of displacement:
- masses in the lungs or in the mediastinum
- fluid or gas in the pleural cavity
- fluid or gas in the abdominal cavity.
</td>
</tr>
<tr>
<td>4</td>
<td>Heart beat/parasternal/ heavy/ palpation.</td>
<td>
Heart beat/parasternal/ heavy (Right Ventricular Area)
• Heaves, forceful ventricular contractions/a sustained forceful pulsation. Heaves represent ventricular hypertrophyand feel as if your hand is being lifted of patient’s chest.
• Heaves are best felt with the heel of the hand at the sternal border. Place the hand flat onto the chest to the left of the sternum. This should be performed close to the left sternal border in the 3rd ,4th and 5th interspacesand towards the apex-Right Ventricular Area.
• The patient should rest supine at 30o . Place the tips of your curved fingers in the 3rd ,4th and 5th interspacesandtry to feel the sistolic impulse of the RV (heart beat due to RV enlargement).
• Again, asking the patient to breathe out and then briefly stop breathing improves your observation.

Palpation of the Precordium to Determine the Location of the PMI https://meded.ucsd.edu/clinicalmed/heart.html
</td>
</tr>
<tr>
<td>5</td>
<td>Abnormal pulsations:</td>
<td>• The Right 2nd Interspase- Aortic Area. This interspace overlies the aortic ouyflow tract. Search for</td>
</tr>
</table>

<table>
<tr><td></td><td>Aortic Area and Pulmonic Area</td><td>pulsations(aortic aneurysm) and palpable heart sounds (systolic thrills)
• The Left 2nd Interspase- Pulmonic Area. This interspace overlies the pulmonary atery. As the patient holds expiration, look and feel for an impulse and feel for possible heart sounds(systolic thrills).
• In thin or shallow-chested patients, the pulsation of aorta and pulmonary atery may sometimes be felt here, especially after exercise or excitement.
 
Figure from . Lewis Potter/ CVS EXAMINATION – OSCE GUIDE</td></tr>
<tr><td>6</td><td>Abnormal pulsations: the suprasternal notch and epigastric area</td><td>• The suprasternal notch pulsation is palpable with aortic aneurysm, High BP, high pulse pressure (aortic insufficiency, thyrotoxicosis,high fever)
• Epigastric area pulsationis palpable in case of
✓ hypertrophy of the right ventricle (defined under the xiphoid process and increases with deep inspiration);
✓ aneurysm of the abdominal aorta,
✓ and pulsation of the left lobe of the liver in tricuspid insufficiency (defined below and does not increase with deep inspiration)
Attention! Pulsation of an unchanged aorta is possible in malnourished patients with a soft abdominal wall!
 
Figure from . Lewis Potter/ CVS EXAMINATION – OSCE GUIDE</td></tr>
<tr><td>7</td><td>Thrills palpation</td><td>Thrills are ‘palpable murmurs’ that can be present over any area of heart.
They feel like ‘stroking a purring cat’, as a shudder or vibration beneath the finger.
If present there should be an easily audiblemurmur present on auscultation.
‘
 
<table><tr><td>Location of Thrill</td><td>Associated Disorder</td></tr><tr><td>At the apex during dyastole</td><td>Mitral stenosis</td></tr><tr><td>At the apex during systole</td><td>Mitral regurgitation</td></tr><tr><td>Over the base of the heart at the 2nd right ICS, during systole</td><td>Aortic stenosis</td></tr><tr><td>To the left of the sternum at the 2nd ICS</td><td>Pulmonic stenosis</td></tr><tr><td>To the left of the sternum at the 4th ICS</td><td>Small muscular septal defect (Congenital heart defect- Roger disease)</td></tr></table>Figure from . Lewis Potter/ CVS EXAMINATION – OSCE GUIDE</td></tr>
<tr><td>8</td><td>Palpation of the radial pulse</td><td>A pulse wave is produced by ventricular contraction during systole.
Approach
• Three finger method: palpation with 2nd–4th fingertips
• Palpation of the common carotid artery, radial artery, abdominal aorta, femoral artery, popliteal artery, tibialis posterior artery, and dorsalispedis artery.
• The pulse of the carotid artery should NEVER be palpated bilaterally and simultaneously!
• Risk of compression of vessels → cerebral hypoperfusion → syncope
• Risk of hyperstimulation of the carotid sinus reflex → bradycardia/low blood pressure → cerebral hypoperfusion → syncope
The thumb of the examiner should never be used to take the pulse as it has its own strong pulse, which might be mistaken for the patient's pulse!</td></tr>
</table>

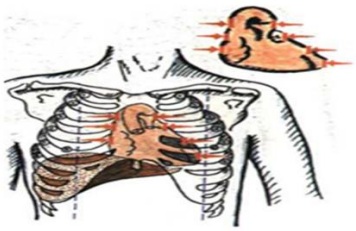
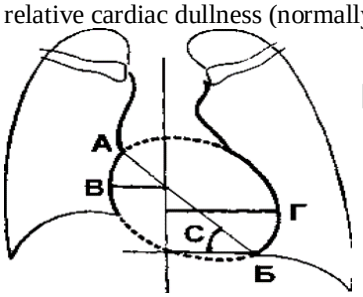
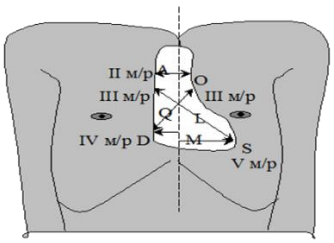
- The first important issue to settle is whether the pulse is present and palpable or absent due to any local or generalized vascular disease. Palpate the pulse on both of the patient's radial arteries at once. The other radial artery should be palpated simultaneously to compare the volume and tension in both radials.
- Radio-radial delay (pulse difference). This is possible, for example, with compression of the left subclavian artery by an enlarged left atrium with mitral stenosis (Saveliev-Popov's symptom).
- If the pulse wave is the same on both radial arteries, hold the patient's hand firmly in one hand and feel the pulse with the fingers of the other hand.
- Next, you need to answer questions about four features of the pulse (Table 5). The first two of these are comparatively easy and can be answered by counting the pulse rate at least 30 seconds. This is long enough to form an initial opinion about the rhythm, whether regular or irregular due to ectopic beats or completely chaotic as in atrial fibrillation.
- Count pulse four times for 15 seconds (or three times for 20 seconds). If all four measurements are the same, the patient's pulse is rhythmic. If you get different readings every 15 seconds, the patient's propulsion is arrhythmic.
- To determine the pulse tension, palpate the patient's pulse with three fingers (index, middle and ring fingers). Position your fingers along the patient's radial artery so that your index finger is higher than the others (middle and ring fingers). Now squeeze the patient's artery with your index finger until the pulse wave disappears under your middle finger. The force that you have applied to completely compress the artery is the tension of the pulse.
- To determine the pulse wave tension, palpate the patient's pulse with three fingers (index, middle and ring fingers). Position your fingers along the patient's radial artery so that your index finger is higher than the others (middle and ring fingers). Now squeeze the patient's artery with your index finger until the pulse wave disappears under your middle finger. The force that you have applied to completely compress the artery is the tension of the pulse.
- Now release the pressure on the artery under your index finger. The pulse wave that you feel under your middle finger will reflect the Pulse volume (amplitude).

Examination of the pulse (some characteristics)

Characteristics	Description	Possible causes
Rate Number of beats per minute	< 60 bpm → bradycardia >90(100) bpm → tachycardia	Physiological variations Bradyarrhythmias Tachyarrhythmias
Rhythm	Regular	Physiological
	irregular	Atrial (e.g.,atrial flutter) •Atrial Tachyarrhythmias fibrillation •Ventricular ectopics (premature ventricular contractions)
	Pulse deficit: difference between the pulse rate measured by cardiac auscultation and the peripheral pulse rate obtained by palpating the radial artery	•Pulse deficit > 10 → atrial fibrillation •Pulse deficit < 10 → premature ventricular contractions •Obstructive hypertrophiccardiomyopathy
Pulse volume (amplitude)	•Hyperkinetic pulse (pulsus altus): bounding pulse Corrigan sign and water hammer pulse: bounding pulse best palpated on the radial, brachial, or carotid artery.	•Arterial hypertension •High cardiac output states: anemia, sepsis •Aortic regurgitation •VSD (ventricular septal defect)
	•Hypokinetic pulse (pulsus parvus): soft pulse with a low amplitude	•Low blood pressure
	Pulsus paradoxus: pathological decrease in the pulse wave amplitude and systolic blood pressure of > 10 mm Hg during inspiration.	Constrictive pericarditis Cardiac tamponade Supeior vena cavas syndrom Severe obstructive airway disease (asthma, COPD) Tension pneumothorax
	Pulsus alternans: alternation of strong and weak pulses caused by alterations in the stroke (cardiac output). Dicrotic pulse: two peaks in the pulse wave occurring in systole and diastole .	Congestive heart failure
Pulse wave tension	High-tension pulse: The vessel wall feels rigid and cord-like between beats (during diastole) and is not easily compressible.	Arterial hypertension
	Low-tension pulse: The vessel wall is either soft or not palpable between beats and is easily compressible.	Low blood pressure Systemic vasodilatation (e.g.,)
Speed of pulse upstroke (wave contour)	Fast-rising pulse: rapid upstroke of the pulse	Aortic regurgitation
	Low-rising pulse: delayed peak pressure of the carotid artery	Aortic stenosis
Delay	Radio radial ldelay	Mitral stenosis

Section 2. History and Physical Examination of Cardiovascular System (CVS)
Instructions for the examiner.
Station №4. Heart percussion : relative and absolute heart dullness.
Please rate the student's ability to percuss and determ the heart dullness.

<table>
<tr><td>№</td><td>Criteria for job steps</td><td></td></tr>
<tr><td>1</td><td>The general rules of heart percussion</td><td>• Percussion is performed in most cases in a vertical position of the patient, with the arms lowered downwards. At impossibility of keeping of this rule it is possible to confine percussion in a horizontal position.
It should, however, be remembered that the area of cardiac dullness in the vertical position is smaller than in the horizontal. This is due to mobility of the heart and the displacement of the diaphragm as the patient changes his posture.
• The doctor can sit or stand to the right of the patient at the time of percussion.
• Respiration of the patient should be superficial.
• The finger-pleximeter (3-rd finger of the left arm) must be densely applied to intercostals spaces to avoid lateral distribution of vibrations along the ribs.
• Percussion is conducted from a clear sound to dulled or dull depending on the purpose of percussion (that is from lungs to heart).
• The revealed border of the heart dullness is marked on outside edge of the finger-pleximeter inverted to a louder percussion sound.
• The strength of percussion stroke depends on the purpose of percussion:
✓ at delimitation of relative dullness of heart the medium (quiet, or light) percussion is used,
✓ at delimitation of absolute dullness of heart - the quietest percussion.</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Main goals of heart percussion. The sequence of percussion</td><td>Information about the size and shape of the heart:
1.Disclosure of ventricular and auricular dilation;
2. Disclosure of vascular bundle dilation</td></tr>
<tr><td>The sequence of percussion
✓ Delimitation of relative dullness of heart,
✓ Definition of a configuration of heart
✓ Definition of transverse length of relative cardiac dullness,
✓ Definition of size of heart vascular bundle,
✓ Delimitation of absolute dullness of heart</td></tr>
<tr><td>3</td><td>Delimitation of relative dullness of heart</td><td>
<table>
<tr><th colspan="4">BORDERS OF RELATIVE HEART ´S DULNESS</th></tr>
<tr><th rowspan="2">Age (years old)</th><th colspan="3">Borders</th></tr>
<tr><th>Upper</th><th>Right</th><th>Left</th></tr>
<tr><td>Older 12</td><td>III coster or
III ICS</td><td>IY ICS
right sternalis line</td><td>From left MCL
1-1,5 cm inwards
(PMI /apex beat area)</td></tr>
</table>
The area of relative cardiac dullness can be modified by extracardiac factors.
➢ At high position of the diaphragm, the heart assumes a horizontal position and its transverse dimensions thus increase.
➢ Accumulation of liquid or air in one pleural cavity displaces cardiac dullness toward the healthy side;
➢ in atelectasis and pneumosclerosis, or in the presence of pleuropericardial adhesion the borders of cardiac dullness are displaced to the affected side.</td></tr>
</table>

4	Definition of a heart configuration	**Determination of heart configuration** The shape jf the heart can be determined by percussion of the vascular bundle in the 2 ICS on the right and left, and of relative cardiac dullness in the 4-th or 3-rd ICS on the right, and in the 5-th, 4-th, or 3-rd ICS on thr left. The pleximeter-finger is moved parallel to the border of expected dullness and the elicited points of dullness are marked on the patient´s skin. The points are connected later by a line to mark the cotours of the relative cardiac dullness.  ✓ The angle formed by the vascular bundle and the left contour of heart becomes more significant when the left ventricle is enlarged. Since it is more pronounced in aortic incompetence and aortic stenosis, this configuration of heart is known as *"aortic configuration "*. ✓ The left atrium is enlarged and the pressure in the pulmonary artery increases in mitral incompetence and mitral stenosis. In this connection *«waist of heart»* becomes smooth. This configuration of the heart is known as *"mitral configuration"*. ✓ Percussion shows considerable enlargement of the cardiac dullness in all directions in pericarditis with effusion. Absolute and relative dullness are almost indistinguishable. The area of dullness resembles a trapezium or a triangle. This configuration of the heart is known as "*trapezoidal configuration"*. ✓ *"Spherical configuration"*, or "cor bovinum", is characterized by the enlargement of heart in all directions as a result of combined heart valves diseases, congenital heart disease, dilated cardiomyopathy, diffuse cardiosclerosis
5	Definition of transverse length of relative cardiac dullness	• Once the area of relative cardiac dullness has been established, its transverse length is measured by a measuring tape, from the extreme points of the relative dullness to the anterior median line. • The normal distance from the right border of relative cardiac dullness (usually in the 4-th ICS) to the anterior median line is 3 or 4 cm, • While the distance from the left border to relative cardiac dullness dullness (usually in the 5-th ICS) to the same line is 8 or 9 cm. The sum of these lengths is the transverse length of relative cardiac dullness (normally 11-13 cm).  
6	Definition of size of heart vascular bundle	**Determination of size (width) of a vascular bundle** • The vascular bundle of heart is formed: ✓ On the right - by cava vein and an ascending part of an aortic arch, ✓ On the left – by a pulmonary artery and a part of an aortic arch. • The vascular bundle of heart can be determined by percussion of the borders of relative heart dullness in the 2-nd ICS on the right and left. • The borders of the vascular bundleare determined by quiet (light) percussion in the 2-nd ICS, to the right and left from the MCL, toward the sternum. • When the percussion sound dulls, a mark should be made by the outer edge of the finger. **The right and left borders of vascular dullness are normally found along the edges of the sternum; the transverse length of dullness is 5-6 cm.**

<table>
<tr><td>7</td><td>Delimitation of absolute dullness of heart</td><td>
<table>
<tr><th colspan="3">NORMAL POSITION OF ABSOLUT HEART DULNESS</th></tr>
<tr><th>Border</th><th>Position</th><th>Anatomical structure</th></tr>
<tr><td>Right – 4-th ICS</td><td>At the left edge of the sternum</td><td>Right ventricle</td></tr>
<tr><td>Left - 5-th ICS</td><td>1,5-2 cm medially of the left relative heart duiness</td><td>Right ventricle</td></tr>
<tr><td>Superior</td><td>On the lower edge of 4-d rib at the left parasternal line</td><td>Right ventricle</td></tr>
</table>
The area of absolute cardiac dullness can be modified by extracardiac factors.
➢ The area of absolute cardiac dullness markedly diminishes or disappears in pulmonary emphysema, while it increases in pneumosclerosis.
➢ The area of absolute dullness is also enlarged in the anterior displacement of the heart (e.g. by a mediastinal tumour, due to accumulation of fluid in the pericardium, or in dilatation of the right ventricle).
</td></tr>
<tr><td>8</td><td>Causes of displacement of the heart dullness</td><td>The borders of relative dullness are displaced in the presence of enlarged heart chambers.
➢ Displacement to the right is due to dilatation of the right atrium and the right ventricle.
➢ If the left atrium or the conus of the pulmonary trunk is enlarged, the area of relative dullness is displaced upwards.
➢ Dilatation of the left ventricle displaces the area of relative dullness to the left.
➢ It should be remembered that a markedly enlarged and hypertrophied right ventricle displaces the left ventricle and can also displace the border of relative dullness to the left.
➢ Aortic dilatation increases the dullness area in the second interspace.
The restriction of the relative dullness of heart is observed:
➢ as a result of phrenoptosis (descent position of a diaphragm in asthenic constitution, at the general enteroptosis);
➢ as a result of pulmonary pathology (pulmonary emphysema).</td></tr>
</table>

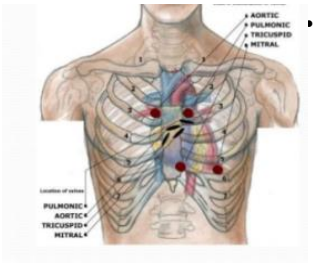
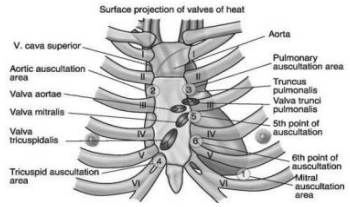
Section 2. History and Physical Examination of Cardiovascular System (CVS).

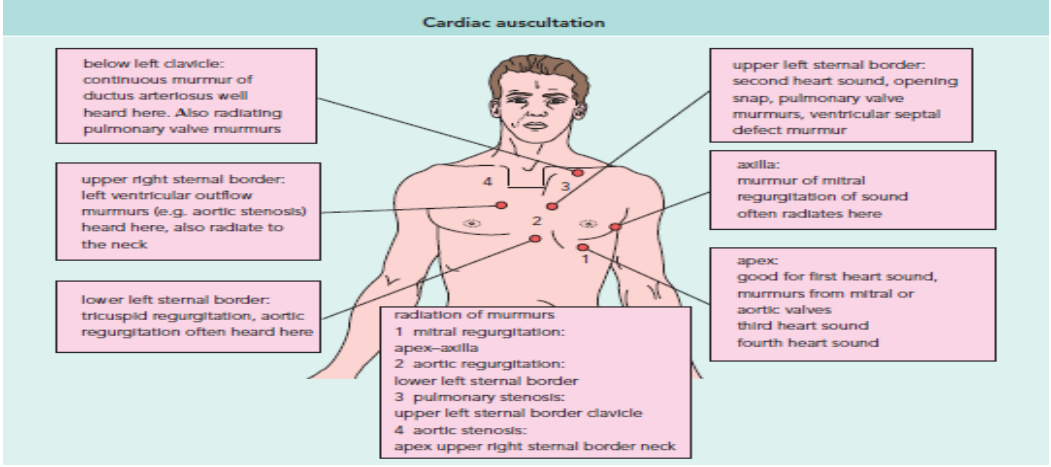
Instructions for the examiner.

Station №5. Heart auscultation.

Please rate the student's ability to auscultate the heart.

№	Criteria for job steps	
1	General rules and Auscultation Technique	• Patient is supine or, at most, 30 degrees • Student is on patient's right side • Exam is done on skin (not over a gown); • Chest exposed (male) or loosely fitted gown (female) –need to see area where placing stethoscope –stethescope must contact skin • Patient may have to hold breath to eliminate respiratory noise. First uses bell of stethoscope and then repeats exam with diaphragm (higher pitched sounds) engaged. Auscultate 5 locations with the diaphragm (which best facilitates hearing high-pitched sounds, including S1 and S2) and then repeat with the bell (which best facilitates hearing low-pitched sounds, including S3 and S4). • Give special attention to the intensity of S1 at the apex and to the intensity of P2 and splitting of S2 in the left second intercostal space • Identify any extra sounds and murmurs in systole or diastole. Note location, timing (systole or diastole), pitch, quality, radiation or transmission, and intensity (grade).

2	Auscultation anatomical surface landmarks and Auscultation points (areas).	 • Since all the heart valves are located close to each other, to evaluate the sound effects associated with the work of each valve there are used more remote points from the valves location, where the sound is carried either by the flow of blood, or by myocardium of the heart area, where this sound is produced and where the summation of the sounds originating in neighboring parts of the heart is minimal. • *They distinguish six so-called auscultation points (areas):* 4 main and 1 additional points. 1.aortic area − right 2nd interspace close to the sternum; 2.pumonic area − left 2nd interspace close to the sternum, *these two areas together are sometimes called the "base" of the heart;* 3.tricuspid area − at the base of xyphoid process, as well as to the left and right from it 4.mitral (or apical) area − left 5th interspace just medial to the midclavicular line; 5.Botkin − Erb's point – 3rd left interspace close to the sternum where aortic and pulmonic origin may often be heard; 6. mitral valve projection area – left 4th interspace close to the sternum (English version)  «Assignment» numbers to the auscultation points (1st auscultation point, 2nd auscultation point, etc.) and listening to the heart valves in this sequence in clinical practice is determined by the frequency of their damage (i.e. the most frequently damaged mitral valve, and most rarely - tricuspid one) (Russion version).
3	The basic rhythm of the heart sounds in norm	During each heartbeat, two sounds can be distinguished with a stethoscope. This heart sounds are associated with Normal valve closure: • First Heart Sound =s S1 → closure of Mitral, Tricuspid valves • Second Heart Sound =s S2→ closure of Pulmonic, Aortic valves The basic rhythm of the heart sounds is lub-dub, pause, lub-dub, pause, and so on.
	The assessment of The First Heart Sound and the Second heart sound in norm	• The First Heart Sound-S1- created due to closure of Mitral, Tricuspid valves during systole and tends to be *louder,longer and more resonant* than the Second Heart Sound. The assessment of the sonority of the first tone is given precisely at the points of auscultation of the mitral and tricuspid valves. ^ ^ The basic rhythm at the points of ausc. of the mitral and tricuspid valves looks like LUB- dub,LUB-dub, pause, and so on. • The second heart sound - S2 - occurs when the aortic and pulmonary valves close, after blood has left the ventricles to enter the systemic and pulmonary circulation systems at the end of a systole and at the beginning of ventricular relaxation(diastole). The second heart sound is *short and sharp.* The assessment of the sonority of the second sound is given precisely at the points of auscultation of the aortic and pulmonic valves, where it is normally more audible than the first sound and equally well heard on the aorta and pulmonary artery (The pressure in the aorta is much higher than in the PA, but it is located deeper and this equalizes the sounds at the base of the heart). ^ ^ The basic rhythm listened at the base of the heart looks like lub -DUB, pause, lub -DUB, pause, and so on.
4	The heart auscultation: heart sounds abnormalities	The heart auscultation: heart sounds abnormalities In clinical practice the following changes of heart sounds may be met: 1. Volume change of the main sounds (S1 and S2); 2. Splitting (doubling) of the main sounds; 3. Appearing of additional sounds: S3 and S4, mitral valve opening snap (OS), additional systolic sound (click) and the so-called pericardium tone.
5	Loud (Accentuating)	• There exist two main reasons of accentuating of S1:

	of S1. Diminished (soft) first heart sound	1. increase of isovolumetric ventricular contraction rate for example, in tachycardia or thyrotoxicosis, when the rate of all the metabolic processes in the organism, including myocardium, is increased (increased cardiac output) 2. consolidation of cardiac structures taking part in vibrations and formation of the first sound, for example, in mitral stenosis. • Diminished (soft) S1 (non-cardiac causes) -increased check wall thickeness -pericardial effusion -hypothyroidism • Diminished (soft) S1 (cardiac causes) -mitral regurgitation -tricuspid regurgitation -ventricular dicfunction
6	Loud (Accentuating) S2. Diminished (soft) S2.	• Loud/Enhancing (accent) of the second heart sound on aorta/PA may be caused by: 1. arterial pressure increase of various genesis (due to increase of aortic valve cusps shutting rate); 2. loud the second heart sound (pulmonary) due to Pulmonary hypertension 3. consolidation of aortic valve cusps and aortic walls (atherosclerosis, syphilitic aortitis, etc). • Diminished (soft) S2. The main reasons of the second heart sound diminishing are 1. aortic or pulmonary regurgitation; 2. Decreased rate of semilunar valves closure in: a. heart failure accompanied by decreased rate of ventricles relaxation (diast. ventricular dicfunction); b. arterial pressure decrease; 3. adhesion and decrease of motility of semilunar valves cusps, for example, in valvular aortic stenosis.
7	Three-part rhythms: Mitral valve opening snap (OS) and gallop hythms	• Mitral valve opening snap (OS) (diastole). Mitral valve opening snap (OS) appears exclusively in case of mitral stenosis at the moment of mitral valve cusps opening. The heart rhythm at the same time becomes three-fold and is called the quail rhythm. • Sound S3 and S4 (diastole). - Any change of diastolic ventricular myocardial tonus, rate of its relaxation or increase of atrium volume may lead to appearance of pathologic *third heart sound*, or protodiastolic gallop rhythm. [lub de dub] sound. - In healthy people physiologic *fourth sound* is very soft, low frequent and is found rather rarely, predominantly in children and teenagers. -Pathologic accentuation *of S4* in adults is named as pre-systolic gallop rhythm. [T lub-dub] sound -Summation gallop is a three-part ventricular rhythm when, in result of sharp shortening of slow filling phase in presence of tachycardia pathologic S3 and S4 merge into one additional sound.
8	Examples of most characteristic murmurs in five acquired cardiac defects	Identify any extra sounds and murmurs in systole or diastole. Note location, timing (systole or diastole), pitch, quality, radiation or transmission, and intensity (grade). • Examples of most characteristic murmurs in five acquired cardiac defects: mitral incompetence, mitral stenosis, aortic stenosis, aortic incompetence, tricuspid incompetence.  Fig. The best sites for hearing sounds and murmurs depend on where the sound is produced and to where turbulent blood flows radiate. From Clinical Examination. Epstein et all, 2001; Tezci, 2011

OSCE check -list
Section 2. History and Physical Examination of Cardiovascular System (CVS)
Station №1. Patient interview.
FULL NAME student_____group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	Greeting			
2	Clarification of the Personal information			
3	Clarifying complaints (beginning with the preferred types of questions)			
4	Detailing the chief (CC)/ main complaints submitted to patients			
	Are there any other CC? List and details them.			
5	Clarifying Secondary /additional/non-principal complaints			
6	History of the present illness (HPI) /anamnesis morbi			
7	Past medical history (PMH)/Life history/anamnesis vitae	.	.	.
8	Review of systems(ROS)/ Documents presence or absence of common symptoms related to each major body system			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter)

Signature examiner _____
Date_____

OSCE check -list

Section 2. History and Physical Examination of Cardiovascular System (CVS)

Station №2. Systemic inspection/peripheral examination (check-up/survey) of the patients with CVS diseases. Neck vessels Exam.The examination of the precordium.

FULL NAME student_____group _____

Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	General approach to check-up			
2	Peripheral Examination			
3	Vital Signs			
4	Neck vessels Exam.Carotid pulsations.			
5	Neck veins Inspection: Jugular venous pulse(JVP). Jugular venous pressure (JVP) or abnormal waves.			
6	Examination of the precordium : Visual identification and characterization.			
7	Examination of the precordium. Any visible pulsations: Apex beat (PMI).			
8	Examination of the precordium: Any visible pulsations: heart beat and other pathological pulsations.			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter)

Signature examiner _____
Date_____

OSCE check -list
Section 2. History and Physical Examination of Cardiovascular System (CVS)
Station №3. Palpation of the the precordium. The arterial pulse palpation.
FULL NAME student_____group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	Observance of general rules the area of the heart			
2	Main goals of heart palpation and Seven areas to be examined for adnormal cardiovascular pulsation and paipation			
3	Apex Beat (PMI) Palpation			
4	Heart beat/parasternal/ heavy/ palpation.			
5	Abnormal pulsations: Aortic Area and Pulmonic Area			
6	Abnormal pulsations: the suprasternal notch and epigastric area			
7	Thrills palpation	.	.	.
8	Palpation of the radial pulse			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter) Signature examiner _____
Date_____

OSCE check -list
Section 2. History and Physical Examination of Cardiovascular System (CVS)
Station №4. Heart percussion : relative and absolute heart dullness.
FULL NAME student_____group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	The general rules of heart percussion			
2	Main goals of heart percussion. The sequence of percussion			
3	Delimitation of relative dullness of heart			
4	Definition of a configuration of heart			
5	Definition of transverse length of relative cardiac dullness			
6	Definition of size of heart vascular bundle			
7	Delimitation of absolute dullness of heart			
8	Causes of displacement of the heart dullness			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter) Signature examiner _____
Date_____

OSCE check -list
Section 2. History and Physical Examination of Cardiovascular System (CVS).
Station №5. Heart auscultation.
FULL NAME student_____group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	General rules and Auscultation Technique			
2	Auscultation anatomical surface landmarks and Auscultation points (areas).			
3	The basic rhythm of the heart sounds in norm The assessment of The First Heart Sound and the Second heart sound in norm			
4	The heart auscultation: heart sounds abnormalities			
5	Loud (Accentuating) of S1. Diminished (soft) first heart sound			
6	Loud (Accentuating) S2. Diminished (soft) S2.			
7	Three-part rhythms: Mitral valve opening snap (OS) and gallop rhythms			
8	Examples of most characteristic murmurs in five acquired cardiac defects			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter)

Signature examiner _____
Date_____

Section 3. Focused Gastrointestinal Assessment (esophagus,stomach and intestines)

Section 3. Focused Gastrointestinal Assessment (esophagus,stomach and intestines)
Station №1. Patient interview.
Assignment for student: demonstrate your communication skills, the ability to establish contact with the patient, the ability to collect Personal information, to identify and detail the patient's complaints, to collect History of the present illness (HPI) /anamnesis morbi and Past medical history (PMH)/Life history/anamnesis vitae. Determine a history of the patient's life risk factors for the development of GIT diseases.
Time: 5 minutes.

Section 3. Focused Gastrointestinal Assessment (esophagus,stomach and intestines)
Station №2. Systemic inspection (check-up/survey) of patients with esophagus, stomach and intestinal diseases . Focused Inspection of the abdomen.
Assignment for student: Describe general approach to check-up(survey) of GIT (according to Scheme of patient's Systemic inspection). Conduct a survey of the abdomen, briefly explaining your actions. Briefly describe the possible changes and their causes.
Time: 5 minutes.

Section 3. Focused Gastrointestinal Assessment (esophagus,stomach and intestines)
Station №3. Palpation of the abdomen: stomach and colons.
Assignment for student: Describe the general rules and goals of palpation. Light/superficial palpation and Deep sliding methodical palpation of the abdomen according to the Obraztsov-Strazhesko technique: goals and practice.
Time: 5 minutes.

Section 3. Focused Gastrointestinal Assessment (esophagus,stomach and intestines)
Station №4. The abdominal percussion.
Assignment for student: Diagnostic possibilities of percussion in determining changes in the abdominal organs. Percussion determination of the lower border of the stomach and ascites.
Time: 5 minutes.

Section 3. Focused Gastrointestinal Assessment (esophagus,stomach and intestines)
Station №5. Auscultation of the abdomen.
Assignment for student: Describe the general approach to auscultation of the abdomen: Bowel sounds,Vessel Bruits,Friction rubs, Venous hums.
Time: 5 minutes.

Section 3. Focused Gastrointestinal Assessment (esophagus,stomach and intestines)
Instructions for Examiner.
Station № 1. Patient interview

Please evaluate the student's ability to conduct questioning of a patient with stomach and intestinal diseases.

<table>
<tr><td>№</td><td>Criteria for job steps</td><td></td></tr>
<tr><td>1</td><td>Greeting</td><td>Has greeted, named itself, the purpose of conversation</td></tr>
<tr><td>2</td><td>Clarification of the Personal information</td><td>Has found out Personal information and age (number of full years) of the patient (Age, sex, marital status, occupation. Clarifying the date of receipt, the order of admission to hospital (planned, emergency, self-reversal), the place of patient·s work and the reason for which the patient does not work (disability, etc.)</td></tr>
<tr><td>3</td><td>Clarifying complaints (beginning with the preferred types of questions)</td><td>1. General questions: "What are you worried about?" "How did you feel before the last of ill health?"
2. Direct questions: "Where and how does it hurt?" "When did these feelings?"
The patient is given the opportunity to express all the unpleasant sensations.</td></tr>
<tr><td>4</td><td>Detailing the chief (CC)/ main complaints submitted to patients</td><td>Has defined the chief (CC) /main complaint (the CC, as a rule, coincides with the reason for seeking medical help, the diagnosis is based on the CC, the CC characterize the pathology of a certain organ system).
With regard to the CC - pain in the epigastric region- should be clarified:
• Localization & irradiation(upper/low,localized/diffused)
• Characteristics (quantitative, qualitative)
• Intensity:acceptable-intolerable
• Regularity (periodic or sporadic)
• Connection with nutrition early-30 min after meal, late-1,5-2 hours after meal, nocturnal and hunger pain
. Influencing factors (context, modifying factors,associated signs) Aggravating and relieving factors

The CC of patients with pathology of GIT
• Unpleasant sensations in the mouth (pain, burning tongue, taste, dryness, odor)
• Change in appetite (decreased, anorexia, increased, distortion) • Weight gain or loss
• Dysphagia/Odynophagia • Heartburn, belching
• Intolerance to certain foods •Nausea and vomiting (emesis/ retching)
• Change in bowel habits (constipation, diarrhea,flatulence)
• Stool description (frequency,consistency,colour,presence of any blood,mucus and pus)
• Abdominal pain • Bleeding (bloody vomiting/ hematemesis,melena)</td></tr>
<tr><td>5</td><td>Clarifying Secondary /additional/non-principal complaints</td><td>Complaints characterizing the general reaction of the body to the pathological process are called non-principal (additional)/
For example, weakness, malaise,ets. These complaints cannot t be the basis of a diagnosis.</td></tr>
<tr><td>6</td><td>History of the present illness (HPI) /anamnesis morbi</td><td>History of the present illness (HPI) /anamnesis morbi
• When did the illlness start?
• How did it start?
• How has the problem progressed over time?
• What kind of analysis has been taken and there results?
• What treatment has been taken and its effect?
Reason (s) of the present request for medical assistance</td></tr>
<tr><td>7</td><td>Past medical history (PMH)/Life history/anamnesis vitae.</td><td>
<table>
<tr><td>1. Conditions in which the patient lived and developed
• Place of Birth
• Development in childhood and adolescence
• Education
• Military service</td><td>2. Heredity
• Atherosclerotic vascular lesions
• Kidney Diseases
• Stroke
• Alcoholism
• Tuberculosis
• Mental disorders • Malignant tumors</td></tr>
<tr><td>3. Medical history (what? When?)
• Diseases
• Operations
• Anesthesia
• Treatment
• Allergic anamnesis
• Medical anamnesis</td><td>4. Social anamnesis
• Family status
• Gynecological anamnesis in women
• Professional anamnesis
• Conditions of life, hobbies</td></tr>
<tr><td>5. Risk factors
• Risk factors for external and internal environment, which increase the risk of developing the disease
• Their elimination reduces the risk of developing the disease</td><td>6. Harmful habits
• Smoking and associated clinical problems:
Diseases of the lungs (COPD, cancer)
Cardiovascular diseases
Malignant tumors
Gastrointestinal tract
Drug Interactions
Pregnancy
• Signs of alcohol dependence
• Signs of drug dependence</td></tr>
</table>
</td></tr>
</table>

8	Review of systems/ Documents presence or absence of common symptoms related to each major body system	

Check list for Systems Review (ROS)

GENERAL	GASTROINTESTINAL	MUSCULOSKELETAL	CNS
Fatigue/malaise Fever/rigors/night sweats Weight/appetite Skin: rashes/bruising Sleep disturbance CARDIOVASCULAR Chest pain/angina Shortness of breath (including on exercise) Orthopnoea PND Palpitations Ankle swelling RESPIRATORY Chest pain Shortness of breath/wheeze Cough/sputum/haemoptysis Exercise tolerance	Appetite/weight loss Dysphagia Nausea/vomiting/haematemesis Indigestion/heart burn Jaundice Abdominal pain Bowels: change/constipation/diarrhoea/ description of stool/blood/mucus/flatus GENITO-URINARY Frequency/dysuria/nocturia /polyuria/oliguria Haematuria Incontinence/urgency Prostatic symptoms Impotence Menstruation (if appropriate): menarche (age at onset) duration of bleeding, periodicity menorrhagia (blood loss) dysmenorrhoea, dyspareunia menopause, post-menopausal bleeding	Pain/swelling/stiffness – muscles/joints/ back Restriction of movement /function Power Able to wash and dress without difficulty/Able to climb up and down stairs ENDOCRINE Menstrual abnormalities Hirsutism/alopecia Abnormal secondary sexual features Polyuria/polydipsia Amount of sweating Quality of hair SKIN Rash Pruritus Acne	Headaches Fits/faints/loss of consciousness Dizziness Vision – acuity, diplopia Hearing Weakness Numbness/tingling Loss of memory /personality change Anxiety/depression

Section 3. Focused Gastrointestinal Assessment (esophagus,stomach and intestines)
Instructions for Examiner.
Station № 2. Systemic inspection (check-up/survey) of patients with esophagus, stomach and intestinal diseases . Focused Inspection of the abdomen.
Please evaluate the student's ability to inspect a patient with stomach and intestinal diseases.

№	Criteria for job steps	
1	General approach to check-up(survey):	Good lighting, warm room, warm& clean hands of the doctor, convenient position of the doctor and patient. Doctor s position on the patient's right side. Patient position Explain to the patient each step of the exam as it progresses. • Supine position • Full exposure to abdomen however maintain appropriate draping • Do not expose the patient's body until you are ready to examine. • Ask patient if they have pain anywhere before you begin!
2	General inspection check-up (survey): typical signs of GIT diseases	Approach:General inspection: →General appearance: • Bedside: equipment, treatment devices • Assess the consciousness (the continuous spectrum of quantitative disorders (oppression) of consciousness in which torpor, sopor, coma are distinguished (hypoxia, irritative disorders of intoxication); Mental state: orientation • The general condition of a patient is estimated as -satisfactory, -medium gravity or -grave (heavy) -extremely heavy -terminal • Position of patient (active;passive;forced) • Body habitus: weight loss, cachexia, obesity, (↑muscle bulk). • (Skin changes) → Face: - Eyes: jaundice, pallor, (Bitot's spot, Kayser-Fleischer rings, xanthelasma, periorbital purpura) - Salivary glands: parotid gland, submandibular gland - Mouth: hydration status, (fetor, tongue (coating, lingua nigra, geographic tongue, leukoplakia, glossitis, macroglossia), mucosa (gum hypertrophy, pigmentation, ulcers, pallor, jaundice, traces of scratching, hemorrhages, dryness or humidity) → Neck and chest: spider naevus, gynaecomastia, cervical lymphadenopathy → Upper limb:- Arms: spider naevus, (bruising, scratch marks) - Axilla: lymphadenopathy, (acanthosis nigricans) - Hands: clubbing, leukonychia, palmar erythaema, Dupuytren's contracture, asterixis,(blue lununae) → Legs: ankle oedema, (ankle pigmentation, bruising)
3	Vital Signs	• Temperature • Blood Presure • Pulse • Respiration
4	Inspection of abdomen: Setting	Setting: Good lighting, warm room, table flat. • The abdomen is inspected for vertical and horizontal position. • Positioning: supine with head resting on table /a pillow, hands at side. • Exposure: nipple to pubic symphysis ± mid-thigh (if it is a surgical case, need to look for hernias)
5	Inspection of abdomen: Shape	Inspect the surface, contours, and movements of the abdomen. → Shape: flat, scaphoid, protuberant, distended,"frog" belly, ascites. Abdominal distension or focal swellings (fat, fluid, flatus, faeces, fetus). Asymmetric abdomen bulging. Hernias & abdominal masses. Asymmetry is a warning sign and can suggest masses or organomegaly. → Umbilicus: buried, everted, inverted.
6	Inspection of abdomen: Skin lesions	→ striae, scars, stomas, fistulae. Skin discolouration (jaundice, Cullen's sign – discolouration at the umbilicus and surrounding skin, Grey-Turner's sign, pigmentation: discolouration at the flanks). Scars (result of trauma or previous surgery). Striae (pink-purple striae of Cushing's syndrome). Stomas (colostomy, ileostomy, urostomy, nephrostomy).
7	Inspection of abdomen: Dilated veins	→ Dilated veins: caput medusa vs IVC obstruction.Prominent vasculature (caput medusae – dilated blood vessels radiating from the umbilicus). Obvious pulsations (pulsatile, expanding mass in the epigastrium may be an abdominal aortic aneurysm).
8	Inspection of abdomen: Movement	→ Movement: asymmetrical movement with respiration, epigastric pulsation, visible peristalsis Peristaltic waves (may indicate intestinal obstruction). → Cough impulse (in surgical examination).

Section 3. Focused Gastrointestinal Assessment (esophagus,stomach and intestines)
Instructions for Examiner.
Station №3. Palpation of the abdomen: stomach and colon.
Please evaluate the student's ability to carry out palpation of the abdomen: stomach and colon.

№	Criteria for job steps	
1	Basic rules/ Preparation	Make sure there is enough light and that noise is minimized (by turning off TV or radio in the room). • Warm hands and stethoscope; avoid long nails; approach slowly • Position yourself on the patient's right side • Patient supine, arms at sides or folded across chest - avoid arms above the head as this tightens the abdomen. Bending knees may relax abdomen. • Patient should have an empty bladder • Before you begin, ask the patient to point to areas of pain and examine last • Distract the patient with conversation or questions • Sheet over the genitals; The abdomen is exposed from above the xiphoid to the suprapubic region; the groin is exposed as well.
2	Defining purpose of abdominal palpation.	Palpation allows for the identification of: - the extent of abdominal wall tension, - diffused or local pain/ tenderness, - abdominal masses - the presence of fluid or gas in the peritoneal cavity, - the abnormalities of sensory perception in the skin. In case of tenderness on palpitation the exam should include determining if the rapid release of hand pressure is accompanied by increased tenderness compared with the pain that is elicited by applying pressure alone. This is Blumberg sign, which provides evidence of acute peritonitis.
3	Instractions for the patient and the sequence of abdominal palpation.	• Explain to the patient each step of the exam as it progresses. • Teach the patient relaxation and deep abdominal breathing for best exam results. • Warn the patient about the possibility of discomfort during palpation. Normal (mild) tenderness is possible over the xiphoid, aorta, cecum , sigmoid colon, and ovaries with deep palpation .
4	Structures are palpable and not palpable normally	Several structures are palpable normally: Sigmoid colon is frequently palpable as a firm, narrow tube in the left lower quadrant. The caecum and ascending colon form a softer, wider tube in the right lower quadrant. Normal liver distends below the costal margin but its soft consistency is difficult to feel. Pulsations of the abdominal aorta are frequently visible and usually palpable. Usually NOT palpable are: stomach, spleen, gallbladder, duodenum,pancreas, kidneys. • Normal abdomen is non - tender and soft. There is no guarding. No palpable masses are present. Umbilicus and surrounding area are free of swellings, bulges, or masses.
5	Light/superficial palpation	• *Preceded by any deep palpation.* • *The goal is to identify the pain and an involuntary tension in the abdominal muscles* • *Sometimes it is possible to identify large volume formations (superficial organs, and masses).* Use the fingertips and palmar aspects of the fingers. Lay your right hand on the patient's abdomen and gently press in by flexing at the metacarpophalangeal joints. *Palpate with a light, gentle dipping motion using the palmar surface of Fingers.* If there is pain on light palpation, attempt to determine whether the pain is worse when you press down or when you release the pressure (rebound tenderness -Shchetkin-Blumberg sign). If the abdominal muscles seem tense, determine whether it is localized or generalized. Ensure that the patient is relaxed—it may be helpful for the patient to bend their knees slightly, relaxing the abdominal muscles. An involuntary tension in the abdominal muscles, apparently protecting the underlying organs, is called guarding. *The order in which they are examined doesn't matter—find a routine that suits you!* *Could be performed in strict consequences:* the palpation starts from the area which is the most remote from the painful area of the abdomen; if the patient does not complaint the pain in the abdomen the palpation starts from left iliac region and then continues in this consiquences→left lateral region→left umbilicalis region→left hypochondriac region→epigastric→right hypochondriac

		region→right umbilicalis region→ right lateral region→ right iliac region→hypogastric. *If the patient complains of pain in the left inguinal area,* the sequence of palpation should be so changed that the least painful site on the anterior abdomen should first be examined. *It is also a procedure of a surface tentative palpation of symmetrically areas of an abdomen*. In this case after of the left inguinal area palpation is then continued by examining symmetrical points of the abdomen on its left and right sides to end in the epigastric region. The surface tentative palpation of an abdomen reveals a presence of morbidity, a resistance of a forward abdominal wall or its muscle strain, to probe the inspissations formed in a wall, hernias, tumours, to distinguish puffiness of a skin from augmentation of a hypodermic fatty tissue. For an establishment of morbidity before a palpation it is necessary to warn the patient that he has told when at him the pain sensation will be maximal, will appear and stop. Pay attention also to a look of the patient. Simultaneously assess the condition of the abdominal skin and subcutaneous connective tissue, the strain of the abdominal wall, the zones of superficial and deeper painful areas to locate them accurately. Hernial separation of muscles and protrusions, and also other anatomical changes should be revealed. Resistance and marked strain of muscles of the abdominal wall are usually palpated over the organ affected by inflammation, especially so if the peritoneum is involved. In the presence of acute inflammation of the peritoneum (local inflammation included, e.g. in purulent appendicitis, cholecystitis, and thelike), local pressure causes strong pain but it becomes even more severe when the pressure is released (Shchetkin-Blumberg sign). In the presence of pronounced enlargement of the parenchymatous organs, in strained abdomen or intestinal loops, and also in the presence of large tumours, even surface palpation can give much diagnostic information. But only deep systematic palpation can give full information about the condition of the abdominal cavity and its organs, as well as their topography. Utmost degree of muscles contraction (abdominal guarding) suggests peritoneal irritation (peritonitis). Generalized rigidity of the abdominal muscles should be interpreted in the context of the patient's clinical state. *Rebound tenderness is elicited by removing the palpating hand suddenly after firm pressure has been applied over an area of the abdomen. If the rebound tenderness exists the patient will report pain on removal. It indicates localized peritonitis. This is conraindication for deep palpation!*
6	Deep sliding methodical palpation of the abdomen according to the Obraztsov-Strazhesko technique: goals and technique description.	1) to make a topographical distinction between the abdominal organs from each other; 2) to determine: size, shape, position, the nature of the surface, texture, pain (sensitivity), the mobility of the abdominal organs, the properties of the wall and the nature of the contents (for hollow organs). Deep palpation technique involves four steps. • The first of these is the correct position of the hands. The right hand with slightly bent fingers placed on anterior abdominal wall of the patient so that the bent fingers is parallel to the palpable part of the intestine. This point palpation requires knowledge of the topography of the abdominal organs. • The second step involves displacement of the skin and formation of skin folds to avoid skin tension during the movement of the hands. • The third stage of deep palpation is dipping the fingers of the right hand deep into the abdomen, which is carried out on the exhalation of the patient, which promotes relaxation of the muscles of the anterior abdominal wall. • The fourth stage of deep palpation is a sliding of the fingers of the right hand on the surface of the intestine is pressed to the back of the abdominal wall, the arm "rolls" across the intestine, which allows to estimate properties: localization, form, diameter, consistency (soft, dense), surface (smooth, nodular), mobility and the presence of rumbling.
7	Deep sliding methodical palpation of the abdomen according to the Obraztsov-Strazhesko technique: Colon Examination. The usual sequence.	Normally all parts of the colon can be assessed by deep palpation. The usual sequence of deep palpation includes investigation of sigmoid, then terminal part of ileum, caecum, ascending and descending colon and finally - transverse colon. This sequence also represents decreasing probability of success in palpation: it means, that sigmoid colon can be easily felt in most of the patients, even obese, while transverse colon is extremely difficult to detect. There are also some divergences in technique of palpation of different parts of the colon: you should use your left palm as a support at palpation of ascending and descending colon; you should use bimanual palpation for assessment of transverse colon. Palpation of sigmoid • The fingers of the right hand placed in the left iliac region on the border of the middle and outer thirds of the line connecting the umbilicus with the anterior upper spine of the Ilium parallel to the oblique location of the sigmoid colon. Then, shift the skin toward the umbilicus, forming the skin fold and penetrate deep into the abdominal cavity during exhale andro ll, sliding on its surface. *Normal sigmoid colon* is palpable more often than other parts of the colon (91-95% of cases) and is

		defined in the left iliac region for 20-25 sm in length , of painless cylinder form, dense consistency, with smooth surface, with a diameter of 3 cm. *The diameter of the sigmoid colon* increases with the buildup in stool,tumor lesions. In spastic contraction of the sigmoid colon, the diameter may be reduced. In malignant tumors the consistency of the sigmoid colon is compacted, and the surface becomes uneven and lumpy and less mobile. Palpation of the caecum The fingers of the right hand placed in the right iliac region on the border of the middle and outer thirds with the anterior upper spine of the Ilium parallel to the oblique location of the caecum. Then, shift the skin toward the umbilicus, forming the skin fold and penetrate deep into the abdominal cavity during roll, sliding on its surface. *Palpation of the caecum is in right iliac region*. The cecum is palpated in 79-85% of cases in the form of a resilient, moderately dense cylinder with a pear-shaped downward extension with a diameter of 3-4 cm, painless, displace in the range of 2-3 cm, rumbling on palpation. *In case of inadequate fixation* of the cecum to the rear abdominal wall, its elongation, and also by having a common mesentery with the ileum portion appears excessive mobility of the cecum, in the case of the development of adhesions mobility of the cecum reduced. *Tuberculosis or cancer consistency* of the cecum becomes more dense,and the surface hilly. Palpation of the ascending and descending parts of the colon With the aim of creating a kind of hard lining the physician puts the left hand under the right (at a palpation the ascending part) and under the left (palpation of the descending part) side of the lumbar region. The fingers of the right hand set parallel to the longitudinal axis of the named segments of the colon, the formation of the folds of the skin move towards the navel, and dipping in the abdominal cavity with your fingers slide outward, rolling through the intestine. Palpation of transverse colon. The transverse colon is palpated in approximately 70% of cases. Since the position of the transverse colon is variable, before her palpation predefine the lower border of the stomach, after which the fingers are set at 2c m was found below the border of the stomach. The fingers of both hands for 2-3 respiratory cycle on the exhale, sink deeper into the abdomen, on the next exhale is a relaxed slide down. The transverse colon is palpated in 60-70% of cases and is perceived easily dislodged cylinder. Usually the transverse colon is determined by the level of the navel for men and at 1-3 cm below the navel in women, which is below the greater curvature of the stomach 2-3 cm. Palpation of transverse colon conduct a bimanual. The bent fingers of both hands set to the right and to the left of the middle line. Fold the skin move up and slide your fingers after penetration into the abdominal cavity produce from top to bottom.
8	Deep sliding methodical palpation of the abdomen according to the Obraztsov-Strazhesko technique: Stomach Exam.	Stomach Examination Other methods of investigation include deep palpation, stethoacoustic palpation and succession. Look for the lower border of the stomach 4-5 cm above the navel, identifying it first with percussion. *Splashing sound (succussion*) can be heard if the patient is lying on his back, while the examiner pushes the anterior wall of the peritoneum with four flexed fingers of the apt hand. The other hand of the physician should fix the muscles of the abdominal prelum against the sternal edge. This technique is useful for outlining of the inferior border of the stomach. *Stethacoustic palpation (s. auscultative percussion, or auscultative affricsion) the stomach* is helpful when used together with palpation of the stomach to outline its inferior border.

Section 3. Focused Gastrointestinal Assessment (esophagus,stomach and intestines)
Instructions for the examiner.
Station №4. Abdominal percussion.
Please evaluate the student's ability to conduct abdominal percussion.

№	Criteria for job steps	
1	Justification of percussion in the abdomen Exam	• Same principle as Lung percussion • From their sound and tactile perception, the abdominal notes can be categorized as resonant or tympanic due to air or gas; dull due to muscle, soft tissue, or an organ; or stony dull due to fluid, e.g: liver → dull; air filled stomach→ tympanitic. • Organs or masses will appear as dullness, where as a bowel full of gas will seem abnormally resonant.
2	Defining purpose of abdominal percussion	• To assess size and density of organs • Determining the size and nature of enlarged organs or masses • To distinguish gas, ascites, cystic or solid masses • Detecting shifting dullness Eliciting rebound tenderness
3	General approach to abdominal percussion.	• Abdominal percussion is topographic • Use topographical lines of the chest • Percuss all 4 quadrants to find normal mix of dull and tympanitic sound. • Abdominal percussion sequences may proceed clockwise or up and down over the abdomen . • Use quiet (surface) percussion strike • Patient position: supine, on the right or left side, lying on smb stomach, standing, the knee-elbow position in order to mark shifting dullness.
4	Percussion of the abdomen: Normal percussion notes over abdominal region.	• With the exception of an area of dullness over the liver in the right lower anterior chest generalized tympany predominates heard over the abdomen because of air in the stomach and intestines. • Dullness is heard over the liver. A normal spleen isnt large enough to render the percussion note dull. • The level of dullness in the lateral abdomen flanks does not go beyond the anterior axillary line. • The borders between tympany and dullness remain relatively constant throughout position changes .
5	Percussion of the abdomen: Lower border of the stomach	Lower border of the stomach can be normally determined by light percussion along the vertical line, located 2 cm to the left from front median line, moving from the level of umbilicus (intestinal tympanic note, higher in pitch and lower in intensity) upwards to the stomach projection (stomach tympanic note, lower in pitch, higher in intensity). Percussion is used to determine the inferior border of the stomach. Provided professional skill is high, the inferior border of the stomach can be outlined by light percussion by differentiating between gastric and intestinal tympany.
6	Examining for ascites	If fluid is present in the peritoneal cavity (ascites), gravity will cause it to collect in the flanks when the patient is lying flat—this will give dullness to percussion laterally with central resonance as the bowel floats. Ascites will produce a distended abdomen, often with an everted umbilicus. If you suspect the presence of ascites: • Percuss centrally to laterally with the fingers spread and positioned longitudinally • Listen (and feel) for a definite change to a dull note.
7	Specific test for ascites: Shifting dullness	• Percuss centrally to laterally until dullness is detected. This marks the air-fluid level in the abdomen. • Keep your finger pressed there as you do the following • Ask the patient to roll onto the opposite side (i.e., if dullness is detected on the right, roll the patient to their left-hand side). • Ask the patient to hold the new position for about half a minute. • Repeat percussion, moving laterally to central over your mark.If the dullness truly was an air-fl uid level, the fluid will now be moved by gravity away from the marked spot and the previously dull area will be resonant
8	Specific test for ascites: Fluid thrill	Detect a wave transmitted across the peritoneal fluid. This is only really possible with massive ascites. You need an assistant for this test (you can ask the patient to help). • Ask your assistant to place the ulnar edge of one of their hands in the midline of the abdomen in order to prevents transmission of the impulse across the surface of the abdominal wall. • Place your left hand on one side of the abdomen, about level with the mid-clavicular line. • With your right hand, flick the opposite side of the patient's abdomen. • If a fluid thrill can be detected, you will feel the ripple from the flick transmitted as a tap to your left hand.

Section 3. Focused Gastrointestinal Assessment (esophagus,stomach and intestines)
Instructions for the examiner.
Station №5. Auscultation of the abdomen.
Please evaluate the student's ability to auscultate the abdomen: Bowel sounds, Bruits, Friction rubs, Venous hums.

<table>
<tr><td>№</td><td>Criteria for job steps</td><td></td></tr>
<tr><td>1</td><td>Sounds that can be identified during auscultation of the abdomen</td><td>• Bowel sounds
• Vessel Bruits
• Friction rubs
• Venous hums</td></tr>
<tr><td>2</td><td>General approach to abdominal Auscultation</td><td>• You should always auscultate the abdomen after inspection and before percussion or palpation so you do not produce false bowel sounds by percussion or palpation.
• Use diaphragm for bowel sounds
• Use bell for vasculature sounds…bruits, friction rubs, venous hum</td></tr>
<tr><td>3</td><td>The origin of Bowel sounds</td><td>These are low-pitched gurgling sounds produced by normal gut peristalsis. They are intermittent but will vary in timing depending on when the last meal was eaten.
•Bowel sounds echo the underlying movements of the intestines. It is normal to hear clicking and gurgling sounds approximately every 5 to 15 seconds.
• Normal: low-pitched gurgling, intermittent.
•High-pitched: often called tinkling. These sounds are suggestive of partial or total bowel obstruction.
•Borborygmus: a loud, low-pitched gurgling that can even be heard without a stethoscope. (The sounds are called borborygmi .) These are typical of diarrheal states or abnormal peristalsis.
• Absent sounds: If no sounds are heard for 2 minutes (in order to determine if bowel sounds are truly absent listen for five minutes (Jarvis, 2011)., there may be a complete lack of peristalsis—i.e., a paralytic ileus or peritonitis.
• Increased bowel sounds (including high-pitched tinkling or marked borborygmi) indicate obstruction, bleed, malabsorption, carcinoid syndrome</td></tr>
<tr><td>4</td><td>Bowel sounds. Auscultation technique description.</td><td>• Listen with the diaphragm of the stethoscope just below the umbilicus.
• Auscultation should begin in the right lower quadrant. Because bowel sounds are widely transmitted through the abdomen, listening in one spot, such as the right lower quadrant, is usually sufficient.
• Listen for bowel sounds and note their frequency and character. It is suggested that you listen to bowel sounds for a full minute before determining if they are normal, hypoactive, or hyperactive.</td></tr>
<tr><td>5</td><td>Table of Bowel Sounds</td><td>
<table>
<tr><th>Bowel Sound</th><th>How it is Produced</th><th>Possible Cause</th></tr>
<tr><td>Normal Bowel Sounds</td><td>Intestines transporting fluid and digested food through intestinal lumen at normal rate. Sounds are approximately every 5 to 15 seconds.</td><td>• Normally functioning intestine</td></tr>
<tr><td>Hypoactive Bowel Sounds</td><td>Intestines transporting fluid and digested food through intestinal lumen at a decreased rate probably due to inactivity of smooth muscle in the bowel. Sounds are approximately every 20 to 30 seconds; can be longer.</td><td>• Paralytic ileus
• Peritonitis
• Decreased bowel motility
• Late intestinal obstruction</td></tr>
<tr><td>Hyperactive Bowel Sounds</td><td>Intestines transporting fluid and digested food through intestinal lumen at an increased rate probably due to rapid passage of air and fluid through the intestines. Sounds can be as frequent as every second.</td><td>• Diarrhea
• Early intestinal obstruction
• Gastroenteritis
• Anxiety</td></tr>
<tr><td>High-pitched Rushing or Tinkling Sounds (Borborygmi)</td><td>Hyperperistalsis from intestinal straining to push fluid and/or air past an obstruction, or fluid and/or air under pressure. Very loud sounds; may be heard without a stethoscope.</td><td>• Intestinal obstruction
• Dilated bowel loops
• Fecal impaction
• Gastroenteritis</td></tr>
<tr><td>Absent Bowel Sounds</td><td>Absence of intestinal motility
Ominous finding</td><td>• Peritonitis
• Late obstruction (ileus)
• Perforation
• Trauma</td></tr>
<tr><td>Abdominal Bruits</td><td>Whooshing sound over an artery from increased turbulence of blood flow in that artery</td><td>• Aneurysm
• Thin, emaciated patient
• Renal artery stenosis</td></tr>
<tr><td colspan="3">(Jarvis, 2011; Shaw 2012)</td></tr>
</table>
</td></tr>
<tr><td>6</td><td>Bruits auscultation approach</td><td>These are sounds produced by the turbulent flow of blood through a vessel—similar in sound to heart murmurs. Listen with the diaphragm of the stethoscope.
Bruits may occur in normal adults but raise the suspicion of pathological stenosis (narrowing) when heard throughout both systole and diastole.
There are several areas you should listen at on the abdomen:
• Just above the umbilicus over the aorta (abdominal aortic aneurysm)
• Either side of midline just above the umbilicus (renal artery stenosis)</td></tr>
</table>

		• At the epigastrium (mesenteric stenosis) • Over the liver (AV malformations, acute alcoholic hepatitis,hepatocellular carcinoma)
7	Friction rubs auscultation approach	These are creaking sounds like that of a pleural rub heard when inflamed peritoneal surfaces move against each other with respiration. Listen over the liver and spleen in the right and left upper quadrants, respectively. Causes include hepatocellular carcinoma, liver abscesses, recent percutaneous liver biopsy, liver or splenic infarction, and STI-associated perihepatitis (Fitz–Hugh–Curtis syndrome).
8	Venous hums auscultation approach	Rarely, it is possible to hear the hum of venous blood flow in the upper abdomen over a caput medusa secondary to portosystemic shunting of blood.

OSCE check-list
Section 3. Focused Gastrointestinal Assessment (esophagus,stomach and intestines)
Station № 1. Patient interview
FULL NAME student_____ group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	Greeting			
2	Clarification of the Personal information			
3	Clarifying complaints (beginning with the preferred types of questions)			
4	Detailing the chief (CC)/ main complaints submitted to patients			
5	Clarifying Secondary /additional/non-principal complaints			
6	History of the present illness (HPI) /anamnesis morbi			
7	Past medical history (PMH)/Life history/anamnesis vitae			
8	Review of systems/ Documents presence or absence of common symptoms related to each major body system			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter)

Signature examiner _____
Date_____

OSCE check-list
Section 3. Focused Gastrointestinal Assessment (esophagus, stomach and intestines)
Station № 2. Systemic inspection (check-up/survey) of patients with esophagus, stomach and intestinal diseases. Focused Inspection of the abdomen.
FULL NAME student_____ group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	General approach to check-up(survey)			
2	General inspection check-up (survey): typical signs of GIT diseases			
3	Vital Signs			
4	Inspection of abdomen: Setting			
5	Inspection of abdomen: Shape			
6	Inspection of abdomen: Skin lesions			
7	Inspection of abdomen: Dilated veins			
8	Inspection of abdomen: Movement			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter)

Signature examiner _____
Date_____

OSCE check-list
Section 3. Focused Gastrointestinal Assessment (esophagus, stomach and intestines)
Station № 3. Palpation of the abdomen: stomach and colon.
FULL NAME student_____ group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	Basic rules/Preparation			
2	Defining purpose of abdominal palpation.			
3	Instractions for the patient and the sequence of abdominal palpation.			
4	Structures are palpable and not palpable normally			
5	Light/superficial palpation			
6	Deep sliding methodical palpation of the abdomen according to the Obraztsov-Strazhesko technique: goals and technique description.			
7	Deep sliding methodical palpation of the abdomen according to the Obraztsov-Strazhesko technique: Colon Examination.The usual sequence.			
8	Deep sliding methodical palpation of the abdomen according to the Obraztsov-Strazhesko technique: Stomach Exam.			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter) Signature examiner _____
Date_____

OSCE check-list
Section 3. Focused Gastrointestinal Assessment (esophagus,stomach and intestines)
Station № 4. Abdominal percussion.
FULL NAME student_____ group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	Justification of percussion in the abdomen Exam			
2	Defining purpose of abdominal percussion			
3	General approach to abdominal percussion.			
4	Percussion of the abdomen: Normal percussion notes over abdominal region.			
5	Percussion of the abdomen: Lower border of the stomach			
6	Examining for ascites			
7	Specific test for ascites: Shifting dullness			
8	Specific test for ascites: Fluid thrill			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter) Signature examiner _____
Date_____

OSCE check-list
Section 3. Focused Gastrointestinal Assessment (esophagus,stomach and intestines)
Station № 5. Auscultation of the abdomen.
FULL NAME student_____ group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	Sounds that can be identified during auscultation of the abdomen			
2	General approach to abdominal Auscultation			
3	The origin of Bowel sounds			
4	Bowel sounds. Auscultation technique description.			
5	Table of Bowel Sounds			
6	Bruits auscultation approach			
7	Friction rubs auscultation approach			
8	Venous hums auscultation approach			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter)

Signature examiner _____
Date_____

Section 4. The fundamentals of clinical diagnosis hepatobiliary system and pancreas diseases.

Section 4. The fundamentals of clinical diagnosis hepatobiliary system and pancreas diseases.
Station №1. Patient interview.
Assignment for student: demonstrate your communication skills, the ability to establish contact with the patient, the ability to collect Personal information, to identify and detail the patient's complaints, to collect History of the present illness (HPI) /anamnesis morbi and Past medical history (PMH)/Life history/anamnesis vitae. Determine a history of the patient's life risk factors for the development of the liver, biliary tract, pancreas diseases.
Time: 5 minutes.

Section 4. The fundamentals of clinical diagnosis hepatobiliary system and pancreas diseases.
Station №2. Systemic inspection (check-up/survey) of patients. Focused Inspection of the abdomen for hepatobiliary system and pancreas disease signs.
Assignment for student: Describe general approach to check-up(survey) of hepatobiliary system and pancreas (according to Scheme of patient's Systemic inspection). Conduct a survey of the abdomen, briefly explaining your actions. Briefly describe the possible changes and their causes.
Time: 5 minutes.

Section 4. The fundamentals of clinical diagnosis hepatobiliary system and pancreas diseases.
Station №3. Palpation of the abdomen: liver, gallbladder, spleen and pancreas.
Assignment for student: Name the general rules of palpation. Define purpose and carry out deep palpation: liver, gallbladder, spleen, pancreas. Briefly characterize palpation data and possible changes in liver and their causes.
Time: 5 minutes.

Section 4. The fundamentals of clinical diagnosis hepatobiliary system and pancreas diseases.
Station №4. Percussion of the abdomen: liver and spleen.
Assignment for student: Describe the upper and inferior liver borders delimination. Carry out liver and spleen percussion according to M. G. Kurlov (Liver and spleen span determination). Briefly characterize percussion data and possible changes in liver and their causes.
Time: 5 minutes.

Section 4. The fundamentals of clinical diagnosis hepatobiliary system and pancreas diseases.
Station №5. Auscultation of the abdomen: Bruits, Friction rubs, Venous hums.
Assignment for student: conduct auscultation of the abdomen: Bowel sounds, Bruits, Friction rubs, Venous hums, auscultative percussion/auscultoaffliction for inferior liver boder determination
Time: 5 minutes.

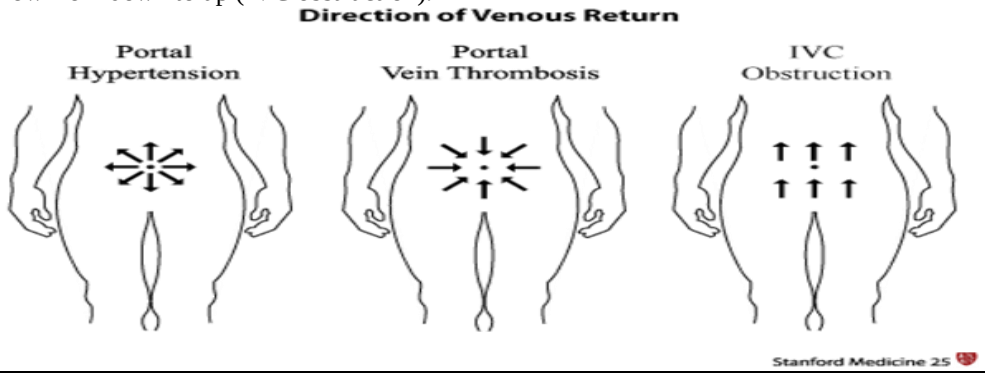
Section 4. The fundamentals of clinical diagnosis hepatobiliary system and pancreas diseases.
Instructions for Examiner.
Station № 1. Patient interview
Please evaluate the student's ability to conduct questioning of a patient with hepatobiliary system and pancreas diseases.

№	Criteria for job steps	
1	Greeting	Has greeted, named itself, the purpose of conversation
2	Clarification of the Personal information	Has found out Personal information and age (number of full years) of the patient (Age, sex, marital status, occupation. Clarifying the date of receipt, the order of admission to hospital (planned, emergency, self-reversal), the place of patient's work and the reason for which the patient does not work (disability, etc.)
3	Clarifying complaints (beginning with the preferred types of questions)	1. General questions: "What are you worried about?" "How did you feel before the last of ill health?" 2. Direct questions: "Where and how does it hurt?" "When did these feelings?" The patient is given the opportunity to express all the unpleasant sensations.
4	Detailing the chief (CC)/ main complaints submitted to patients	Has defined the chief (CC) /main complaint (the CC, as a rule, coincides with the reason for seeking medical help, the diagnosis is based on the CC, the CC characterize the pathology of a certain organ system). *With regard to the CC - pain in the upper /right hypochondrium, epigastric region- should be clarified:* • Localization & irradiation(upper /right hypochondrium and sometimes in the epigastrium) • Pain may radiate to the right shoulder, scapula, and in the interscapular space (in chronic cholecystitis, perihepatitis and pericholecystitis, i.e. when the process extends onto the peritoneum overlying the liver and the gall bladder, and also in rapid and considerable enlargement of the liver which causes distension of Glisson's capsule). • Characteristics (quantitative, qualitative): pressure, heaviness, or distension in the right hypochondrium • Intensity:acceptable-intolerable • Regularity (periodic or sporadic) (persistent and dull, or it may be severe and occur in attacks) The CC of patients with pathology of hepatobiliary system and pancreas Dyspeptic complaints include: bitter taste in the mouth • Change in appetite (decreased, anorexia) • Weight gain or loss • Heartburn, belching, , eructation, • Intolerance to certain foods •Nausea and vomiting (emesis/ retching) • Change in bowel habits (constipation, diarrhea,flatulence) • distension of the abdomen and rumbling,) • Abdominal pain • Bleeding (bloody vomiting/ hematemesis,melena),ecchymosis,easy bruising • Jaundice, pruritus, clay colored stool • Altered sensorium, fatigue
5	Secondary /additional/non-principal complaints	Complaints characterizing the general reaction of the body to the pathological process are called non-principal (additional)/ For example, weakness, malaise,ets. These complaints cannot t be the basis of a diagnosis.
6	History of the present illness (HPI) /anamnesis morbi	History of the present illness (HPI) /anamnesis morbi • When did the illlness start? • How did it start? • How has the problem progressed over time? • What kind of analysis has been taken and there results? • What treatment has been taken and its effect? Reason (s) of the present request for medical assistance
7	Past medical history (PMH)/Life history/anamnesis vitae.	1. Conditions in which the patient lived and developed • Place of Birth • Development in childhood and adolescence • Education • Military service 2. Heredity • Atherosclerotic vascular lesions • Kidney Diseases • Stroke • Alcoholism • Tuberculosis • Mental disorders • Malignant tumors

<table>
<tr><td></td><td></td><td colspan="2">3. Medical history (what? When?)
• Diseases
• Operations
• Anesthesia
• Treatment
• Allergic anamnesis/Medical anamnesis</td><td>4. Social anamnesis
• Family status
• Gynecological anamnesis in women
• Professional anamnesis
• Conditions of life, hobbies</td></tr>
<tr><td></td><td></td><td colspan="2">5. Risk factors
• Risk factors for external and internal environment, which increase the risk of developing the disease
• Their elimination reduces the risk of developing the disease</td><td>6. Harmful habits
• Smoking and associated clinical problems:
Diseases of the lungs (COPD, cancer) Cardiovascular diseases
Malignant tumors Gastrointestinal tract
Drug Interactions Pregnancy
• Signs of alcohol dependence
• Signs of drug dependence</td></tr>
<tr><td>8</td><td>Review of systems/ Documents presence or absence of common symptoms related to each major body system</td><td colspan="3"><table>
<tr><td colspan="4">Check list for Systems Review (ROS)</td></tr>
<tr><td>GENERAL
Fatigue/malaise
Fever/rigors/night sweats
Weight/appetite
Skin: rashes/bruising
Sleep disturbance
CARDIOVASCULAR
Chest pain/angina
Shortness of breath (including on exercise)
Orthopnoea
PND
Palpitations
Ankle swelling
RESPIRATORY
Chest pain
Shortness of breath/wheeze
Cough/sputum/haemoptysis
Exercise tolerance</td><td>GASTROINTESTINAL
Appetite/weight loss
Dysphagia
Nausea/vomiting/haematemesis
Indigestion/heart burn
Jaundice
Abdominal pain
Bowels:
change/constipation/diarrhoea/
description of
stool/blood/mucus/flatus
GENITO-URINARY
Frequency/dysuria/nocturia
/polyuria/oliguria
Haematuria
Incontinence/urgency
Prostatic symptoms
Impotence
Menstruation (if appropriate):
menarche (age at onset)
duration of bleeding, periodicity
menorrhagia (blood loss)
dysmenorrhoea, dyspareunia
menopause, post-menopausal bleeding</td><td>MUSCULOSKELETAL
Pain/swelling/stiffness – muscles/joints/ back
Restriction of movement /function
Power
Able to wash and dress without difficulty/Able to climb up and down stairs
ENDOCRINE
Menstrual abnormalities
Hirsutism/alopecia
Abnormal secondary sexual features
Polyuria/polydipsia
Amount of sweating
Quality of hair
SKIN
Rash
Pruritus
Acne</td><td>CNS
Headaches
Fits/faints/loss of consciousness
Dizziness
Vision – acuity, diplopia
Hearing
Weakness
Numbness/tingling
Loss of memory /personality change
Anxiety/depression</td></tr>
</table></td></tr>
</table>

Section 4. The fundamentals of clinical diagnosis hepatobiliary system and pancreas diseases.
Instructions for Examiner.
Station №2. Systemic inspection (check-up/survey) of patients. Focused Inspection of the abdomen for hepatobiliary system and pancreas disease signs.
Please evaluate the student's ability to inspect a patient and inspect the abdomen for hepatobiliary system and pancreas diseases signs.

№	Criteria for job steps	
1	General approach to check-up(survey):	Good lighting, warm room, warm& clean hands of the doctor, convenient position of the doctor and patient. Doctor ́s position on the patient's right side. Table flat. Patient position Explain to the patient each step of the exam as it progresses. • Supine position • Full exposure to abdomen however maintain appropriate draping • Do not expose the patient's body until you are ready to examine. Ask patient if they have pain anywhere before you begin! • The abdomen is inspected for vertical and horizontal position. • Positioning: supine with head resting on table /a pillow, hands at side. Exposure: nipple to pubic symphysis ± mid-thigh (if it is a surgical case, need to look for hernias)
2	General inspection check-up (survey): General appearance	Approach:General inspection: →General appearance: • Bedside: equipment, treatment devices • Assess the consciousness (the continuous spectrum of quantitative disorders (oppression) of consciousness in which torpor, sopor, coma are distinguished (hypoxia, irritative disorders of intoxication); Mental state: orientation • The general condition of a patient is estimated as -satisfactory, -medium gravity or -grave (heavy) -extremely heavy -terminal • Position of patient (active;passive;forced) • Body habitus: weight loss, cachexia, obesity, (↑muscle bulk).
3	General inspection check-up (survey): typical signs of liver diseases.	• (Skin changes) alopecia, petechia & echymotic patches → Face: - Eyes: jaundice, pallor, (Bitot's spot, Kayser-Fleischer rings, xanthelasma, periorbital purpura) - Salivary glands: parotid swelling, submandibular gland - Mouth: hydration status, (fetor, tongue (coating, lingua nigra, geographic tongue, leukoplakia, glossitis, macroglossia), mucosa (gum hypertrophy, pigmentation, ulcers, pallor, jaundice, traces of scratching, hemorrhages, dryness or humidity) → Neck and chest: spider naevus, gynaecomastia, cervical lymphadenopathy → Upper limb:- Arms: spider naevus, (bruising, scratch marks) - Axilla: lymphadenopathy, (acanthosis nigricans) diminished axillary hair, - Hands: clubbing, leukonychia, palmar erythaema, Dupuytren's contracture, asterixis,(blue lununae), Terry's "half & half" nails. → Legs: ankle oedema, (ankle pigmentation, bruising) →Testicular atrophy
4	General inspection check-up (survey): typical signs of pancreas diseases.	Skin discoloration Grot's sign is atrophy of subcutaneous fat in the projection area of the pancreas on the anterior abdominal wall. "Red drops" sign may be observed — presence of red spots on the abdominal, chest and back skin, and also brownish skin colouring above the pancreas area. Classical patterns of bruising or discoloration indicating the presence of retroperitoneal blood (seen especially in pancreatitis): • Cullen's sign: discoloration at the umbilicus and surrounding skin • Grey-Turner's sign: discoloration at the flanks
5	Inspection of abdomen: Shape	Inspect the surface, contours, and movements of the abdomen. → Shape: flat, scaphoid, protuberant, distended,"frog"-like, ascites. Abdominal distension or focal swellings (fat, fluid, flatus, faeces, fetus). → Umbilicus: buried, everted, inverted.
6	Inspection of abdomen: asymmetry	Asymmetry is a warning sign and can suggest masses or organomegaly (hepatomegaly, splenjmegaly). Asymmetric abdomen bulging. Hernias & abdominal masses.

7	Inspection of abdomen: Skin lesions	→ striae, scars, stomas, fistulae. Skin discolouration (jaundice, Cullen's sign – discolouration at the umbilicus and surrounding skin, Grey-Turner's sign, pigmentation: discolouration at the flanks). Scars (result of trauma or previous surgery). Striae (pink-purple striae of Cushing's syndrome). Stomas (colostomy, ileostomy, urostomy, nephrostomy).
8	Inspection of abdomen: Dilated veins.	→ Dilated veins: caput medusa vs IVC obstruction. Prominent vasculature (caput medusae – dilated blood vessels radiating from the umbilicus).
	Inspection of abdomen: Abdominal Venous Patterns	Need to distinguish three kinds of flow in visible veins. • Flow away from the umbilicus (portal hypertension). • Flow to the umbilicus (rare, in portal vein thrombosis). • Flow from down to up (IVC obstruction). 

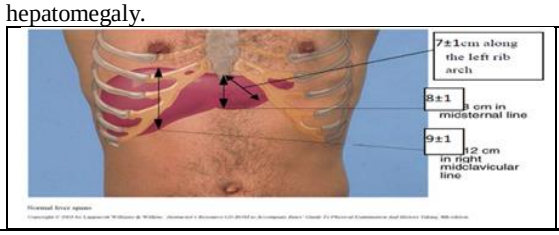
Section 4. The fundamentals of clinical diagnosis hepatobiliary system and pancreas diseases.
Instructions for Examiner.
Station №3. Palpation of the abdomen: liver, gallbladder, spleen and pancreas.
Please rate the ability of the student to carry out palpation liver, gallbladder, spleen and pancreas.

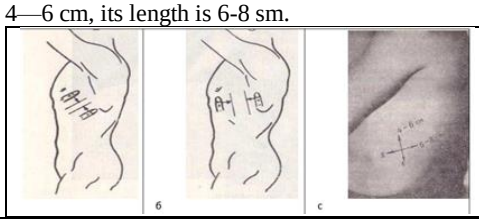
№	Criteria for job steps	
1	Basic rules/ Preparation	Make sure there is enough light and that noise is minimized (by turning off TV or radio in the room). • Warm hands and stethoscope; avoid long nails; approach slowly • Position yourself on the patient's right side, facing the patient • Patient supine, arms at sides or folded across chest - avoid arms above the head as this tightens the abdomen. Bending knees may relax abdomen. • Patient should have an empty bladder • Distract the patient with conversation or questions Sheet over the genitals; The abdomen is exposed from above the xiphoid to the suprapubic region.
2	Defining purpose of liver palpation.	Palpation of a liver purposes • detection of the inferior edge, • definition of its localization, • form, lineament, consistence, • character of surface and tenderness
3	Instractions for the patient and explanation of the sequence of liver palpation.	• Explain to the patient each step of the exam as it progresses. • Teach the patient relaxation and deep abdominal breathing for best exam results. • Warn the patient about the possibility of discomfort during palpation. • Percussion of hepatic inferior borders on all lines foreruns always to palpation of the liver.
4	Procedure of palpation of the liver by the Obraztsov and Strazhesko method.	As the lower edge of the liver descends to meet the examining fingers during a deep inspiration it slides over the fingers and thus becomes detectable. It should be remembered that the respiratory mobility of the liver is the highest compared with that of the other abdominal organs because the liver is the closest to the diaphragm. It follows therefore that during palpation of the liver, the active role belongs to its respiratory mobility rather than to the palpating fingers (as is the case with palpation of the intestine). Procedure of palpation of the liver. Place four fingers of left hand on the right costal arch of the patient chest and use left thumb to press on the costal arch to move the liver closer to the palpating fingers of the right hand and to prevent expansion of the chest during inspiration. It stimulates greater excursions of the right cupula of diaphragm. The palm of the right hand is placed flat on the abdomen below the costal arch between the right parasternalis and midclavicular lines. The slightly flexed fingers press lightly on the abdominal wall. The patient is asked to take a deep breath; the liver descends to touch the palpating fingers and then slides to bypass them. The examiner's hand remains motionless. The procedure is repeated several times. The position of the liver margin varies depending on conditions. It is therefore necessary first to determine the lower margin of the liver by percussion before positioning the palpating fingers. Common rules should be followed during palpation of the liver and the gall bladder. The four moments of deep sliding palpation must be taken into account for palpation of the liver: *The first moment is the position of arms*. The right arm is placed at the region of right hypochondrium on the right parasternalis line with slightly bent fingers whose tips should be 3-5 sm lower than the percussionaly found inferior border of the liver. The left arm covers the inferior department of the right half of chest so that the big finger is placed on the anterior surface of the right costal arch while other fingers (2-5-th fingers) settled down behind. Thus we aspire to confine motility of the chest during an inspiration and to strengthen motion of the diaphragm from top to bottom. The second and third moments (formation of the artificial pouch according to V.P. Obraztsov) are united and performed during the one expiration. For this purpose it is necessary to make a superficial motion to dislocate a skin fold downwards and to plunge tips of fingers of the right arm in depth of the abdominal cavity during the one expiration when there is a maximal release of the anterior abdominal wall muscles, and the liver follows the diaphragm. The fourth moment is palpation of the inferior edge of a liver. After dipping a palpating arm in abdomen and formation of the artificial pouch the patient is askedto take a deep breath. The liver descends to touch the palpating fingers and then slides to bypass them. The lower edge of a normal liver is usually palpated between the right parasternal and midclavicular line; the liver is impalpable to the right of the midclavicular line because it is located behind the costal arch; the liver is hardly palpable to the left of the line because of the abdominal muscles. An enlarged or consolidated liver can be palpated in all lines. It is easily to perform a palpation on the right parasternalis

		line as here the inferior edge of a liver settles down in standard conditions on 2 sm of below costal arch. On a right midclavicular line it is as a rule at a level of a costal arch. According to Obraztsov, normal liver can be palpated in 88 per cent of cases. Palpation verifies the findings obtained by percussion of the liver.
5	Liver lower edge and surface description	The margin of an unaffected liver palpated at the height of a deep inspiration is 1—2 cm below the costal arch. It is soft, sharp or slightly rounded under the form, readily bending, smooth and insensitive. Physical properties of the liver can be determined by palpating its lower edge (it can be soft, firm, rough, sharp, rounded, tender, etc.). The liver of a healthy subject (if it is accessible to palpation) is soft; it becomes firmer in hepatitis, hepatosis, and cardiac congestion. *Palpation is painful* if the liver is inflamed and the affection extends onto the liver capsule; the liver is also tender when it is distended (e.g. in blood congestion due to heart failure). The liver is especially firm in cirrhosis. Its edge becomes sharp and the surface smooth or covered with small tubercles. The liver is also firm in the presence of tumour and multiple metastases of cancer. *Its surface then becomes* covered with rough tubercles (surface metastases) and the lower margin is rough. The liver is firm in amyloidosis. Comparatively small tumours and echinococcosis can sometimes be palpated. Protrusion of the lower margin of an enlarged liver is assessed with respect to the costal arch in the right anterior axillary line, right midclavicular line, right parasternal line, anterior median line, and left parasternal line.
6	The gallbladder palpation:describe the cases of palpability.	The gallbladder cannot be palpated in healthy subjects because of its soft consistency and the insignificant protrusion. But if the gallbladder is enlarged (hydrops, stones in the bladder, cancer, etc.) it becomes palpable. The position of the patient for palpation of the gallbladder is the same as in palpation of the liver. After the margin of the liver has been found, the gall bladder should be palpated at the lateral edge of the right rectus abdominis muscle. The palpation technique is the same as that for palpation of the liver. The gallbladder can easier be found by moving the palpating fingers in the direction perpendicular to the axis of the gallbladder. The bladder is felt like a pear of variable size, firmness and tenderness depending on the character of pathology in the gallbladder proper or the surrounding organs (e.g. the gallbladder is enlarged, soft, and elastic in tumour obstructed bile duct: Courvoisier-Terrier sign; the bladder is firm and tuberous in the presence of newgrowths in its wall, in overfilling with stones, in inflammation of the wall, etc.). An enlarged gallbladder is mobile during respiration (it performs lateral pendulum-like movements). The gallbladder loses its mobility in inflammation of the overlying peritoneum (pericholecystitis). In the presence of cholecystitis and cholelithiasis, the palpation is difficult because of sharp pain and reflectory rigidity of the muscles of the anterior abdominal wall.
7	Procedure of Spleen palpation by the Obraztsov and Strazhesko method	A normal spleen is impalpable. It can only be palpated in rare cases of extreme splenoptosis, and more frequently in enlargement of the organ. Palpation of the spleen is held in position on the back and on the right side. In the case of splenomegaly evaluated its edge surface. • Again, with the left hand, reach over and round the patient to support and press forward the lower left rib cage • With your right hand below the left costal margin, press in toward the spleen • Again, begin palpation low so you don't miss an enlarged spleen • Again ask the patient to take a deep breath and try to feel the tip of the spleen as it comes down to meet your fingertips
8	The spleen palpation:describe the cases of palpability.	A normal spleen is impalpable. It can only be palpated in rare cases of extreme splenoptosis, and more frequently in enlargement of the organ. The anterior surface of the enlarged spleen emerges from under the costal arch and also becomes palpable. *The characteristic peculiarity of lien is* one or several notches (incisures) on the anterior edge of the spleen can be palpated if its enlargement is considerable. The notches are used to identify the spleen (to differentiate it from other organs, e.g. from the left kidney, tumors originated from the left kidney, splendid curvature of a transverse colon and caudal part of pancreas). *The spleen is enlarged* in some acute and chronic infectious diseases (typhus, viral hepatitis, sepsis, malaria, etc.), in liver cirrhosis, thrombosis or compression of the splenic vein, and also in many diseases of the hemopoietic system (hemolytic anemia, thrombocytopenic purpura, acute and chronic leucosis). *Considerable enlargement of the spleen is called splenomegaly*. The greatest enlargement of the spleen is observed at the terminal stage of chronic myeloleucosis: it often occupies the entire left part of the abdomen, while its lower pole is found in the small pelvis. *In most diseases the spleen is insensitive to palpation.* It becomes tender in infarction, perisplenitis, and in distension of the capsule, due to the rapid enlargement, e.g. in venous blood congestion due to thrombosis of the splenic vein. *The spleen surface is usually smooth*; the edges and the surface are irregular in perisplenitis and old infarctions (depressions in the surface). In syphilitic gummas, echinococcosis, cysts and very rare

		tumours of the spleen its surface is tuberous. *The spleen is normally quite mobile*, but the mobility becomes limited in perisplenitis. A markedly enlarged spleen remains motionless during respiration but it can however be displaced by the palpating fingers.

Section 4. The fundamentals of clinical diagnosis hepatobiliary system and pancreas diseases.
Instructions for Examiner.
Station №4. Percussion of the abdomen: liver and spleen.
Please rate the ability of the student to carry out liver and spleen percussion.

№	Criteria for job steps	
1	Some based ideas for liver and spleen percussion	Liver and spleen Percussion: • Percuss looking for areas of tympany and dullness • Upper border of the liver is percussed in the right, midclavicular line starting at midchest • Resonance becomes dull as upper border of liver is reached and becomes resonant again as lower level of liver is reached • Can be used to assess size of liver and spleen • These two organs are approached from the umbilicus below, and above from the right second space for the upper edge of the liver, and from the left axilla for the spleen.
2	Superior liver border delimination	Superior border of absolute hepatic dullness is determined on parasternalis, midclavicular, right anterior axillary lines by percussion on intercostal spaces. In norm the superior border of absolute hepatic dullness passes: • on right parasternalis line at the level of the upper edge of the 6-th rib, • on the midclavicular line - at the level of inferior edge of the 6-th rib, • on anterior axillary line - at the level of inferior edge of the 7-th rib. The superior border of the liver can be determined posteriorly, but normally the determination ends by percussion in the three mentioned lines.
3	Inferior liver border delimination (according to Obraztsov and Strazhesko): procedure of percussiod	Delimitation of the inferior border of absolute hepatic dullness is difficult because of the presence of hollow organs in the vicinity of the liver. The stomach and the intestine give high tympanic sound that masks the liver dullness. The lightest (quietest) percussion should therefore be used. Determination of the inferior border of absolute dullness (according to Obraztsov and Strazhesko) should begin from the right part of the abdomen along 5 lines with the patient in the horizontal position: • the right anterior axillary line • the right midclavicular line • the right parasternal line • the anterior median line • the left parasternalis line The pleximeter-finger is placed parallel to the expected inferior border of the liver, some distance away from it, so that tympany might first be heard (at the umbilical level or slightly below the navel). As the pleximeter-finger is then moved upwards, tympany is followed by absolute dullness. The point of disappearance of tympany is marked in each vertical line on the inferior edge of the pleximeter-finger.
4	The normal inferior borders of liver absolute dullness (according to Obraztsov and Strazhesko)	Normally the inferior border of absolute dullness of a lying patient with normosthenic chest passes • at the level of upper edge of 10-th rib **in the right anterior axillary line,** • at the inferior edge of the right arch **in the midclavicular line,** • 2 cm below the interior edge of the right costal arch **in the right parasternal line,** • and 3-6 cm away from the inferior edge of the xiphoid process (at the border of the upper third of the distance from the base of the xiphoid process to the navel) **on the anterior median line;** • **on the left parasternalis line** - at the level of the inferior edge of a costal arch. The lower margin of the liver in norm can be very depending on the shape of the chest and constitution of the patient, but it has only effect on the position in the anterior median line. The lower margin of the liver in a hypersthenic chest is slightly above the mentioned level, while in an asthenic chest below it, approximately midway between the base of the xiphoid process and the navel. If the patient is in the upright posture, the lower margin of the liver descends 1-1.5 cm. If the liver is enlarged, its lower margin is measured in centimeters from the costal arch and the xiphoid process.
5	The left border of liver dullness determination	When determining the left border of liver dullness, the pleximeter-finger is placed perpendicularly to the edge of the left costal arch, at the level of the 8-9-th ribs, and percussion is carried out to the right, directly over the edge of the costal arch, to the point where tympany changes to dullness (in the region of Traube's space).
6	Percussion of the liver according to M. G. Kurlov: Liver span determination	When you apply percussion of the liver according to M. G. Kurlov estimated its size, which allows to identify hepatomegaly.  In a healthy person the dimensions of a liver on Kurlov: • on the midclavicular line - 9 ± 1 cm • along the median line of 8 ± 1 cm • along the left costal arch 7 ± 1 cm.
7	Percussion of the spleen:	• The percussion of a lien in view of its small size and the close surrounding with gassy organs (lung, a stomach and an intestine) is inconvenient. The lien is placed in norm under the left dome of a diaphragm in the lateral

	Spleen span determination	part of the left hypochondrium, adjoining the chest wall between the 9- and -11-th ribs. The longitudinal axis of the spleen passes in an oblique, anteroposterior direction, parallel to the 10-th rib. • During percussion the patient lies usually on his right side with a little bit bent left leg and the left arm stretched forward, more rarely the patient stands upright. • Quiet percussion should be used with transition from clear resonance to dullness. • Percussion of the superior and the inferior borders of the lien is performed first, the anterior and posterior borders of the lien are percussed second. • For delimitation of the superior border of lien the finger- pleximeter is placed parallel to the ribs at the 3-d or 4-th intercostal space on the left medium axillary line. Percussion is conducted from top to bottom before appearance of the dulled sound. The border is marked on the edge of the finger - pleximeter from the side of a clear sound. • Delimitation of the inferior border of lien is performed also on the left medium axillary line. The finger-pleximeter is positioned below the inferior edge of the left costal arch. Percussion is conducted upwards the spleen dullness, marking the border from the side of a tympanic note. • For delimitation of the anterior border of lien it is necessary to continue mentally its superior and inferior borders in the line of umbilicus. In the interspace between them the finger - pleximeter is positioned parallel to the required border. Starting from the umbilicus a quiet percussion is proceeded on the 10-th intercostals space. The required border of lien is marked on the side of a tympanic sound. • For delimitation of the posterior border of lien it is necessary to find the 10-th rib corresponding to its longitudinal axis and to place a finger - pleximeter on these lines parallel to the required border (i.e. upright) in the space between the posterior axillary and scapular lines. Percussion is performed immediately on the 10-th rib before appearance of a dulled sound. The posterior border of lien is marked from the side of a tympanic sound. • Normally the superior border of the splenic dullness corresponds to the lower edge of IX rib, inferior border - to the lower edge of XI ribs. The anterior border of the splenic dullness is on 1-2 sm outside of anterior axillary line, the posterior border – on the posterior axillary line. The measurement of the lines bridging the superior and inferior, anterior and posterior borders of splenic dullness gives conception about size of lien. Its width is 4—6 cm, its length is 6-8 sm.  Spleen span determination
8	Interpretation of the results of liver percussion.	• Outlining the liver by percussion is diagnostically important. But ascending or descending of the superior margin of the liver is usually associated with extrahepatic changes (high or low diaphragm, sub-diaphragmatic abscess, pneumothorax, or pleurisy with effusion). The superior margin of the liver can ascend only in echynococcosis or cancer of the liver. • Elevation of the inferior margin indicates diminution of the liver; it can also occur in meteorism and ascites which displace the liver upwards. • The lower border usually descends when the liver is enlarged (due to hepatitis, cirrhosis, cancer, echynococcosis, blood congestion associated with heart failure, etc.). • It can sometimes be explained by low position of the diaphragm. • Systematic observation of the liver borders and changes in the liver dullness gives information on changes in its size during the disease.

Section 4. The fundamentals of clinical diagnosis hepatobiliary system and pancreas diseases.
Instructions for Examiner.
Station №5. Auscultation of the abdomen: Bruits, Friction rubs, Venous hums.
Please evaluate the student's ability to conduct auscultation of the abdomen: Bowel sounds, Bruits, Friction rubs, Venous hums, auscultative percussion/auscultoaffliction for inferior liver boder determination

<table>
<tr><td>№</td><td>Criteria for job steps</td><td></td></tr>
<tr><td>1</td><td>Sounds that can be identified during auscultation of the abdomen</td><td>• Bowel sounds
• Vessel Bruits
• Friction rubs
• Venous hums</td></tr>
<tr><td>2</td><td>General approach to abdominal Auscultation</td><td>• You should always auscultate the abdomen after inspection and before percussion or palpation so you do not produce false bowel sounds by percussion or palpation.
• Use diaphragm for bowel sounds
• Use bell for vasculature sounds…bruits, friction rubs, venous hum</td></tr>
<tr><td>3</td><td>The origin of Bowel sounds</td><td>These are low-pitched gurgling sounds produced by normal gut peristalsis. They are intermittent but will vary in timing depending on when the last meal was eaten.
•Bowel sounds echo the underlying movements of the intestines. It is normal to hear clicking and gurgling sounds approximately every 5 to 15 seconds.
• Normal: low-pitched gurgling, intermittent.
• High-pitched: often called tinkling. These sounds are suggestive of partial or total bowel obstruction.
• Borborygmus: a loud, low-pitched gurgling that can even be heard without a stethoscope. (The sounds are called borborygmi .) These are typical of diarrheal states or abnormal peristalsis.
• Absent sounds: If no sounds are heard for 2 minutes (in order to determine if bowel sounds are truly absent listen for five minutes (Jarvis, 2011)., there may be a complete lack of peristalsis—i.e., a paralytic ileus or peritonitis.
Increased bowel sounds (including high-pitched tinkling or marked borborygmi) indicate obstruction, bleed, malabsorption, carcinoid syndrome</td></tr>
<tr><td>4</td><td>Bowel sounds. Auscultation technique description.</td><td>• Listen with the diaphragm of the stethoscope just below the umbilicus.
• Auscultation should begin in the right lower quadrant. Because bowel sounds are widely transmitted through the abdomen, listening in one spot, such as the right lower quadrant, is usually sufficient.
• Listen for bowel sounds and note their frequency and character. The frequency of which has been estimated at from 5 to 34 per minute.
• It is suggested that you listen to bowel sounds for a full minute before determining if they are normal, hypoactive, or hyperactive.</td></tr>
<tr><td>5</td><td>Bowel motility assesment</td><td>Provides important information about bowel motility: decreased motility suggests peritonitis; increased motility suggests obstruction
<table>
<tr><td>Hyperactive bowel sounds</td><td>Hypoactive/paralitik ileus</td></tr>
<tr><td>Postprandial physiologic</td><td>Adinamic ileus</td></tr>
<tr><td>Laksatif consumption</td><td>peritonitis</td></tr>
<tr><td>Diare</td><td></td></tr>
<tr><td>Early mechanical obstruction</td><td></td></tr>
</table></td></tr>
<tr><td>6</td><td>Bruits and Venous hums auscultation approach</td><td>These are sounds produced by the turbulent flow of blood through a vessel—similar in sound to heart murmurs. Listen with the diaphragm of the stethoscope.
Bruits may occur in normal adults but raise the suspicion of pathological stenosis (narrowing) when heard throughout both systole and diastole.
There are several areas you should listen at on the abdomen:
• Just above the umbilicus over the aorta (abdominal aortic aneurysm)
• Either side of midline just above the umbilicus (renal artery stenosis)
• At the epigastrium (mesenteric stenosis)
• Over the liver (AV malformations, acute alcoholic hepatitis,hepatocellular carcinoma)
• Rarely, it is possible to hear the hum of venous blood flow in the upper abdomen over a caput medusa secondary to portosystemic shunting of blood.</td></tr>
<tr><td>7</td><td>Friction rubs auscultation</td><td>These are creaking sounds like that of a pleural rub heard when inflamed peritoneal surfaces move against each other with respiration.</td></tr>
</table>

	approach	Listen over the liver and spleen in the right and left upper quadrants, respectively. •Rubs over the liver are most likely neoplastic, but may infrequently occur in inflamantory disease, including acute cholecystitis •Splenic infarction can generate LUQ rubs
8	The technique of auscultative percussion/ auscultoaffliction for inferior liver boder determination	The technique of auscultoaffliction to determine the size and location of the liver (A. Chandrasekhar, 2006; S. Mangione, 2008 and others): • stethoscope is installed on the abdominal wall below the xiphoid process of the sternum or above the approximate location of the patient's liver; • the examiner performs light scratching movements along the skin of the patient's abdomen, moving laterally along the mid-clavicular line, from bottom to top, starting from the lower right quadrant of the abdomen. • When the doctor reaches the bottom borders of the liver, the scratching sound in the stethoscope is greatly amplified. • By a similar method it is possible to determine the upper edge of the liver.

OSCE check-list

Section 4. The fundamentals of clinical diagnosis hepatobiliary system and pancreas diseases.
Station № 1. Patient interview
FULL NAME student_____ group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	Greeting			
2	Clarification of the Personal information			
3	Clarifying complaints (beginning with the preferred types of questions)			
4	Detailing the chief (CC)/ main complaints submitted to patients			
5	Secondary /additional/non-principal complaints			
6	History of the present illness (HPI) /anamnesis morbi			
7	Past medical history (PMH)/Life history/anamnesis vitae.			
8	Review of systems/ Documents presence or absence of common symptoms related to each major body system			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter)

Signature examiner _____
Date_____

OSCE check-list

Section 4. The fundamentals of clinical diagnosis hepatobiliary system and pancreas diseases.
Station № 2. Systemic inspection (check-up/survey) of patients. Focused Inspection of the abdomen for hepatobiliary system and pancreas disease signs.
FULL NAME student_____ group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	General approach to check-up(survey):			
2	General inspection check-up (survey): General appearance			
3	General inspection check-up (survey): typical signs of liver diseases.			
4	General inspection check-up (survey): typical signs of pancreas diseases.			
5	Inspection of abdomen: Shape			
6	Inspection of abdomen: asymmetry			
7	Inspection of abdomen: Skin lesions			
8	Inspection of abdomen: Dilated veins.			
	Inspection of abdomen: Abdominal Venous Patterns			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter) Signature examiner _____
Date_____

OSCE check-list

Section 4. The fundamentals of clinical diagnosis hepatobiliary system and pancreas diseases.
Station № 3. Palpation of the abdomen: liver, gallbladder, spleen and pancreas.
FULL NAME student_____ group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	Basic rules/Preparation			
2	Defining purpose of liver palpation.			
3	Instractions for the patient and explanation of the sequence of liver palpation.			
4	Procedure of palpation of the liver by the Obraztsov and Strazhesko method.			
5	Liver lower edge and surface description			
6	The gallbladder palpation: describe the cases of palpability.			
7	Procedure of Spleen paipation by the Obraztsov and Strazhesko method			
8	The spleen palpation: describe the cases of palpability.			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter)

Signature examiner _____
Date_____

OSCE check-list

Section 4. The fundamentals of clinical diagnosis hepatobiliary system and pancreas diseases.
Station № 4. Percussion of the abdomen: liver and spleen.
FULL NAME student_____ group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1-2	Some based ideas for liver and spleen percussion			
	Superior liver border delimination			
3	Inferior liver border delimination (according to Obraztsov and Strazhesko): procedure of percussion			
4	The normal inferior borders of liver absolute dullness (according to Obraztsov and Strazhesko)			
5	The left border of liver dullness determination			
6	Percussion of the liver according to M. G. Kurlov: Liver span determination			
7	Percussion of the spleen: Spleen span determination			
8	Interpretation of the results of liver percussion.			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter) Signature examiner _____
Date_____

OSCE check-list

Section 4. The fundamentals of clinical diagnosis hepatobiliary system and pancreas diseases.
Station № 5. Auscultation of the abdomen: Bruits, Friction rubs, Venous hums.
FULL NAME student_____ group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	Sounds that can be identified during auscultation of the abdomen			
2	General approach to abdominal Auscultation			
3	The origin of Bowel sounds			
4	Bowel sounds. Auscultation technique description.			
5	Bowel motility assessment			
6	Bruits and Venous hums auscultation approach			
7	Friction rubs auscultation approach			
8	The technique of auscultative percussion/auscultoaffliction for inferior liver boder determination			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter)

Signature examiner _____
Date_____

Section 5. Physical Assessment of the Renal/Urinary System

Section 5. Physical Assessment of the Renal/Urinary System
Station №1. Patient interview.
Assignment for student: demonstrate your communication skills, the ability to establish contact with the patient, the ability to collect Personal information, to identify and detail the patient's complaints, to collect History of the present illness (HPI) /anamnesis morbi and Past medical history (PMH)/Life history/anamnesis vitae. Determine a history of the patient's life risk factors for the development of the Renal/Urinary System diseases.
Time: 5 minutes.

Section 5. Physical Assessment of the Renal/Urinary System
Station №2. Systemic inspection (check-up/survey) of patients with the Renal/Urinary System diseases. A survey of the kidneys and bladder region.
Assignment for student: Describe general approach to check-up(survey) of the Renal/Urinary System (according to Scheme of patient's Systemic inspection). Conduct a survey of the kidneys and bladder region, briefly explaining your actions. Briefly describe the possible changes and their causes.
Time: 5 minutes.

Section 5. Physical Assessment of the Renal/Urinary System
Station №3. Palpation of the kidneys and bladder.
Assignment for student: Describe the general approach and demonstrate technique of the kidneys bimanual palpation,bladder and ureteric points palpation.
Time: 5 minutes.

Section 5. Physical Assessment of the Renal/Urinary System
Station №4. Kidney and bladder percussion.
Assignment for student: Diagnostic capabilities of percussion for diseases of the kidneys and urinary tract. Determination of pain when tapping the lower back (Pasternatsky's symptom). Determination the level of the bottom of the bladder.
Time: 5 minutes

Section 5. Physical Assessment of the Renal/Urinary System
Station №5. Kidney arteries auscultation
Assignment for student: Describe the general approach and diagnostic value of the kidney arteries auscultation
Time: 5 minutes

Section 5. Physical Assessment of the Renal/Urinary System

Instructions for Examiner.

Station №1. Patient interview.

Please evaluate the student's ability to to conduct questioning of a patient with the Renal/Urinary System diseases.

№	Criteria for job steps	
1	Greeting	Has greeted, named itself, the purpose of conversation
2	Clarification of the Personal information	Has found out Personal information and age (number of full years) of the patient (Age, sex, marital status, occupation. Clarifying the date of receipt, the order of admission to hospital (planned, emergency, self-reversal), the place of patient' s work and the reason for which the patient does not work (disability, etc.)
3	Clarifying complaints (beginning with the preferred types of questions)	1. General questions: "What are you worried about?" "How did you feel before the last of ill health?" 2. Direct questions: "Where and how does it hurt?" "When did these feelings?" The patient is given the opportunity to express all the unpleasant sensations.
4	Detailing the chief complaints (CC)/ main complaints submitted to patients	Has defined the chief complaints (CC) /main complaint (the CC, as a rule, coincides with the reason for seeking medical help, the diagnosis is based on the CC, the CC characterize the pathology of a certain organ system). *With regard to the CC - pain in the pain in the lumbar region* (*Low back pain) - should be clarified:* • Localization & irradiation(Pain of renal origin localizes frequently in the lumbar region. If the ureters are affected, the pain is felt by their course. If the bladder is involved, pain is suprapubical, radiation of pain into the perineal region (attack of nephlithiasis). • Characteristics (quantitative, qualitative). ✓ Dull and boring pain in acute glomerulonephritis, in heart decompensation ("congestive kidney"), in chronic pyelonephritis (usually unilateral) because of the inflammatory or congestive swelling of the renal tissue. ✓ Some patients complain of attacks of severe piercing pain in the lumbar region or by the course of the ureter. The pain increases periodically and then subsides, i.e. has the character of renal colic. ✓ Difficult and painful urination is observed in stranguria. Patients with urethritis feel a burning pain in the urethra during or after urination. • Intensity: acceptable-intolerable • Regularity (periodic or sporadic) • Influencing factors (context, modifying factors,associated signs) Aggravating and relieving factors:pain in nephrolithiasis can be provoked by taking much liquid, jolting motion, or the like; pain is provoked by urination in cystitis. Difficult and painful urination is observed in stranguria. Patients with urethritis feel a burning pain in the urethra during or after urination. The CC of patients with pathology of the Renal/Urinary System diseases. • Disordered urination and change in day and night urination volume, nocturia • Color changes urine • Itching, • Edema • Headache and dizziness (arterial hypertension), heart pain • Dyspnea • Nausea and vomiting | • Fever
5	Clarifying Secondary /additional/non-principal complaints	Complaints characterizing the general reaction of the body to the pathological process are called non-principal (additional), for example, weakness, malaise,ets. These complaints cannot t be the basis of a diagnosis.
6	History of the present illness (HPI) /anamnesis morbi	History of the present illness (HPI) /anamnesis morbi • When did the illlness start? • How did it start? • How has the problem progressed over time? • What kind of analysis has been taken and there results? • What treatment has been taken and its effect? Reason (s) of the present request for medical assistance
7	Past medical history (PMH)/Life history/anamnesis	1. Conditions in which the patient lived and developed • Place of Birth 2. Heredity • Atherosclerotic vascular lesions • Kidney Diseases

<table>
<tr><td></td><td>vitae.</td><td>
<table>
<tr><td>• Development in childhood and adolescence
• Education
• Military service</td><td>• Stroke
• Alcoholism
• Tuberculosis
• Mental disorders • Malignant tumors</td></tr>
<tr><td>3. Medical history (what? When?)
• Diseases
• Operations
• Anesthesia
• Treatment
• Allergic anamnesis
• Medical anamnesis</td><td>4. Social anamnesis
• Family status
• Gynecological anamnesis in women
• Professional anamnesis
• Conditions of life, hobbies</td></tr>
<tr><td>5. Risk factors
• Risk factors for external and internal environment, which increase the risk of developing the disease
• Their elimination reduces the risk of developing the disease</td><td>6. Harmful habits
• Smoking and associated clinical problems:
Diseases of the lungs (COPD, cancer)
Cardiovascular diseases
Malignant tumors
Gastrointestinal tract
Drug Interactions
Pregnancy
• Signs of alcohol dependence
• Signs of drug dependence</td></tr>
</table>
</td></tr>
<tr><td>8</td><td>Review of systems/ Documents presence or absence of common symptoms related to each major body system</td><td>
<table>
<tr><td colspan="4">Check list for Systems Review (ROS)</td></tr>
<tr><td>GENERAL
Fatigue/malaise
Fever/rigors/night sweats
Weight/appetite
Skin: rashes/bruising
Sleep disturbance
CARDIOVASCULAR
Chest pain/angina
Shortness of breath (including on exercise)
Orthopnoea
PND
Palpitations
Ankle swelling
RESPIRATORY
Chest pain
Shortness of breath/wheeze
Cough/sputum/haemoptysis
Exercise tolerance</td><td>GASTROINTESTINAL
Appetite/weight loss
Dysphagia
Nausea/vomiting/haematemesis
Indigestion/heart burn
Jaundice
Abdominal pain
Bowels: change/constipation/diarrhoea/ description of stool/blood/mucus/flatus
GENITO-URINARY
Frequency/dysuria/nocturia /polyuria/oliguria
Haematuria
Incontinence/urgency
Prostatic symptoms
Impotence
Menstruation (if appropriate):
menarche (age at onset)
duration of bleeding, periodicity
menorrhagia (blood loss)
dysmenorrhoea, dyspareunia
menopause, post-menopausal bleeding</td><td>MUSCULOSKELETAL
Pain/swelling/stiffness – muscles/joints/ back
Restriction of movement /function
Power
Able to wash and dress without difficulty/Able to climb up and down stairs
ENDOCRINE
Menstrual abnormalities
Hirsutism/alopecia
Abnormal secondary sexual features
Polyuria/polydipsia
Amount of sweating
Quality of hair
SKIN
Rash
Pruritus
Acne</td><td>CNS
Headaches
Fits/faints/loss of consciousness
Dizziness
Vision – acuity, diplopia
Hearing
Weakness
Numbness/tingling
Loss of memory /personality change
Anxiety/depression</td></tr>
</table>
</td></tr>
</table>

Section 5. Physical Assessment of the Renal/Urinary System
Instructions for Examiner.
Station №2. Systemic inspection (check-up/survey) of patients with the Renal/Urinary System diseases. A survey of the kidneys and bladder region.
Please evaluate the student's ability to inspect a patient with Renal/Urinary System diseases.

<table>
<tr><td>No</td><td>Criteria for job steps</td><td></td></tr>
<tr><td>1</td><td>General approach to Systemic inspection (check-up/survey) of patients with the Renal/Urinary System diseases</td><td>Good lighting, warm room, warm& clean hands of the doctor, convenient position of the doctor and patient.
Doctor ´s position on the patient's right side.
Patient position
Explain to the patient each step of the exam as it progresses.
• Supine position
• Full exposure to abdomen however maintain appropriate draping
• Do not expose the patient’s body until you are ready to examine.
• Ask patient if they have pain anywhere before you begin!</td></tr>
<tr><td>2</td><td>General inspection check-up (survey): General appearance (some characteristic features).</td><td>General inspection:
→General appearance:
• Assess the consciousness (the continuous spectrum of quantitative disorders (oppression) of consciousness in which torpor, sopor, coma are distinguished (Loss of consciousness in severe affections, renal insufficiency and uremic coma); Mental state: orientation.
Convulsions in uremic coma and renal eclampsia.
• The gravity of the patient's condition is estimated as
-satisfactory,
-medium gravity or -grave (heavy)
-extremely heavy -terminal (uremic coma),
• Position of patient /Patient's posture in bed (active;passive;forced).
The position of the patient: passive (uremic coma), forced (paranephritis is characterized by the position given to the stomach with the foot on the affected side, in renal colic the patient tosses), restlessness in renal colic.
• Hands (radial/brachial fistula)</td></tr>
<tr><td>3</td><td>Vital Signs</td><td>• Temperature • Blood Presure (HTN) • Pulse • Respiration(acidosis (Kussmaul’s breathing)</td></tr>
<tr><td>4</td><td>Detection of edema in kidney diseases</td><td>• Facies nefritica (pale and swollen face, edematous eyelids and narrowed eye-slits)
• Anasarca (edema of the whole body, hydrothorax, hydropericardium, ascites)</td></tr>
<tr><td>5</td><td>Distinctive signs of renal and cardiac edema</td><td>• It should be remembered that in cardiac edema (as distinct from renal edema) the skin is more or less cyanotic.
<table>
<tr><th>Differences</th><th>Renal edema</th><th>Cardiac edema</th></tr>
<tr><td>begin</td><td>from the face in the morning</td><td>from the feet in the evening</td></tr>
<tr><td>localization of edema in later stages</td><td>Everywhere
• face
• torso
• limbs</td><td>In sloping places
• on the feet and legs
• on the loin</td></tr>
<tr><td>Color of the skin</td><td>pale</td><td>Cyanotic (acrocyanosis)</td></tr>
<tr><td>Softness of edema</td><td>Soft, mobile, quickly appear and disappear</td><td>Hard, builds up slowly and goes down slowly</td></tr>
</table></td></tr>
<tr><td>6</td><td>The signs characterize chronic renal insufficiency (uremia)</td><td>• pale subicteric dry skin, scratching excoriation and peeling skin.
• edematous skin is pallid (wax-pallid) due to the spasm of skin arterioles, and anemia which attends uremia
• skin hemorrhages
• uraemic frost (deposition of white/tan urea crystals on the skin after sweat evaporation (very rare)
• coated dry tongue
• the odor of ammonia from the mouth and from the skin of the patient (factor uremicus)</td></tr>
<tr><td>7</td><td>Inspection of the abdomen and the loin</td><td>• Inspection of the abdomen and the loin does not usually reveal any noticeable changes.
• Inspect and comments: Transplant scars in flanks. Nephrostomy.
• In rare cases, an especially large tumour of the kidney may be manifested by protrusion of the abdominal wall.
• It is possible to notice swelling on the affected side of the loin in the presence of paranephritis.</td></tr>
<tr><td>8</td><td>Inspection of the suprapubic abdomen (bladder)</td><td>Distended bladder can be protruded over the pubic bone in thin persons. The distension can be due to overfilling of the bladder, for example, due to retention of urine in adenoma or cancer of the prostate.</td></tr>
</table>

Section 5. Physical assessment of the Renal/Urinary System
Instructions for Examiner.
Station №3. Palpation of the kidneys and bladder.
Please evaluate the student's ability to carry out palpation of the kidneys and bladder.

<table>
<tr><td>№</td><td>Criteria for job steps</td><td></td></tr>
<tr><td>1</td><td>Basic rules/ Preparation</td><td>Make sure there is enough light and that noise is minimized (by turning off TV or radio in the room).
Warm hands and stethoscope; avoid long nails; approach slowly
Position yourself on the patient's right side
Palpation ican be bimanual (both hands) a one hand palpation (ballottement).
Palpation is carried out in the standing and supine position of the patient.
Patient supine, arms at sides or folded across chest - avoid arms above the head as this tightens the abdomen. Bending knees may relax abdomen.
Patient should have an empty bladder
Before you begin, ask the patient to point to areas of pain and examine last
Warn the patient about the possibility of discomfort during palpation.
Distract the patient with conversation or questions</td></tr>
<tr><td>2</td><td>Kidney palpability conditions</td><td>Kidneys are usually are NOT palpable.
Cases when the kidneys can be palpated:
very thin patient
prolapsed kidney/translocated kidney
enlarged kidney (tumor)</td></tr>
<tr><td>3</td><td>Technique of the kidneys bimanual palpation</td><td>This technique uses two hands.
Reach one hand round to the patient's right loin with your other hand over the right upper quadrant.
Push your hands together whilst asking the patient to breathe in and out.
Try to palpate any enlarged kidney between your two hands.
Repeat for the left kidney. This can either be done by examining the patient from the left side with your right hand under their left loin or by examining them from the right side with your left hand reaching round under their left loin area.
In a very thin person who relaxes well, it may be just possible to feel a kidney, especially on the left but usually it is abnormal.
Examine for enlarged kidneys, renal masses or loin tenderness.</td></tr>
<tr><td>4</td><td>Technique of the kidneys one hand palpation. (ballottement)</td><td>Place your left hand behind the patient at the right loin.
• Place your right hand below the right costal margin at the lateral border of the rectus abdominis.
• Keeping the fingers of your right hand together, flex them at the metcarpophalangeal joints, pushing deep into the abdomen.
• Ask the patient to take a deep breath—you may be able to feel the rounded lower pole of the kidney between your hands, slipping away when the patient exhales.
• This technique of using one hand to move the kidney toward the other is called renal ballottement .
• Repeat the procedure for the left kidney, leaning over and placing your left hand behind the patient’s left side.</td></tr>
<tr><td>5</td><td>Kidneys bimanual palpation findings</td><td>Examine for ptosis of the kidneys, enlarged kidneys, renal masses, or lower back tenderness.
• Unilateral palpable kidney: ptosis of the kidneys, hydronephrosis, polycystic kidney disease, renal cell carcinoma, acute renal vein thrombosis, renal abscess, acute pyelonephritis
• Bilateral palpable kidneys: bilateral hydronephrosis, bilateral renal cell carcinoma, polycystic kidney disease, nephrotic syndrome, amyloidosis,lymphoma, acromegaly</td></tr>
<tr><td>6</td><td>Enlarged left kidney and enlarged spleen differentiating</td><td>Enlarged left kidney and enlarged spleen differentiating<table><tr><th>Enlarged spleen</th><th>Enlarged kidney</th></tr><tr><td>Impossible to feel above</td><td>Can feel above the organ</td></tr><tr><td>Has a central notch on the leading edge</td><td>No notch, but you may feel the central hilar notch medially</td></tr><tr><td>Moves early on inspiration</td><td>Moves late on inspiration</td></tr><tr><td>Moves inferiomedially on inspiration</td><td>Moves inferiorly on inspiration</td></tr><tr><td>Not ballottable</td><td>Ballottable</td></tr><tr><td>Dullness to percussion</td><td>Resonant percussion note due to overlying bowel gas</td></tr><tr><td>May enlarge toward the umbilicus</td><td>Enlarges inferiorly lateral to the midline</td></tr></table></td></tr>
<tr><td>7</td><td>Bladder palpation</td><td>It is not palpable when empty.
As it fills, it expands superiorly and may even reach as high as the umbilicus or just beyond if very</td></tr>
</table>

		full. The full bladder will be as follows: • A palpable, rounded mass arising from behind the pubic symphysis • Dull to percussion • You will be unable to feel below it. • Pressure on the full bladder will make the patient feel the need to urinate.
8	Palpation of ureteric points. Three pairs of anterior ureteric points:	(1) subcostal point - at the anterior end of 10-th rib; it corresponds to renal pelvis; (2) superior ureteric point - at the edge of the rectus abdominis muscle at the level of the umbilicus; it corresponds to superior third of ureter; (3) medium ureteric point - at the intersection of the biiliac
	Palpation of ureteric points. Two pairs of posterior ureteric points:	(1) costovertebral point - in the angle formed with the inferior edge of 12-th rib and a columna vertebralis; (2) costolumbar point – at the intersection of lumbar muscle and 12-th rib. Pressure in these points in norm routinely painless becomes sharply responsive at a pyelonephritis, a paranephritis, a nephrolithiasis, a tumor and tuberculosis of kidneys.

Section 5. Physical Assessment of the Renal/Urinary System
Instructions for Examiner.
Station №4. Kidneys and bladder percussion.
Please evaluate the student's ability to conduct percussion in patients with Renal/Urinary System diseases, to determin pain when tapping the lower back (Pasternatsky's symptom) and to determin the level of the bottom of the bladder.

№	Criteria for job steps	
1	Diagnostic capabilities of percussion for kidneys and urinary tract diseases	• It is impossible to percuss the kidneys in a healthy subject because they are covered anteriorly by the intestinal loops which give tympany. • Dullness can only be determined in the presence of very marked enlargement of the kidneys.
2	Determination of pain when tapping the lower back (Pasternatsky's symptom)	A much more informative method for examination of the kidneys is tapping. ✓ The physician places his left hand on the patient's loin and using his right hand (palm edge or fingers) taps with a moderate force on the right hand overlying the kidney region on the loin. ✓ If the patient feels pain, the symptom is positive (Pasternatsky's symptom).
3	The diagnostic value of Pasternatsky's symptom. Assessing the sensitivity and specificity of a symptom.	• Presence of tenderness and pain indicates a kidney infection or polycystic kidney disease. • This symptom is also positive in nephrolithiasis, paranephritis, inflammation of the pelvis, • and also in myositis and radiculitis. • This decreases the diagnostic value of Pasternatsky's symptom because it is sensitive but not very specific
4	Other simple techniques for identifying pain in the loin region (modification of Pasternatsky's symptom)	• The patient is asked to stand on his toes and sharply go down on his heels • If the patient feels pain when shaking the body, the symptom is positive and assessed similarly to the symptom of tapping in the loin region (Pasternatsky's symptom). Ключевые моменты диагностики внутренних болезней:Учебное пособие по пропедевтике внутренних болезней /Под ред. Ж.Д. Кобалава. – М.: РУДН, 2011. – 397с.
5	List ways to detect a full bladder	• Or just percussion, • or auscultative percussion (auscultoaffriction)
6	Percussion of urinary bladder	✓ The finger-pleximeter is placed horizontally, i.e. collaterally to a pubis, on anterior abdominal wall at a level of umbilicus or slightly below it, ✓ and a quiet percussion is performed from top to down on anterior midline in the direction of pubis. ✓ If urinary bladder is full of urine, there is dullness on percussion above a pubis at percussion. ✓ If it is empty the tympanic note down to a pubis in a vertical and horizontal position of the patient is determined.
7	Auscultatory percussion (auscultoaffriction) for detecting a full bladder	✓ Place the phonendoscope membrane directly above the pubic symphysis in the midline of the patient's abdomen. ✓ "Scratch" the patient's abdominal skin, moving along the midline from the umbilicus towards the pubic symphysis at 1 cm intervals. ✓ The point at which the intensity of scratching sounds increases indicates a change in the density of the underlying tissues, i.e. to the upper border of the bladder.
8	The reliability assessment of patient's bladder auscultoaffriction results	The probability of determining the upper border of the bladder with increased scratching sounds is determined as 0%, at a distance of 6.5 cm from the pubic symphysis 43%; at a distance of 6.5-7.5 cm from the pubic symphysis 91%. at a distance of 7.5 cm from the pubic symphysis Physical Diagnosis Secrets,/Mangione, Salvatore, MD et all., - Third Edition, Copyright © 2021 by Elsevier

Section 5. Physical Assessment of the Renal/Urinary System
Instructions for Examiner.
Station № 5. Kidney arteries auscultation
Please evaluate the student's ability to conduct kidney arteries auscultation and to define diagnostic value of the exam.

№	Criteria for job steps	
1	General approach to the kidney arteries auscultation	• The doctor's position is to the right of the patient • The kidney arteries should be heard anteriorly and posteriorly • Patient position: Patient lying (auscultation from the front) and sitting (auscultation from the back) • The room is warm and quiet • The doctor's hands and stethoscope should be warm
2	Determining the goals of of the kidney arteries auscultation	Auscultation of the kidney arteries is performed to detect a systolic murmur caused by narrowing of this artery (renal artery stenosis)
3	Auscultation of the kidney arteries from the front	• Auscultation of the kidney arteries from the front is carried out with the patient supine position. • The stethoscope is pressed tightly against the anterior abdominal wall at the level of the umbilicus, 3-5 sm above the umbilicus and and near 4-5 sm aside on both sides, • after which the patient is asked to take a deep breath, then exhale completely and hold his breath. • Gently pressing on the abdominal wall with a stethoscope, immerse it deep into the abdomen and listen
4	Auscultation of the kidney arteries from the back	• When auscultating the kidney arteries from the back, the patient sits on a chair. • The stethoscope is pressed tightly in the in lumbar range in a costovertebral angle (at the free end of the 12th rib).
5	Other possible sources of murmurs in the area of auscultation of the renal arteries	• When listening to the abdomen, vascular murmurs of another origin can be heard: abdominal aorta aneurysm, stenosis of large branches of the abdominal aorta (in the epigastric region)
6-7	Evaluation of the sensitivity and specificity of the results of kidney arteries auscultation (anteriorly and posteriorly)	• The anterior position auscultation: low specificity, high sensitivity (frequently heard, but 30% false positive results) • The posterior position auscultation: specificity is 100%, but sensitivity is only 10%!!! (rarely heard, but 100% detect renal artery stenosis)
8	Diagnostic value of detecting systolic murmur over the kidney arteries	• A bruits above renal arteries indicate impaired blood flow to the kidneys and detect the stenosis of the corresponding renal artery. • Renal artery stenosis causes symptomatic renovascular hypertension.

OSCE check-list
Section 5. Assessment of the Renal/Urinary System
Station №1. Patient interview.
FULL NAME student_____
group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	Greeting			
2	Clarification of the Personal information			
3	Clarifying complaints (beginning with the preferred types of questions)			
4	Detailing the chief (CC)/ main complaints submitted to patients			
5	Clarifying Secondary /additional/non-principal complaints			
6	History of the present illness (HPI) /anamnesis morbi			
7	Past medical history (PMH)/Life history/anamnesis vitae.			
8	Review of systems/ Documents presence or absence of common symptoms related to each major body system			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter)

Signature examiner _____
Date_____

OSCE check-list
Section 5. Assessment of the Renal/Urinary System
Station №2. Systemic inspection (check-up/survey) of patients with the Renal/Urinary System diseases. A survey of the kidneys and bladder region.
FULL NAME student_____
group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	General approach to Systemic inspection (check-up/survey) of patients with the Renal/Urinary System diseases			
2	General inspection check-up (survey): General appearance (some characteristic features).			
3	Vital Signs			
4	Detection of edema in kidney diseases			
5	Distinctive signs of renal and cardiac edema			
6	The signs characterize chronic renal insufficiency (uremia)			
7	Inspection of the abdomen and the loin			
8	Inspection of the suprapubic abdomen (bladder)			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter)

Signature examiner _____
Date_____

OSCE check-list
Section 5. Assessment of the Renal/Urinary System
Station №3. Palpation of the kidneys and bladder.
FULL NAME student_____
group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	Basic rules/ Preparation			
2	Kidney palpability conditions			
3	Technique of the kidneys bimanual palpation			
4	Technique of the kidneys one hand palpation. (ballottement)			
5	Kidneys bimanual palpation findings			
6	Enlarged left kidney and enlarged spleen differentiating			
7	Bladder palpation			
8	Palpation of ureteric points. Three pairs of anterior ureteric points			
	Palpation of ureteric points. Two pairs of posterior ureteric points			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter)

Signature examiner _____
Date_____

OSCE check-list
Section 5. Assessment of the Renal/Urinary System
Station №4. Kidneys and bladder percussion.
FULL NAME student_____
group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	Diagnostic capabilities of percussion for kidneys and urinary tract diseases			
2	Determination of pain when tapping the lower back (Pasternatsky's symptom)			
3	The diagnostic value of Pasternatsky's symptom. Assessing the sensitivity and specificity of a symptom.			
4	Other simple techniques for identifying pain in the loin region (modification of Pasternatsky's symptom)			
5	List ways to detect a full bladder			
6	Percussion of urinary bladder			
7	Auscultatory percussion (auscultoaffriction) for detecting a full bladder			
8	The reliability assessment of patient's bladder auscultoaffriction results			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter)

Signature examiner _____
Date_____

OSCE check-list
Section 5. Assessment of the Renal/Urinary System
Station № 5. Kidney arteries auscultation
FULL NAME student_____
group _____
Examiner_____

№	Criteria for job steps	0-0.1 points	0.2-0.3 points	0.4-0.5 points
1	General approach to the kidney arteries auscultation			
2	Determining the goals of of the kidney arteries auscultation			
3	Auscultation of the kidney arteries from the front			
4	Auscultation of the kidney arteries from the back			
5	Other possible sources of murmurs in the area of auscultation of the renal arteries			
6-7	Evaluation of the sensitivity and specificity of the results of kidney arteries auscultation (anteriorly and posteriorly)			
8	Diagnostic value of detecting systolic murmur over the kidney arteries			
	TOTAL			

0-0.1 criterion is not done
0.2-0.3 criterion is met with the observations
0.4-0.5 criterion is done

The maximum score of 4.0 points (A - "excellent") by score-rating system evaluations.

Evaluation score _____ (letter)

Signature examiner _____
Date_____

Knowledge Testing Cases

Case 1

A 50- year- old patient, engineer, was admitted to the immedency care department.
Complaints: Pains in the right half of the chest enhancing in deep inhalation, a quiet dry cough, accompanied by pain in the right half of the chest, hyperthermia 37.9 0 C. The patient's position is forced - the patient lies on the right side, pressing with his hand the right half of the chest (the forced lateral recumbent (edgewise) position (lateral decubitus).

What are the most likely localization and nature of the pathological process in the lungs?

- Lesions of the pleura (dry pleurisy)
- Chronic inflammatory process in the lungs
- Purulent inflammatory process in the bronchi (bronchiectasis), or in the lung (abscess)
- Isolated lesions of the alveoli
- Inflammatory lesions of the alveoli and bronchi (bronchopneumonia)

Case 2

A 49- year- old patient, accountant, was admitted to the emergency care department.
He complains of an attack of suffocation that occurred 2 hours ago at home, a cough with a small amount of viscous glassy sputum.
Examination: the condition is grave (heavy) , the position is forced: the patient sits in bed, leaning on it with his hands. The chest is emphysematous ((barrel-like)). The number of respiratory movements is 18 per minute, exhalation is prolonged. Active participation of accessory respiratory muscles in the
respiratory act. There is pronounced diffuse cyanosis and swelling of the neck veins.

What is the most likely cause of Dyspnoe?

- Reduction of the respiratory surface of the lungs (lobar inflammatory compaction)
- Decreased elasticity of the lungs due to emphysema
- Spasm of small bronchi
- Mechanical obstruction in the upper respiratory tract (larynx)
- Mechanical obstruction in the trachea or large bronchus

Case 3

A 43- year- old patient , taken to the clinic, examination revealed the following: the left half of the chest was slightly enlarged in size. There is a lag in the act of breathing, smoothness and slight bulging of the intercostal spaces (positive Litten's sign).

What syndrome does the patient have signs of?

- Fluid or air in the pleural cavity
- Obstructive atelectasis
- Inflammatory compaction of the lung lobe

Case 4

Examination of the precordium: The visible apex beat /apical impulse (PMI) is clearly visible to the eye, enhanced, diffuse, displaced to the anterior axillary line.
Palpation of the precordium: The apex beat /apical impulse (PMI) is located in the V1 intercostal space along the axillary line, forceful, sustained, resistent, diffuse. Heart beat and epigastric pulsation are not detected.

What does the most likely syndrome the patient have?

- Left ventricular hypertrophy without dilatation
- Left ventricular hypertrophy and dilatation
- Hypertrophy and the left ventricle and left auricular
- Hypertrophy and dilatation of the right ventricle
- Hypertrophy and dilatation of the left ventricle and right ventricles

Case 5
Examination of the precordium: Heart beat and epigastric pulsation are visible. The apex beat /apical impulse (PMI) is not detected.
Palpation of the precordium: The apex beat /apical impulse (PMI) is located in the5th left intercostal space, 1-2 cm medial to left MCL.
In the area of absolute dullness of the heart and epigastrium, intensified and diffuse pulsation is determined.

What does the most likely syndrome the patient have?

• Left ventricular hypertrophy without dilatation
• Left ventricular hypertrophy and dilatation
• Hypertrophy and the left ventricle and left auricular
• Hypertrophy and dilatation of the right ventricle
• Hypertrophy and dilatation of the left ventricle and right ventricles

Case 6

The patient has severe total (right-left ventricular) heart failure. BP 100/50 mm Hg.

1. How will sound1 be changed at the mitral (or apical) area ? Why?

• Loud/Enhancing (accent) S1
•Diminished (soft) S1
•Splitting

2. How will the sound2 be changed at the base of heart? Why and where?

• Loud/Enhancing (accent) at aortic area
• Loud/Enhancing (accent) at pulmonic area
• Diminished (soft) at the aortic area
• Diminished (soft) at the pulmonic area
• Splitting at the pulmonic area

3. What additional heart sounds can be heard at the apex of the heart? Explain the mechanism of their occurrence.

•sound 3
•tone 4
• Mitral valve opening snap (OS)

Case 7

A 38- year- old patient, consulted a doctor with complaints of pain in the epigastric region, which appeared 20–30 minutes after eating. One day before there was vomiting “coffee grounds”, after which the pain seemed to decrease, but severe weakness and fainting.

1. What pathology of the digestive organs should you think about?
2. What urgent examination does the patient need to confirm the diagnosis?
3. What changes can be detected during stool examination?

Case 8

A 39- year- old patient, developed dull pain in the epigastric region, a feeling of heaviness, fullness, a rotten egg belching and weight loss.
Examination: decreased nutrition, dry, pale skin. The tongue is covered with a white coating, the papillae are smoothed. The abdomen is soft, painful on palpation in the epigastric region.

1. What syndrome are we talking about in this case?
2. What can be revealed in a patient during esophagogastroduodenoscopy?

Case 9

A 32- year- old patient iis bothered by pain in the epigastric region, appearing 2–3 hours after eating or on an empty stomach, sometimes night pain that disappears after eating. Pain is accompanied nausea, vomiting, pain decreases after

vomiting. On palpation, pain in the epigastric region is greater to the right of the midline. A study of gastric juice revealed a sharp increase in the secretory and acid-forming functions of the stomach.

1. What syndrome does the patient have?
2. What additional studies should the patient undergo?

Case 10

When examining the patient in an upright position, an enlargement of the abdomen was detected, more in the lower section. The navel is protruding. In a horizontal position, the shape of the abdomen changes: the abdomen flattens, hangs down at the sides, and a "frog-like" shape appears. When lying on the side, the half of the abdomen that is located above flattens, and the lower half protrudes.

What reason could cause the described changes?

Case 11

A 28-year-old patient is bothered by intense pain in the right hypochondrium of a cramping nature, occurring after eating fatty foods, radiating under the right shoulder blade, to the right shoulder, accompanied by vomiting, which does not bring relief. After painful attacks, he notes dark urine and light feces. Skin, mucous membranes, sclera with an icteric tint. Palpation of the abdomen in the right hypochondrium is painful. Positive symptom of Ortner, Kehr, Murphy.
Blood bilirubin - 60 μmol/l, direct fraction - 45 μmol/l.

Name the syndromes of damage to internal organs, preliminary diagnosis, additional research methods to confirm the diagnosis.

Case 12

During a medical examination of a young girl with an asthenic build, palpation of the abdomen revealed the lower pole of the spleen at the edge of the costal arch.

1. In what position is it best for the patient to palpate the spleen?
2. Is the spleen palpable normally?
3. Can we assume that this patient has an enlarged spleen?

Case 13

The patient complains of constant aching pain in the lumbar region, headache, tinnitus, swelling of the face. History: 2 years ago suffered acute nephritis.
The face is pale, puffy. Heart relative dullness borders is expanded to the left, the sounds are loud, the sound2 is accented on the aorta. Blood pressure is 170/120 mm Hg. Urinalysis: a specific gravity –1007, protein – 3.5 g/day, in sediment: changed erythrocytes, granular and hyaline casts 1–2 in the field of view.

1. Identify the syndrome.
2. What does a specific gravity of 1007 indicate?

Case 14

A 50-year-old patient complains of weakness, lethargy, poor appetite, constant nausea, itching, small amount of urine, swelling of the eyelids. He has been suffering from chronic glomerulonephritis for many years.

The patient is lethargic and smells of ammonia. The skin and mucous membranes are pale, there are traces of scratching on the skin. The face is swollen - facies nefritica. Blood pressure 180 and 100 mm Hg. Heart sounds are dull and rhythmic. Vesicular breathing. The abdomen is soft, painless in all parts. Diuresis per day – 600 ml.
Serum creatinine - 800 μmol/l. Urinalysis: a specific gravity 1010, protein – 1.6 g/l, erythrocytes – 10-15 per field of view, leukocytes – 2-3 per field of view, hyaline casts – 2-3 per field of view.
Ultrasound of the abdominal organs: the kidneys are reduced in size, the corticorenal index is changed.

Name the syndromes of damage to internal organs, preliminary diagnosis.

Case 15

A 58-year-old patient suffers from swelling in the legs, shortness of breath with slight physical exertion, and weakness. For many years he has suffered from highly active rheumatoid arthritis.
The condition is heavy. The skin is pale. Swelling of the legs (feet, legs, thighs). Vesicular breathing is weakened below the angles of the scapulars both sides. Heart sounds are soft. Ultrasound reveals free fluid in the abdominal cavity, an increase in the size of the kidneys, an increase in their echostructure, a small amount of fluid in the pleural cavities on both sides, and effusion in the pericardial cavity.
Urinalysis: a specific gravity 1020, protein – 4.1 g/l, hyaline casts – 3-4 in the field of view, waxy casts – 2-3 in the field of view, leukocytes – 4-5 in the field of view, erythrocytes – 2-3 in the field of view.
Biochemical blood test: protein - 50 g/l, albumin - 45%, globulins 55%, cholesterol 9.6 mmol/l.

Name the syndromes of damage to internal organs, preliminary diagnosis, additional research methods to confirm the diagnosis.

ANSWERS

1. Lesions of the pleura (dry pleurisy)
2. Spasm of small bronchi
3. Fluid or air in the pleural cavity
4. Left ventricular hypertrophy and dilatation
5. Hypertrophy and dilatation of the right ventricle
6. 1. Loud/Enhancing (accent) S1
6.2. Loud/Enhancing (accent) at pulmonic area
Splitting at the pulmonic area
6.3. Sound 3
7. 1 The patient experiences so-called early pain, which indicates a pathology of the stomach, possibly a stomach ulcer.
7.2. The patient needs emergency fibrogastroduodenoscopy
7.3. When examining the stool, blood may be detected, possibly melena.
8. 1. Delayed gastric emptying syndrome
8.2. Stomach outlet obstruction: The stenosis of exit of a stomach (pylorus) can be found.
9. 1. The patient is bothered by late night, nocturnal and hunger pain due to increased gastric secretion syndrome; a possible pyloric or duodenal ulcer.
9.2. To clarify the diagnosis, fibrogastroduodenoscopy is necessary.
10. Describes the signs characteristic of ascites.
11. Hepatic colic syndrome, obstructive jaundice syndrome. The gallbladder inflammation syndrome is indicated by positive symptoms of Kehr, Ortner, and Murphy.
The preliminary diagnosis is calculous cholecystitis, hepatic colic.
To confirm the diagnosis of calculous cholecystitis, it is necessary to perform an ultrasound examination of the gallbladder and biliary ducts.
12. The spleen is palpated better on the right side; normally, the lower pole can be palpated in asthenic patients, but more often in women.
13. 1. Chronic nephritic syndrome.
13.2. Decrease in the concentrating ability of the kidneys
14. Syndromes: chronic nephritic, chronic renal failure, arterial hypertension, urinary sediment changes syndrome (proteinuria, haematuria) .
15. The signs of nephrotic syndrome in a patient suffering from rheumatoid arthritis for a long time are described. A kidney biopsy is required.
Heart failure is possible, which requires ultrasound examination of the heart and determination of the level of natriuretic peptide.

Literature and References

1. Vasilenko V.K. Propaedeutics of internal diseases: Textbook. - 6th edition, I, I I - volume, revised and updated (Textbooks. For medical students)/ Vasilenko V.K. , Vasilenko V.V. - Almaty: CCK, 2017. - 364 p.
2. Ivashkin V.T. Internal diseases propedeutics: textbook/ V. T. Ivashkin, A. V. Okhlobystin. - M.: GEOTAR-Media, 2016. -176 p.
3. Smirnova A.Yu. Internal diseases propedeutics part III. Diagnostics of the diseases of gastrointestinal tract and kidneys: Textbook of Medicine for medicine faculty students / Smirnova A.Yu., Gnoevykh V.V. - Ulyanovsk, 2017 – 165p.
4. Smirnova A.Yu. Propedeutics of respiratory tract diseases:Textbook of Medicine for medicine faculty students/ Smirnova A.Yu., Gnoevykh V.V. - Ulyanovsk, 2019 – 177p.
5. Smirnova A.Yu. Internal diseases propedeutics part II. Diagnostics of cardiovascular diseases: Textbook of Medicine for medicine faculty students/ Smirnova A.Yu., Gnoevykh V.V. - Ulyanovsk, 2019-177p.
6. Немцов Л.М. General propedeutics of internal diseases : lecture course (Общая пропедевтика внутренних болезней : курс лекций (на английском языке) / Л.М. Немцов. – 2-е изд. – Витебск: ВГМУ, 2016. – 175 с.
7. Основы семиотики заболеваний внутренних органов: учебное пособие + СД/ А. В. Струтынский, А. П. Баранов - М.: Медпресс-информ, 2016. -304 с.
8. Маджони Сальваторе. Секреты клинической диагностики/ Маджони С. Пер.с англ.под ред проф.Струтынского А.В.- М.: БИНОМ, 2004.- 605с.
9. Ефремовцева М.А. Расспрос больного. Intrvew with the patient: Учебно-методическое пособие на русском и английском языках/ Ефремовцева М.А., Кобалава Ж.Д. – М.: РУДН,2005.-77с.
10. Кобалава Ж.Д. Ключевые моменты диагностики внутренних болезней:Учебное пособие по пропедевтике внутренних болезней / Кобалава Ж.Д., Мильто А.С., Ефремовцева М.А. с соавт..– М.: РУДН, 2011. – 397с.
11. Kenneth Korn. Oxford American Handbook of Clinical Examination and Practical Skills /Kenneth Korn, James Whyte IV, J ames Thomas,T anya Monaghan: /Copyright © 2011 by Oxford University Press .-673p.
12. Douglas G. Macleod`s Clinical Examination/ G. Douglas, F. Nicol, C. Robertson: Elsevier, 2013. -451 p.
13. www.jove.com Journal of Visualized Experiments. Science Education Collection Respiratory Exam II: Percussion and Auscultation Source: Suneel Dhand, MD, Attending Physician, Internal Medicine, Beth Israel Deaconess Medical Center
14. JoVE Science Education Database. Physical Examinations I. Cardiac Exam I: Inspection and Palpation. JoVE, Cambridge, MA, (2018).
15. Farid Ghalli. An Illustrated Guide For Cardiovascular System Examination/ C:/Users/Farid/AppData/Local/Microsoft/Widows/NetCacheContent.Word/Dilated veins.png, , 2016
16. https://www.jove.com/science-education/10041
17. https://www.clinicalexams.co.uk/
18. https://oxfordmedicaleducation.com/clinical-examinations/cardiovascular-exam-detailed/
19. https://www.msdmanuals.com/professional/pages-with-widgets/procedures-and-exams?mode=list
20. https://teachmesurgery.com/examinations/gastrointestinal/abdomen/
21. https://www.amboss.com/us/knowledge/valvular-heart-diseases
22. https://www.cardiosmart.org/news/2015/6/understanding-heart-valve-disease