

**ANATOMO-PHYSIOLOGICAL PECULIARITIES,
METHODS OF EVALUATION OF THE CARDIOVASCULAR
SYSTEM IN CHILDREN**

**Academic discipline «Pediatric Propedeutics»
Self-study guide for the 3rd year
*English medium students***

**АНАТОМО-ФІЗІОЛОГІЧНІ ОСОБЛИВОСТІ, МЕТОДИ
ОБСТЕЖЕННЯ СЕРЦЕВО-СУДИННОЇ СИСТЕМИ У
ДІТЕЙ**

**З дисципліни «Пропедевтика педіатрії»
Методичні вказівки
до самостійної роботи студентів 3-го курсу
*медичного факультету***

**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
Харківський національний медичний університет**

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Затверджено
Вченою радою ХНМУ
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**Харків
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Anatomo-physiological peculiarities, methods of evaluation of the cardiovascular system in children: self-study guide for the 3rd year English medium students / compiled by.: V.A., Klymenko T.V. Sirenko, O.M. Plakhotna – Kharkiv: KhNMU, 2016. – 16 p.

Compiled by: Klymenko V.A.
Sirenko T.V.
Plakhotna O.M.

Анатомо-фізіологічні особливості, методи обстеження серцево-судинної системи у дітей: метод. вказ. до самост. роботи студентів 3 курсу медичних факультетів / упор. В.А.Клименко, Т.В. Сіренко, О.М. Плахотна. – Харків, ХНМУ, 2016. – 16 с.

Упорядники: Клименко В.А.
Сіренко Т.В.
Плахотна О.М.

Number of class periods: independent work– 4;
practical trainings – 4.

Contents

Embryogenesis of the cardiovascular system. Critical period of development. Organs of the cardiovascular system: heart, arteries, veins, system of central hemodynamic, microcirculation. Function of the cardiovascular system is transport function.

The main regularity of morpho-functional development of cardiovascular system on tissue, organ and organism levels. Morpho-functional development and structure of the cardiovascular system in prenatal period, placental type of hemodynamic, its characteristics. Functional changes of the cardiovascular system in postnatal period. Growth and development of the cardiovascular system in postnatal period. Hemodynamic in different age periods, pulse rate, arterial pressure in age aspect.

The main clinical methods of investigation of the cardiovascular system: interrogation, observation, palpation, percussion, auscultation, palpation of pulse, determining of blood pressure. The main paraclinical methods of investigation of the cardiovascular system: electrocardiography, phonocardiography, echocardiography, roentgenography, determining of arterial and venous pressure, function tests with physical exercises, angiocardiology, measuring of cardiac output, measuring of circulating blood volume, measuring of blood flow speed, capillaroscopy.

Specific goals:

- to collect anamnesis of a patient with diseases of the cardiovascular system.
- to conduct an objective examination of the cardiovascular taking into account the child's age characteristics.
- to interpret the results of investigation.

To know:

- the embryogenesis of cardiovascular system
- the congenital anomalies of the heart and blood vessels.
- the peculiarities of blood circulation in fetus.
- anatomico-physiological peculiarities of the heart and blood vessels in childhood.
- method of physical examination, palpation of the cardiovascular system in children.
- percussion of absolute and relative boundaries of the heart in children.
- auscultation of the heart in children.

Be able to:

- to collect anamnesis of a patient with diseases of the cardiovascular system.
- to conduct an objective examination of the cardiovascular taking into account the child's age characteristics.
- to interpret the results of investigation.

Basic knowledge, practices and skills necessary for the topic (interdisciplinary integration).

Names of previous branches of learning	Acquired skills
1. General anatomy	Knowledge of organs and body systems. Meaning of some anatomical features of the children's body for organization of the children's care.
2. General physiology.	Knowledge of characteristics of organs and body systems functioning.

3. Introduction to psychology. Introduction to pedagogics	Analysis of patient's emotions, interpersonal relationships, children's behavior.
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Control questions to the lesson:

1. What do you know about embryogenesis of the cardiovascular system?
2. Tell about peculiarities of morphological structure of child's cardiovascular system.
3. What is the cardiovascular system function?
4. What do you know about the intrauterus and postnatal type of child's hemodynamic?
5. Tell about physiological features of children cardiovascular system.
6. State the main clinical methods of examination of the cardiovascular system.
7. State the main paraclinical methods of examination of the cardiovascular system.
8. What is the role of the cardiovascular system examination in pediatric practice?
9. Describe the semeiology of the cardiovascular system affections.

Graphical structures of individual issues of the topic.

1. Fetal blood circulation.
2. Newborn blood circulation.
3. «The cardiovascular system. Anatomico-physiological peculiarities, methods of evaluation of the cardiovascular system in children»

Tests for self-control:

1. What is the main function of the cardiovascular system?

- A. transport
- B. protective
- C. respiratory

- D. tactile
- E. All answers are correct

2. Fetal four-chambered heart is formed?

- A. 4-3 weeks of gestation
- B. 6-5 weeks of gestation
- C. 7-8 weeks of gestation
- D. 9-10 weeks of gestation
- E. 14-17 weeks of gestation

3. At what week of gestational age may formed intrauterine abnormalities of the cardiovascular system?

- A. 3-8
- B. 12-15
- C. 17-20
- D. 21-22
- E. 24-27

4. What are the basic structures of the fetal circulation cease to function after birth?

- A. Two umbilical veins, umbilical artery, Arantsev duct, Botllov duct, foramen ovale
- B. Two umbilical arteries, Arantsev duct, Botllov duct, foramen ovale
- C. Two umbilical arteries, umbilical vein, Arantsev duct, Botllov duct, foramen ovale
- D. Two umbilical arteries, umbilical vein, Arantsev duct, Botllov duct, foramen ovale
- E. umbilical artery, umbilical vena, Arantsev duct, Botllov duct, foramen ovale

5. Location of the apical impulse on the vertical line in a child older than 12 years is:

- A. 0.5 cm outwards from the left sternocleidomastoideus line
- B. 1 cm outwards from the left sternocleidomastoideus line
- C. on sternocleidomastoideus line
- D. 1-2 cm outwards from the left sternocleidomastoideus line
- E. 0.5 cm medially from the left sternocleidomastoideus line

6. Bulging of the chest in the heart, region is determined as:

- A. "Carotid shudder"
- B. cardiac hump
- C. apical beat
- D. cardiac impulse
- E. symptom Myusi

7. The tip of the heart after birth consists of:

- A. the right atrium and right ventricle
- B. left atrium and left ventricle
- C. right atrium and left atrium
- D. right ventricular and left ventricular
- E. right ventricle and left atrium

8. What methods of clinical examination of the cardiovascular system do you know?

- A. survey, external inspection
- B. palpation, percussion
- C. auscultation
- D. assessment of the heart rate, blood pressure
- E. all answers are correct

9. What is a vessel come out from the right ventricle:

- A. superior and inferior vena cava
- B. trunkus pulmonary
- C. right pulmonary artery
- D. left pulmonary artery
- E. aorta

10. Place of auscultation of the tricuspid valve (fourth point):

- A. the apex
- B. point of attachment III - IV on the left edge to the edge of the sternum
- C. second intercostals interval to the right of the sternum
- D. second intercostals space to the left of the sternum
- E. place of attachment of the xiphoid process to the sternum, slightly to the right

11. The pulse rate of a newborn is:

- A. 120-140 beats per minute
- B. 100 beat per minute
- C. 80-90 beats per minute
- D. 70-80 beats per minute
- E. less than 70 beats per minute

12. Place of the auscultation of the mitral and aortic valves (fifth point) is:

- A. the apex
- B. point of attachment III - IV on the left edge to the edge of the sternum
- C. second intercostal space to the right of the sternum
- D. second intercostal space to the left of the sternum
- E. place of attachment of the xiphoid process to the sternum, slightly to the right

13. What is a vessel coming out of the left ventricle:

- A. aorta
- B. pulmonary arteries
- C. pulmonary trunk
- D. aorta
- E. superior and inferior vena cava

14. How is called heart valve, which is located between the left atrium and left ventricle:

- A. semilunar
- B. mitral
- C. tricuspid
- D. univalve
- E. All answers are correct

15. The pulse rate for a teenager of 15 years is:

- A. 140 beats per minute
- B. 100 beats per minute
- C. 80-90 beats per minute
- D. **70-80 beats per minute**
- E. less than 70 beats per minute

16. Criteria for the apical impulse is, except for:

- A. localization
- B. distribution
- C. edema**
- D. quantity
- E. resistance

17. Place of auscultation the mitral valve (first point):

- A. the apex
- B. point of attachment III - IV on the left edge to the edge of the sternum
- C. second intercostal space to the right of the sternum
- D. second intercostal space to the left of the sternum
- E. place of attachment of the xiphoid process to the sternum, slightly to the right

18. The place of the auscultation of aortic valve (second point)?

- A. the apex
- B. point of attachment III - IV on the left edge to the edge of the sternum
- C. second intercostal space to the right of the sternum
- D. second intercostal space to the left of the sternum
- E. place of attachment of the xiphoid process to the sternum, slightly to the right

19. The murmur listen in the heart can be in character and causes:

- A. organic
- B. organo-functional
- C. functional
- D. physiological
- E. All answers are correct

20. What vessels drain into the right atrium:

- A. upper and lower hollow vein
- B. pulmonary trunk
- C. right pulmonary artery

- D. left pulmonary artery
- E. aorta

21. The pulse rate in a child older than 5-6 years is:

- A. 140 beats per minute
- B. 100 beats per minute
- C. 80-90 beats per minute
- D. 70-80 beats per minute
- E. less than 70 beats per minute

22. The localization of point of auscultation the pulmonary artery valve (third point)?

- A. the apex
- B. point of attachment III - IV on the left edge to the edge of the sternum
- C. second intercostal space to the right of the sternum
- D. second intercostal space to the left of the sternum
- E. place of attachment of the xiphoid process to the sternum, slightly to the right

Answers: 1 – A, 2-C, 3-A, 4-D, 5-E, 6-B, 7-D, 8-E, 9-B, 10-E, 11-A, 12- B, 13-A, 14-B, 15-D, 16-C, 17- A,18-C, 19-E, 20-A, 21-C, 22- D.

The list of study materials:

Main:

1. Propaedeutics of Paediatrics: Manual for foreign students / V. A. Fjoklin, V. A. Klymenko, O. M. Plakhotna, T. V. Sirenko, A. I. Kojemiaka, O. V. Sharikadze. – Kharkiv: 2010. – 356 p.
2. Kapitan T. Propaedeutics of children's diseases and nursing of the child / T. Kapitan. – The state cartographical factory, 2006. – 734p.

Additional:

1. Nelson textbook of pediatrics.—19th ed./ [edited by] Robert M. Kliegman... [at. ol], p. SM
2. Ghai O.P. Essential pediatrics (fourth edition). – New Delhi, India: Interpint, 1996.–476 p.
3. Gupte S. The short textbook of pediatrics, 8th edition. – New Deli, India.: Iaypee Brthe others. Medical publishers (P) hTD, 1998. – 617 p.
4. Bickley L.S., Hockelman R.A. Physical examination and History Taking. – Philadelphia, New York, Baltimor.: Lippincott, 1999. – 789 p.

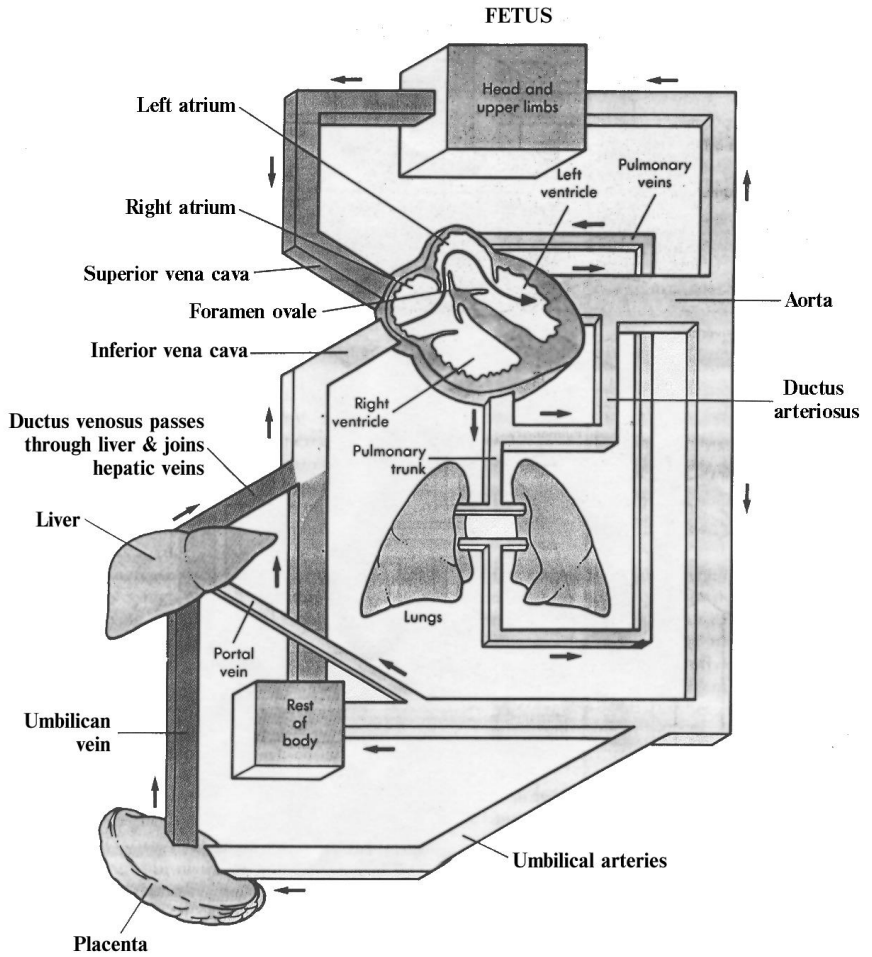


Figure. 6 Fetal circulation

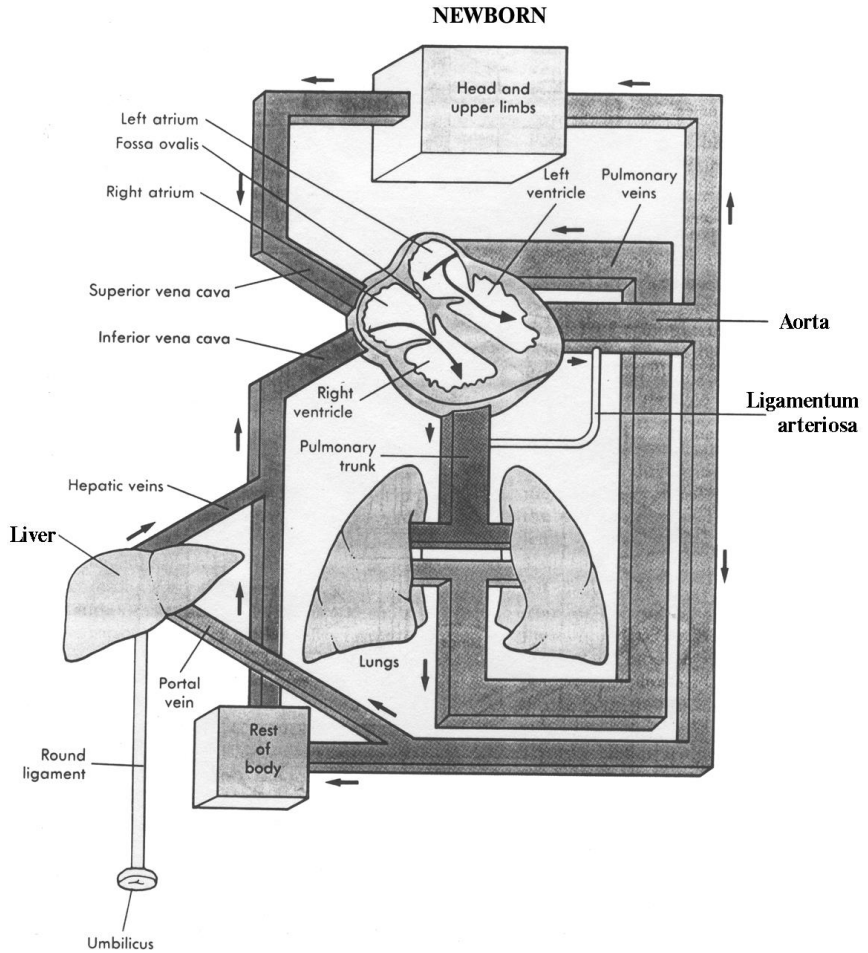
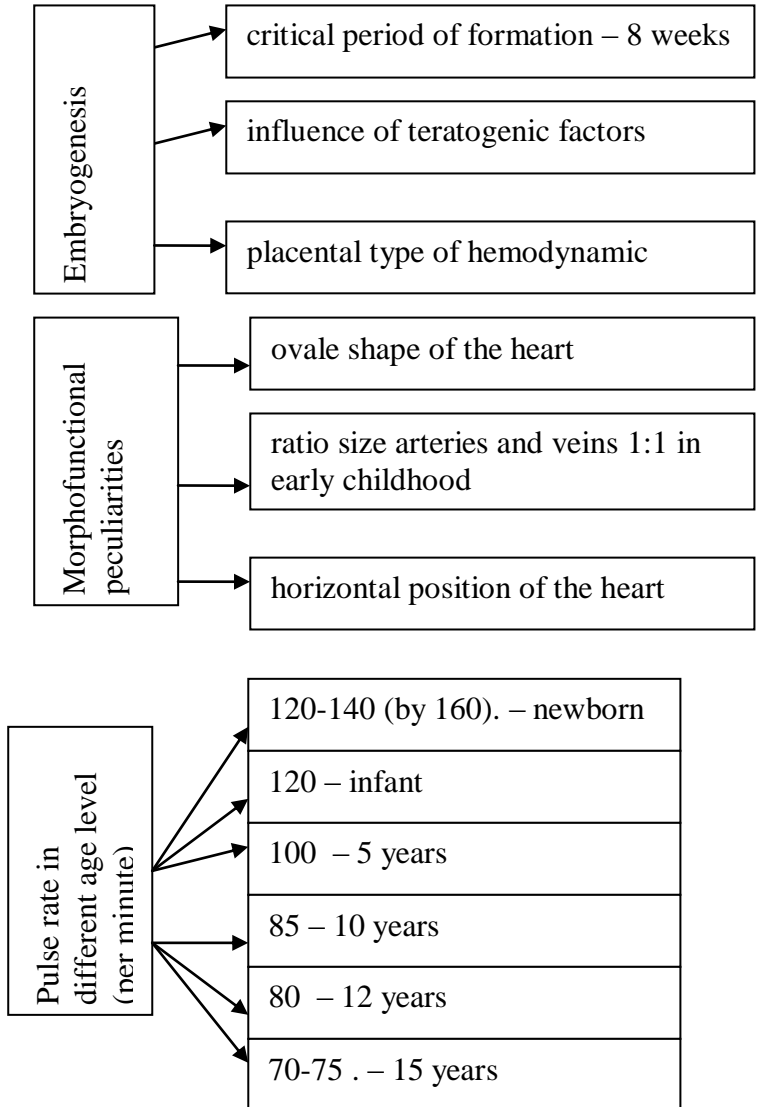
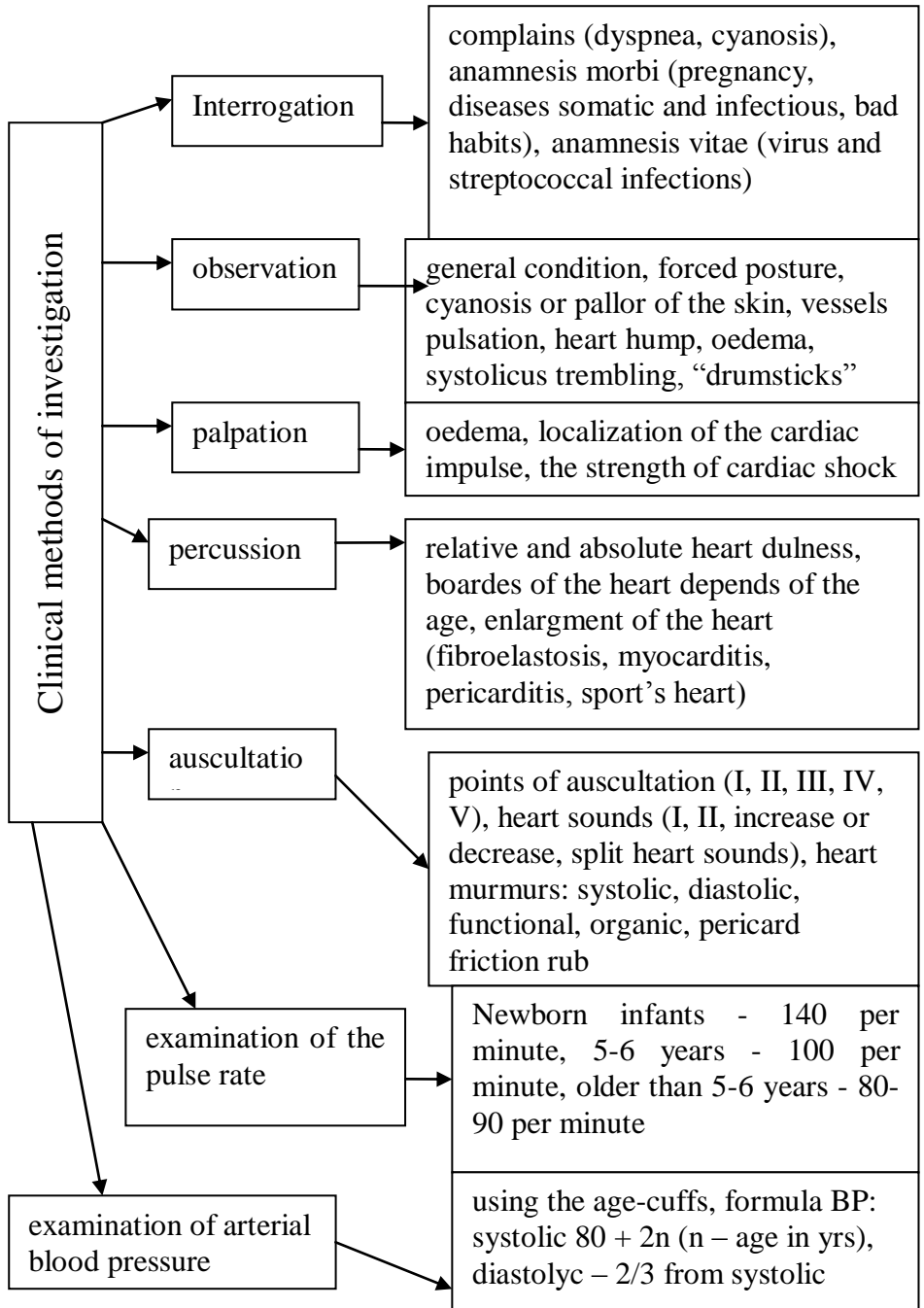


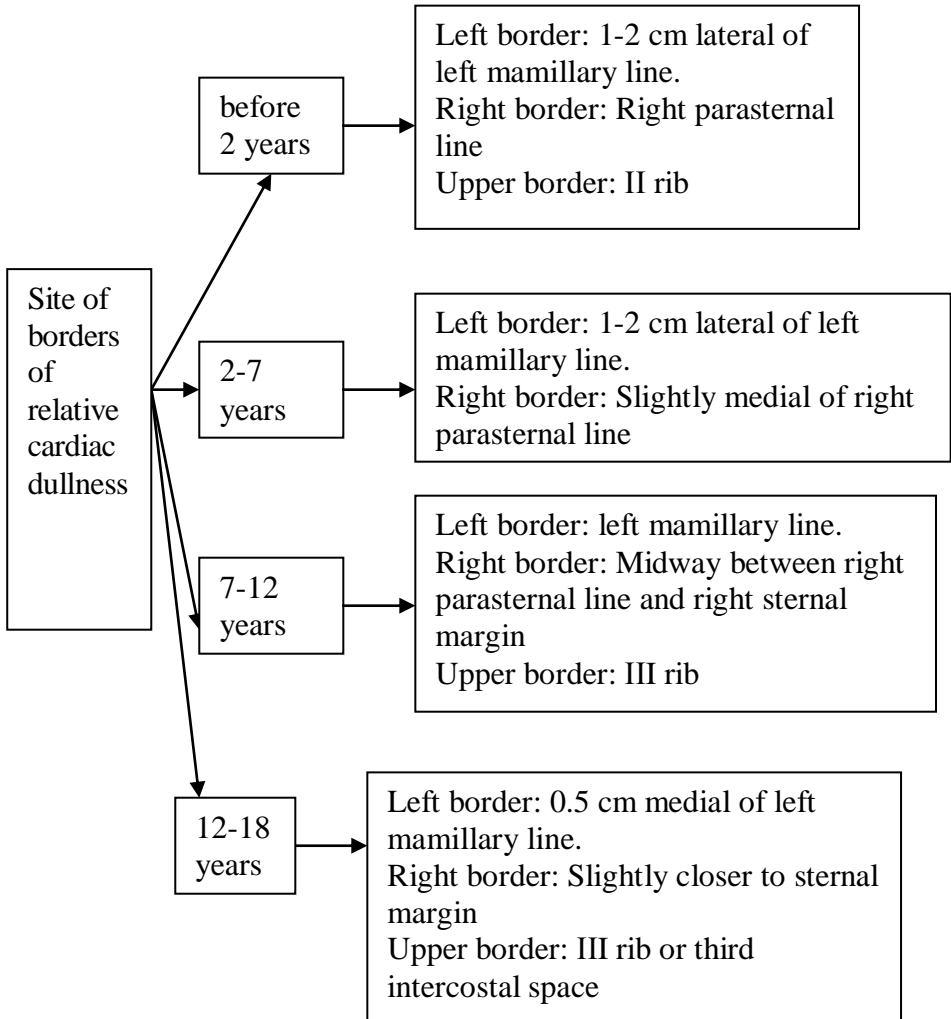
Figure.7 Transitional circulation in the newborn.

Graflogic structure for topic “The cardiovascular system. Anatomophysiological peculiarities, methods of evaluation of the cardiovascular system in children»





**Graflogic structure for topic “The cardiovascular system.
Anatomo-physiological peculiarities, methods of evaluation of
the cardiovascular system in children»**



Для нотатків

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Навчальне видання

Анатомо-фізіологічні особливості, методи обстеження серцево-судинної системи у дітей

Упорядники: Клименко Вікторія Анатоліївна
Сіренко Тетяна Вадимівна
Плахотна Ольга Миколаївна

Відповідальний за випуск: Клименко В.А.

Комп'ютерна верстка

Ум. друк. арк. ____. Тираж ____ прим. Зам. № ____.
