MINISTRY OF HEALTH OF THE REPUBLIC OF UZBEKISTAN

TASHKENT MEDICAL ACADEMY

DEPARTMENT OF CLINICAL MODELING

THE IMPORTANCE OF SIMULATION LEARNING IN THERAPY

Instructional manual

Tashkent - 2023

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"I APPROVE"
Vice Rector for Academic Affairs
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THE IMPORTANCE OF SIMULATION LEARNING IN THERAPY

Instructional manual

For professors and teachers of higher medical educational institutions and IV year students of treatment and medical pedagogy faculties

Tashkent - 2023 year

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Importance of simulation training in the science of therapy.

Fundamentals of objective examination of patients (adults). Assessment of auscultatory signs in heart and lung diseases (hypertension, acquired heart defects, pneumonia, bronchial asthma, chronic obstructive pulmonary disease). Instructions and technique for performing picfluometry and ophthalmoscopy. Diagnosis of normal and pathological changes. Determining the next tactic.

1. THEORETICAL PART

Simulation (simulation-appearance, pretense) is an imitation of the occurrence of a disease or its specific symptoms by a certain person with the help of an artificial (mechanical or computer) system.

The process of building practical skills is long and requires many repetitions. Therefore, an important aspect of the teacher's work in the process of forming a unique skill for a student is to constantly monitor the educational process, make the necessary corrections for the correct formation of the skill, ensure that mistakes are not repeated in the process of repeated repetition, and most importantly, it is important to determine that mistakes are not detected. Therefore, in this sense, special attention is now being paid to the place of simulation education.

The correct organization of the practice process using simulation technologies provides an opportunity to acquire professional practical skills at a higher level than the theoretical description and is one of the effective teaching methods for the formation of students' professional skills**.**

Leonardo High Fidelity Patient Simulator Review

Simulation training in medical education is a modern technology for teaching and evaluating practical skills and abilities based on realistic modeling,

simulating a clinical situation - for which training models of varying complexity and realism are used.

Advantages of simulation training:

Maximum immersion in reality.

Clinical experience without risk to the patient.

Reducing stress during the first independent manipulations.

Practical solution of variable clinical scenarios.

Objective assessment of the achieved level

Types of simulators:

Mechanical simulator - a simulator made of various materials (silicone, plastic), with the help of which certain practical skills are mastered (injections, punctures, catheterization).

Model - a life-size model of an organ or part of the body that does not have the tactile and functional characteristics of a reproduced object.

A phantom is a life-size model of an organ or part of the body, which has a number of tactile and functional characteristics of the reproduced object.

Mannequin - a mechanical full-height model of a low degree of realism, with the help of which basic practical skills and abilities are worked out (care, nursing and medical manipulations, transportation, ambulance)

Virtual simulator - (simulator) - a device consisting of software, a computer and electronic-mechanical peripherals.

A mannequin-simulator of a patient is a more complex mechanical full-height model of a person, equipped with electronic devices that evaluate the correctness of the manipulation (sound, light).

The patient simulator robot is a product of the highest class of realism, it has a complex electronic-mechanical design, which, based on software, realistically simulates the patient's physiological reactions in response to the treatment (manipulations, administration of medications). You can use standard medical equipment.

Virtual patient

Virtual patients are defined as “interactive computer simulations of real-life clinical scenarios for the purpose of medical training, education, or assessment”

SCENARIO DESIGNER

The scenario creator allows you to create an unlimited number of custom scenarios, thus extending the functionality of Leonardo VR.

The constructor allows you to define the condition of the patient and the conditions for moving to the next stage.

CONTROL PANEL

The button enables interactive communication with the patient. In the drop-down list, you can select a question and get a predetermined answer from the patient in the scenario.

Situational issues in the virtual patient panel.

1. Vasiliy Sazonov

Age: 65 years

Height: 167

Weight: 80

Long-term increase in blood pressure, maximum 200/100 mm Hg. until, in the last 2 years, periodic pain in the chest is stopped with nitroglycerin. Today, he again

felt a tight, aching pain in the chest, took nitroglycerin, but it did not work, so he called an ambulance.

2. Dmitry Kupriyanov

Age: 67 years old

Height: 175

Weight: 75

The patient was admitted to the emergency department of the hospital with complaints of dyspnea at rest, suffocation during minimal physical exertion, cough with the separation of a significant amount of mucopurulent sputum, pain in the left side, fever up to 38.5°C.

Examination of the patient is an important step in the treatment-diagnostic process, as the diagnosis is made on the basis of the examination data and treatment is prescribed. The survey consists of subjective and objective data.
A subjective survey is an inquiry that includes the following sections:
Passport information (full name, age, gender, marital status, occupation, position, place of work, place of residence).

Patient complaints. The patient's complaints will be identified during the examination. First, they are asked about the main complaints that served as a reason for seeking medical attention, and then about the secondary complaints. One of the most common complaints is pain. You need to ask more about it: its localization, distribution, nature, intensity, duration and frequency, time and cause of pain, conditions of its disappearance or reduction. Similarly, other complaints are asked.

Medical history . The patient is asked about the time of onset of the disease and its first symptoms, find out the possible causes of the disease (cold, eating disorders, the impact of working conditions). Then you will be asked about the course of the procedure, the time of seeking medical help, the methods of examination and treatment, the effectiveness of treatment. If the disease is chronic, it is important to know the number of outbreaks and their causes, as well as the conditions under which remissions develop. In addition, the causes and clinical manifestations of the recent exacerbation of the disease are asked.

Patient's life history. Gather information on childhood growth and development, enrollment time, military service, housing and financial conditions, diet, physical education and sports, and physical activity. It is important to inquire about working conditions and whether there are any occupational injuries. If available, their nature, duration of operation in hazardous production. It is also determined that the patient has harmful habits. If so, detailed information on the duration of smoking (alcohol abuse), the number of cigarettes smoked. Past illnesses are asked in chronological order. Collection of allergic history (allergy to drugs,

food, serums, vaccines). Then there is a survey of family and sexual history, pregnancy in women, the number of births, the number of children. In addition, it is necessary to inquire about the genetic predisposition, ie the state of health of the patient's close relatives, to determine the cause of death. Trauma, tuberculosis, neuropsychiatric diseases, atherosclerosis, cardiovascular diseases, metabolic diseases, diseases of the circulatory system.

Objective examination consists of general examination, palpation, percussion, and auscultation, and is usually performed according to the following systems: the patient's current condition, respiratory system, cardiovascular system, digestive system, urinary system, nervous and endocrine systems.

The examination is divided into general and local. During the general examination, we assess the general condition, consciousness, the patient's condition in bed, the skin.

• General condition of the patient: satisfactory, moderate, severe.

• Patient status: active, passive, compulsory (how).

• Consciousness: clear, stupor, sopor, coma. It ensures that the mind is clear enough to answer questions. Stupor is a state of numbness. The patient finds it difficult to orient in the environment and answers questions conclusively. Drowsiness or drowsiness, which occurs when the patient calls out loud for a short period of time or by braking with a bell. Reflexes are preserved. Coma is an unconscious state associated with external stimuli, lack of reflexes, and impaired vital functions.

• Constitutional body structure: normosthenic, asthenic, hypertensive. Height, body weight, body temperature

A local inspection will then be conducted. Head shape, type of breathing (nose, mouth; free, difficult).

Eyes: eye shape, deer eyes, etc.

Skin and mucous membranes. Color: light pink, pale, cyanotic, yellowish. Other changes: pigmentation, rash, bleeding, scarring, itching. Hair and nails: mortality, shape.

Bone system . Examination of the bones of the skull, spine, chest, limbs: finger sticks in the form of drumsticks, deformity, fingers in the form of pains, painful. Joints: change of configuration, condition of the skin through the joints, active and passive movements, pain.

Local testing is performed by systems depending on the specific disease. Examine the chest, heart region, abdomen.

Palpation.

Skin moisture (normal, dry, moist). General or local sweating. Skin elasticity: normal, decreased.

Subcutaneous tissue : level of development (moderate, weak, excess), uniform distribution.

Tumors: general, local, their distribution. Lymph nodes: size, consistency, shape, pain, motility, adhesion to surrounding tissues. Typically, peripheral lymph nodes are not palpable.

Muscular system : general level of development, tone (normal, increased, decreased), atrophy, pain. Bone and joint dryness is performed if necessary .

Percussion.

When the third finger (hammer) of the right hand strikes directly on the patient's body and hits the third finger (plethysmometer) of the left hand, it is pressed against the patient's body.
The general rules of direct percussion are given in the appendix .
There are the following percussion sounds: clear lung sound (over a healthy lung), tympanic sound (over the abdomen), tympanic sound, blunt sound (with fluid in the a cavity), box sound (with an increase in lung air). There is pain when you touch the bones.

Auscultation.

Auscultation is performed using a phonendoscope.
Heart auscultation method rules .
In humans, heart sounds are detected using a stethoscope and phonendoscope, but sometimes direct auscultation is used. If the patient's condition allows, it is good to listen to heart sounds in any position of the body: lying down, standing up, after physical activity.

Sounds associated with mitral valve pathology are better defined when the patient is lying on his left side.
Auscultation of the heart should be performed in a specific sequence: first, the mitral valve located on the top of the heart should be heard, then the royal valve located on the right side of the sternum between the II ribs, then the valve of the pulmonary trunk located on the left side of the sternum between the II ribs, the saber on the sternum the tricuspid valve located at the base of the tumor and, finally, at the point of attachment of the III IV ribs (the fifth point of hearing).
In myocardial infarction on auscultation of the heart is weakened tone I at the apex and tone II over the aorta, if there are signs of stagnation in the small blood circulation, there is an accent II tone on the pulmonary artery

Hypertension

Approximately 1/3 of the patient had IV (compartmental) and III (ventricular) tones as a result of increased intraventricular pressure, and in 2/3 of cases the second rib space to the right of the chest and systolic murmur at the apex of the heart and an II tone accent is heard over the aorta.

Heart defects

Narrowing of the mitral orifice : During auscultation when the mitral stenosis is isolated, it is usually followed by a hesitation and accent of tone II on the pulmonary artery, and at the apex of the heart "tapping" tone I, 0.06-0.12 seconds after tone II organic diastolic noise, which is accompanied by the opening noise of the mitral valve and pre-systolic tension. The noise is best heard in the horizontal position , especially at the apex of the heart when lying on the left side. The "crackling" I tone, the II tone accent and the opening sound of the mitral valves together create the "quail rhythm" characteristic of mitral stenosis.
Mitral valve insufficiency : Auscultation is characterized by a decrease in tone I at the apex of the heart or no hearing at all, which occurs due to insufficient closure of the mitral valve during isovolytic contraction of the left ventricle. In the late stages

of the disease the accent of tone II on the artery sometimes (rarely) due to the shortening of the period of expulsion of blood from the left ventricle, the aortic component of tone II appears early, and as a result its hesitation is detected. In mitral regurgitation, a pathological III tone can sometimes be heard. It occurs due to the volume tension of the left ventricle . However, the absence of tone III does not exclude mitral valve insufficiency and only indicates that the defect is small. One of the important auscultatory signs of mitral valve insufficiency is the systolic murmur heard at the apex of the heart. It is caused by a turbulent flow of blood from it to the left ventricle during left ventricular systole. In mitral regurgitation, systolic murmur may occur after or with I tone. The noise is well heard at the apex of the heart and is transmitted to the left axillary area. The strength of the systolic interaction depends on the defect of the anatomical structures in the blood return flow path. The larger the defect, the louder and rougher the noise . The systolic murmur observed in organic mitral regurgitation is not related to changes in body position and respiratory period. In most cases, no changes in pulse and blood pressure are detected in mitral regurgitation .

Aortic stenosis: On auscultation, there is a sharp systolic murmur in the right intercostal space II and changes in tone I and II, although in most cases there is a decrease, but this defect is more characteristic of a decrease in tone I at the apex of the heart. which is due to the slowing of the isovolyumic contraction of the left ventricle, which is hypertrophied. Occasionally, I tone splitting (hesitation) is observed due to an increase in asynchrony in the contraction of the right and left ventricles with hypertrophy. II tone subsides over the aorta , IV pathological tone can be heard in the compensatory stage. It is caused by an increase in the force and tension of the left ventricular contraction and insufficient relaxation of the hypertrophied left ventricle during diastole. As noted above , systolic murmur is an important auscultatory sign of aortic stenosis. The noise is mainly heard on the right side of the sternum, in the second intercostal space . It is transmitted to the carotid arteries in some cases to the thoracic (between the shoulder blades) or the abdominal aorta. The noise is strong and loud, and the intensity of the stenosis increases. In aortic stenosis , the systolic pulse has a distinctive rhombic shape. The noise can occupy the entire systole without adding I and II tones. Its duration, not its strength , reflects the degree of obstruction. The higher the degree of stenosis , the closer the "peak" of the rhombic noise to the II tone. In mild stenosis, the "peak" of the noise is close to the morning . In the early stages of the disease, the pulse and blood pressure are almost unchanged.

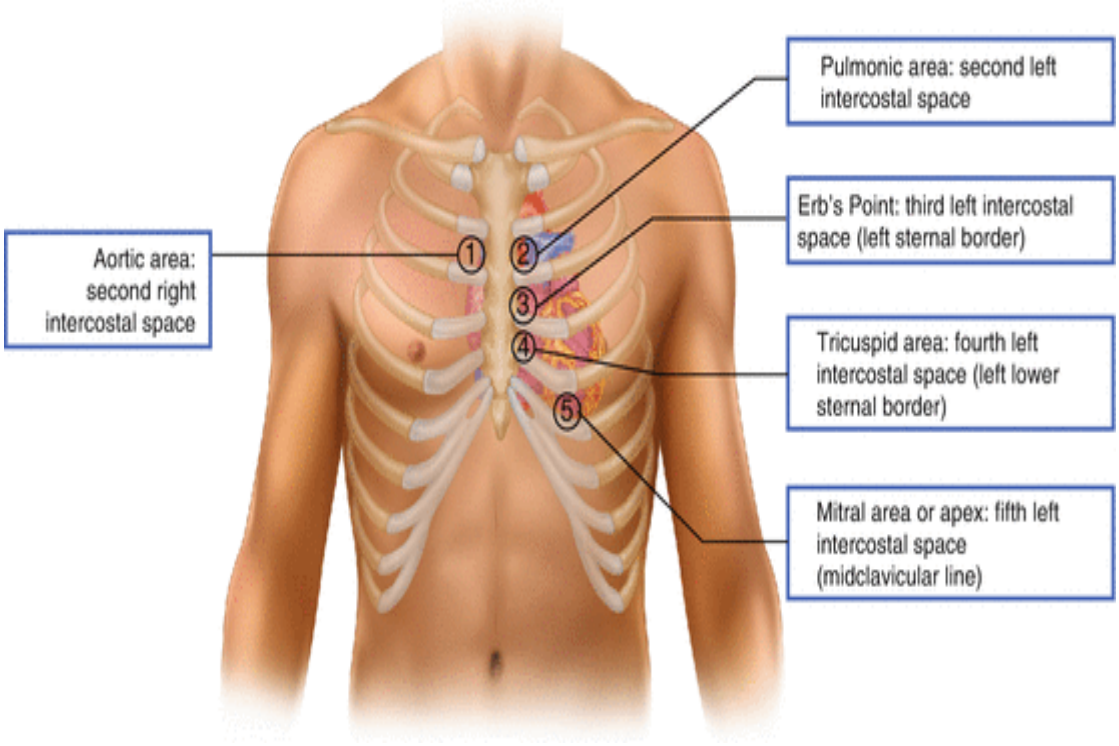
Aortic valve insufficiency . On auscultation, diastolic murmur, attenuation of I and II tones are heard at the aorta and Botkin's point . As a result of sudden tension of the left ventricle and a decrease in isovolyumic contraction of the ventricle, the I tone at the apex of the heart slows down and sometimes hesitates. Depending on the cause of the defect, tone II may increase, decrease, or disappear altogether. Deformation and contraction of the valvular layers as a result of rheumatism or infectious endocarditis leads to a decrease or complete loss of tone II in the aorta. Damage to the aorta from trauma is characterized by a metallic tone II tone ("resonant" II tone). Pathological III tone is most often detected in aortic regurgitation. Its appearance indicates a decrease in left ventricular tension,

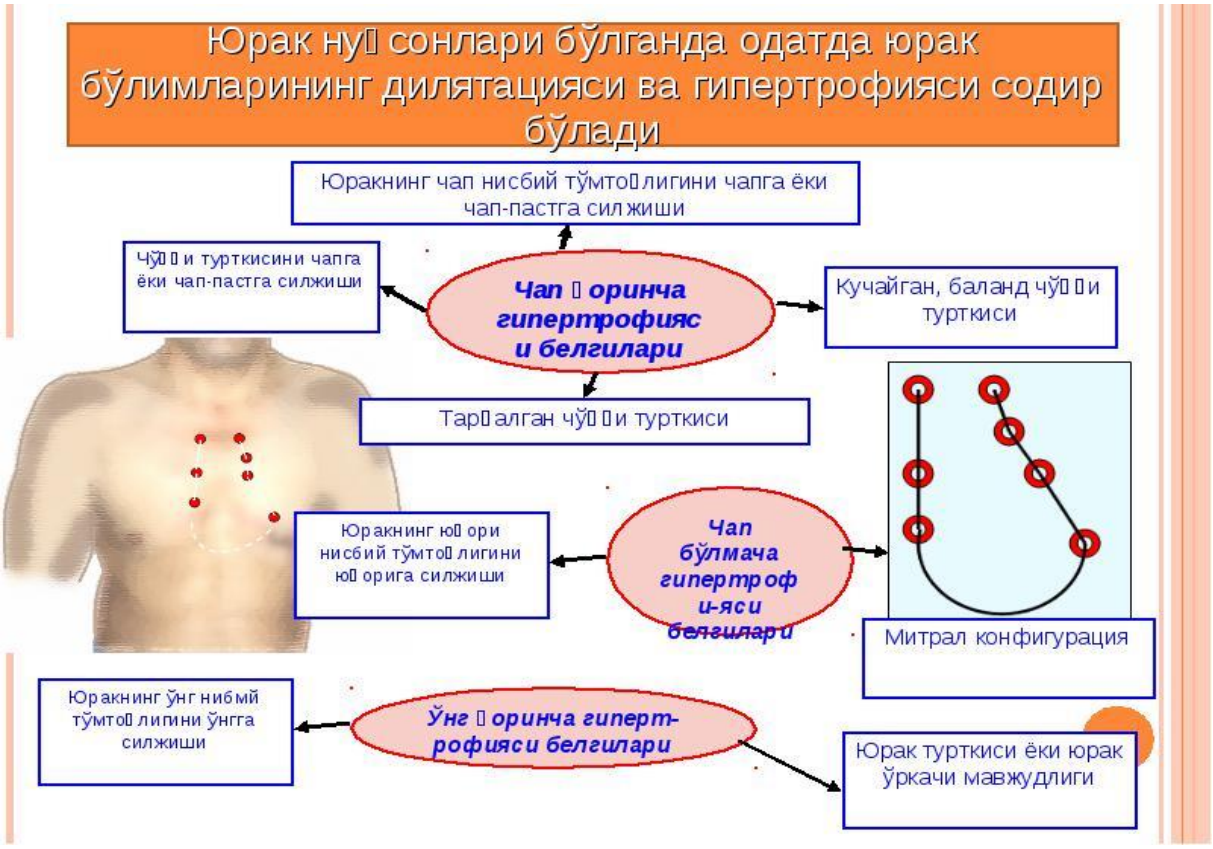
contractility and diastolic (tonic) tension. Diastolic murmur is an auscultatory sign characteristic of aortic regurgitation. The noise is best heard on the right side of the sternum, in the II intercostal space , and on the left side of the sternum, between the III-IV ribs, and is transmitted to the apex of the heart. Diastolic noise begins during protodiastole, ie immediately after tone II, and gradually decreases during diastole. The nature of diastolic noise varies depending on the degree of regurgitation . In mild, minor regurgitation, soft, puffy, high-wavelength, obvious regurgitation, mixed-wave, and in severe regurgitation, rough, low, and medium-wave noise are detected.

Tricuspid valvular insufficiency: On auscultation, the first tone of the heart may be weakened. But this sign is not constant, and it is not observed when tricuspid valvular insufficiency is combined with mitral stenosis. In organic insufficiency of the tricuspid valve, the absolute height of the II tone in the pulmonary artery decreases due to a decrease in the contractility of the right ventricle and a decrease in the volume of blood coming to the small blood circulation. However, in the case of relative tricuspid insufficiency formed on the basis of pulmonary arterial hypertension diseases (mitral stenosis, pulmonary heart), tone II accent remains for a long time to the left of the sternum, in the II intercostal area.

In most cases, tricuspid valvular insufficiency causes the right ventricle to have a pathological III tone, and in this case, a protodiastolic murmur is heard on auscultation. The systolic murmur characteristic of this defect is best heard in the V-V I intercostal space between the left edge of the sternum and the left mid-umbral line. Sometimes, due to hypertrophy and dilatation of the right side of the heart and its clockwise rotation around the transverse axis, a systolic murmur can be heard over a wedge-shaped barrier. It usually occupies the entire systole or a large part of it and always begins at the same time as the I tone. The noise subsides at the end of systole, but in some cases it may not change or become stronger during the entire systole.

Tricuspid stenosis : On auscultation of the heart at the base of the dagger-shaped tumor, especially during respiration, increases by 1 ton. In tricuspid stenosis, in contrast to the "clicking" tone in mitral stenosis, this tone is higher, shorter in duration and is better heard in the area of auscultation of the tricuspid valve. If tricuspid stenosis is observed alone in patients, there may be a decrease in tone II in the II intercostal space to the left of the sternum due to the absence of hypertension in the small circulation. But this is not a reliable diagnostic criterion for the defect. When tricuspid stenosis is accompanied by left atrioventricular stenosis, the pulmonary artery appears at tone II or its accent. In the lower part of the sternum, the opening tone (crackling) of the tricuspid valves is heard in the area where the V rib is attached. It can be transmitted upwards, to the III rib area, and intensified when inhaled





Pulmonary auscultation

1. Vesicular breathing - heard at the level of lung tissue. Occurs as a result of the movement of an elongated element in the wall of the alveoli during filling of the alveoli during respiration . Filling the entire alveoli with air in series creates a collection of sounds and a puffing sound is heard. This noise is almost reminiscent of the sound that occurs during the pronunciation of the letter "F"

during breathing . Noise is also heard throughout the respiratory period , as well as in the first / 3 part of exhalation , or the ratio of inhalation and exhalation duration is 3: 1 or 3: 0.

2. Bronchial breathing (laryngotracheal) - is heard at the level of the larynx, trachea and its bifurcation. It is formed as a result of the winding movement of the air stream in the larynx and trachea (during the passage of sound). These sounds, generated by the air bundle , propagate throughout the bronchial tree. The sounds produced by these waves are reminiscent of the pronunciation of the letter "H". The sound is heard louder and more continuously during exhalation than during exhalation .

Types of bronchial breathing:

1. Normal bronchial breathing

- Hear only at the level of the larynx and trachea;
- Auscultation sound is loud, reminiscent of the "H" sound;
- The ratio of inhalation and exhalation duration is 1: 3 or 1: 1;
- There is of course a silent break between the stages of inhalation and exhalation;
- In other areas of the chest where there is a lot of lung tissue, it suffocates.

2. Pathological bronchial breathing

- In cases of pathological process in the lungs, along with vesicular breathing at the level of the chest , or bronchial breathing can be heard in his lungs. Such breathing is called pathological bronchial breathing. It is transferred to the level of the chest wall only under certain conditions. The main condition for its conduction is the thickening of the lung tissue, which fills the alveoli with inflammatory exudate (croupous inflammation of the lungs, tuberculosis, etc.), blood (pulmonary infarction) or pleura occurs due to compression of the alveolalaming and compression of the lung to its root (compression atelectasis) when the cavity is filled with fluid or air. In these cases, the walls of the alveoli do not move, and as a result of the thickening of the airless lung tissue, bronchial respiratory sound waves are well transmitted to the level of the chest wall.

3. Amphoric breath

- Amphoric respiration is present in the lungs and is heard at the level of bullous (destructive pneumonia) and other cavities connected to the bronchi, has a puffy and hollow

reminiscent of the sound as when a glass is blown into the throat of a vessel. Amphoric breathing is high-wave, high, and well-transmitted to tissues.

- It must have two conditions for its appearance, namely a large volume of air space and its connection with the large bronchus.

Basic clinical syndromes

I. Pulmonary Tissue Focal Syndrome - Alveolar inflammation filled with inflammatory exudates and fibrin (pneumonia), blood (pulmonary infarction) or prolonged inflammatory process, as well as tumor or connective tissue 'occurs as a result of the growth of the lesion (pneumosclerosis, comorbidities).

- On auscultation: bronchial breathing, increased bronchophonia, wet resonant wheezing in the presence of fluid secretions in the small bronchi

II. Pulmonary cavity syndrome - pulmonary abscess, cavernous tuberculosis, and pulmonary tumor rupture observed when a hollow large cavity is in contact with the bronchus. In most cases, it is surrounded by an inflamed circle. The resulting cavity is larger than 4 cm in diameter , located close to the chest and can be identified if there is enough air inside.

- On auscultation: Amphoric breathing, increased bronchophonia and , in most cases, resonant medium and large vesicular wheezing

III. Fluid retention syndrome in the pleural cavity is observed in hydrothorax (e.g., non-inflammatory transudate in heart failure) or in exudative pleurisy (pleural inflammation and a number of other causes).

- On auscultation: Breathing and bronchophonia are sharply reduced or not heard at all

IV. Air accumulation syndrome in the pleural cavity is observed in cases of contact with the bronchial cavity (in the subpleural location of the tuberculous cavity, pulmonary abscess), chest injuries and spontaneous pneumothorax. During this process, air accumulated in the pleural cavity can compress the lungs. In this case, the high pressure in the cavity stops the flow of air by closing the hole using a piece of damaged tissue, and the patient develops a closed pneumothorax. Otherwise pneumothorax is called open.

- On auscultation: Respiration and bronchophonia are sharply reduced and not transmitted to the surface of the chest

Respiratory diseases

1. Acute bronchitis often manifests itself in the form of acute respiratory diseases (ARI), in particular, as a sign of acute respiratory viral infection (ARI), and acute nonspecific diseases of the respiratory organs. 20 - 25%.

- On auscultation: shortness of breath, as well as dry, liquid and large amounts of sputum at different levels and membranes can be heard with a small , silent murmur, wet wheezing .

2. Chronic bronchitis is a long- term inflammatory process characterized by diffuse damage to the bronchi, changes in their structure, mucosal hypersecretion and impaired drainage function. Because it is often latent (lateral), it is very difficult to speculate on the true prevalence of chronic bronchitis. But there is an opinion that its prevalence among different segments of the population is 5% to 17%. In recent years, the incidence has been on the rise. This is due to air pollution and an increase in allergies among the population.

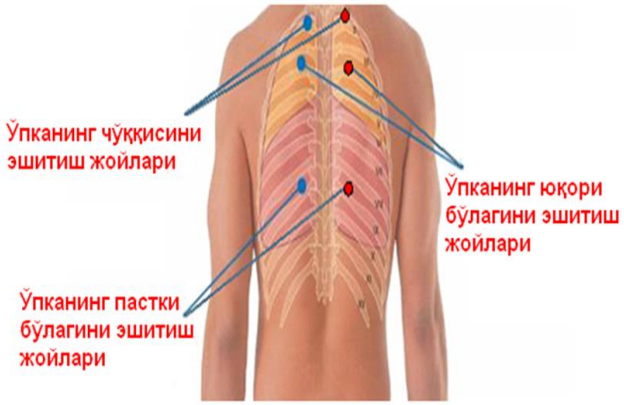
- On auscultation: rough breathing, dry wheezing, non- resonant wet wheezing in cases of sputum separation**.**

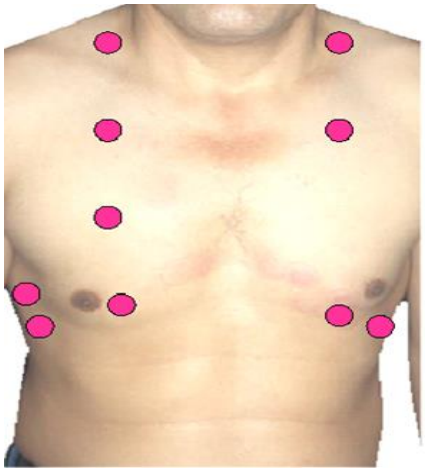
3. Bronchial asthma (asthma bronchiale) is a chronic allergic disease characterized by altered reactivity of the bronchi (due to various immunological and non-immunological mechanisms). Its main clinical sign is suffocation attacks. Bronchial asthma is one of the most common diseases in the population. According to various estimates, in European and American countries, 3-7% of the population is infected.

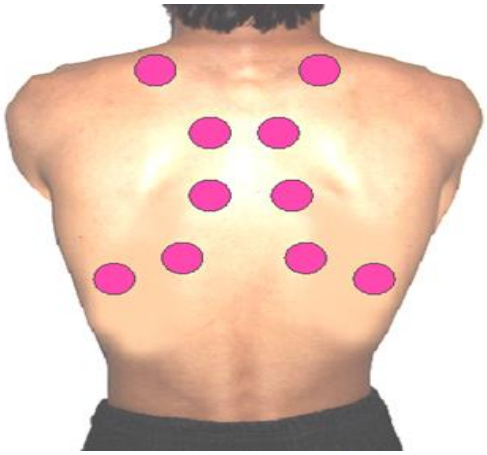
- On auscultation: Weak vesicular breathing with prolonged exhalation over the lungs and numerous scattered dry (mostly whistling) wheezes are heard.

4. Croupous zotiljam is characterized by a hyperergic type of reaction to a cold, which is characterized by acuteness and cyclicity of the disease, lung lobe and

segment damage, pleural involvement in the process, a sharp violation of vascular permeability, and a high level of fibrin in the exudate. appears.
-On auscultation: a weak vesicular breath (often bronchial), initial crepitation (crepitatio indux), as well as pleural friction noise are heard over the inflamed area.
5. In focal pneumonia (pneumonia focalis, sin. Catarrhalis) it is often noted that the inflammatory process passes from the mucous membrane of the bronchi to the lung tissue, and the inflammatory focus is usually one or more bounded by a fraction. This feature of focal pneumonia is reflected in its synonyms such as fragmentary, lobular, catarrhal pneumonia, bronchopneumonia.
- On auscultation: decreased vesicular breathing, increased bronchophonia and a moist, loud wheezing limited to a specific area.
6. Pulmonary abscess is a purulent dissolution of lung tissue, resulting in a more or less limited cavity. Pulmonary abscesses and gangrene now belong to a group of diseases known as 'infectious lung destruction' or 'destructive pneumonitis'.
- On auscultation: decreased vesicular respiration to bronchial tone, increased bronchophonia. At the subfebrile location of the abscess, pleural friction noise can be heard.
7. Dry pleurisy
- On auscultation: Fibrinous folds are the leading and sometimes the only objective sign of dry pleurisy ng pleural friction noise audible in a slightly diminished respiratory landscape over the area.
8. Exudative pleurisy
- On auscultation: vesicular breathing in the area of exudate is sharply reduced or not heard at all. Above the border of the exudate (in the area of the Garland triangle) an increase in bronchophonia and sound vibration, as well as bronchial tint of respiration is detected, which is associated with its tissue thickening due to compression of the lungs.
9. Bronchiectasis (morbus bronchoectaticus) is a disease of the respiratory system, characterized by the formation of bronchiectasis (Fig. 65) and the subsequent development of chronic purulent process in them. According to various data, its prevalence among the population is 0.3 -1.2%. The disease often develops in infancy and adolescence (5-25 years).
- **On auscultation:** rough breathing (in the presence of adjacent bronchitis), in the presence of emphysema - diminished vesicular breathing. Dry and wet (usually small and medium vesicular) wheezing is detected on bronchiectasis.







Pulmonary auscultation technique. ***Lung hearing areas.***

2. PRACTICAL SKILLS

1. Auscultation of the lungs
2. Auscultation of the hearts

I. Rules for auscultation of the lungs

1. The room should be quiet and warm.

2. The lungs are listened to in the vertical position of the patient (standing or sitting), only in a serious condition of the patient can be listened to in the supine position.

3. Auscultation of the lungs, as well as percussion, should be comparative.

4. Listening to the lungs, unlike percussion, is carried out not along topographic lines, but in areas, starting from the supraclavicular regions (the region of the tops of the lungs), then the area of \u200b\u200bthe pectoralis major muscles and the lower lateral sections of the anterior surface of the chest (Fig. 22). When listening to the axillary regions, the patient is asked to lay his hands behind his head, then listen to the lateral surfaces of the chest. On the posterior surface, auscultation of the lungs begins with the supraspinous areas (projection of the tops of the lungs from behind), then the interscapular region is heard, for this the patient must cross his arms over his chest. Further, the areas below the angles of the shoulder blades and the lower lateral sections are auscultated.

5. In each area, auscultation is carried out by the "nested method", i.e. the tube is placed at at least 2-3 points, since it is impossible to evaluate the auscultatory picture at one point, then auscultation is performed in the same way on the symmetrical section of the opposite side.

6. At the beginning, the main respiratory sounds are analyzed, while the patient's breathing should be even through the nose and of medium depth.

7. Then the patient is asked to breathe deeply and through the mouth, while side breath sounds are better detected. For the same purpose, if necessary, ask the patient to cough, exhale quickly and sharply.

II. Rules for auscultation of the hearts

Sequencing

1.Prepare a phonendoscope;

2. Wash your hands, treat with an antiseptic;

3.Wear overalls;

4.Take such a position that it is possible to freely and correctly apply the phonendoscope to the places of listening;

5. Expose the patient's body to the waist;

6.It is necessary to listen to the heart in vertical and horizontal positions, in some cases on the left side, during normal breathing and during breath holding after inhalation and exhalation, if the patient's condition allows, then before and after exercise, at four standard points plus at the additional Botkin point ;

7. The first auscultatory point in the 5th intercostal space, 1 sm inward from the left mid-clavicular line - sound phenomena that occur in the region of the bicuspid valve;

8. The second auscultatory point in the 2nd intercostal space on the right at the edge of the sternum - sound phenomena that occur on the aorta;

9. The third auscultatory point in the 2nd intercostal space on the left at the edge of the sternum;

10. The fourth auscultatory point at the base of the xiphoid process (the place of attachment of the 5th costal cartilage to the sternum) - sound phenomena that occur in the region of the tricuspid valve;

11. Fifth (additional) auscultatory point, Botkin's point in the 3rd intercostal space on the left at the edge of the sternum - sound phenomena emanating from the aortic valves;

3. Situational issues .

Conditional masala №1

20 years old, turned to the doctor with complaints of general weakness, fever, cough with purulent sputum, shortness of breath. He got sick 10 days ago: runny nose, cough, headache, he treated himself, he did not take sick leave. Yesterday, the condition worsened, the temperature rose again to 38.4°C.

On examination: temperature 38.6°C. General condition - average weight. The skin is clean, hyperemia of the face is observed. The number of breaths is 30 per minute. There are no changes in chest examination and palpation. Decreased percussion sound on right subscapular percussion. During auscultation in this area, rough breath sounds, wheezing with moist small bubbles are heard. Heart sounds are muffled. Pulse - 98 per minute, rhythmic, satisfactory. Blood pressure is 110/60 mm. Abdominal pathology was not identified.

Tasks

1. Approximate your diagnosis
2. Required additional checks say
3. List possible complications .
4. Determine your tactics for this patient , talk about the principles of treatment, prognosis and prevention of the disease.

Situational issue № 2

At the age of 43, he consulted a doctor with complaints of daily asthma attacks, difficulty breathing, general weakness, weakness. There is a small amount of sputum after the attack. Having been ill for 3 years, these complaints occur every year in June and July. He attributes his illness to the loss of a loved one. Mother and grandmother also suffered from asthma attacks. The patient is allergic to strawberries and penicillin.

Lens: Condition - Average weight. The skin is clean, cyanotic in color. The chest is barrel-shaped, the subscapular and upper areas are flattened, the intercostal areas expand, there is an expansion of the cervical veins, the involvement of auxiliary muscles, and the retraction of the intercostal spaces. Breathing is accelerated, with whistling and noise, 26 times per minute. On percussion, a box sound is heard, the lower border of the lung along the middle axillary line is determined at the 9th rib,

the excursion of the lung along this line is 2 cm. A dry whistling sound is heard against the background of diminished vesicular breath. NOS - 26 per minute. Heart sounds are rhythmic, clear, 92 per minute, AQB 110/70 mm. Peak flow rate is 70% of peak expiratory flow.

Tasks

1. Your approximate diagnosis
2. State the additional checks needed.
3. List the possible complications of this disease.
4. Determine your tactics for this patient, talk about the principles of treatment, prognosis and prevention of this disease.
5. Demonstrate the technique of using a pocket inhaler.

Situational issue №3

A 35-year-old man presented with complaints of weakness, weakness, shortness of breath, cough with odorless muco-purulent sputum, especially in the morning, discharge of up to 300 ml per day. Sometimes blood is present. He has been sick for 5 years, his condition worsens from time to time, he was treated in the hospital several times.

Lens: temperature 37.4 C. General condition is satisfactory. The skin is pale, the lips are cyanotic, the subcutaneous fat layer is not sufficiently developed, the nail phalanges of the toes and hands are "drumsticks", the nails are in the form of "watch glasses", the rate of breathing. 22 per minute. Percussion in the lower parts of the lungs reduces the sound of the percussion, auscultation slows down the breath, in the lower parts, single wet wheezes are heard. Heart tones are breathless. Pulse - 95 per minute, rhythmic. AQB - 130/60 mm wire top. Abdominal pathology was not identified.

Tasks

1. Your approximate diagnosis
2. State the additional checks needed.
3. List possible complications .
4. Determine your tactics towards the patient, talk about the principles of treatment, prognosis and prevention of the disease.

Situational issue №4

The doctor was called to the home of the 32-year-old patient Z. The patient complains of a strong cough, an unpleasant odor of large amounts of purulent sputum, fever, malaise, shortness of breath, pain in the right half of the chest. He became ill a week ago after hypothermia. He did not seek medical attention, he took aspirin. At night the condition worsened sharply, the cough intensified, and a large quantity of purulent sputum with an unpleasant odor appeared.

Objectively: temperature 38,5 C. General condition of moderate weight. The skin is clean. Hyperemia of the face is observed. When percussing the chest, a decrease in 7-8 intercostal percussion sounds is observed in the right shoulder area. On auscultation, bronchial breathing is heard in the blunt area, large and medium-bubble wet wheezing is heard. Vesicular breathing is heard in the rest of the breath.

Heart tones are muffled. Heart rate 102 min. Blood pressure 100/70 mm Hg. Abdominal pathology was not identified.

Tasks

1. Your approximate diagnosis
2. State the additional checks needed.
3. List possible complications .
4. Determine your tactics towards the patient, talk about the principles of treatment, prognosis and prevention of the disease.

Situational issue №5

26 -year-old man presented to the doctor with complaints of chills, dry cough, shortness of breath on deep breathing, pain in the right half of the chest, increased shortness of breath. It is easier for the patient to sit than to lie down. Sick for 2 weeks.

Lens: temperature 37, 8 C. Average condition. The skin is clean. On chest examination, the delay of the right half during respiration, during palpation, decreased sound vibration on the right. In percussion, the percussion sound is attenuated from the 7th rib to the right along the midline and below the spine. Respiration in this area has sharply decreased. Relatively the left border of the heart is 1 cm outside the middle shoulder line. Heart sounds muffled , rhythmic. Heart rate 110 min. Blood pressure 90/60 mm wire.

Tasks

1. Your approximate diagnosis
2. State the additional checks needed
3. List possible complications .
4. Determine your tactics towards the patient, talk about the principles of treatment, prognosis and prevention of the disease.
5. Demonstrate the technique of auscultation of the lungs .

Situational issue №6

A 46-year-old woman. An increase in temperature up to 39.6°, pain in the right side during breathing, aggravated by cough, shortness of breath at rest is detected. He was sick three days ago. After a severe cold, chills, fever rises to 39-40°, shortness of breath is observed, since last night he began to feel pain in the chest, cough with rusty sputum.

Objective: The patient's condition is critical. Lies with the head raised. There is hyperemia of the right cheek, herpes on the lips, cyanosis of the nose-lip triangle. T=39°, PS=98 minutes, weak. Blood pressure is 90/60 mm above normal. The number of breaths is 38 per minute. When examining the chest, there is a right sided back during breathing. on auscultation, bronchial breath is heard here, crepitation and pleural friction are heard. Heart tones are muffled. Constipation, diuresis - normal.

Tasks

1. Your approximate diagnosis. Select the primary clinical syndrome.
2. Name additional tests to confirm the diagnosis.
us about the principles of treatment of this disease .
4. Mark your actions towards this patient.

Situational issue №7

Patient K., 25 years old, applied to UASH with complaints of shortness of breath, increased physical exertion, dry cough. The day before he had hemoptysis. Having rheumatic fever two years ago.

Lens: temperature 37.2 C. General condition - average weight. The skin and visible mucous membranes are cyanotic. Respiration is vesicular, moist crackles inaudible in the lower parts of the lungs. NOS 26 min. Palpation of the apex of the heart reveals the "cat's whine" symptom. The relative upper limit of the heart is determined in the second intercostal area. On auscultation at the apex of the heart, the 1st tone is crackling, diastolic noise, the 2nd tone is accented in the pulmonary artery. Heart rate 110 min. Blood pressure 110/70 mm sim. Above

Tasks

1. Your approximate diagnosis.
2. State the additional checks needed.
3. List possible complications .
4. Determine your tactics towards the patient, talk about the principles of treatment, prognosis and prevention of the disease.
5. Demonstrate a pulse checking technique.

Situational issue №8

A doctor was called to the home of 18-year-old patient G., who complains of severe shortness of breath, palpitations that increase with the slightest movement. He has been suffering from rheumatism since the age of 6, according to the dispensary. He says that he will be treated against rheumatism. Deterioration of the condition in 3 days is associated with hyperthermia.

Lens: temperature 37.2 C. General condition - average weight. Clean skin, moderate moisture. Weakened breathing, wet wheezing. NOS 30 min. The left border of the heart is determined along the left midscapular line. A coarse systolic murmur is heard above the apex, where the 1st tone is attenuated. Heart beat 98 per minute, rhythmic. Blood pressure is 120/70 mm. Liver is not enlarged, there is no swelling.

Tasks

1. Your approximate diagnosis
2. State the additional checks needed.
3. List possible complications .
4. Determine your tactics towards the patient, talk about the principles of treatment, prognosis and prevention of the disease.
5. Demonstrate ECG technique.

Situational issue №9

A 23-year-old man presented to a physician with complaints of fatigue, shortness of breath, and palpitations during physical activity. Similar symptoms appeared 2 months ago. Last year, he was treated at a hospital for infectious endocarditis and discharged in satisfactory condition.

Lens: temperature 36 , 8 C. General condition is satisfactory. Examination reveals rhythmic shaking of the head, pulsation of the carotid arteries, capillary pulse. The skin is clean. NOS 22 min. Vesicular breathing in the lungs. The left border of the heart is defined along the left middle shoulder line. Heart tones are rhythmic, clear. On the right side of the chest, a diastolic murmur is detected at the second intercostal space and at the Botkin point. Heart rate 88 min. Blood pressure 160/50 mm Hg. Abdominal pathology was not identified.

Tasks

1. Your approximate diagnosis
2. State the additional checks needed.
3. List possible complications .
4. Determine your tactics towards the patient, talk about the principles of treatment, prognosis and prevention of the disease.
5. Demonstrate ECG technique.

Situational issue №10

A 57-year-old patient was called to number of breaths at K.'s home. Complaints of headache in the neck area, vomiting, dizziness, mosquitoes in the eyes. According to the anamnesis, these events developed this afternoon. He had not consulted a doctor before. Over the years, headaches were bothersome from time to time, but the patient ignored them and did not go to the doctors.

Lens: temperature 36 , 4 C. General condition of moderate weight. The skin is pale. Vesicular breathing in the lungs. The relative left border of the heart is 1 cm outside the middle mediaclavicular line. Heart sounds are muffled , amplified by 2 tones in the aorta. Heart rate 92 beats per minute, pulse hard, tense, 92 beats per minute. BP 200/110 mm sim.ust. Abdominal pathology was not identified.

Tasks

1. Your approximate diagnosis
2. State the additional checks needed.
3. List possible complications .
4. Determine your tactics towards the patient, talk about the principles of treatment, prognosis and prevention of the disease.
5. Demonstrate a technique for measuring blood pressure .

4. Test tasks

1. A more informative examination method for diagnosing chronic bronchitis:

A. Bronchoscopy
B. X-ray of the chest
C. Lung scintigraphy
D. Determination of gas content in blood
E. EKG

2. What is heard during auscultation in chronic bronchitis:

A. Loud, moist rales
B. Pleural friction murmur
C. Crepitation
D. Dry wheezing
E. Dry and wet wheezing

3. Which group of drugs is not recommended for chronic bronchitis:

A. Beta blockers
B. Immunomodulators
C. Biostimulants
D. Bronchodilators
E. Vitamins

4. Characteristic for croupous pneumonia:

A. Sudden onset, with chills
B. You are slowly shaking
C. With slow and frequent tremors
D. Sudden onset, without tremors
E. Shivering, bradycardia

5. Auscultative phenomenon in the early stages of croupous pneumonia:

A. Crepitation indux
B. Moist wheezes
C. Dry wheezing
D. Bronchial breathing
E. Crepitation redux

6. The following symptoms are observed in dry pleurisy, indicate the incorrect one:

A. Acrocyanosis
B. Chest pains
C. Dry cough
D. Sweating a lot
E. Subfebrile

7. What can be associated with the pain in the chest observed when coughing and taking a deep breath in pneumonia:

A. Spread of the inflammatory process to the pleura
B. Accumulation of exudative fluid in the pleural cavity
C. Involvement of parenchyma in the inflammatory process
D. Involvement of mesenchyme in the inflammatory process
E. Inflammatory process in the upper respiratory tract

8. A characteristic sign of exudative pleurisy:

A. Choking attacks
B. Panting
C. Surface breathing
D. Increase in body temperature
E. Hoarseness on percussion

9. Auscultatory phenomenon in the stage of exacerbation-browning in croupous pneumonia:

A. Bronchial breathing
B. Vomiting vesicular breath
C. Moist wheezes
D. Dry wheezing
E. Crepitation

10. A common complication of bronchial asthma:

A. Pulmonary emphysema
B. Lung abscess
C. Bleeding from the lungs
D. Bronchiectasis
E. Exudative pleurisy

11. Auscultative sign of bronchospasm:

A. Prolonged breathing and dry wheezing

B. Prolonged exhalation and dry wheezing
C. Bronchial breathing
D. Amphoric breath
E. Prolonged exhalation and wet wheezing

12. Characteristic sign of bronchial asthma

A. Expiratory panting
B. Inspiratory gasping
C. Moist crackles in the lower parts of the lungs
D. Liquid frothy sputum
E. Mucous-purulent sputum

13. Characteristic for mitral stenosis:

A. Crackling I tone at the apex of the heart
B. Accent II tone in the aorta
C. Systolic murmur at Botkin's point
D. Systolic murmur at the apex of the heart
E. Diastolic murmur at the point of Botkin

14. Auscultation in mitral insufficiency:

A. Systolic noise at the apex of the heart and attenuation of I tone
B. Systolic murmur and II tone accent in the aorta
C. Systolic noise at the apex of the heart and increased I tone
D. Systolic and diastolic murmur at the apex of the heart
E. Attenuation of I tone and diastolic murmur at the apex of the heart

15. Typical for mitral insufficiency:

A. A coarse systolic murmur at the apex of the heart
B. increased heart rate
C. Quail song rhythm
D. "horse dupuri" rhythm
E. Systolic murmur in the aorta

16. What signs indicate the development of aortic insufficiency against the background of mitral stenosis:

A. Botkin- diastolic murmur at Erb's point
B. Presystolic murmur at the apex of the heart
C. Mitral valve opening tone
D. Concussive I tone
E. Increased tone II in the pulmonary artery

17. Shifting of the heart borders to the left, weakening of the I tone at the apex of the heart and II tone in the aorta, diastolic murmur in the aorta, ABP: 130/20 mm.rt.st. These signs are characteristic of which defect:

A. Aortic insufficiency
B. Mitral insufficiency
C. Aortic stenosis
D. Tricuspid insufficiency
E. In mitral stenosis

18. More typical for aortic stenosis:
A. A coarse systolic murmur in the aorta
B. Systolic murmur at the apex of the heart
C. Systolic murmur at the apex of the heart
D. Crackling tone at the apex of the heart
E. Second tone increase in aorta

19. ECG during acute myocardial infarction:
A. High T tooth
B. ST segment depression
C. ST interval elevation
D. Deep Q tooth
E. Negative R notch

20. Which sign is more typical for transmural myocardial infarction:
A. Formation of QS tooth
B. Single Q tooth
C. Negative T tooth
D. A decrease in the amplitude of R
E. Negative R tooth

5. Criteria for assessing knowledge in the subject and types of control

Forms of current assessment of practical classes

Assessment of students' knowledge is carried out according to a 5-point system.

Current criteria for assessing student learning

Mark	Score	Student's level of knowledge
Excellent "5"	90 — 100	– Mastered the theoretical and methodological terms in the subject; – Has a creative approach to the development of knowledge; – Can express his opinion about the events under study; – Determines the factors influencing the studied medical phenomena; – Based on the analysis, he can correctly assess the situation; – Can conduct an analytical analysis of the studied phenomena and make the right decision.
Good "4"	70 — 89,9	– Has his own opinion about the studied phenomena; – Can correctly interpret analysis data; – Has an idea about the studied medical phenomena and processes; – Determines the factors that have an impact on the studied medical phenomena; – Can conduct an analytical analysis of the studied phenomena and make the right decision.
Satisfactory «3»	60 — 69,9	– Determines the factors that have an impact on the studied medical phenomena; – As an idea about the studied medical phenomena and processes; – Can conduct analytical analysis of the studied phenomena.
Unsatisfactory «2»	0 — 59,9	– Lack of knowledge of the theoretical and methodological foundations of the subject being studied; – Has no idea about the studied medical phenomena and processes;

6. Change in assessment from a 5-point scale to a 100-point scale

5-point scale	100-point scale	100-point scale	100-point scale	5-point scale	100-point scale
5,00 — 4,96	100	4,30 — 4,26	86	3,60 — 3,56	72
4,95 — 4,91	99	4,25 — 4,21	85	3,55 — 3,51	71
4,90 — 4,86	98	4,20 — 4,16	84	3,50 — 3,46	70
4,85 — 4,81	97	4,15 — 4,11	83	3,45 — 3,41	69
4,80 — 4,76	96	4,10 — 4,06	82	3,40 — 3,36	68
4,75 — 4,71	95	4,05 — 4,01	81	3,35 — 3,31	67
4,70 — 4,66	94	4,00 — 3,96	80	3,30 — 3,26	66
4,65 — 4,61	93	3,95 — 3,91	79	3,25 — 3,21	65
4,60 — 4,56	92	3,90 — 3,86	78	3,20 — 3,16	64
4,55 — 4,51	91	3,85 — 3,81	77	3,15 — 3,11	63
4,50 — 4,46	90	3,80 — 3,76	76	3,10 — 3,06	62
4,45 — 4,41	89	3,75 — 3,71	75	3,05 — 3,01	61
4,40 — 4,36	88	3,70 — 3,66	74	3,00	60
4,35 — 4,31	87	3,65 — 3,61	73	**Less than 3.0**	**Less than 60**

7. A list of main and additional educational literature and information sources

Main literature:

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