	OŃTÚSTIK QAZAQSTAN **MEDISINA AKADEMIASY** «Оңтүстік Қазақстан медицина академиясы» АҚ	SKMA –1979–	SOUTH KAZAKHSTAN **MEDICAL ACADEMY** АО «Южно-Казахстанская медицинская академия»	
Department: "General practitioner - 1"				044/61
Methodical guidelines for teaching in practical skills center (using execution algorithm)				

Methodical guidelines for teaching the skills of palpation, auscultation of the heart and ECG assessment for heart defects and arrhythmias in PSC (using execution algorithm)

Specialty: GM
Discipline: Basics of GM practice
Course: 5,6
Department: "General practitioner - 1"
Compiled by: Abdraimova S.E.

Shymkent 2022

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Reviewed and discussed at the meeting of the department

Protocol No. 4 of 5. 11 2022

Head of the Department _____ Datkaeva G.M.

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1.Clinical Skill Name: Palpation, auscultation of the heart and ECG assessment for heart defects and arrhythmias.

2.The purpose of the training: to develop the skills of palpation, auscultation of the heart and ECG assessment for heart defects and arrhythmias.

3.Time required for pre-briefing and skill demonstration on a mannequin: 15 minutes

4. Time needed to master the skill: 20 minutes

5. Necessary theoretical knowledge for mastering a clinical skill:

- Technique of palpation of the heart area

- Cardiac auscultation technique

- ECG interpretation rules

6. Simulator: Simulator Edward

7. List of medical products and equipment:

• Phonendoscope

8. Execution algorithm:

	Steps	Algorithm of action
1	Palpation of the heart area	• Place the palm of the right hand on the heart area so that its base is at the left edge of the sternum, and the top of the fingers is at the anterior axillary line between the IV and VI ribs. • First, a push is determined with the whole palm, then at the place of its pulsation with the tips of 2 fingers, set perpendicular to the surface of the chest. • Normally, the apex beat is palpated in the 5th intercostal space 1.5-2 cm medially from the median clavicular line. • If a patient has aortic or mitral stenosis, a symptom of cat's purring is detected - chest trembling caused by turbulent blood flow through a narrow opening. To identify it, you need to put your palm on the chest in the region of the heart. There are systolic and diastolic trembling of the precordial region. Systolic trembling, determined in the II intercostal space on the right, at the base of the heart, is characteristic of stenosis of the aortic mouth, in the II intercostal space on the left - for stenosis of the mouth of the pulmonary artery and non-closure of the ductus arteriosus. Diastolic trembling is determined in the region of the apex of the heart and is characteristic of mitral stenosis.
2	Auscultation of the heart	The first point is the apex of the heart (mitral valve). The second point is the 2nd intercostal space to the right of the sternum (aortic valve). The third point is the 2nd intercostal space to the left of the sternum (pulmonary valve). The fourth point is at the base of the xiphoid process on the right (tricuspid valve). The fifth point (Botkin-Erb point) is the place of attachment of the fourth rib to the sternum on the left (aortic valve).
3	Interpretation of the ECG	• Assess the rhythm, its regularity.

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		• Determine the electrical axis of the heart or the frontal projection of the vector of excitation of the ventricles, the direction of the electric wave through the ventricles during contraction. The electrical axis of the heart is normal from 30° to 70°, the direction is down-right. • Determine the parameters of the P wave. • Analyze the QRS complex. • Determine the parameters of the ST segment. • Analyze T wave characteristics. • Analyze the characteristics of the remaining intervals and segments.

9. Tasks:

1. Palpate the area of the heart
2. Conduct auscultation of the heart
3. Interpret the ECG

10. Skill execution algorithm:

1. Palpation of the heart area
2. Auscultation of the heart
3. ECG interpretation

11.Self-assessment materials:

1) Choose one most correct answer: in which of the listed heart defects does the first clapping sound occur at the apex?

A. Insufficiency of the aortic valve.

B. Mitral valve insufficiency.

C. Tricuspid valve insufficiency.

D. Stenosis of the aortic mouth.

 E. Mitral stenosis.

2) In what phase of the activity of the heart are the heart sounds heard?

1. First tone.

2. Second tone.

3. Third tone.

Answer options:

A. During atrial systole.

B. At the beginning of ventricular systole.

C. In the phase of expulsion of blood from the ventricles.

D. At the very beginning of diastole (protodiastole).

E. In the phase of rapid filling of the ventricles.

3) Which of the following signs can determine the first heart sound?

1- The first tone coincides with the pulsation on the carotid artery.

2- The first tone coincides with the pulsation on the radial artery.

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3- The first tone coincides with the apex beat.

4- The first tone is heard after a short pause.

5- The first tone is heard after a long pause.

4) List non-cardiac causes leading to an increase in the sonority of heart sounds.

1. Thin chest.

2. The approach of the heart to the anterior chest wall due to the development of a tumor in the posterior mediastinum.

3. Wrinkling of the edges of the lungs.

4. After exercise.

5. When excited.

5) List non-cardiac causes leading to a decrease in the sonority of tones.

1. Thickening of the subcutaneous fat.

2. Emphysema of the lungs.

3. General weakening of the body.

6) Name the correct sequence of components that form the first tone.

A. Valvular, muscular, vascular, atrial.

B. Muscular, valvular, vascular. atrial.

C. Atrial, valvular, muscular, vascular.

D. Valvular, vascular, muscular, atrial.

7. What auscultatory signs can distinguish mitral valve stenosis from bifurcation of the second tone?

Sample answer: the auscultatory picture of mitral stenosis is heard at the apex of the heart, while the bifurcation of the second tone is best determined on the basis of the heart. In addition, bifurcation of the second tone is not accompanied by an increase in the first tone, and for mitral valve stenosis this sign is mandatory. The time interval between the second tone and the opening tone of the mitral valve is more pronounced than with a bifurcation of the second tone. The bifurcation of the second tone is not constant in time and can change under the influence of the position of the body, the phase of respiration, and the melody of mitral stenosis does not change over time.

8. How should heart sounds change in case of combined mitral valve disease?

Sample answer: The auscultatory picture of heart sounds in combined mitral valve disease depends on the prevalence of stenosis or insufficiency. With a combined defect of the mitral valve with a predominance of stenosis on the vertex of the heart, an increase in the first tone will be heard, and with a predominance of insufficiency, a weakening.

9. Clinical task.

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Patient P., 66 years old, complains of aching, pressing pains in the region of the heart, frequent tinnitus, headaches, mainly in the occipital region, fatigue, memory loss, increased blood pressure to 150/90 mm Hg. History - pneumonia at the age of 30 years, frequent acute respiratory infections.

On examination: hypersthenic physique, increased nutrition. The skin is clean, flesh-colored, turgor is somewhat reduced. The pronounced arcus senilis is determined. There is weakened vesicular breathing in the lungs, no wheezing. BH - 16 in 1 min.

Question. The change in which tone and on which valve will be determined in this patient

Sample answer: In the 2nd intercostal space on the right side of the sternum, an accent of the second tone will be heard, a systolic murmur that intensifies when bending forward. The reason - sclerosis of the aortic valve cusps in a patient with signs of atherosclerotic lesions of the heart and blood vessels.

12. Criteria for assessing the performance of skill

	Steps	Algorithm of action	Performance evaluation	
			Yes	Not
1	Palpation of the heart area	• Place the palm of the right hand on the heart area so that its base is at the left edge of the sternum, and the top of the fingers is at the anterior axillary line between the IV and VI ribs. • First, a push is determined with the whole palm, then at the place of its pulsation with the tips of 2 fingers, set perpendicular to the surface of the chest. • Normally, the apex beat is palpated in the 5th intercostal space 1.5-2 cm medially from the median clavicular line. • If a patient has aortic or mitral stenosis, a symptom of cat's purring is detected - chest trembling caused by turbulent blood flow through a narrow opening. To identify it, you need to put your palm on the chest in the region of the heart. There are systolic and diastolic trembling of the precordial region. Systolic trembling, determined in the II intercostal space on the right, at the base of the heart, is characteristic of stenosis of the aortic mouth, in the II intercostal space on the left - for stenosis of the mouth of the pulmonary artery and non-closure of the ductus arteriosus. Diastolic trembling is determined in the region of the apex of the heart and is characteristic of mitral stenosis.		
2	Auscultation of the heart	The first point is the apex of the heart (mitral valve). The second point is the 2nd intercostal space to the right of the sternum (aortic valve). The third point is the 2nd intercostal space to the left of the sternum (pulmonary valve). The fourth point is at the base of the xiphoid process on the right (tricuspid valve). The fifth point (Botkin-Erb point) is the place of attachment of the fourth rib to the sternum on the left (aortic valve).		
3	Interpretation of the ECG	• Assess the rhythm, its regularity. • Determine the electrical axis of the heart or the frontal projection of the vector of excitation of the ventricles, the direction of the electric wave through the ventricles during		

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		contraction. The electrical axis of the heart is normal from 30° to 70°, the direction is down-right. • Determine the parameters of the P wave. • Analyze the QRS complex. • Determine the parameters of the ST segment. • Analyze T wave characteristics. • Analyze the characteristics of the remaining intervals and segments.		

13. Literature

1. Sultanov VK, Study of the objective status of the patient. - St. Petersburg: Peter Press, 1996.

2. Academic medical history: rules for examining a patient and registration in clinical descriptions

- Ufa, 2012.

14. Correct answer templates for assessment material

1. E;
2. 1-B, S.;
3. B;
4. A, B, C;
5.A,D,E;
6.4;
7.3;
8.3;
9.3;