

Zaporozhye State Medical University
Department of Propedeutics of Children Diseases

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WORKBOOK

**PATIENTS EXAMINATION AND SEMIOTICS
OF PEDIATRIC DISEASES (MODUL 2)**

FOR THE THIRD-YEAR STUDENTS OF THE MEDICAL UNIVERSITY

Student's name _____

Group № _____

Zaporozhye 2016

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Обстеження пацієнта та семіотика педіатричних хвороб (модуль 2) :
робочий зошит для студентів 3 курсу медичних університетів

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Introduction.

The workbook can be used by teachers and students at homework and practical classes in examination of patients, as well as for independent work in the discipline "Propedeutic pediatrics".

The workbook contains tables, pictures, scheme which is required for patient examination.

The content of workbook corresponds to the requirements of "Educational qualification characteristics of the specialist in specialty 7.120101 "General Medicine".

Передмова.

Навчальний посібник (робочий зошит) може бути використано студентами для самостійної підготовки домашніх завдань і для роботи на практичних заняттях з дисципліни "Пропедевтична педіатрія".

Робочий зошит містить таблиці, малюнки, схеми, які треба заповнити, інформацією, необхідною для об'єктивного обстеження пацієнта і діагностики симптомів. Зміст відповідає вимогам навчальної програми з підготовки спеціаліста за спеціальністю 7.120101 "Лікувальна справа".

Малюнки та схеми використано з мережі Інтернет.

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**Theme: Anatomical and physiological features
of nervous system in children, physical examination**

1. How the development of central nervous system in embryo and fetus proceeds?
2. What harmful factors can influence development of central nervous system in ante-, intra- and early postnatal periods?
3. What kinds of anatomical and physiological features of nervous system do the child get distinguished from an adult person?
4. What typical developmental abnormalities should make a basis to congenital diseases of nervous system in children?
5. What complaints are specific of acute or chronic diseases of CNS?
6. How is the history of psychomotor development used in diagnostics of CNS diseases?
7. How to define the level of consciousness in children of different ages?
8. What is the reason of head's and skull fontanelle's sizes estimations in neurological workup in children?
9. Why is usually the cranial nerves functional estimation using in neurological examination?
10. What are the clinical tests included into a clinical plan of motor examination?
11. What does it mean a tendon reflexes and how can they be estimated?
12. What are the main features of cerebral spinal fluid in children of different ages? What are the most important semiotics of its abnormalities in procedure of clinical workup (for instance, in diagnostics of purulent or serous meningitis, benign meningeal irritation's syndrome, hydrocephaly, brain tumor, intracranial hemorrhages)?
13. What is the procedure of lumbar puncture? What are the main features of its attendance in early aged children.
14. The common characteristics of additional methods of central nervous system's clinical researches (like echoencephalography, reoencephalography, computer tomography (CT) and nuclear magnetic resonance imaging (MRI) as a methods of brain and spinal cord visualization).

The recommended literature.

1. Lecture
2. Manual of Propedeutics Pediatrics Nykytyk S.O., Ternopil, 2005, P.98-105
3. Propedeutics of children's diseases and nursing of the child. T. Kapitan, Vinnitsa: The State cartographicae Factory. 2012. P.149-197
4. M. Singh. Pediatric clinical methods. P.201-243.
5. M. El-Naggar. Basic Clinical Pediatrics. P. 29-31.
6. Essential Pediatrics-Ghai OP, 7-th edition. 2009. P.768.
7. Pediatric student's case history and peculiarities of Pediatric Physical Examination. Kyzyma N.V, Ivanko O.G, Krut A.S, Radutnaya E.A, Pidkova V.Y, Pashenko I.V, Nedelskaya E.V. Zaporozhye. 2013. P.128.

1. Describe Anatomical and physiological features of CNS in children:

Features of CNS in children	Clinical significance of CNS features
The child's brain contains more protein than the brain of the adult	
Central and peripheral neurons form myelin coating gradually not at once. Myelination finishes only by the 3rd year of life	
There is no clearness differentiation of the brain's layers (grey and white substances are indistinctly differentiated among themselves)	
The gyri and sulci of the cortex are not deep	
The blood-brain barrier (BBB) of the fetus and newborn is normally semi-permeable, allowing protein and other large and small (glucose) molecules to pass it freely from the cerebral vessels into the CSF, but prevent blood cell penetration.	
Functional minority of regulating action of the cortex in favor of sub-cortical formations with <i>domination thalamo-pallidal and strio-pallidal areas</i> in the first months of life	
The brain vascular system of fetus includes anastomoses developed insufficiently	
Lower end of the cord is at L3 at birth	

2. Describe Level of consciousness (LOC) assessment: _____

● **Glasgow Coma Scale (GCS) top section**

● **Normal dates of Temperature/BP/pulse/respiratory rate:**

Newborns _____

Infants _____

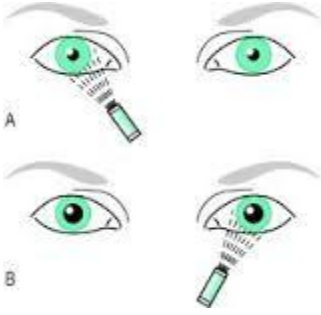
Toddlers _____

Preschool child _____

School child _____

Teenagers _____

- Pupil size / reaction to light:



A. _____
 B. _____

- Limb movement – arms and leg

Verbal response

Motor response

3.Level of consciousness (LOC) disorder:

The disorder	Define the following term
<i>Lethargy or pathological sleepy (somnolence)</i>	
<i>Confusion</i>	
<i>Coma</i>	

4.Define (draw) and name the most prominent part on the back and frontal for measuring head circumference:

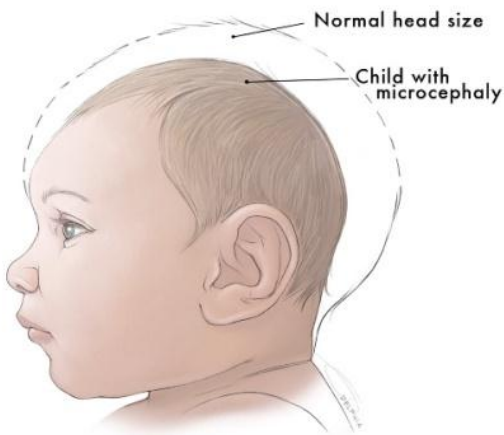


5.Average head circumference at birth is _____ cm

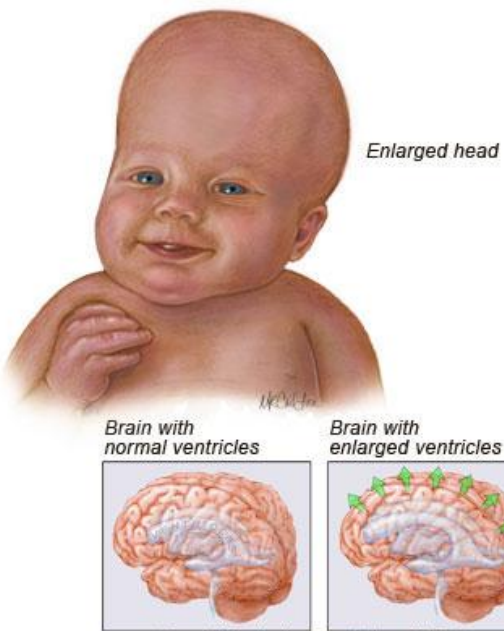
6. General trends in head circumference gain during childhood are the next:

	Age	Head circumference
Infants	Birth – 6 months	Monthly gain ____ cm
	6-12 months	Monthly gain ____ cm

7. Microcephaly is _____.

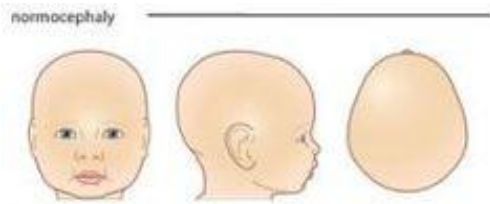


8. Macrocephaly is _____.

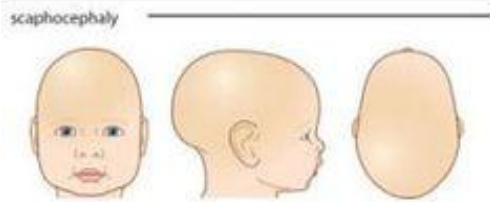


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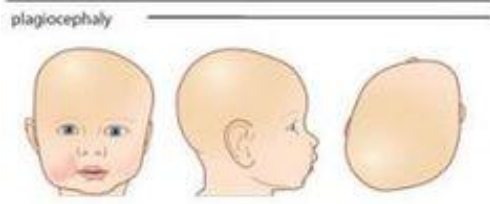
9. Match the following pictures with definitions:



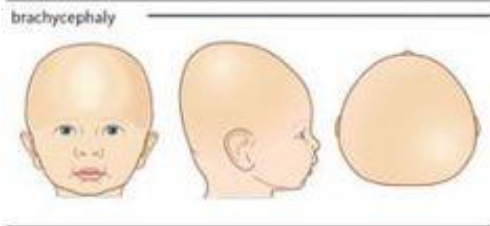
is the medical term to name a baby's head that has normal dimensions and proportions



variants of flat head syndrome will have a head shape deformity, either to the back or side of the head.

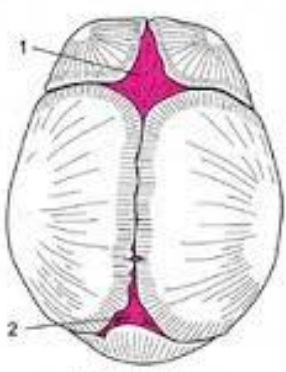


this is when the back of the head becomes flattened, causing the head to widen. To compensate, the front of the skull sometimes bulges out.



is the most common of the [craniosynostosis](#) conditions and is characterized by a long, narrow head.

10. Name № 1 _____ №2 _____



Fetal skull, superior view

11. Normal size of anterior fontanel at birth is _____ cm

12. Anterior fontanel close up to _____ months



13. Bulge anterior fontanel is symptom of
 1. _____ 2. _____.

(exicosis, hydrocephalus, meningitis)



Sunken fontanel is symptom of _____.

(exicosis, hydrocephalus, meningitis)

14. Describe strategies to assess every cranial nerves in newborns and infants

Cranial Nerve	Strategy
I Olfactory	
II Visual acuity	
II, III Response to light	
III, IV, VI Extraocular movements	

<p style="text-align: center;">V Motor</p>	
<p style="text-align: center;">VII Facial</p>	
<p style="text-align: center;">VIII Acoustic</p>	
<p style="text-align: center;">IX, X Swallow. Gag</p>	
<p style="text-align: center;">XI Spinal accessory</p>	
<p style="text-align: center;">XII Hypoglossal</p>	



15. Describe the muscle tone examination:

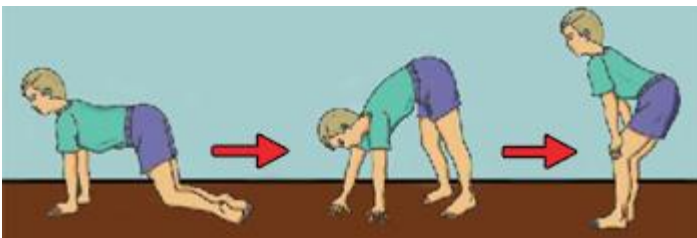


16. Describe the muscle strength examination:



17. Name position of this infant with muscle hypotonia: _____

18. Name these symptoms of muscle hypotonia: _____









19. Describe implementation of Deep tendon reflexes

Describe implementation of Deep tendon reflexes	
Knee	
Achilles	
Brachioradial	
Biceps	
Triceps	
Clonus	

20. List the variants of pathological gait:

1. _____
2. _____
3. _____..

21. Neonatal Reflexes assessment:

	The label	Describe Neonatal Reflexes and match with the following pictures
		Palmar grasp reflex:
		Babinski's reflex:
		Tonic neck reflex:
		Sucking reflex:
		Moro's reflex:
		Stepping reflex:
		Rooting reflex:

22.Meningeal Signs assessment:

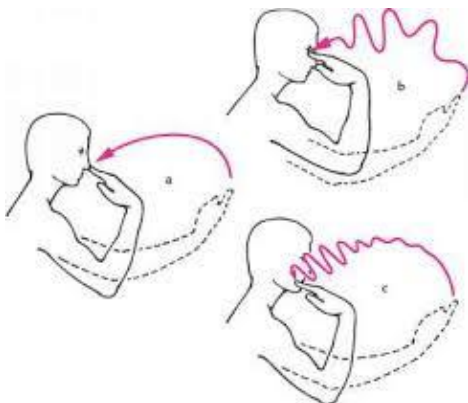
Meningeal Sign	Describe implementation
Kernig's sign	
Brudzinski's neck sign	
Brudzinski's contralateral reflex sign (leg) sign	
Neck rigidity	

23.Describe Romberg test implementation:



Romberg Test Position

24.Describe finger-nose test implementation:



25. Describe Normal Values for Cerebrospinal Fluid

	Neonate	Infant/child
Pressure		
Cytosis (cells)		
Cell type		
Protein		
Glucose (% of Serum)		
Color		

Examine the patient:

Level of consciousness (LOC): _____.

Examination of the child's head:

size _____ cm

shape _____

asymmetry _____

for infants assess anterior fontanel: size _____, tension _____, sutures _____, dilated veins _____, cephalohematoma _____.

Cranial nerves:

I. (Olfactory N.) –

II. (Optic N.) –

II (Optic N.), III (Oculomotor N.) -

III (Oculomotor N.), IV (Trochlear N.), VI (Abducens N.) – _____

V (Trigeminal N.) –

VII (Facial N.) –

VIII (Auditory N.) –

IX (Glossopharyngeal N.), X (Vagus N.) –

XI (Accessory N.) –

XII (Hypoglossal N.) –

Examination of motor system:

1. posture _____

2. gait

3. motor disorders (palsy, paresis), athetosis, tics, tremor – yes or not.

4. Muscles Development:

shape _____

contour of the body _____ in relaxed and tensed state;
muscle bulk _____;
muscle tone _____;
muscle strength _____.

Deep tendon reflexes:

Biceps _____
triceps _____
brachioradial _____
knee _____
Achilles _____

Assess reflexes for newborns and infants (present or not)

Moro's reflex
tonic neck reflex
stepping reflex
Babinsky's sign
planter reflex
palmar grasp
traction
root reflex
sucking reflex
swallow and gag reflex

Romberg test: _____.

Babinsky's sign (pyramidal) for children older 2 yr. _____

Meningeal signs (positive or negative):

Brudzinski neck _____
Brudzinski leg _____,
neck rigidity _____
Kerning's sign _____.

Theme: The semiotics of the main nervous system diseases in child. Features of cerebral spinal fluid in infants.

Nursing care of the child with neurological disorders.

1. What are the semiotics of the following neurological syndromes in children:
 - meningeal (inflammation and irritation of brain shells),
 - encephalic (inflammatory damage of brain substance),
 - convulsive (seizures),
 - hypertensive-hydrocephalic,
 - motor disturbance syndrome (peripheral and central paralysis and paresis) ,
 - delay of psycho-motor development in young children,
 - a "floppy child » syndrome.
2. What are the causes and forecast of the main neurological diseases in children: in meningitis, encephalitis, hydrocephaly, cerebral palsy, obstetric paralysis, microcephaly, intracranial hemorrhage states, brain tumours, Dushen`s and Verdnig-Goffmann`s diseases.
3. How to render the pre-medical urgent help to a child with seizures.

The recommended literature.

1. Lecture
2. Manual of Propedeutics Pediatrics Nykytyk S.O., Ternopil, 2005, P.98-105.
3. Propedeutics of children's diseases and nursing of the child.T.Kapitan,Vinnitsa:The State cartographicae Factory.2012.P.149-197.
4. M.Singh. Pediatric clinical methods. P.201-243.
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6. Essential Pediatrics-Ghai OP,7-th edition.2009.P.768.
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1. Define (+) the most typical symptoms of meningeal (inflammation and irritation of brain shells) syndrome:

altered mental status	
<u>headache</u>	
<u>high fever</u>	
<u>photophobia</u>	
bulge <u>fontanelle</u> in infant	
meningeal signs is positive	
children often be <u>irritable</u>	
inflammatory change of CNF	

2. Describe CSF findings in bacterial meningitis

Dates	Describe findings in bacterial meningitis
CNF pressure	
White blood cell count	
Cell type	
Protein content	
Glucose	

3. What's the meningism?

4. Describe encephalic (inflammatory damage of brain substance) symptoms:

5. Reasons of convulsive (seizures):

6. Match the definitions of Movement disorders with the correct words:

Paralysis (palsy) is	gross uncoordination that may become worse with the eyes closed
Ataxia is	slow, writhing, wormlike, constant, grossly uncoordinated movements that increase on voluntary activity and decrease on relaxation
Athetosis is	incomplete paralysis
Paresis is	the absence of any voluntary movements
Dystonia is	involuntary, compulsive, stereotyped movements of an associated group of muscles (can be suppressed by strong-willed effort)
Tics is	constant small very fast involuntary movements
Tremors is	slow twisting movements of limbs or trunk (alternation of a hypotonia with rigidity, formation of elaborate postures)

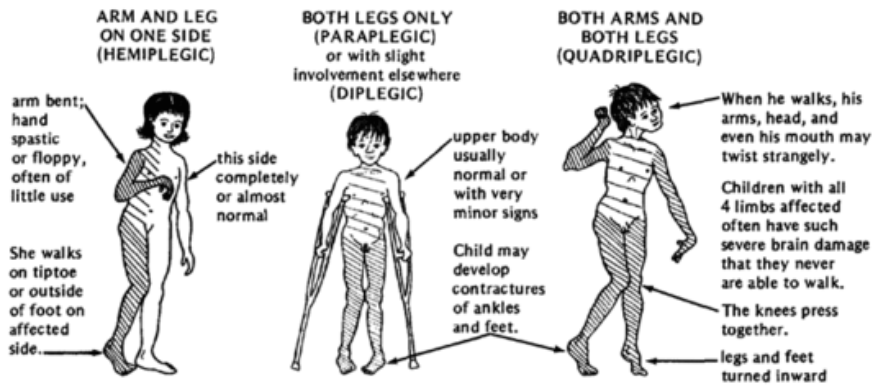
7. Hydrocephaly is _____



8. Hydrocephaly symptoms: _____

9. Cerebral palsy is _____

10. Cerebral palsy symptoms:



Describe hemiplegic _____

Describe paraplegic _____

Describe quadriplegic _____

Other symptoms _____

11. Dushen's and Verdnig-Goffmann's diseases are _____

12. Dushen's and Verdnig-Goffmann's diseases symptoms: _____

Examine the patient:

Level of consciousness (LOC): _____.

Examination of the child's head:

size _____ cm

shape _____

asymmetry _____

for infants assess anterior fontanel: size _____, tension _____, sutures _____, dilated veins _____, cephalohematoma _____.

Cranial nerves:

I. (Olfactory N.) –

II. (Optic N.) –

II (Optic N.), III (Oculomotor N.) -

III (Oculomotor N.), IV (Trochlear N.), VI (Abducens N.) – _____

V (Trigeminal N.) –

VII (Facial N.) –

VIII (Auditory N.) –

IX (Glossopharyngeal N.), X (Vagus N.) –

XI (Accessory N.) –

XII (Hypoglossal N.) –

Examination of motor system:

1. posture _____

2. gait

3. motor disorders (palsy, paresis), athetosis, tics, tremor – yes or not.

4. Muscles Development:

shape _____

contour of the body _____ in relaxed and tensed state;

muscle bulk _____;

muscle tone _____;

muscle strength _____.

Deep tendon reflexes:

Biceps _____

triceps _____

brachioradial _____

knee _____

Achilles _____

For newborn's and infants assess reflexes (present or not)

Moro's reflex

tonic neck reflex

stepping reflex

Babinsky's sign

planter reflex

palmar grasp

traction

root reflex

sucking reflex

swallow and gag reflex

Romberg test: _____.

Babinsky's sign (pyramidal) for children older 2 yr. _____

Meningeal signs (positive or negative):

Brudzinski neck _____

Brudzinski leg _____,

neck rigidity _____

Kerning's sign _____.

Theme: Examination of the skin and its accessory organs, subcutaneous tissue and lymph nodes. Clinical manifestation of the skin disorders.

Theoretical part:

1. The features of skin and its derivatives in children.
2. What characteristics of the skin the physician should be able to assess during the examination? (color, texture, temperature, moisture, turgor, lesions)
3. Clinical value of the skin color changes (pallor, cyanosis, hyperemia, jaundice).
4. Primary and secondary lesions of skin (rashes, exanthema), to give their definitions.
5. Semiotics of infectious and allergic rashes in children.
6. What is it enanthema? (Filatov's-Coplik spots).
7. Subcutaneous fat investigation. (normotrophy, hypotrophy, marasmus, obesity). Cardiac and kidney edema.
8. Skin appendages abnormalities.
9. Assessment of the lymph nodes.
10. The features of skin care in children of different ages.
11. Technique and setting of intradermal injections (the Mantoux test).

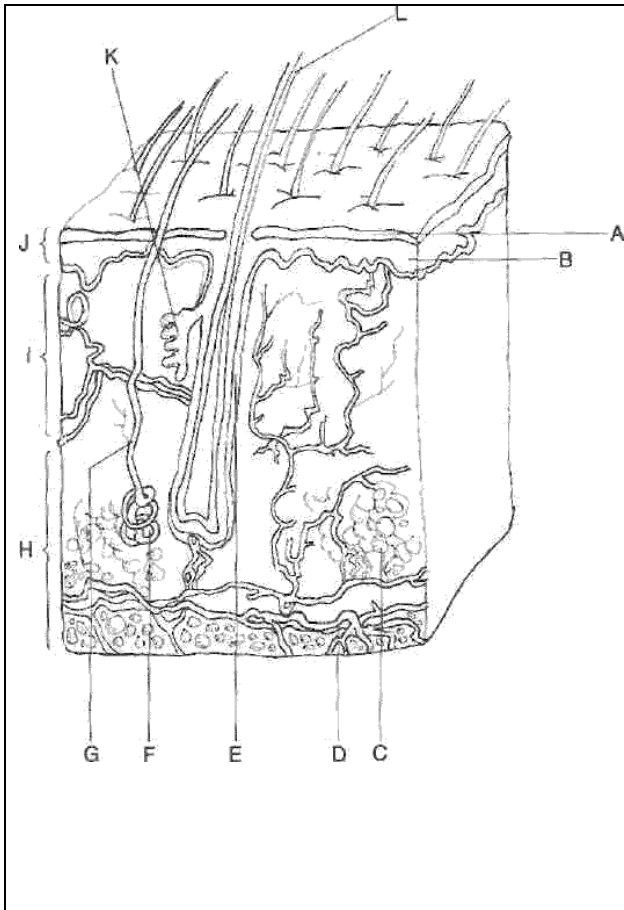
Practical part:

1. Demonstrate examination of the skin and lymph nodes.
2. Describe and record appropriately the physical findings related to inspection and palpation of the skin of children.

The recommended literature

1. Propedeutics of children's diseases and nursing of the child. T. Kapitan, Vinnitsa: The State cartographicae Factory. 2012. P. 205-224
2. M. ELNagar. Basic Clinical Pediatrics. P. 25-28.
3. M. Singh. Pediatric clinical methods. P. 131-149.
4. The language of Dermatology [http://www. Dermatology.org/morphologu,index.html](http://www.Dermatology.org/morphologu,index.html).
5. Textbook "Examination of patients and pediatric history" p. 37-38.
6. Manual of Propedeutics Pediatrics Nykytyk S.O., Ternopil, 2005, P. 117-136.
7. Essential Pediatrics-Ghai OP, 7-th edition. 2009.
8. Pediatric student's case history and peculiarities of Pediatric Physical Examination. Kyzyma N.V, Ivanko O.G, Krut A.S, Radutnaya E.A, Pidkova V.Y, Pashenko I.V, Nedelskaya E.V. Zaporozhye. 2013. P. 128.

Label: Figure 1 Skin



Label:

- ___ 1. epidermis
- ___ 2. horny layer of epidermis
- ___ 3. subcutaneous tissue
- ___ 4. hair
- ___ 5. hair follicle
- ___ 6. sebaceous gland
- ___ 7. cellular layer of epidermis
- ___ 8. dermis
- ___ 9. fat
- ___ 10. duct of sweat gland
- ___ 11. sweat gland
- ___ 12. blood vessel

Fill table 1: Anatomical physiological features of the skin in newborn and infant

Anatomical physiological features of the skin in newborn and infant	Their values
Epidermis:	
Dermis:	
subcutaneous tissue:	
blood vessel:	

sweat gland:	
sebaceous gland:	
Nails:	

Fill table 2: **Skin color changes**

Skin color changes	What disease or pathological states are this discoloration indicated

Fill table 3: **Primary lesions**

Circumscribed, flat, nonpalpable changes in skin color	Palpable elevated solid masses	Circumscribed superficial elevations of the skin formed by free fluid in a cavity within the skin layers
1 _____	1 _____	1 _____
2 _____	2 _____	2 _____
	3 _____	3 _____
	4 _____	

Definitions

Part I

Match the definitions in *Column I* with the correct words in *Column II*

<i>Column I</i>	<i>Column II</i>
___ 1 a small, thin plate of horny epithelium, resembling a fish scale, cast off from the skin	A ulcer
___ 2 an outer layer or covering; a scab; a coagulation product of blood, serum, pus, or a combination of two or more of these	B scar
___ 3 lines resulting from rapid or prolonged skin stretching	C alopecia
___ 4 a wearing away; a state of being worn away, with loss of superficial portions of the dermis	D scale
___ 5 destruction and loss of epidermis, dermis, and subcutaneous tissue	E erythema
___ 6 the fibrous tissue replacing normal tissues destroyed by injury or disease	F ecchymosis
___ 7 redness of skin	G erosion
___ 8 a dark bluish or purplish coloration of the skin and mucous membrane due to deficient oxygenation of the blood in the lungs or to an abnormally great reduction in the flow of the blood through the capillaries;	H clubbing
___ 9 a yellowish staining of the integument, the deeper tissues, and the excretions with bile pigments	I crust
___ 10 baldness	J jaundice

___11 a purplish patch caused by extravasation of blood into the skin; black and blue spot; larger than petechiae	K	vitiligo
___12 a prominent line straight across the palms of the child's hands frequently displayed by children with Down's syndrome	L	striae
___13 broadening and thickening of ends of fingers; seen in chronic pulmonary disease, due to lack of oxygen	M	simian crease
___14 the appearance on the skin of white patches due to simple loss of pigment without other trophic changes	N	cyanosis
___15 fine soft hair with minute shafts and large papillae; it occurs on the forehead, ears, and flanks	O	lanugo

Part II

Match the definitions in *Column I* with the correct words in *Column II*

<i>Column I</i>		<i>Column II</i>
___1 a nonelevated, discolored, cutaneous lesion; a spot on the skin smaller than 1 cm	A	lichenification
___2 a small, circumscribed, solid elevation on the skin (less than 1 cm)	B	hemangioma
___3 a small, circumscribed elevation on the skin, containing serum (less than 0.5-1 cm)	C	wheal
___4 a bleb; blister; a circumscribed area of separation of the epidermis, due to the presence of clear serum; larger than a vesicle	D	macule
___5 a small, circumscribed elevation on the skin, containing pus (less than 0.5-1 cm)	E	maceration
___6 an acute, circumscribed, transitory area of edema of the skin; hive; an urticarial lesion; lesion produced by intradermal injection or test	F	plaque
___7 minute hemorrhage, of pinpoint to pinhead size, in the skin	G	papule
___8 a flat elevation larger than 0.5 cm, often formed by a coalescence of papules	H	tumor
___9 a small node; a solid, elevated mass larger than a papule	I	pustule
___10 an elevated fluctuant sac containing fluid or a semisolid material	J	petechiae
___11a palpable elevated mass larger than a nodule	K	vesicle
___12 leathery induration; an induration and thickening of the skin due to a chronic inflammation caused by scratching or long-continued irritation	L	cyst

___13 a congenital collection of blood vessels forming a benign tumor	M bulla
___14 softening of the tissues by action of liquid	N nodule
___15 the study of surface markings of the skin, especially of the palmar and plantar regions	O dermatoglyphics

Review Questions

True—False

- _____ 1 In physiologic jaundice in newborns, jaundice appears within the first 24 hours.
- _____ 2 Poor skin turgor is an indicator of dehydration.
- _____ 3 Scaliness and desquamation are seldom seen in normal newborns.
- _____ 4 Pubic hair most commonly appears at age 9-10 years.
- _____ 5 Infants with coarctation of the aorta, below the aortic arch, may show more cyanosis in the lower extremities than in the upper extremities.
- _____ 6 Mongolian spots are seen more often in the brown and black race, and have no clinical significance.
- _____ 7 Cafe-au-lait spots may be indicative of neurofibromatosis.
- _____ 8 In moderate amounts, small firm mobile nodes in neck and inguinal area are generally abnormal in the child.
- _____ 9 Erythema nodosum is seen in children with rheumatic fever.
- _____ 10 Tufts of hair over the spinal and sacral region may mark a spina bifida.
- _____ 11 Children with severe protein malnutrition often have hair tipped with a reddish rust color.
- _____ 12 Newborns with erythema toxicum neonatorum should be isolated.
- _____ 13 Very brittle dry hair may indicate hyperthyroidism.
- _____ 14 As in jaundice, the sclera are yellow in carotinemia.

Examine the skin of the child and record findings on the check list provided.

CHECK LIST

Skin: Inspection and Palpation

The following list should be filled in for each inspection and palpation required in the learning activities.

Sex _____

Age _____

General Observations	Yes	No	Describe (<i>where appropriate</i>)
Color			
(<i>normal</i>)			
brown			
cyanosis			
redness			
yellowness			
pallor			
vitiligo			
White-rosy			
other			
Moisture			
dryness			
sweating			
oiliness			
Temperature			
cool			
warm (<i>normal</i>)			
hot			
Texture			
rough			
smooth			
Turgor good			
Lesions			
type			
configuration (grouping)			
distribution			
morphology			
Edema			

LYMPHATIC SYSTEM

Figure 2 Lymphatic system

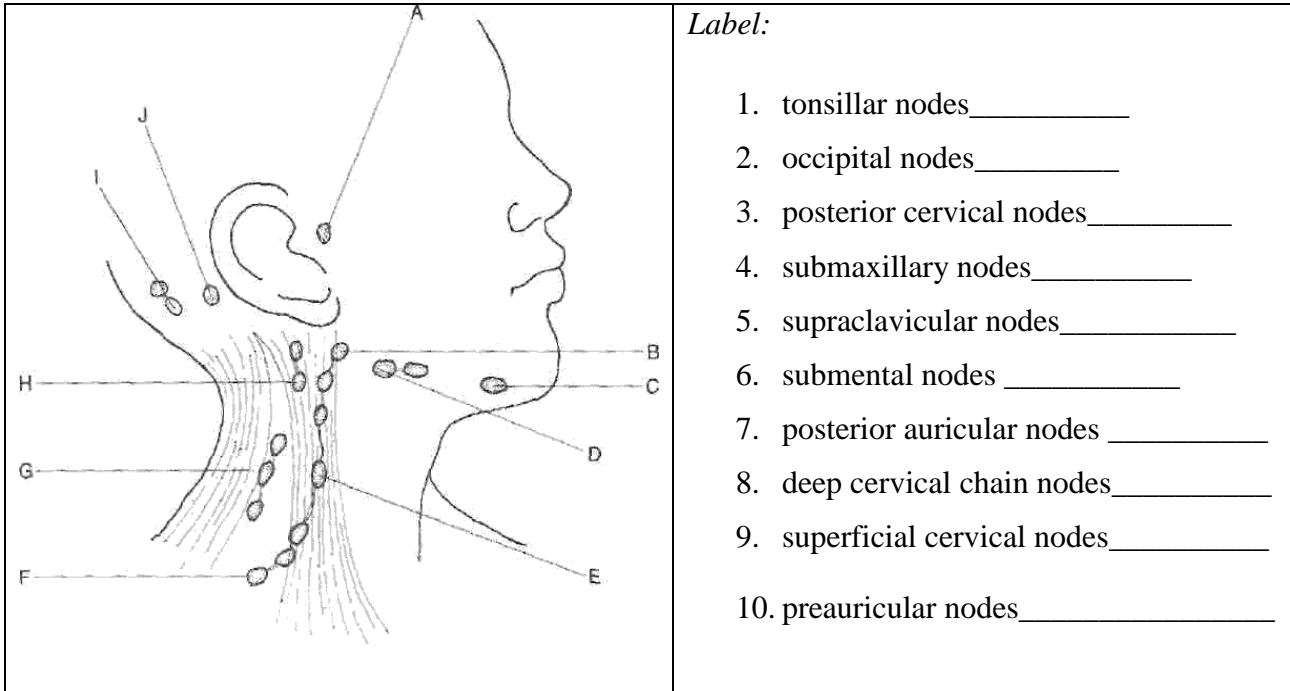


Figure 3 Lymphatic system

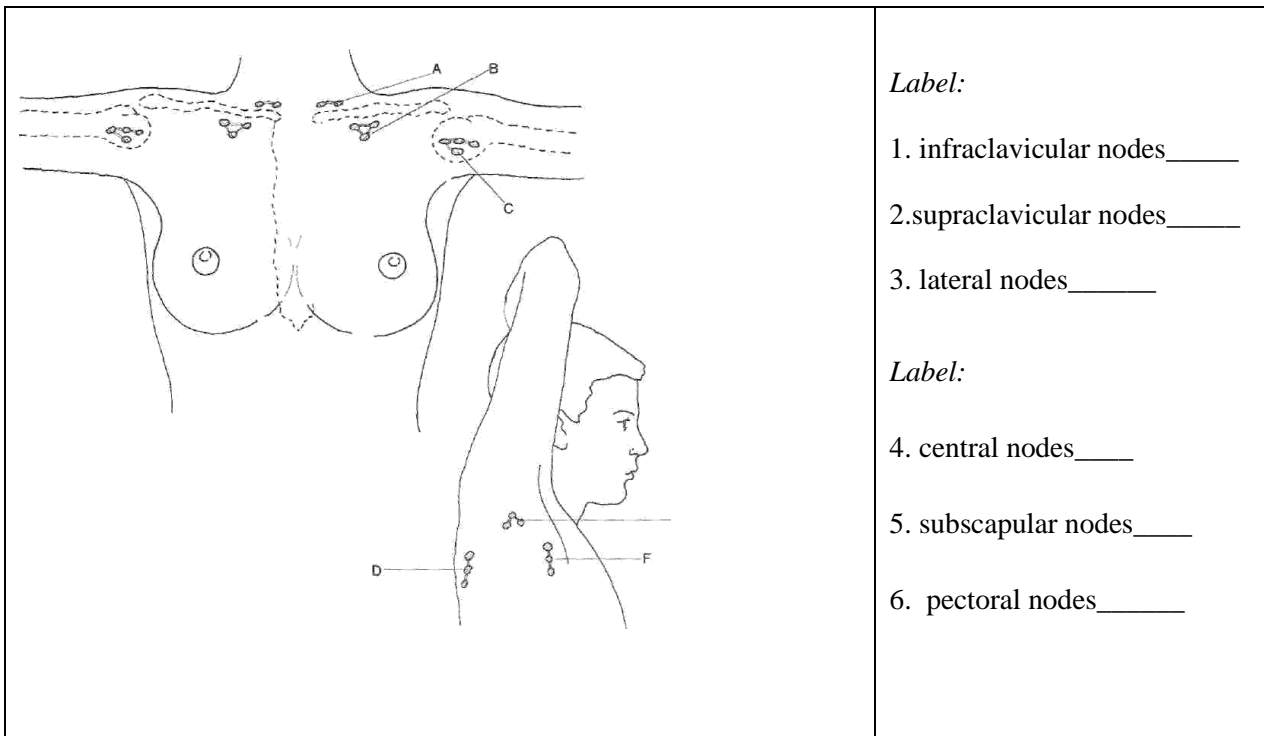


Figure 4 Lymphatic system

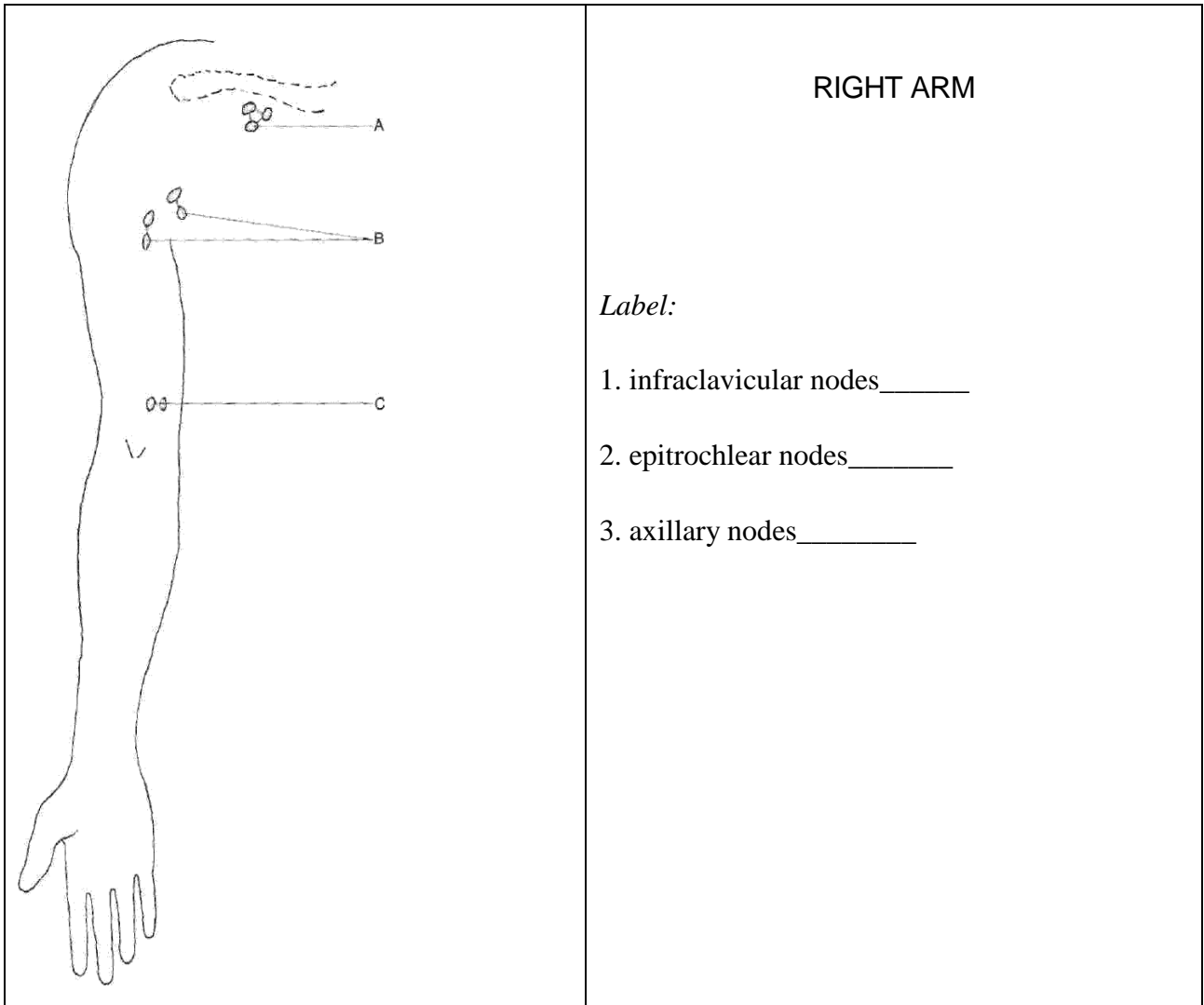
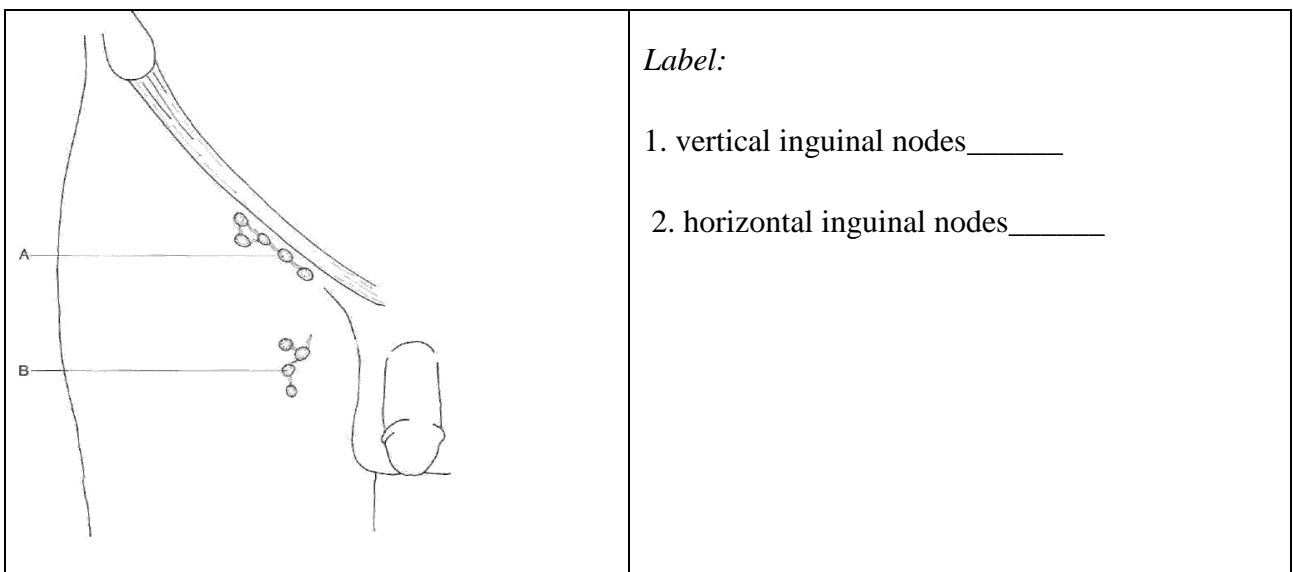


Figure 5 Lymphatic system



Review Questions

Matching (Match the following columns)

<p>These organs and/or areas</p> <p>___ 1 tonsils</p> <p>___ 2 mouth</p> <p>___ 3 scalp</p> <p>___ 4 breast</p> <p>___ 5 posterior chest wall</p> <p>___ 6 upper arm</p> <p>___ 7 ulnar surface of forearm</p> <p>___ 8 external genitalia</p> <p>___ 9 knee</p>	<p>are drained by which of these lymph nodes?</p> <p>a) horizontal inguinal</p> <p>b) vertical inguinal</p> <p>c) epitrochlear</p> <p>d) lateral axillary</p> <p>e) subscapular</p> <p>f) supraclavicular</p> <p>g) pectoral</p> <p>h) submaxillary</p> <p>i) cervical</p> <p>j) occipital</p> <p>k) supraclavicular</p>
--	--

CHECK LIST Lymphatic System: Inspection and Palpation

The following list should be filled in for each inspection and palpation required in the learning activities.

Sex _____

Age _____

Location of Nodes	Yes	No	Describe (where appropriate) According to Characteristics Listed Below*
Head and Neck			
pre-auricular			
posterior auricular			
occipital			
tonsillar			
submaxillary			
submental			
superficial cervical			
posterior cervical chain			
deep cervical chain			
supraclavicular			
Axillary			
infraclavicular			
lateral			
central			
pectoral			
subscapular			
Epitrochlear			
Inguinal		i	
horizontal			
vertical			

* LYMPH NODES—CHARACTERISTICS:

Size ----- cm	Consistency
Color	soft
Temperature	firm
Movable/fixed	hard Tender/nontender

Theme: Anatomical and physiological peculiarities of musculoskeletal system in child. Examination of musculoskeletal system. The semiotic of the main damages of musculoskeletal system. Care of the patient with musculoskeletal disorders.

1. Describe skeletal growth and development in the embryo and postnatal period. When does bone formation begin? Where are “primary” and “secondary” centers of ossification in long bones? What hormones do influence for bone growth? What is “bone age”? How is “bone age” determined? How long linear growth can continue? What congenital defects involving skeleton do you know? (spina bifida, cleft lip and palate, osteogenesis imperfecta).
2. What anatomical and physiological features of musculoskeletal system do you know? What disorders do these peculiarities promote?
3. What are the chief complaints of the patient with musculoskeletal disorders? What factors from prenatal and neonatal history are important and should be obtained?
4. What parts does the examination of the musculoskeletal system include?
5. Tell about inspection and palpation of the head. (When do posterior and anterior fontanel close normally? What characteristics of the fontanel does pediatrician note? At what pathology these can be observed? What deformities of the head do you know? (cephalohematoma, craniotabes). What causes can produce these deformities?)
6. At what age does an eruption of the first primary teeth begin? What is chronology of human dentition? What formula is used for estimating the number of primary teeth in children who are younger 2 years? At what diseases the formation of dental enamel and the order of teeth eruption are broken?
7. Tell about inspection of the chest. What is feature of infancy rib cage? What pathological shape of rib cage do you know? What is the rachitic rosary and Harrison's groove? When do they observe?
8. What deformity of spine do you know? What are causes of these deformities? How do you discover scoliosis?
9. What disorders can be revealed by inspection of the upper and lower extremities? At what diseases are they occurred? What deformities of the foot do you know?
10. What are clinical manifestations of the hip dysplasia? How do you check Ortolani's test (Barlow's, Allis's, Trendelenburg's)? What gait has the child with bilateral dislocations of hips?
11. What physiologic and pathological disorders of muscle tone do you know? When these are occurs?
12. What tests may be helpful in identifying latent tetany? (Chvostek's sign, Trousseau's sign)

Recommended literature

1. Propedeutics of children's diseases and nursing of the child. T. Kapitan, Vinnitsa: The State cartographic Factory. 2012. P. 225-246.
2. O. Ivanko. Course lectures to propaedeutics of pediatrics. - 2206. CD.
3. A guide to physical examination and history taking. Barbara Bates. 6th edition. Philadelphia. 1995. P. 449 – 490, 620 – 625.
4. Musculoskeletal system in children. Manual. Department of Propedeutics of Pediatrics. ZSMU. 32p.
5. Manual of Propedeutics Pediatrics Nykytyk S.O., Ternopil, 2005, P. 137-158.
6. Essential Pediatrics - Ghai OP, 7th edition. 2009.
7. Pediatric student's case history and peculiarities of Pediatric Physical Examination. Kyzyma N.V, Ivanko O.G, Krut A.S, Radutnaya E.A, Pidkova V.Y, Pashenko I.V, Nedelskaya E.V. Zaporozhye. 2013. P. 128.

What anatomical and physiological features of musculoskeletal system do you know?	What disorders do these peculiarities promote?

Figure 1: Fetal skull

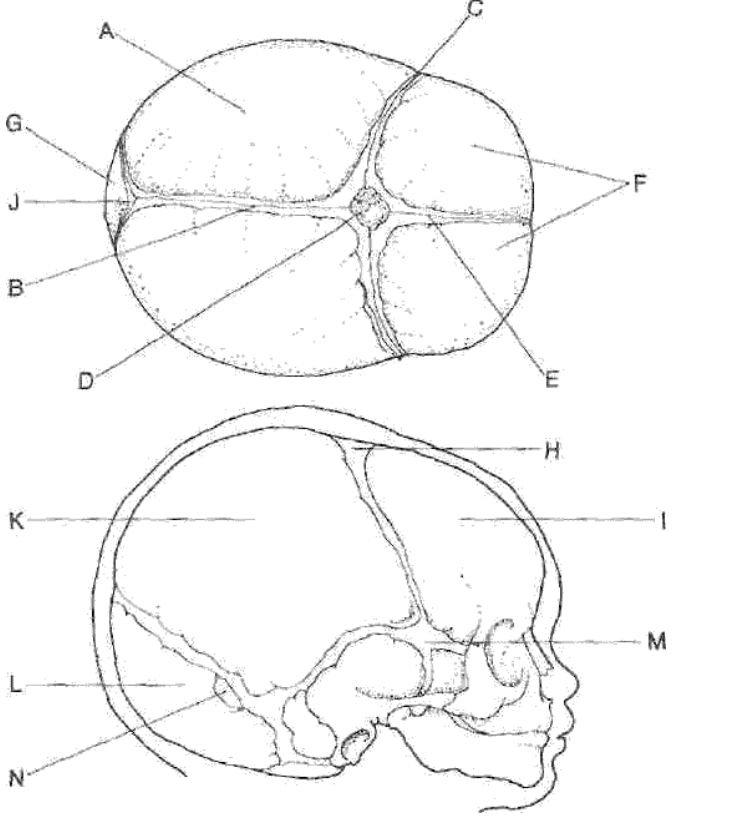
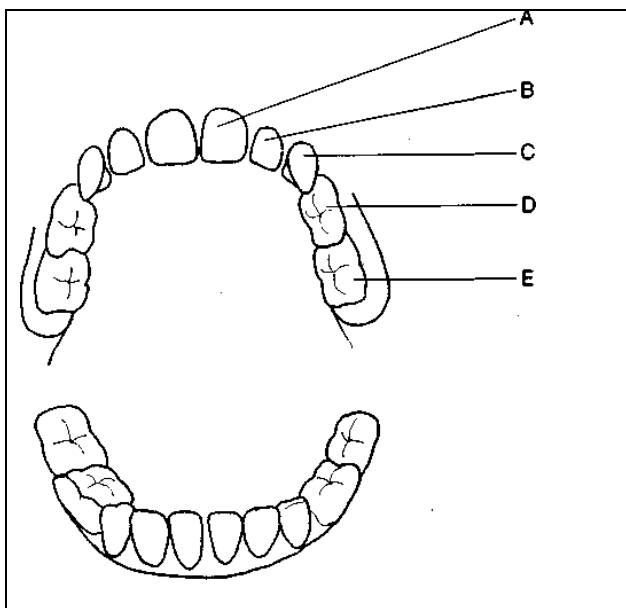
	<p>Label: (The labels may fit more than one letter)</p> <p>__1. lambdoidal suture</p> <p>__2. coronal suture</p> <p>__3. sphenoid fontanel</p> <p>__4. anterior fontanel</p> <p>__5. parietal bones</p> <p>__6. frontal bones</p> <p>__7. sagittal suture</p> <p>__8. mastoid fontanel</p> <p>__9. posterior fontanel</p> <p>__10. frontal suture</p> <p>__11. occipital bone</p>
---	--

Figure 2: Deciduous (primary, temporary) dentition

	<p>Label and indicate age of eruption:</p> <p>___ 1. central incisor</p> <p>___ 2. lateral incisor</p> <p>___ 3. canine (cuspid)</p> <p>___ 4. first molar</p> <p>___ 5. second molar</p>
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A quick guide to assessment of deciduous teeth during the first 2 years is:

Age of the child in months — [6] = number of teeth that should be present.

Figure 3 : Permanent dentition

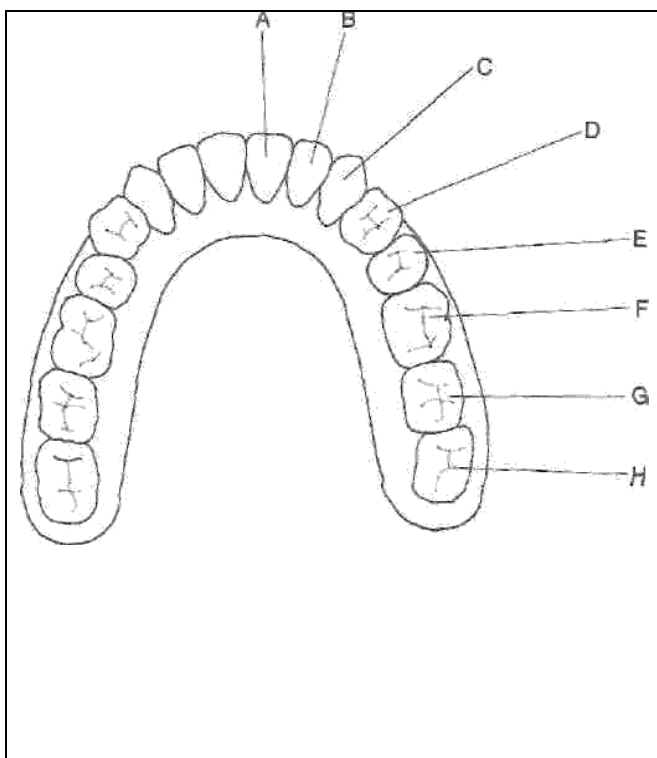
	<p>Label and indicate age of eruption:</p> <p>___ 1. lateral incisor</p> <p>___ 2. central incisor</p> <p>___ 3. canine (cuspid)</p> <p>___ 4. second bicuspid</p> <p>___ 5. first bicuspid</p> <p>___ 6. first molar</p> <p>___ 7. second molar</p> <p>___ 8. third molar</p>
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Figure 4: Tests for detecting congenital dislocated hip

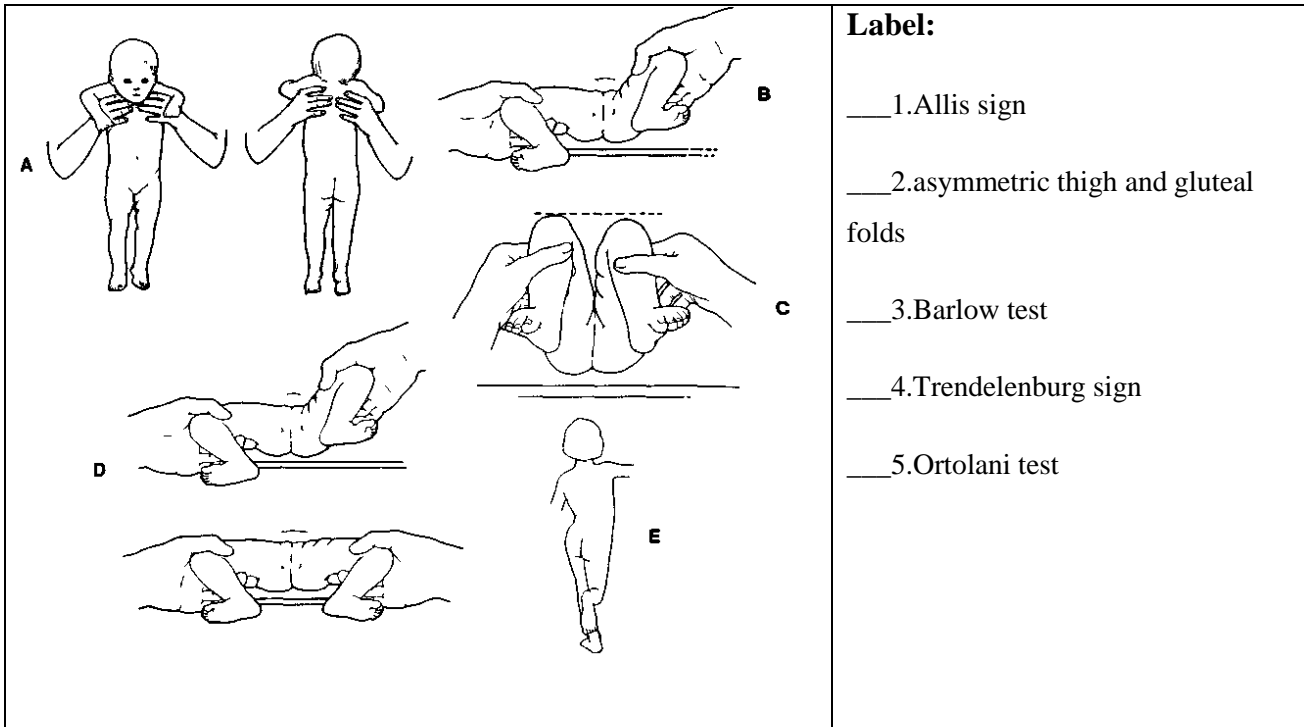
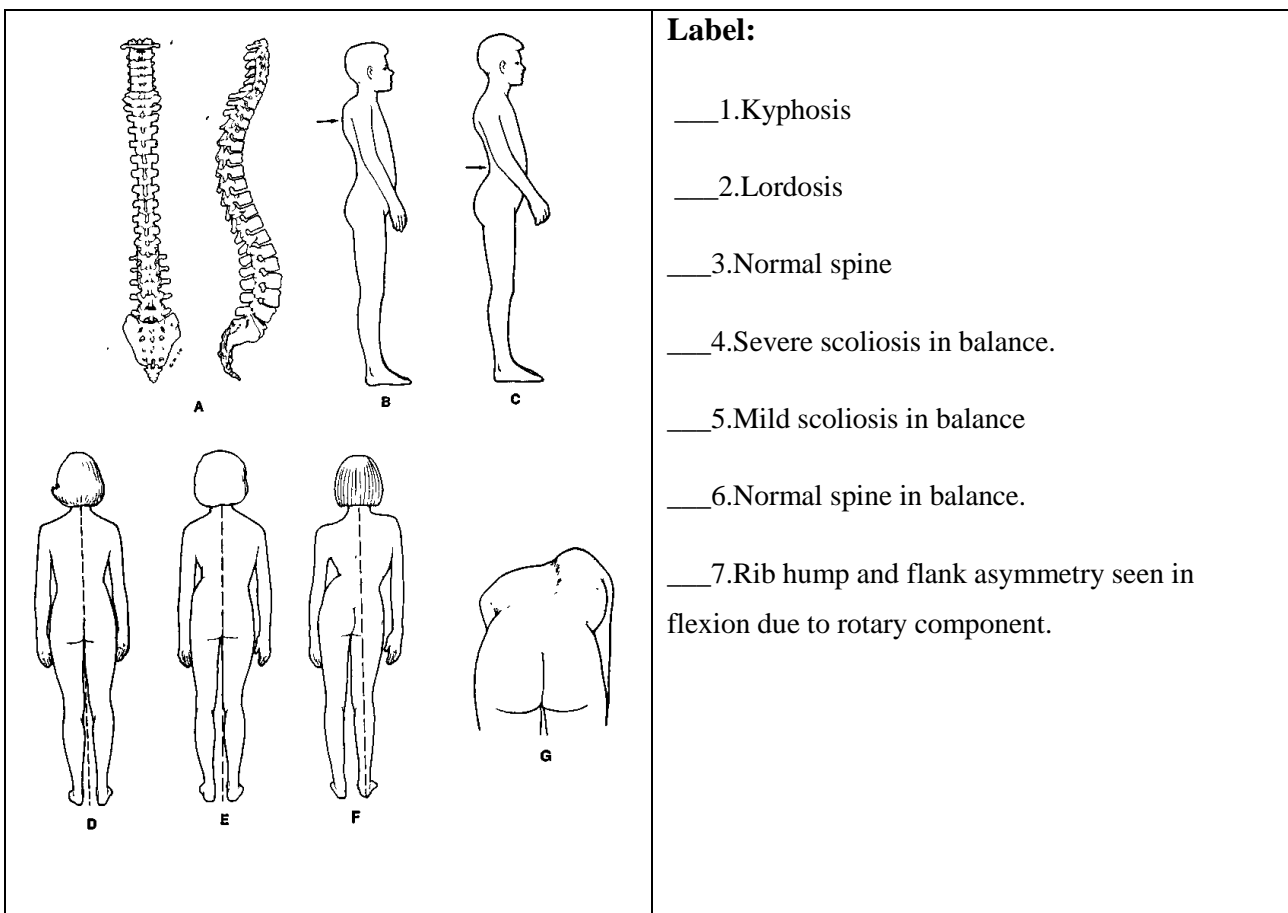


Figure 5: Defects of spinal column:



Definitions (Part I)

Match the definitions in *Column I* with the correct words in *Column II*

___1 permanent eversion of the foot, so that only the inner side of the sole rests on the ground; usually combined with a breaking down of the plantar arch	A kyphosis
___2 stiffening or fixation of a joint	B spasm
___3 a wasting of tissues, organs, or the entire body; e.g., the wasting of muscles due to disuse of a fractured limb	C lordosis
___4 range of motion of the patient's joints; (performed by another person - the patient does not actively move the joints)	D varus deformity
___5 range of motion of a patient's joints when the patient actively moves the extremities, instead of having the extremities moved by another person	E valgus deformity
___6 a curvature of the spine; humpback; hunchback; an abnormal curvature of the spine, with convexity backward due to caries and destruction of the bodies of the affected vertebrae	F atrophy
___7 an exaggerated anteroposterior curvature of the spine, generally lumbar, with the convexity pointing anteriorly	G passive range of motion
___8 inversion of the foot, so that only the outer side of the sole touches the ground; there is usually more or less talipes equinus associated with it	H ankylosis
___9 an involuntary convulsive muscular contraction; cramp	I scoliosis
___10 lateral curvature of the spine	J active range of motion

Definitions (Part II)

Match the definitions in *Column I* with the correct words in *Column II*

___1 webbing together of fingers or toes	A polydactyly
___2 blood in a joint	B hemarthrosis
___3 funnel chest	C pectus excavatum
___4 a deformity of the ribs that results from the pull of the diaphragm on ribs weakened by rickets or other softening of the bone	D syndactyly
___5 the presence of more than five digits on either hand or foot	E Harrison's groove
___6 a test for dislocation of the hip in the newborn in which the examiner flexes the infant's legs at the hips and bends the knees; in this position he proceeds to abduct the legs while keeping his fingers over the hip socket - a clicking sound or the palpable sensation of the femur slipping in and out of the socket indicated a possible dislocation	F Allis's sign

___7 a blood cyst of the scalp in a newborn infant, due to an effusion of blood beneath the pericranium; it does not usually cross suture lines	G barrel chest
___8 a chest permanently the shape of a barrel during full inspiration; seen in cases of emphysema	H cephalohematoma
___9 the uneven height of the 2 patellias when the person is lying on his back with knees totally flexed and feet on the table	I Ortolani's sign
___10 localized, progressively destructive disease of the teeth that starts at the external surface (enamel) with the apparent dissolution of the inorganic components by organic acids	J caries
___11 small head when head circumference more than 2 standard deviations below the mean for age, sex, race and gestation and reflects a small brain	K microcephalic

Learning Activities

Examine the musculoskeletal system of three children and record findings on the check list provided.

CHECK LIST

Head: Inspection and Palpation

The following list should be filled in for each inspection and palpation required for the learning activities.

Sex _____

Age -----

Head circumference: _____

	Yes	No	Describe
Head			
symmetrical			
prominent bulges			
prominent forehead			
shape of head:			
normal			
long			
broad			
Fontanel:			
<i>anterior:</i> open			
closed			
size			
shape			
<i>posterior:</i> open			
closed			
<i>third fontanel:</i> size			
shape			

CHECK LIST

Musculoskeletal System: Inspection and Palpation

Sex _____

Age _____

	Yes	No	Describe (where appropriate)
Ability to carry out ADL: able to walk, stand, sit up, rise from sitting position, lie down, pinch, climb, grasp, lean over (in child — jump and skip)			
able to comb hair, brush teeth, feed, wash, and dress self, carry out toilet hygiene, etc.			
Gait smooth, coordinated, rhythmic			
painful			
limp			
Spine all spinous processes palpable			
normal curvature			
abnormal curvature			
back pain/tenderness			
normal response to sciatic stretch test			

Length of extremities

length same on both sides _____
 discrepancy between length of right and left sides (over 1 cm) _____

Joints (include all joints)

pain or tenderness _____
 full range of motion _____
 abnormal mobility or unusual movements _____
 heat _____
 redness _____
 pain on motion _____
 effusion _____
 swelling or deformity _____
 instability _____
 ankylosis _____
 congenital defects _____

Muscle strength

normal against gravity _____
 normal against resistance _____
 symmetrical for extremities _____

Condition of tissues surrounding joints

muscle atrophy _____
 skin changes _____
 swelling _____
 contractures _____

Theme: Anatomical and physiologic features the respiratory system in the infant and child Physical examination of the respiratory system in child Semiotics of the respiratory system diseases in children

Theoretic part:

1. The development of the respiratory system in different utero periods.
2. What is clinical value of embryonic periods in development of the respiratory system?
3. What are anatomical and physiologic features of the respiratory system in children?
4. What is normal respiratory rate in children different age groups?
5. What is clinical value of the skin color change (cyanosis, paler, erythema), noisy breathing (“snoring”, stridor, grunting), flaring nares?
6. What are causes of nasal breathing difficulties?
7. Semiotics of cough (onset and duration, type, pattern, progress, associated symptoms, secretions).
8. Signs of the oral mucosa inflammation.
9. Shape of the chest and its clinical value.
10. Character, depth, rhythm, rate and type of breathing. Pathologic patterns of the respiration, its graphical imaging (Cheyne-Stokes breathing, Biot’s breathing, Kussmaul breathing), tachypnea, bradypnea, apnea, dispnea and its patterns.
11. Topographic percussion, the lower border of the lungs in children.
12. Comparison percussion of the lungs in children. Percussion sounds and their characteristics (resonance, hyperresonance, tympany, flatness, dullness).
13. Auscultation of the lungs. Characteristics of breath sounds (vesicular, bronchovesicular, bronchial, tracheal); adventitious lung sounds (fine and coarse crackles, wheezes, rhonchi); pleural rub, bronchophony.
14. Clinical manifestation main diseases of the respiratory system in children .

Practical part:

1. Gather appropriate health history information for a child with a respiratory disorder.
2. Observe the skin, oral and nasal mucosa, the shape of the fingernails, and the shape of the chest and way in which it moves. Describe the assessment findings.
3. Demonstrate how to palpate the chest (the range and symmetry of respiratory movement, tactile fremitus).
4. Count the respiratory movements in 3 children different age.
5. Demonstrate percussion and auscultation of the respiratory system in children different age.

The recommended literature:

1. T. Kapiten. Propaedeutics of children’s diseases and nursing of the child: Textbook for students of higher medical educational institution. – Vinnitsa.-2006. P.215-236.
2. O. Ivanko. Course lectures to propaedeutics of pediatrics.- 2012. CD
3. Mohammed El-Naggar. Basic clinical Pediatrics. -1992. P.50 -51.
4. Meharban Singh. Pediatric clinical methods. The 2-nd edition. New Deihi.-2000 - P. 165-170.
5. A guide to physical examination and history taking. Barbara Bates. 6th edition. Phyladelphia. 1995. P.229 – 257.
6. O.P. Ghai. Essential Pediatrics. 1996. – P.271-275.
7. www.education.vivere.org.nz lung sounds thru auscultation

Fill table 1: **Anatomical physiological features of the respiratory system in newborn and infant**

	Anatomical physiological features of the RS in newborn and infant	Their values: What disorders do these peculiarities promote?
The chest		
Nasal structures		
The pharynx		
The larynx		
The trachea and large bronchi		
The airways		
Alveoli		
Respiratory centre		

Figure 1:Paranasal sinuses

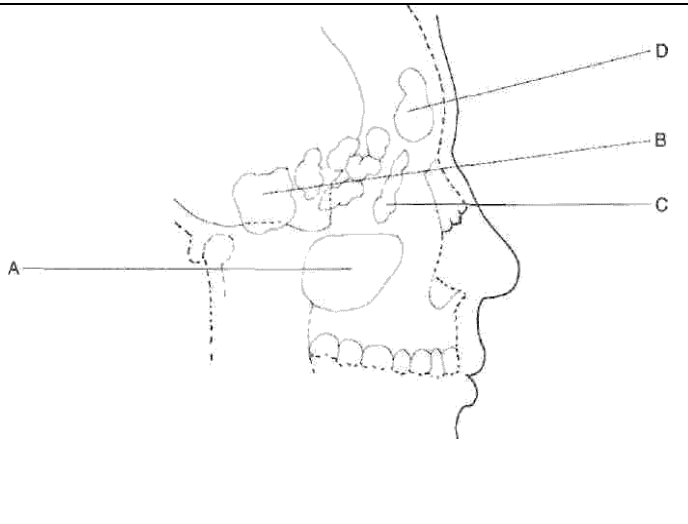
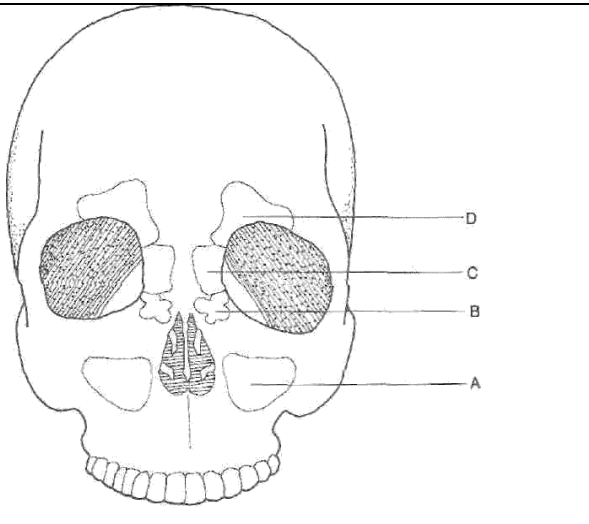
	
<p><i>Label:</i></p> <p>1. frontal _____</p> <p>2. ethmoid ____</p> <p>3. sphenoid ____</p> <p>4. Maxillary _____</p>	<p><i>When is it formed:</i></p> <p>_____ 1. frontal sinus</p> <p>_____ 2. ethmoid sinus</p> <p>_____ 3. maxillary sinus</p> <p>_____ 4. sphenoid sinus</p>

Figure 2: Structures in the mouth and pharynx

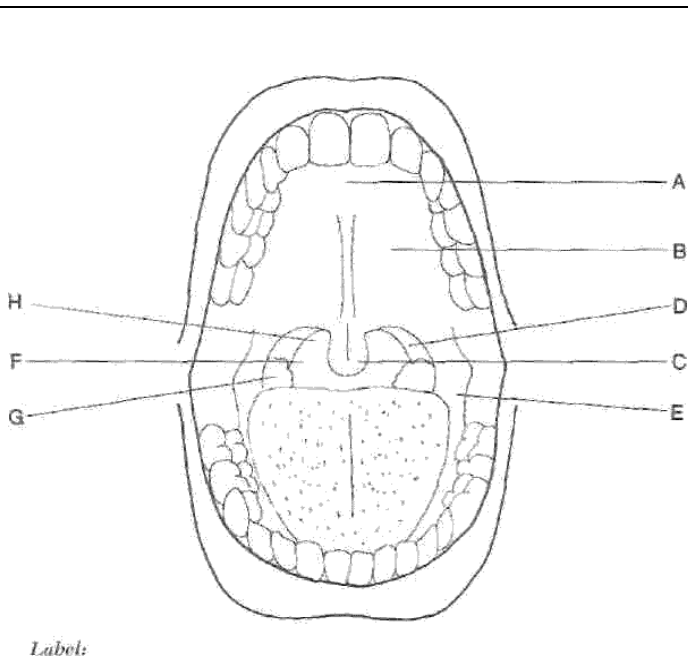
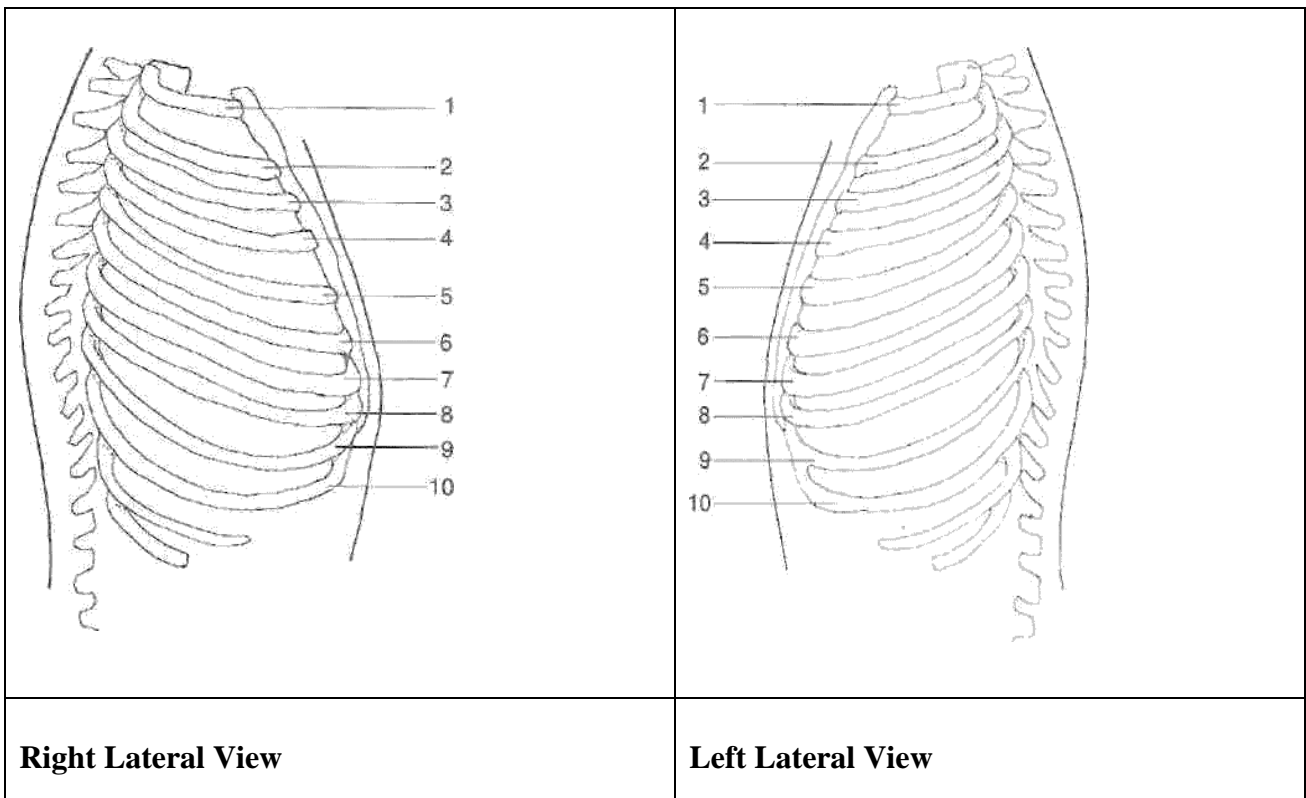
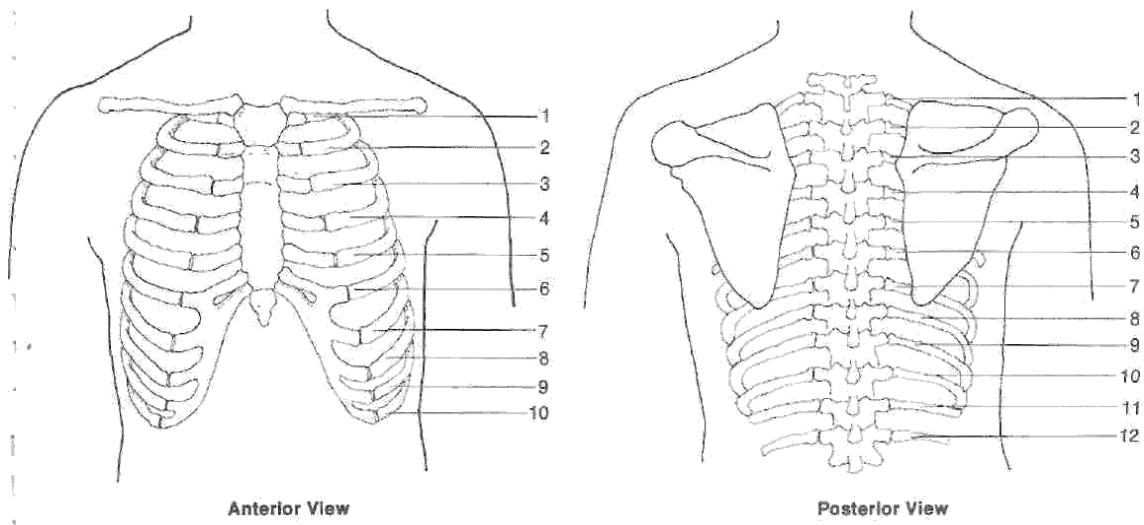
	<p><i>Label:</i></p> <p>_____ 1. anterior tonsillar pillar</p> <p>_____ 2. posterior tonsillar pillar</p> <p>_____ 3. palatine tonsil</p> <p>_____ 4. uvula</p> <p>_____ 5. palatine arch</p> <p>_____ 6. posterior pharyngeal wall</p> <p>_____ 7. hard palate</p> <p>_____ 8. soft palate</p>
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Figure 3: Draw and label projections of the lung's lobes in all views.



Definitions

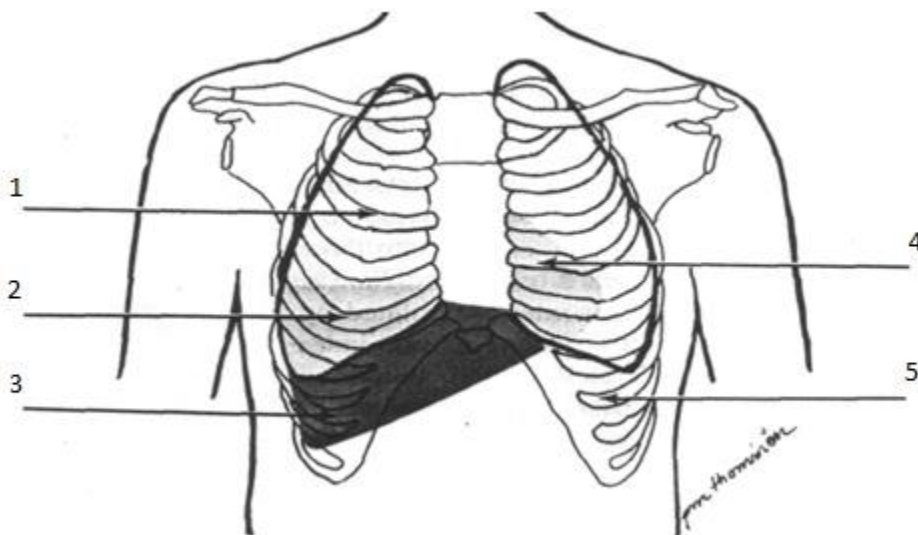
Match the definitions in Column I with the correct words in Column II

Column I	Column II
<p>___1 the pattern of breathing characterized by a gradual increase in depth and sometimes in rate, followed by a decrease resulting in apnea; often associated with patients in terminal stages of illness</p> <p>___2 jerky and irregular respirations usually associated with increased intracranial pressure</p> <p>___3 deep, rapid respiration characteristic of the air hunger of diabetic coma</p>	<p>A. Biot's respiration</p> <p>B. Kussmaul respiration</p> <p>C. Cheyne-Stokes respiration</p>

Review Questions (inspection and palpation):

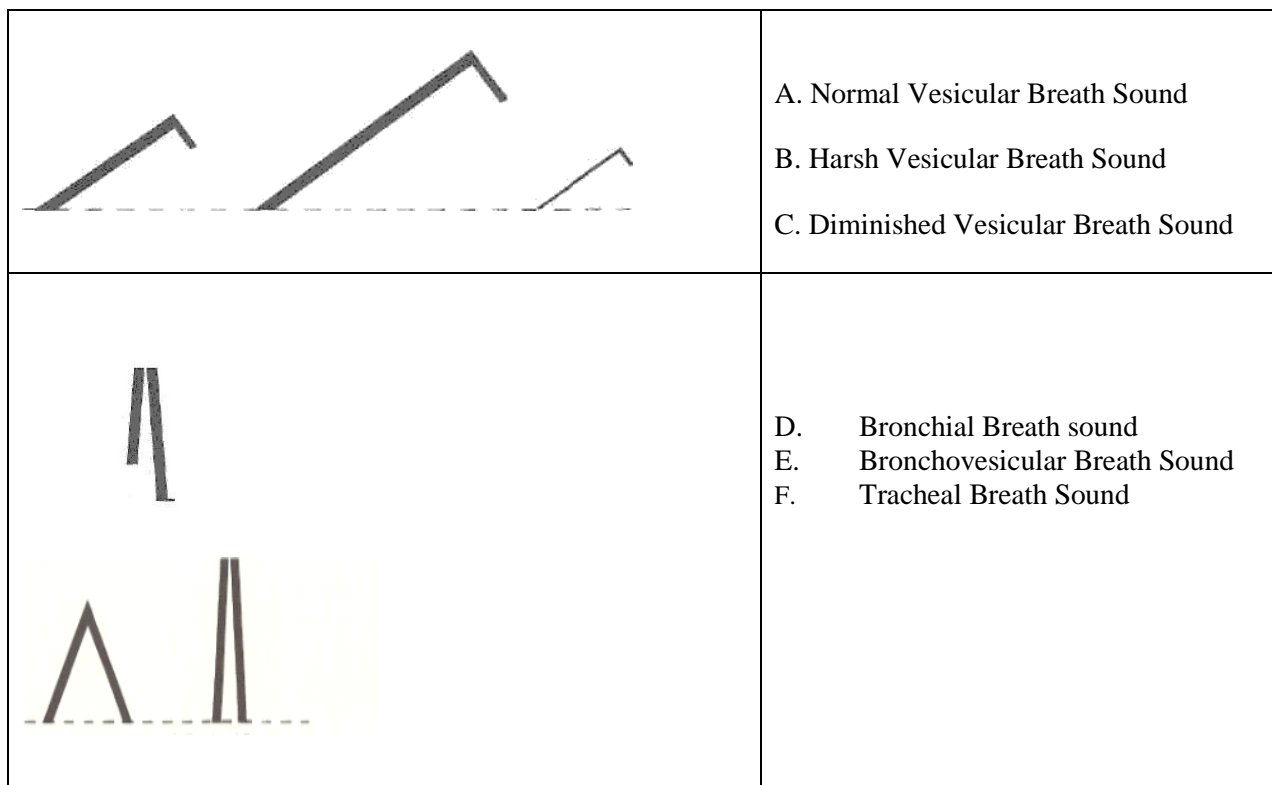
1. Costal breathing in infants may suggest pathological problems in the (chest; abdomen).
2. What should the ratio of the respiration to the pulse be in infant? _____
3. A normal respiratory rate for an adolescent is 30 (true, false).
4. A normal respiratory rate for a newborn might be 30 (true, false).
5. An infant's respiration is primarily (abdominal, costal).
6. Pneumonia would cause (increased; decreased) vocal fremitus.
7. When testing for vocal fremitus, the examiner usually asks the patient to say _____

Figure 4: Percussion sounds found in normal thorax (Label).



- _____ Tympanic
- _____ Dullness
- _____ Resonance
- _____ Flatness

Figure 5: Diagrammatic representation of breath sounds (label)



Fill table 2: Percussion sound

	Example location	Pathologic examples
Flatness		
Dullness		
Resonance		
Hyper resonance		
Tympanic		

Fill table 3: Characteristics of Breath Sounds

Breath Sounds (list)	Locations Where Heard Normally
1.	
2.	
3.	
4.	

Fill table 4: **Adventitious Sounds**

Adventitious Sounds (list)	These sounds are characteristic of what disease?
1.	
2.	
3.	
4.	
5.	

Review Questions (percussion and auscultation):

1. Symmetrical areas of a normal chest will never differ in the sound of their percussion notes (true or false).
2. The only area in the chest where one would normally find tympany is over the _____
3. The normal diaphragmatic excursion is _____ cm.
4. In what type of normal breath sound is the inspiratory component more intense, higher in pitch, and longer in duration (by a ratio of 3:1) than that of expiration? _____
5. In children, vesicular sounds are usually (more; less) harsh than in adults.
6. Diminished vesicular breath sounds are heard normally in the (upper; lower) portions of the lungs.
7. Bronchial sounds are usually (louder; softer) than vesicular sounds.
8. When alveoli are filled with fluid or tissue, bronchophony is (more; less) likely.
9. Asthmatic breath sounds have longer (expiratory; inspiratory) phases.
10. Pleural friction rub (appears; disappears) when the breath is held.

CHECK LIST

Chest and Lungs: Inspection

The following is a check list to be used by the student when doing the chest and lung inspections required. The following list should be filled in for each inspection required in the learning activities (three children of varying ages).

Sex _____

Age _____

	Yes	No	Comments
Configuration Is this thorax: a barrel chest			
a funnel breast			
a pigeon breast			

Is the backbone: kyphotic			
scoliotic			
kyphoscoliotic			
lordotic			

Respirations Yes No
 Rate _____
 What is the normal for this age? _____
 Rhythm: regular _____
 irregular _____
 Are they: abdominal _____
 costal _____
 What is normal for this age?
 (abdominal or costal) _____
 Is the depth:
 normal _____
 shallow _____
 deep _____

Are there:
 supraclavicular retractions _____
 substernal retractions _____
 intercostal retractions _____

Chest and Lungs: Palpation

Describe all palpable findings in the skin, muscle, and bone of the thorax, being sure to locate them exactly according to interspace and/or rib. Do not forget to palpate the trachea for deviations. Include also your findings on tactile fremitus, respiratory excursion, costal angle.

Chest and Lungs: Percussion

Chest and Lungs: Auscultation

- 1 Describe exactly the area in which you heard the following sounds. (Be sure to include anterior, posterior, and both lateral positions.)
- 2 Describe any asymmetry of auscultation, explain it, and state whether it is normal.

Sound	Area	Is this sound normal in this area?		
		Yes	No	Describe; Explain
vesicular sounds				
bronchial sounds				
bronchovesicular sounds				
tracheal sounds				
rales				

sonorous rales				
crepitant rales				
wheezing				
bronchophony				

Matching specific kind of cough with associated diseases:

1	Barking cough	A	Pertussis
2	Brassy cough	B	pleuritis
3	Whooping night cough	C	Nosepharyngitis
4	Dry painful	D	Tuberculosis lymphadenitis, tumor of mediastinum
5	Dry nonproductive	E	Laryngotracheitis, croup

Write typical signs of:

Acute laryngotracheitis, (croup)

pneumonia

Astma

Respiratory failure

Theme: Anatomical and physiological features and physical examination of cardiovascular system in children. Semiotics of congenital heart defects

Theoretic part

1. Embryologic development of cardiovascular system. The causes of the congenital abnormalities of heart and blood vessels.
2. Fetal blood circulation and postnatal circulatory changes. Terms of closing of the fetal communications.
3. Anatomical-physiological features of heart and blood vessels in children.
4. What is the heart rate and blood pressure in children of different age groups?
5. Anamnesis: information which testify the disorders of cardiovascular system.
6. Inspection of cardiovascular system in children (color of the skin and mucous membranes, the pulsation of carotids and jugular veins, an heart bulge, clubbing, edema).
7. Palpation of cardiovascular system (the apex beat, its characteristics, thrill, pulse and its characteristics).
8. Percussion of the heart in children of different ages, the causes of displacement the borders of cardiac dullness.
9. Auscultation of the heart (sounds, rhythm; murmurs).
10. The basic symptoms of cardiovascular system disorders in children (cyanosis, bradycardia, tachycardia, murmur, premature contraction).
11. Measurement of blood pressure; normal levels of blood pressure in children of different ages.
12. Instrumental methods of examination of cardiovascular system in children (an electrocardiogram, echocardiograms, X-ray).
13. Semiotics of the congenital heart diseases in children (atrium and ventricular septal defects, Fallot's tetralogy, coarctation of aorta, patent ductus arteriosus).
14. Clinical symptoms of an acute and chronic congestive heart failure.

Practical part:

1. The anamnesis of diseases in patient and his parents.
2. Inspection of the skin, mucous membranes, fingers, revealing of legs for edema, shape of thorax; their abnormalities
3. Palpation of the apex beat and trills, possible precordial visual pulsation, their characteristics
4. To count up a pulse rate, to characterise it, to reveal a deficiency of pulse.
5. To determine the border of cardiac dullness in children of different ages.
6. Auscultation of the heart.
7. To determine arterial pressure on the upper end lower extremities.

The recommended literature:

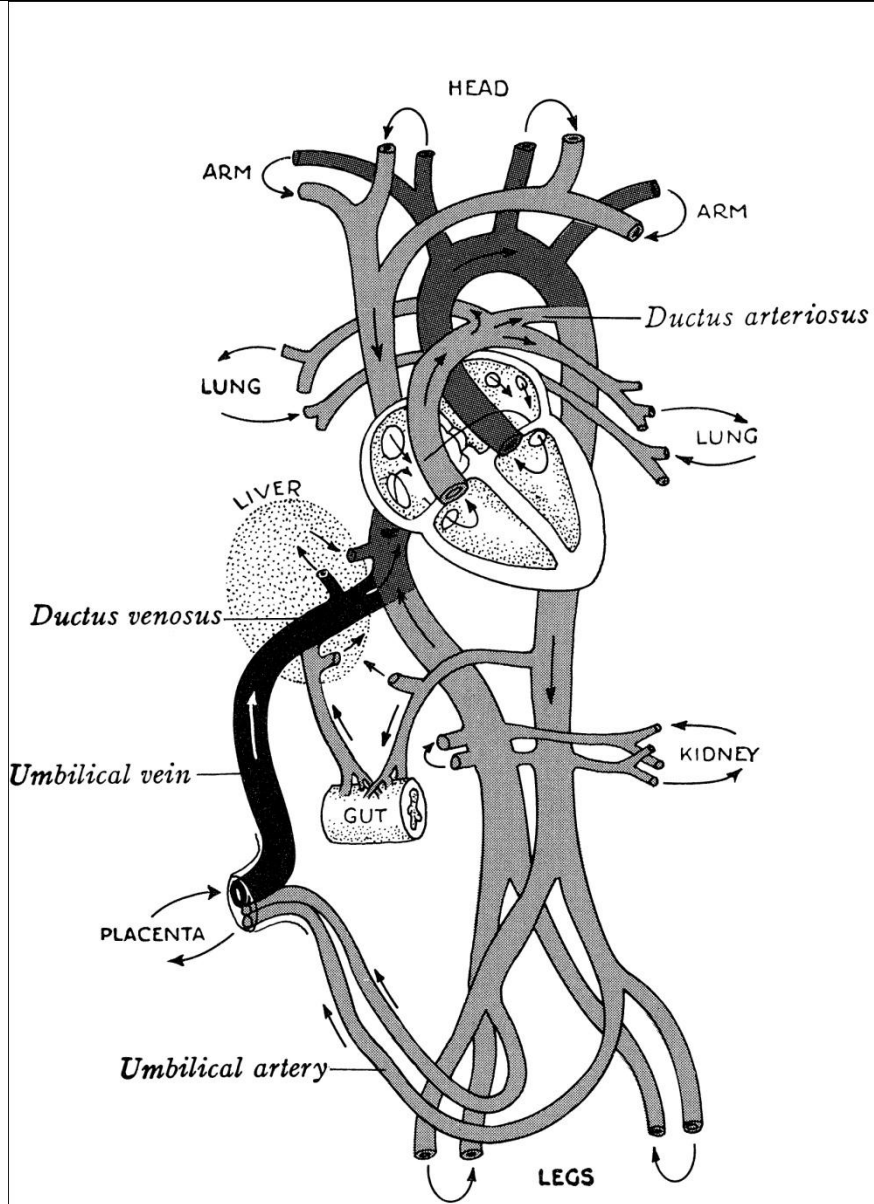
The basic:

1. Propedeutics of children's diseases and nursing of the child. T.Kapitan,Vinnitsa: The State cartographicae Factory. 2012 .P.454-533.
2. O. Ivanko. Course lectures to propaedeutics of pediatrics.- 2015. CD
3. Mohammed El-Naggar. Basic clinical Pediatrics. -1992. P.41 -42-48.
4. Meharban Singh. Pediatric clinical methods. The 2-nd edition. New Deihi.-2000 - P. 181-200.
5. Manual of Propedeutics Pediatrics Nykytyk S.O., Ternopil, 2005, P.177-188.
6. Essential Pediatrics-Ghai OP,7-th edition.2009.
7. Pediatric student's case history and peculiarities of Pediatric Physical Examination. Kyzyma N.V, Ivanko O.G, Krut A.S, Radutnaya E.A, Pidkova V.Y, Pashenko I.V, Nedelskaya E.V. Zaporozhye.2 013.P .128.

Additional:

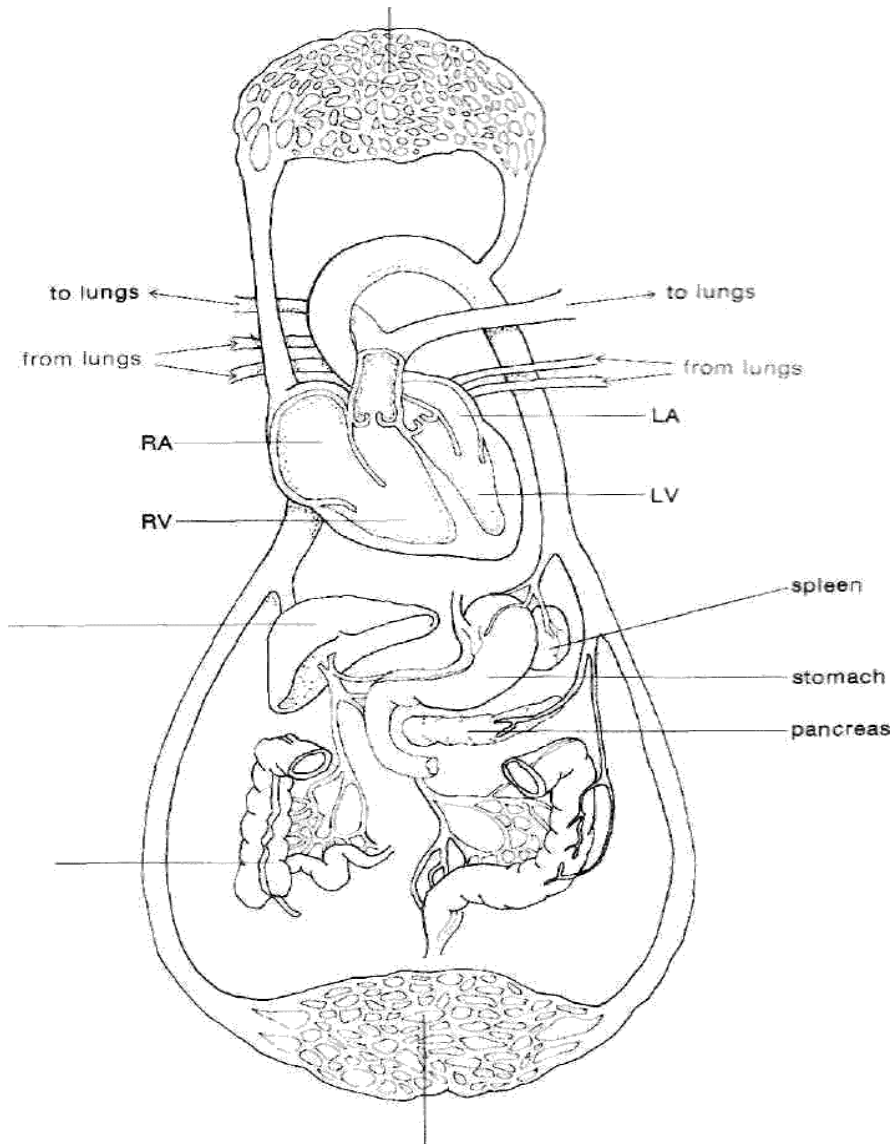
Behrman R.E. Nelson textbook of pediatrics.- Bangalore, India.: W.B. Saunders Company, 1993.- 538 p.

1. Postnatal circulatory changes involve the functional closure of next fetal shunts:



Plan of the human circulation before birth

2. **Pulmonary and systemic circulation.** In the schematic diagram, trace pulmonary circulation in **blue** marking pencil and systemic circulation **in red**; use **arrows** to indicate direction of flow.



3. Fill table: **Anatomical physiological features of the cardiovascular system in newborn and infant**

	Describe anatomical physiological features of the CVS in newborn and infant	Their values:
Heart beats		
Blood pressure		
The size of the heart		
Position of the heart		
The thickness of ventricle walls		
Wide of great vessels (aorta and truncus pulmonalis)		
The apex of the heard localized		

4. Review Questions

1. The electrical conduction system that controls the rhythm of heart contractility consists of the _____, _____, _____, and _____.
2. The first heart sound (S₁) is produced by closure of the _____ valve and tricuspid valve.
3. The second heart sound (S₂) is produced by closure of the _____ valve and the pulmonic valve.
4. A third heart sound (S₃) may be produced by _____.
5. Occasionally one hears a fourth heart sound (S₄), which marks _____.
6. Symptoms of left-sided cardiac failure include _____, _____, and _____.
7. Right-sided failure is characterized by _____, _____, and _____.
8. What are palpable vibrations most commonly produced by the flow of blood from one chamber of the heart to another through a narrowed or abnormal opening, such as a stenotic valve or a septal defect? _____.
9. Heart sounds, which are produced by vibrations within the heart chambers or in the major arteries from the back and forth flow of blood _____.

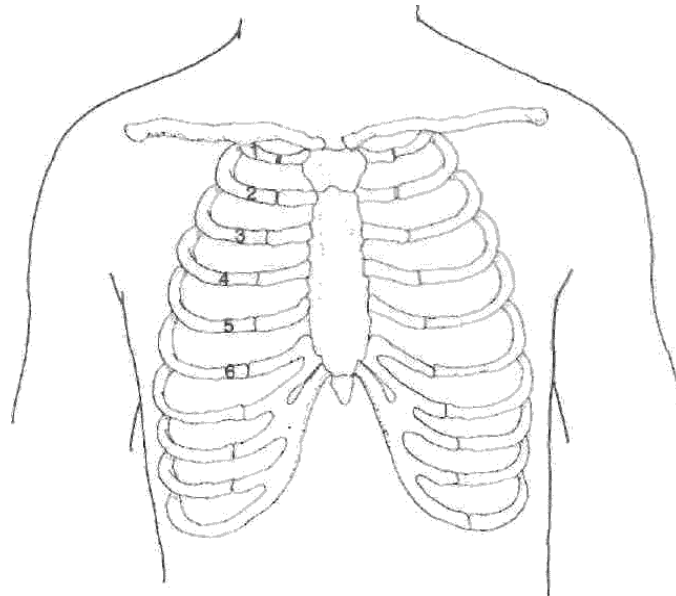
5. Fill table:

	Average pulse rates at rest (beats/minute)	The systolic and diastolic blood pressure (mm Hg)
Newborn		
1-yr-old infant		
5-yr-old child		
10 years		
16 years		

6. Fill table: **Borders relative heart dullness in child**

Border	Age of child		
	Till 2 years	2-7 years	7-12 years
Right			
Upper			
Left			

7. On the diagram below, outline the borders of cardiac dullness as you would expect to percuss them in a normal 5-year-old child.

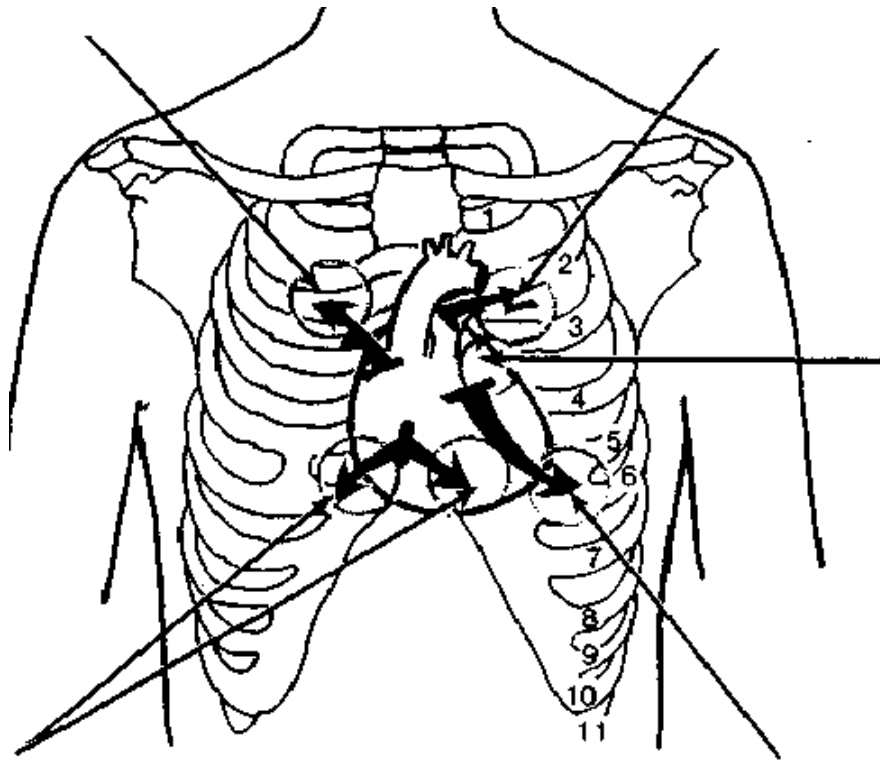


8. Definitions

Match the definitions in *Column I* with the correct words in *Column II*.

<i>Column I</i>	<i>Column II</i>
____1 difficulty or distress in breathing; frequently rapid breathing, usually associated with serious disease of the heart, lung, or nervous system	A. Orthopnea
____2 a dark bluish or purplish coloration of the skin and mucous membrane due to deficient oxygenation of the blood in the lungs	B. precordial bulge
____3 discomfort on breathing in any but the erect sitting or standing position	C. ascites
____4 a protrusion in the epigastrium and anterior surface of the lower part of the thorax	D. Central cyanosis
____5 broadening and thickening of the ends of fingers, seen in chronic pulmonary disease	E. clubbing
____6 an accumulation of serous, high-protein fluid in the peritoneal cavity	F. Dyspnea
____7 the difference between apical pulse rate and peripheral pulse rate	G. Thrill
____8 the vibration accompanying a cardiac or vascular murmur; can be felt by palpation; fremitus	H. Pulsus alternans
____9 a pulse regular in time, but with alternate beats stronger and weaker; often detectable only with a sphygmomanometer and usually indicating serious myocardial disease	I. Pulse deficit

9. Auscultation (Label areas that describe the relation of heard sounds to chest wall).



10. Definitions

Match the definitions in *Column I* with the correct words in *Column II*.

<i>Column I</i>	<i>Column II</i>
___1 the double sound caused by the slightly asynchronous closing of two heart valves	A. innocent murmur
___2 a normal arrhythmia associated with respirations; the heartbeat becomes faster during inspiration and slower during expiration	B. Splitting
___3 murmur caused by a pathological condition	C. organic murmur
___4 a murmur or soft sound heard on auscultation of the heart that is not caused by or indicative of organic heart disease	D. fibrillation
___5 fine, rapid, quivering movements of cardiac muscle that replace the normal myocardial contraction	E. sinus arrhythmia

11. Review Questions

1. What can you have an eleven-year-old child do to help you decide if his arrhythmia is a sinus arrhythmia? _____
2. The difference between the systolic and diastolic blood pressure is the _____.
3. The blood pressure cuff size should not be more than _____ or less than _____ the length of the upper arm.
4. List four positions the patient should assume during a complete cardiac exam. _____
5. The carotid pulse is synchronous with (S₁; S₂).
6. What things may cause an increase in the intensity of S₁

_____.
7. _____ A split of S₂ is best heard _____.
8. A normal split of S₂ is widest with (inspiration; expiration).
9. Three abnormal sounds that can be detected by auscultation of the heart are: _____

10. All murmurs should be evaluated carefully and recorded with regard to: _____

11. Four characteristics of murmurs which mean that they are more likely to be innocent are: _____

CHECK LIST Cardiovascular System:

Inspection (Describe all findings of visual observation related to the cardiovascular system)

Palpation _____

Percussion _____

Auscultation _____

12. Fill table: **Classification of congenital heart disease (CHD)**

Acyanotic		Cyanotic
Left-to-right shunts	Outflow obstruction	1
1	1	2
2	2	
3	3	

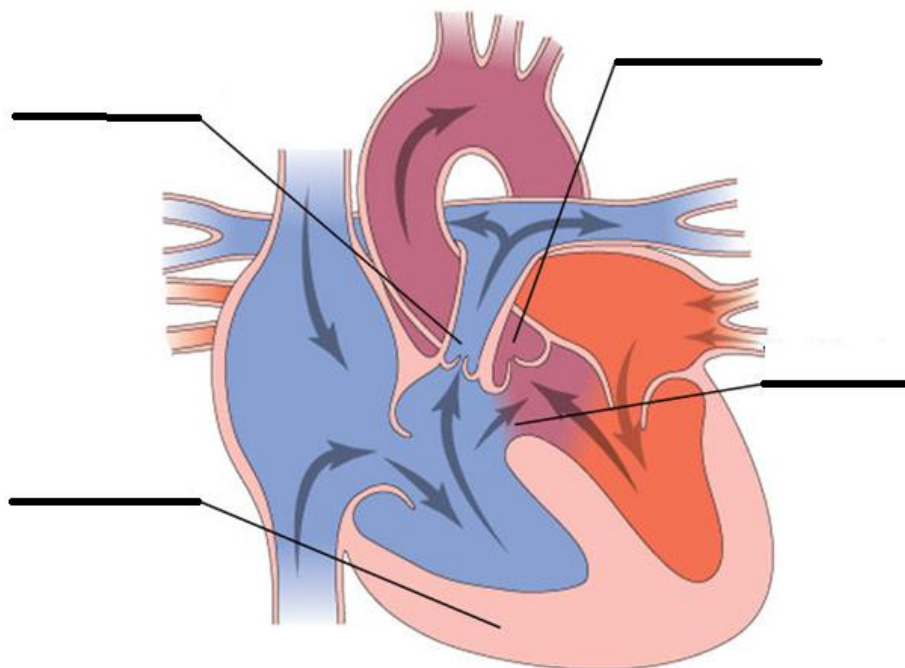
13. Congenital heart disease – Symptoms: _____

14. Describe clinical signs of coarctation of aorta.

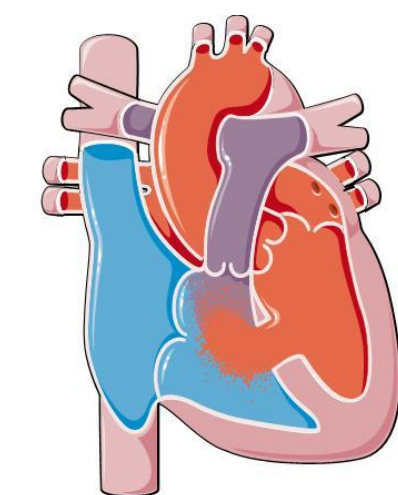
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	<hr/>
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15. Label four abnormalities tetralogy of Fallot (TOF) and write main signs of this disorder.

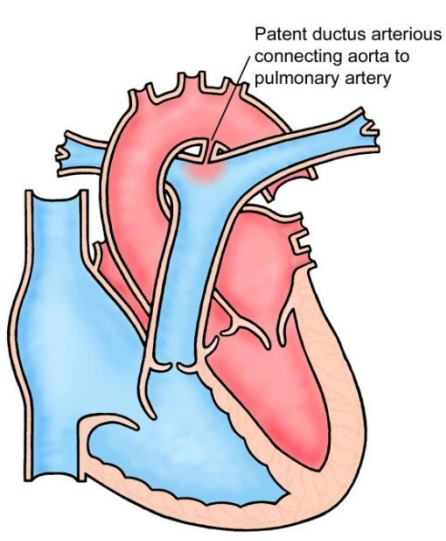
Tetralogy of Fallot



16. Describe hemodynamic disorders of ventricular septal defect (VSD) and write clinical manifestation of disease.

 <p style="text-align: center;">Ventricular septal defect</p> <p> ■ Oxygen-rich Blood ■ Oxygen-poor Blood ■ Mixed Blood </p>	<p>hemodynamic disorders _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>symptoms _____</p> <p>_____</p> <p>_____</p> <p>_____</p>
--	--

17. Describe hemodynamic disorders of patent ductus arteriosus (PDA) and write clinical manifestation of disease.

 <p style="text-align: center;">Patent ductus arteriosus connecting aorta to pulmonary artery</p>	<p>hemodynamic disorders _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>symptoms _____</p> <p>_____</p> <p>_____</p> <p>_____</p>
--	--

18. What are clinical manifestations of congestive heart failure? _____

Theme: Anatomical-physiological peculiarities of digestive system. Examination of the digestive system. Semiotics of main digestive system.

1. What is the clinical meaning of Anatomico-physiological features of Digestive system in children?
2. Estimate stomach volume depending on age.
3. What kind of gut microbiota of intestines do you know?
4. What is the frequency of motions, stool's features depending on feeding do you know in infants?
5. Define and explain the terms: appetite, dysphagia, nausea, vomiting, rumination, regurgitation, meteorismus, constipation, diarrhea, tenesmus, abdominal pain и and its characteristics, intestinal colic, encopresis?
6. Draw topographical zones of abdomen, painful points in digestive system's diseases.
7. What painful symptoms of digestive system diseases do you know?
8. Characterize (describe) on the methods of additional instrumental and laboratory methods of investigations and their probable results depending on child's age. How to prepare the patient for X-ray examination?
9. DS disease syndromes (definition, clinical symptoms): dyspepsia, abdominal pain, exicosis, malabsorption, jaundice, diarrhea, abdominal masses.
10. Semiotics of DS diseases:
 - Developmental defects: (cleft (hare) lip, cleft palate, esophageal atresia, tracheoesophageal fistula).
 - Pylorospasm (gastroesophageal reflux), pylorostenosis.
 - Functional gastric dyspepsia.
 - Gastritis.
 - Peptic ulcer.
 - Cholecystitis, acute appendicitis.
11. Care`s guide lines of children with DS disease.

Practical skills:

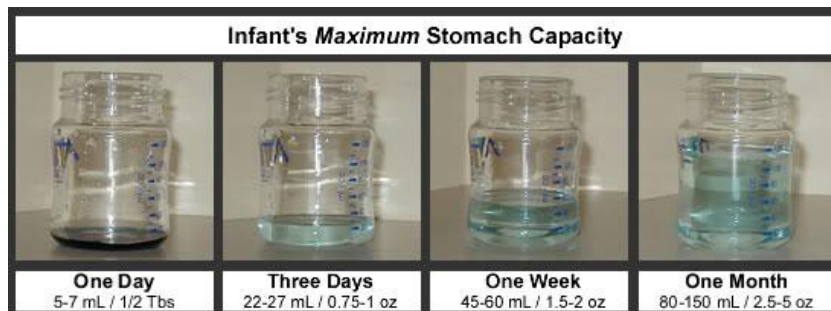
1. Mouth cavity examination
2. Palpation of liver (bimanual)
3. Superficial palpation, deep palpation of bowels (intestines)
4. Technique of abdominal painful points diagnostics and symptoms of gall bladder disorders (Kehr's point, Mussy symptom, Ortner's, Murphy's symptoms)
5. Definitions of abdominal zones, the painful points in pancreas pathology (Chauffard's zone, Desjardin's point, Mayo-Robson's point)
6. The painful points in peptic ulcer of stomach and duodenum (Boas's symptoms)
7. Livers percussion by Kurlov
8. Palpation of pancreas according the Grott's method
9. Percussion and palpation of bowels (intestines)
10. Shchotkin-Blumberg symptom, Rovsing symptom
11. Interpretation of laboratory results: blood count, Urinalysis), Biochemical assays (bilirubin, SGPT), abdominal instrumental (ultrasonic) examination, intragastric pH-measurement, endoscopic procedure).

The recommended literature:

1. M.Singh. Pediatric clinical methods. P. 149-160, 162-164.
2. Propedeutics of children's diseases and nursing of the child. T.Kapitan, Vinnitsa: The State cartographicae Factory. 2012. P.308-381.
3. Nelson Essentials of Pediatrics. Therd Edition edited by R.Behrman, R. Kliegman. W.B. Saunders Company, 1998. p.
4. M. El-Naggar. Basic Clinical Pediatrics. P.
5. Lecture

6. Manual of Propedeutics Pediatrics Nykytyk S.O., Ternopil, 2005, P.212-228.
7. Essential Pediatrics-Ghai OP,7-th edition.2009.
8. Pediatric student's case history and peculiarities of Pediatric Physical Examination. Kyzyma N.V, Ivanko O.G, Krut A.S, Radutnaya E.A, Pidkova V.Y, Pashenko I.V, Nedelskaya E.V. Zaporozhye. 2013.P .128.

1.Stomach physiological volume



The stomach physiological volume is

_____ ml in 1 yr old baby,
 _____ ml in 3 yr old child,
 _____ ml in 10-12 yr old child.

2.Matching:

Anatomical - physiological Features of DS in child

1. The stomach bottom and cardiac division are immature in newborns and infants. There is the functional insufficiency of cardiac sphincter closing function. The efferent part of esophagus is situated over the diaphragm in the chest. In small children it communicates with stomach through the wide hole in the diaphragm. Also the esophagus is short in infants and opens on a top of the gastric bag and it exaggerates the functional insufficiency of cardiac sphincter closing function in early children.
2. The pyloric sphincter of stomach is developed well since child's delivery. The condition when the pyloric sphincter is strong and cardiac is weak can allow to compare the stomach in small children with "open bottle".
3. The small intestine has comparatively greater length in calculation on body growth in early children (aged less than 3 years) in comparison with adult persons.
4. The age dependent mobility of the caecum mesentery

Clinical significance of DS features

- A. The low caloric and liquid type of early children meals – mainly breast or cow milk. The intestinal loops lie more portably because comparatively big liver occupies big volume of abdominal cavity in infants and at the same time the pelvis is not developed yet.
- B. The predisposes young children to intestinal intussusceptions.
- C. The change of baby's position from standing to lying can provoke easy vomiting and food regurgitations.
- D. Small children to very easy vomiting.

5. Rectum is also comparatively long and can occupies all the small pelvis in infants. The ampoule of rectum is nearly undeveloped in newborns. The fatty cellular masses surrounded the rectum are seemed absent. **E.** It leads to high mobility of the rectum and predisposes to easy organs` prolapses .

1. _____ 2. _____ 3. _____ 4. _____ 5. _____

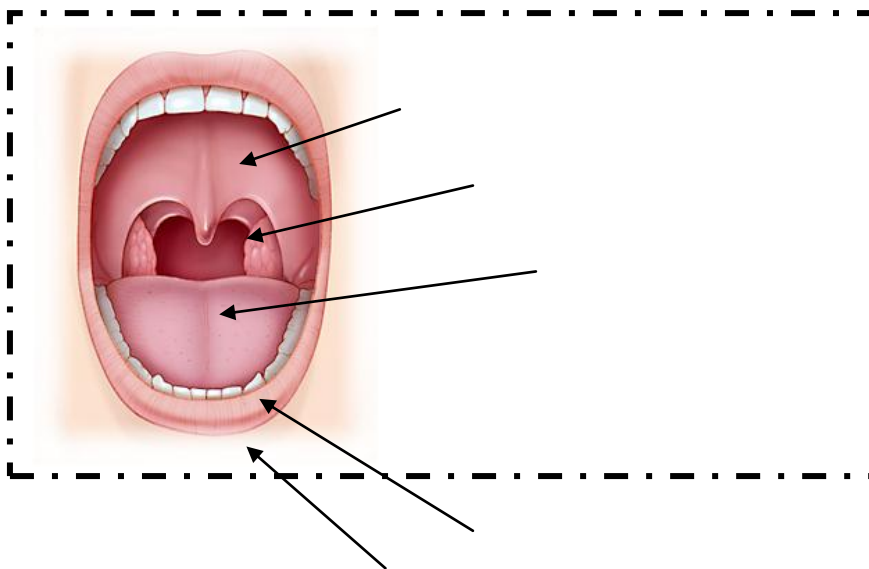
3.What is the distant digestion?

[Empty dotted rectangular box for answer]

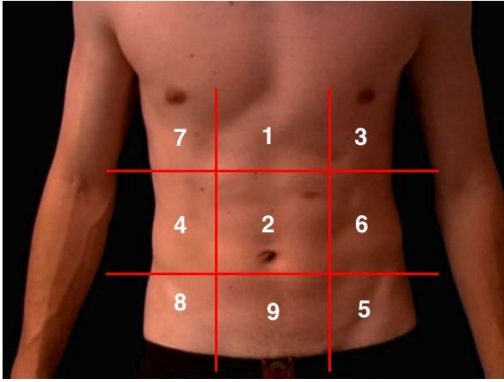
4.What is the membranous digestion?

[Empty dotted rectangular box for answer]

5. Inspect and name structures and organs of oral cavity:



6.Name the abdominal wall regions:



1. _____

2. _____

3. _____

4. _____

5. _____

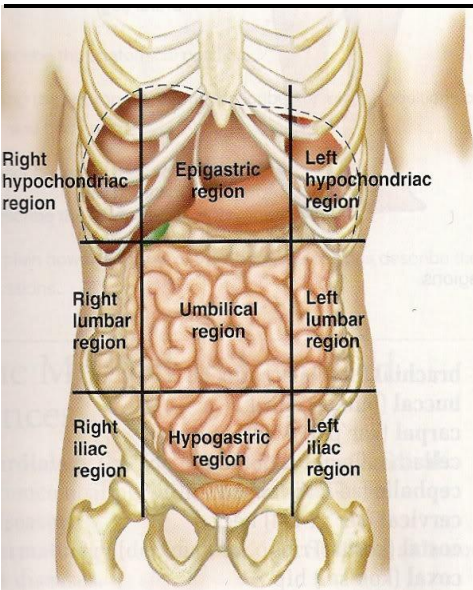
6. _____

7. _____

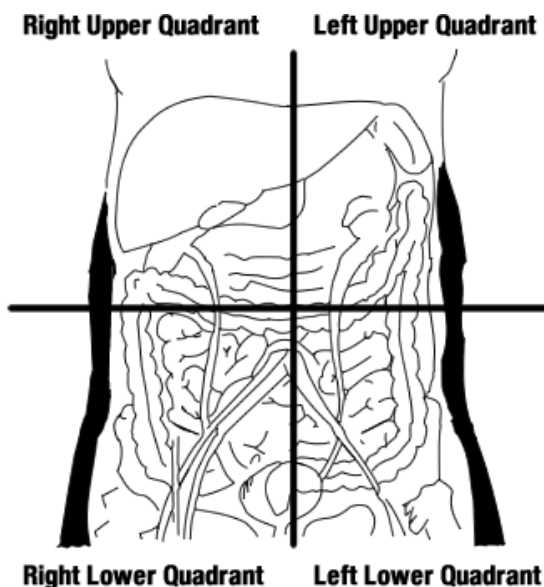
8. _____

9. _____

7.Name organs projection on the abdominal wall regions:



8. Match some Causes of Acute Abdominal Pain



right upper quadrant	right lower quadrant	left upper quadrant	left lower quadrant	periumbilical

1. Duodenal ulcer; Hepatitis; Hepatomegaly; Pneumonia.
2. Appendicitis; Salpingitis; Renal/ureteral stone; Meckel's diverticulitis; Regional ileitis; Perforated cecum.
3. Ruptured spleen; Gastric ulcer; Perforated colon; Pneumonia.
4. Sigmoid diverticulitis; Salpingitis; Renal/ureteral stone; Perforated colon; Regional ileitis; Ulcerative colitis.
5. Intestinal obstruction; Acute pancreatitis; Early appendicitis; Mesenteric thrombosis; Diverticulitis.

9. How many bowel movements should a newborn have in one day? _____

10. Matching stool's features depending on feeding in infants:

- | | |
|-----------------------------|---|
| 1. Healthy breastfed poop | A. Pasty, peanut butter-like poop on the brown color spectrum: tan-brown, yellow-brown, or green-brown. It's more pungent than poop from breastfed babies and a little less pungent than poop from babies who are eating solid food, but you'll recognize the smell. |
| 2. Healthy formula-fed poop | B. Poop is brown or dark brown and thicker than peanut butter, but still mushy. It's also smellier. |
| 3. Solid-food poop | C. Poop is yellow or slightly green and have a mushy or creamy consistency. It may be runny enough to resemble diarrhea. Poop typically looks like Dijon mustard and cottage cheese mixed together and may be dotted with little seed-like flecks. Interestingly, its smell isn't half bad. |

1. _____; 2. _____; 3. _____.

11. What is the dysphagia? _____

12. What is the nausea? _____

13. What is the vomiting? _____

14. What is the rumination? _____

15. What is the meteorismus? _____

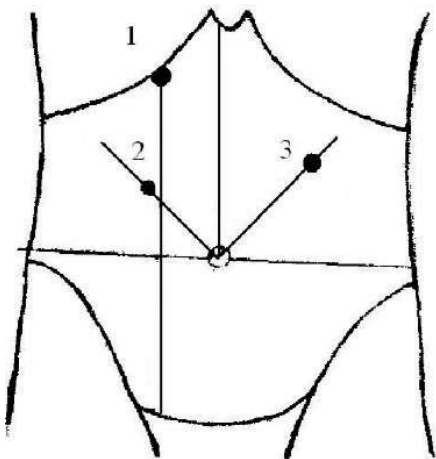
16. What is the constipation? _____

17. What is the diarrhea? _____

18. What is the tenesmus? _____

19. What is the encopresis? _____

20. Define "№":



Kehr's point _____

Desjardin's point _____

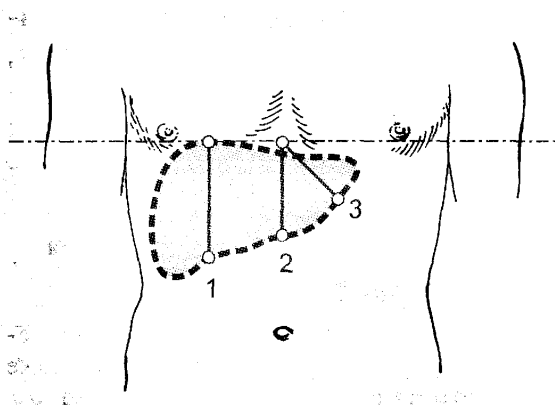
Mayo-Robson's point _____

21. Match symptoms and descriptions:

A. _____ B. _____ C. _____ D. _____ E. _____ F. _____

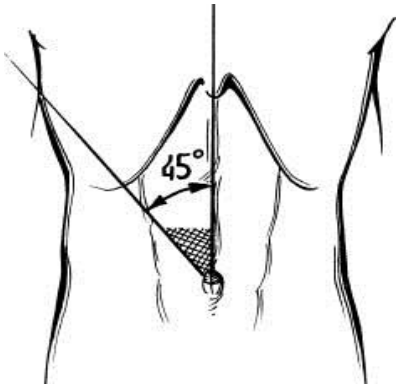
<u>Name of symptom</u>	<u>Description</u>
A. Murphy's	1. are the increases of painfulness at the rapid taking away of fingers by which a front abdominal wall is pressed on. This symptom is matters very much in diagnostics of peritonitis.
B. Kehr's	2. is a delay of breathing during palpation of gall-bladder on inhalation.
C. Ortner's	3. is painfulness at palpation between the legs (above a collar-bone) of right nodding muscle.
D. Mussy's	4. is painfulness at the easy pushing on right costal arc by the edge of palm.
E. Rovsing's sign	5. is strengthening of pain at pressure on the area of gall-bladder, especially on deep inhalation.
F. Blumberg's	6. continuous deep palpation starting from the left iliac fossa upwards (anti clockwise along the colon) may cause pain in the right iliac fossa, by pushing bowel contents towards the ileocaecal valve and thus increasing pressure around the appendix.

22. Describe steps of livers percussion by Kurlov:



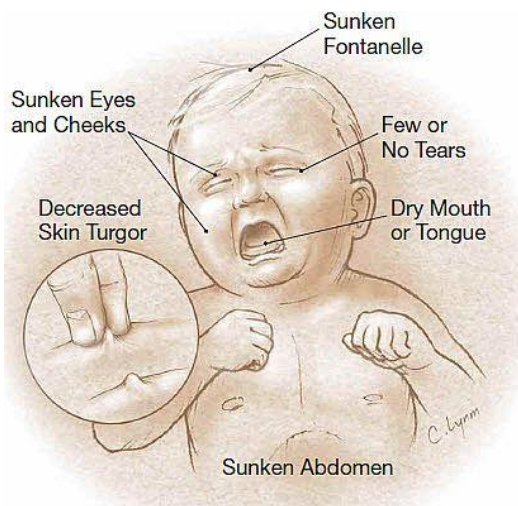
23. Normal size of livers percussion by Kurlov:

1. _____ cm; 2. _____ cm; 3. _____.



24. Name this zone _____ .

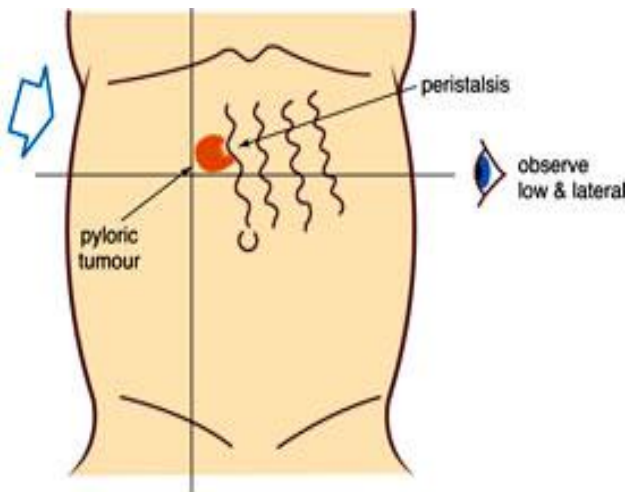
25. What syndrome is in the picture? _____.



26. Why do these disorders start? _____

27. Prophylactic steps: _____

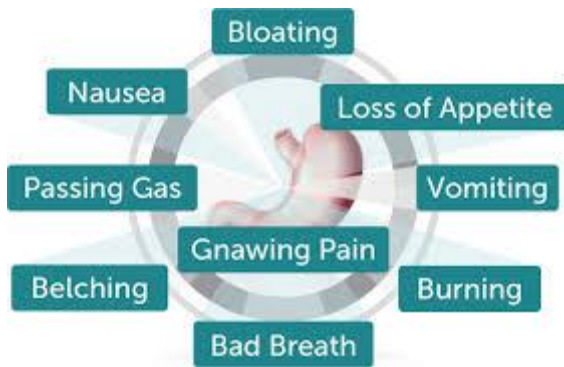
28. What's diseases symptoms in the picture?



29.What’s functional gastric dyspepsia?

30.Symptoms of functional gastric dyspepsia are

31.Name diseases with these symptoms. What’s the cause (microbe) of these diseases?



32.What Are the Symptoms of an Ulcer?

An ulcer may either have or not have symptoms. When symptoms occur, they may include (write “+” if rightly):

- A gnawing or burning pain in the middle or upper stomach between meals or at night
- Bloating
- Heartburn
- Nausea or vomiting
- Exicosis

In severe cases, symptoms can include:

- Dark or black stool (due to bleeding)
- Severe pain in the mid to lower abdomen
- Vomiting blood (that can look like "coffee-grounds")
- Weight loss
- Severe pain in the mid to upper abdomen

Exam Digestive system and abdominal cavity characteristic in patiens:

Inspection:

the oral cavity: mucosa _____
throat _____
tonsils _____
tongue _____
teeth (temporary, permanent, teeth formula, caries) _____

Shape and size of the abdomen _____

visible peristalsis _____

respiratory movement _____

umbilical veins _____

hernia _____

Palpation superficial (location of painful points):

masses _____

areas of tenderness _____

increased muscular resistance _____

Soft abdomen

abdominal distension

tense abdomen

"acute"/surgical abdomen

Deep palpation.

Palpation of the large intestines _____

Palpation of the small intestines _____

Liver palpation: _____

Spleen palpation _____

Percussion of the abdomen:

Liver percussion by Kurlov:

Detect ascites _____

Auscultation:

Stool _____

Theme: Anatomic – physiological features of urinary system. Examination of urinary system. Semiotics of Urinary System disease.

Theoretical part:

1. What is the clinical meaning of APF of urinary system organs in children? What are features of **uropoiesis** and urinary **excretion**?
2. The abnormality of embryogenesis of urinary system organs as basis for congenital malformations nephron and urinary tracts.
3. What are risk factors of urinary system disease?
4. What are the quantitative and the qualitative dates of diuresis and urination depending of age?
5. What is data (characteristic) of urinalysis? (hematuria, erythrocyteuria, leucocyteuria, proteinuria, cylinderuria, glucosuria). What is proteinuria, hematuria? Name and characterize type of nonpathologic proteinuria (postural (orthostatic), febrile, exercise). List and name causes of urinary hematuria?
6. What is data of urinalysis by Nechiporenko?
7. Characterize tests of renal function: glomerular filtration rate (creatinine clearance), urinary concentration test, tubular reabsorption.
8. What are clinical symptoms of urinary system disease depending of uropoiesis disorder and urinary excretion disorder (edema, arterial hypertension, disorders of urination act, intoxication)?
9. Define the terms: oliguria, polyuria, anuria, dysuria, enuresis.
10. What is data of serum creatinine and serum K, Na, pH, protein?
11. What are criteries of bacteriuria?
12. What are symptoms of toxic, pain, dysuric, edematic, urinary syndrome?
13. What are normal and abnormal results of paraclinical methods of examination of renal system in children (X-ray examination, ultrasound examination, excretory urography. Indications for paraclinical methods of examination of renal system in children, biopsy).
14. What are clinical manifestation and laboratory tests of glomerulonephritis and pyelonephritis in child?
15. What are clinical and laboratory signs of acute and chronic renal failure in child?
16. What are nursing care of the child with kidney's disease?

Practical skills:

- Inspect of abdomen and lumbar region
- Determine edema
- Measure arterial blood
- Determine disembrionogenic stigms
- Assessment of physical development
- Palpation of kidneys (by Obraztsov- Strazhesko; by Israel; by Botkin in vertical position)
- Inspect external female and male genital organs.
- Assessment gross impression of urine.
- Assessment results of:
 - urinalysis
 - urine analyses by Nechiporenko

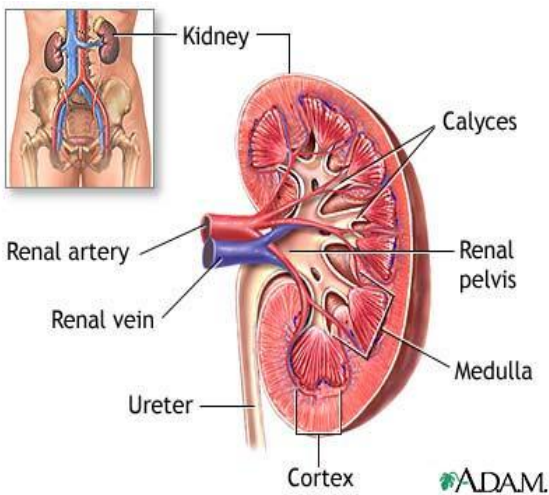
-tests of renal function: glomerular filtration rate (creatinine clearance), urinary concentration test, tubular reabsorption.

- microbiological diagnostics (bacterial inoculation)

- Assessment results of serum creatinine and serum K, Na, pH, protein.
- Assessment results of X-ray examination, ultrasound examination, excretory urography.

Recommended literature:

1. Propedeutics of children's diseases and nursing of the child. T. Kapitan, Vinnitsa: The State cartographicae Factory. 2012. P. 621-669.
2. O. Ivanko. Course lectures to propaedeutics of pediatrics.
3. Mohammed El-Naggar. Basic clinical Pediatrics. -1992. P. 69-71, 79-81.
4. Meharban Singh. Pediatric clinical methods. The 2-nd edition. New Delhi. -2000 - P. 155-160.
5. Manual of Propedeutics Pediatrics Nykytyk S.O., Ternopil, 2005, P. 238-259.
6. Essential Pediatrics-Ghai OP, 7-th edition. 2009.
7. Pediatric student's case history and peculiarities of Pediatric Physical Examination. Kyzyma N.V, Ivanko O.G, Krut A.S, Radutnaya E.A, Pidkova V.Y., Pashenko I.V, Nedelskaya E.V. Zaporozhye. 2013. P. 128.



1. Name structures and organs of:

uropoiesis

urinary excretion

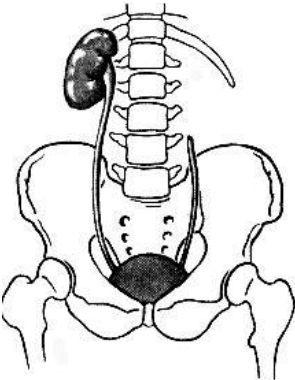
1. Describe the Adult Derivatives of Embryonic Kidney Structures

Embryonic Structure	Adult Derivative
Ureteric bud (metanephric diverticulum)	
Metanephric mesoderm	

3. Name it (the kidney and ureter are absent).



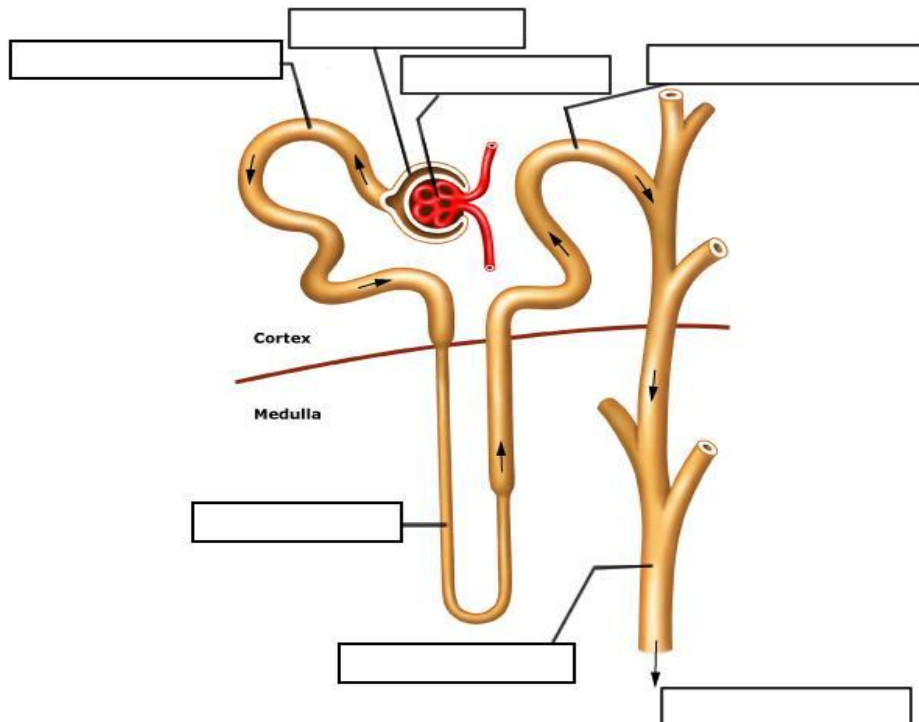
4. Name it (the kidney is absent and ureter is present).



5. Renal cortical dysembryogenesis signs:

- 1 _____
- 2 _____
- 3 _____
- 4 _____

6. Name it: _____



7. The glomerular filter consists of (Match with the corresponding letter):

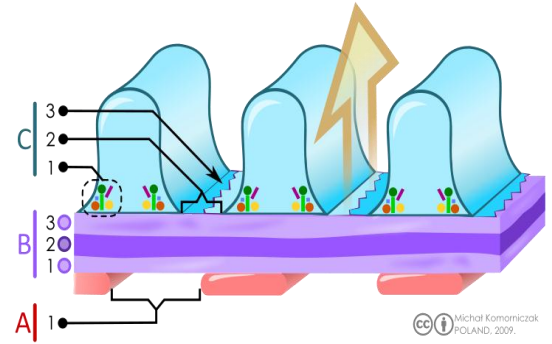
_____ is podocytes

(1. enzymatic and structural protein 2. filtration slit 3. Diaphragm).

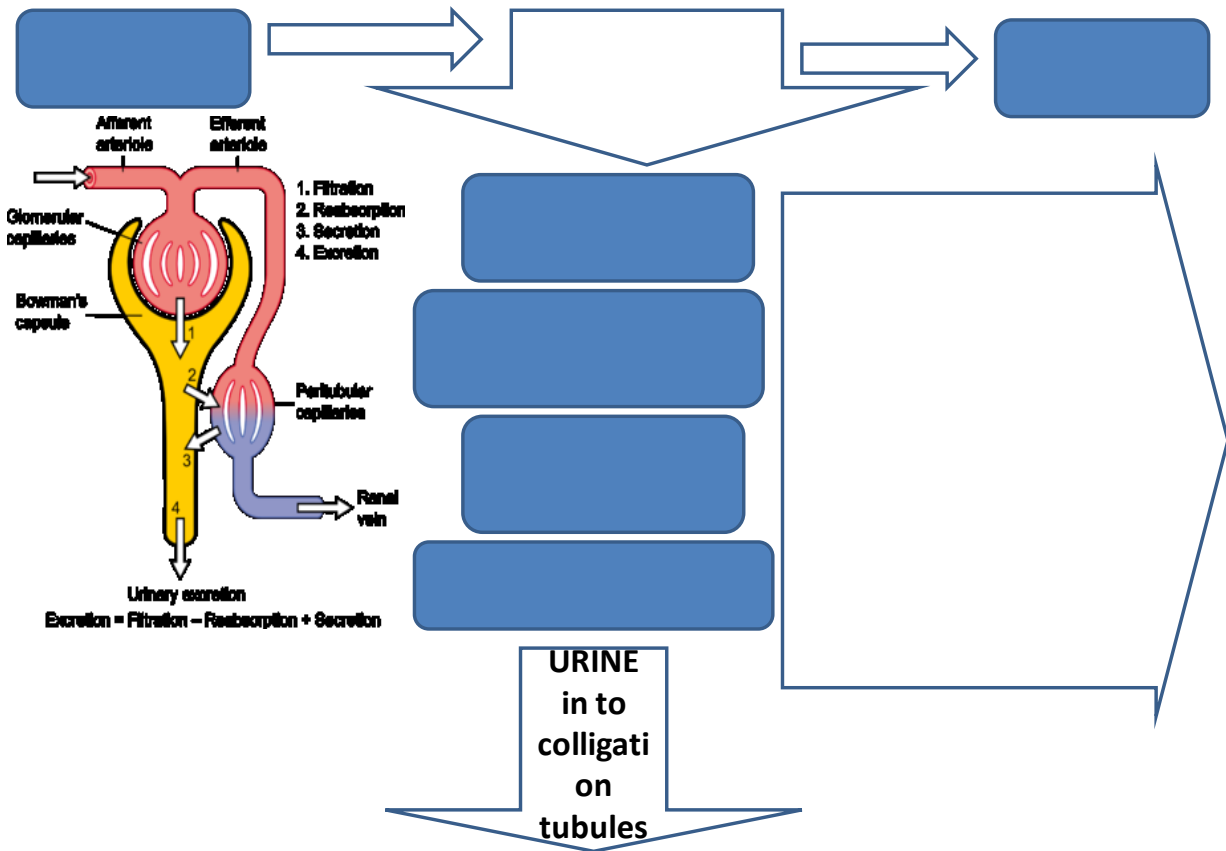
_____ are the endothelial cells of the glomerulus (vessel) (1. pore (fenestra).

_____ is glomerular basement membrane

(1. lamina rara interna 2. lamina densa 3. lamina rara externa).



8. Physiological bases of uropoiesis in children (complete the chart):



9. Renal Functions Tests In Clinic (match the following test with the arrow):

- Filtration assessment
- Concentration assessment
- Reabsorption assessment
- tubular reabsorption test
- glomerular filtration rate (GFR) test
- specific gravity test
- creatinine in serum

10. Semiotics Of Urine Syndrome In Diseases Of NEPHRON (complete the chart):

The diuresis is _____.

THE DAILY DIURESIS
? _____ ml/kg of body weight per day

THE HOURLY DIURESIS
? _____ ml/kg of body weight per hour

11. What is data (characteristic) of urinalysis (complete the chart):

URINALYSIS RESULTS	
Name: _____	Date: _____
Appearance: _____	Blood: _____
Color: _____	Bilirubin: _____
Protein: _____	Ketones: _____
Spec Grav: _____	Glucose: _____
Sediment: _____	Urobilinogen: _____
Bacteria: _____	RBC: _____
WBC: _____	Crystals: _____
Casts: _____	Epithelium: _____
pH: _____	Notes: _____

12. What is data of urinalysis by Nechiporenko?

Red Blood Cells in 1 ml _____
White Blood Cells in 1 ml _____
Custs in 1 ml _____

13. What is hematuria _____.

14. What is leucocyteuria _____.

15. What is proteinuria _____.

16. What is glucosuria _____.

17. Define the terms DIURESIS DISORDERS:

oliguria -

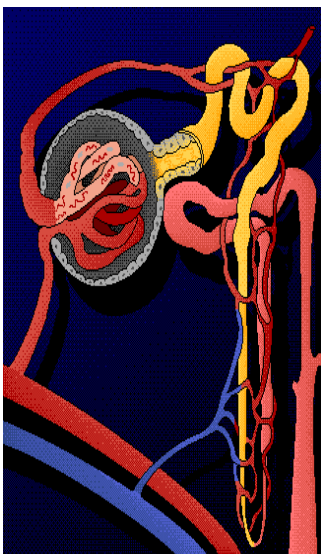
polyuria -

anuria-

dysuria -

enuresis-

18. Define place of breakage if (match the following place with the arrow)



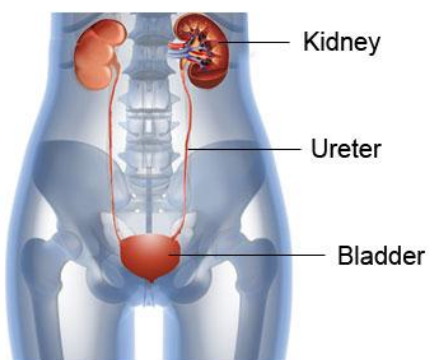
The Glomerular Proteinuria

The Tubular Proteinuria

The Prerenal proteinuria

19. Define place of breakage if (match the following place with the arrow)

Hematuria





Anatomy of Urinary System


The Renal painless hematuria



The Postrenal (painful) hematuria


20. Clinical Signs Of Renal Diseases (glomerulonephritis) (complete the chart):


The urination frequency _____ and
change color of urine _____


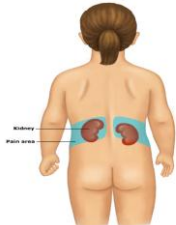








21. The clinical signs allowing to suspect the urinary tract inflammation disease (pyelonephritis) (complete the chart):





22. What are criteries of bacteriuria? _____

23. What test can you use for diagnostic bacteriuria? _____

24. What are clinical manifestation and laboratory tests of glomerulonephritis in child? _____

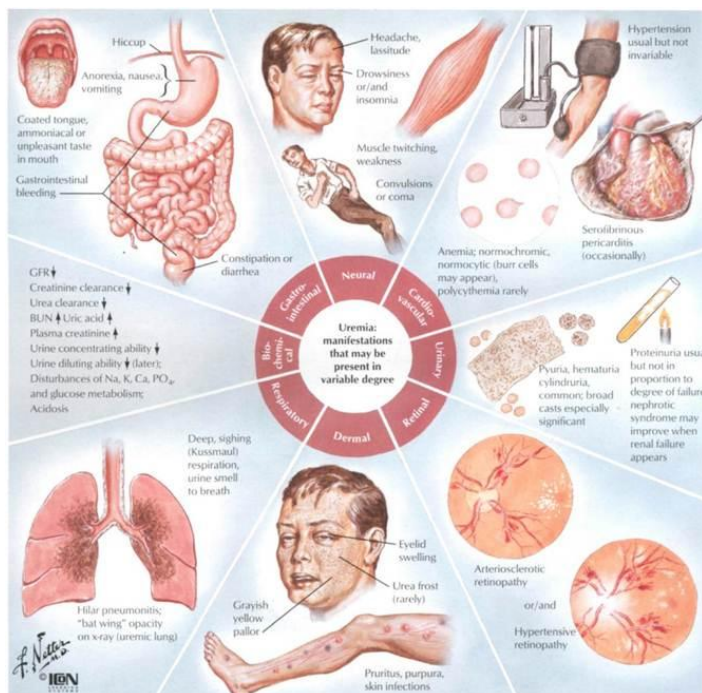
25. What are clinical manifestation and laboratory tests of pyelonephritis in child? _____

26. What are clinical and laboratory signs of acute renal failure in child? _____

Acute Renal Failure

- **Clinical findings:**
 - Decreased filtration at the glomeruli
 - Raised levels of urea and creatinine in plasma
 - Retention of potassium and hydrogen ions
 - Results in hyperkalemia and metabolic acidosis reflected in the low plasma bicarbonate
 - Tubular damage
 - Impairs sodium resorption resulting in urinary loss
 - High urea concentration
 - Plasma osmolality
 - Damaged renal tubules
 - Ability to dilute or concentrate urine is impaired and thus urinary osmolality approximates that of plasma

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27. What are clinical and laboratory signs of chronic renal failure in child? _____

Examine Urinary System in patient:

Inspection of lumbal region: _____

Bimanual palpation of kidneys:

Palpation and percussion of the urinary bladder:

Painful points: _____

Pasternacky's sign _____

Pain on urination _____

Frequency _____

urgency _____

hematuria _____

nocturia _____

polyuria _____

Assess:

URINALYSIS-COMLETE	
COLOR	YELLOW
APPEARANCE	HAZY
SPECIFIC GRAVITY	1.058
PH	6.5
PROTEIN (ACID PPT)	2+
GLUCOSE-STRIP	NEGATIVE
KETONES	NEGATIVE
BILIRUBIN	NEGATIVE
OCCULT BLOOD	NEGATIVE
WBC/HPF	NONE
RBC/HPF	NONE
CASTS/LPF	NONE OBSERVED
CRYSTALS/HPF	NONE OBSERVED
EPITH CELLS/HPF	
SQUAMOUS CELLS 1-3	
OTHER	
FAT DROPLETS 3+	
BACTERIA	NONE OBSERVED

DOCTOR: PETERSON		RESULTS
TEST PROCEDURES		
URINALYSIS		
* VOLUME		1.5
* COLOR		YELLOW
* CLARITY		HAZY
* SPECIFIC GRAVITY		1.021
* GLUCOSE		NEGATIVE
* BILIRUBIN		NEGATIVE
* KETONES		NEGATIVE
* BLOOD	↔	3+ (H)
* PH		6.5
* PROTEIN		2+ (40-100 mg/c)
* WBC		10-15
* RBC		50-75
* BACTERIA	↔	NONE SEEN
* EPI CELL		1+ (1-3/LPF)
* MUCUS		NONE SEEN
* CASTS		NONE SEEN
* CRYSTALS		NONE SEEN
* UROBILINOGEN		NORMAL

Theme: Morphological and functional features of the blood in children. Examination of hematologic system in children. Semiotics of main Hematological diseases.

1. What is function of the blood?
2. What components of the blood do you know?
3. What are the cellular elements?
4. What are hemopoietic (blood-forming) organs?
5. What organs are formed blood cells during embryonic development?
6. Methods of physical examination of the blood and hematogenic system (complaints, anamnesis, palpation, percussion, auscultation).
7. Features in children.
8. Complete blood count and its interpretation.
9. The normal system of hemostasis.
10. Blood groups, Rh-factor and HLA system.
11. Myelogram in child.
12. Semiotics of basic diseases of the blood system.
13. Anemia:
 - Anemia caused by bleeding (posthemorrhagic)
 - Anemia as a result of hemopoietic disorders
 - Anemia as a result of the increased hemolysis
14. Hemolytic syndrome.
15. Hemorrhagic diathesis.
 - Coagulopathy (hemophilia, etc.)
 - Thrombocytopeny (Werlhof's disease = idiopathic thrombocytopenic purpura, etc.)
 - Angiopathy (Henoch-Schonlein disease = hemorrhagic vasculitis, etc.)
16. Leukemia acute and chronic
17. The common rules of care.
18. The pre-medical help at nasal bleeding.

Practical part:

1. Gather complaints, and appropriate health history information for a patient with disorders of the blood.
2. Perform physical examination of the skin, lymph nodes, spleen, and liver.
3. Describe representative laboratory studies used to assess the blood system and interpret its. Differentiate between normal and abnormal assessment findings of the blood.
4. Nursing care the child with the blood system diseases.
5. Render emergencies at bleeding.

Recommended literature:

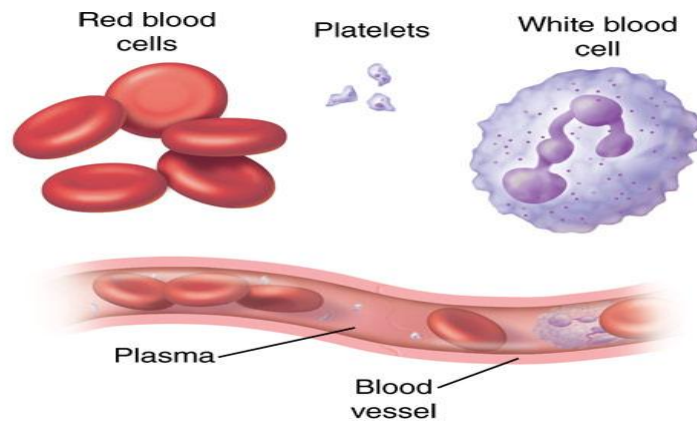
1. Propedeutics of children's diseases and nursing of the child. T. Kapitan, Vinnitsa: The State cartographic Factory. 2012. P. 534-598, 599-620.
2. Manual of Propedeutics Pediatrics Nykytyk S.O., Ternopil, 2005, P. 272-280.
3. Essential Pediatrics - Ghai OP, 7-th edition. 2009.
4. Pediatric student's case history and peculiarities of Pediatric Physical Examination. Kyzyma N.V., Ivanko O.G., Krut A.S., Radutnaya E.A., Pidkova V.Y., Pashenko I.V., Nedelskaya E.V. Zaporozhye. 2013. P. 128.

1. *Definition:*

Blood is _____

2. **Name the main functions of blood:**

3. **What components of the blood?**



4. **What are the cellular elements?**

5. **What is blood plasma?** _____

6. **What is hematocrit?**

7. Definition:

Hematopoiesis _____

8. The main stages of embryonic hematopoiesis

I (3 wk - 6 wk) _____

II (6 wk - 5 months) _____

III (4 - 5 months) _____

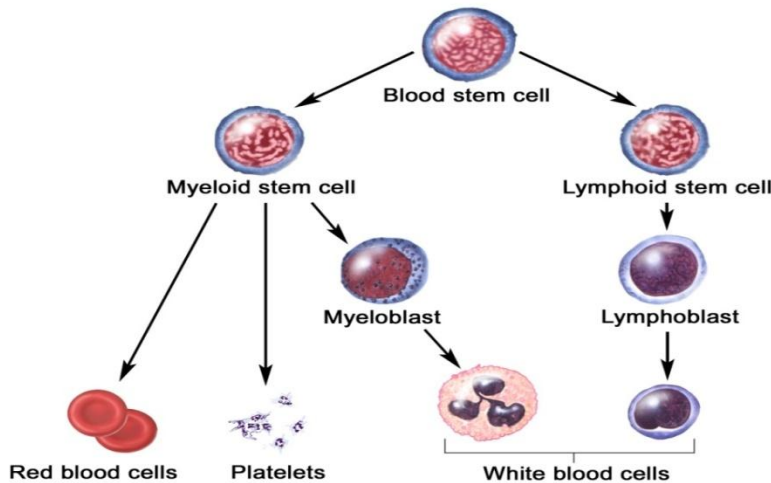
9. Hematopoiesis after birth

The main source of the formation of all types of blood cells are:

newborn _____

4 years _____

12-15 years and adult - _____



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Erythrocyte system

10. Definition:

Erythrocytes _____

11. The main functions of erythrocytes:

12. What are reticulocytes?

13. Definition: Hemoglobin is _____

14. Fill the table 1: Types of normal hemoglobin

Types of hemoglobin	In which period is found
(Hb P)	
(Hb F)	
(Hb A)	

15. What is Color index? What is normal value? _____

16. What is Erythrocyte sedimentation rate? What is normal value? _____

17. What is Osmotic fragility of erythrocytes? What is normal value? _____

Erythrocyte indices:

18. MCV (mean corpuscular volume) _____

19. MCH (mean corpuscular hemoglobin) _____

20. Fill the table 2: Normal Hematologic Values

Erythrocytes	
Reticulocytes	
Hemoglobin (Hb)	
Color index	
Hematocrit (Hct)	
Erythrocyte sedimentation rate (E.S.R.)	
MCV	
MCH	
RDW	

Leukocyte system

21. Definition:

Leukocytes _____

22. What is Leukocytes formula _____

23. The main functions of Leukocytes:

Granulocytes:

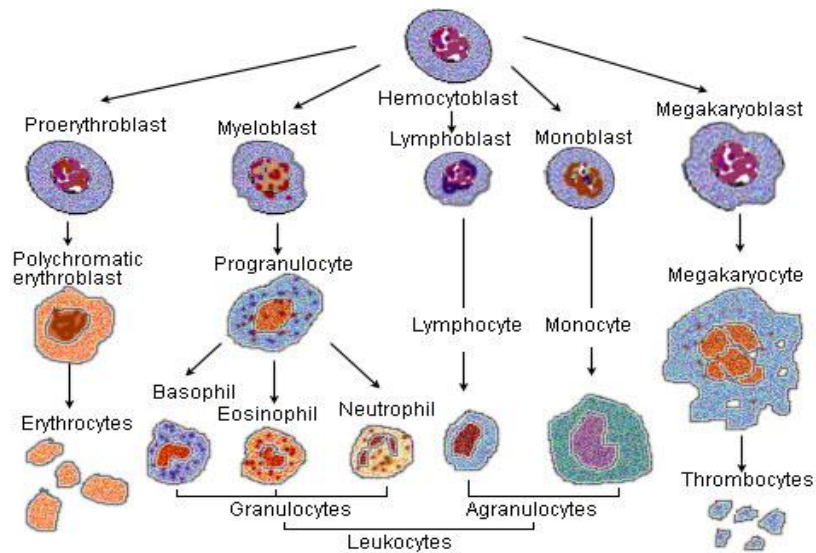
- *Neutrophils* _____
- *Eosinophils* _____
- *Basophils* _____

Agranulocytes:

- *Lymphocytes* _____
- *Monocytes* _____

24. What is Platelets and their functions _____

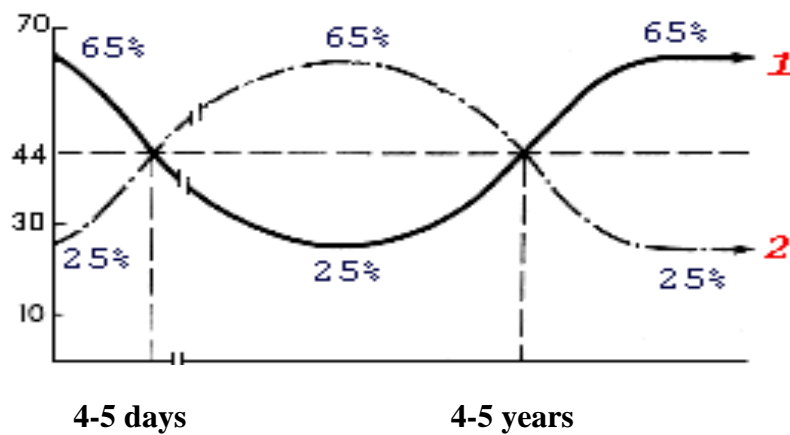
Blood cell lineage



25. Fill the table 3: WBC Differential Count

Age	Leuco- cytes (x10 ⁹ /l)	Baso- philes %	Eosino- philes %	Neutrophiles				Lympho- cytes %	Mono- cytes %
				myelo- cytes, %	juvenile %	“bands” %	“segs” %		
3d.									
5d.									
3 yr									
5 yr									
12 yr									

Physiological crosses of WBC



1. Neutrophils

2. Lymphocytes

Characteristic of peripheral blood of different age children

26. In newborn:

27. In infants:

28. Peculiarities of blood in children older 1 year:

The system of blood coagulation

29. What is hemostasis? _____

30. The process of hemostasis is provided by three main link:

1. _____

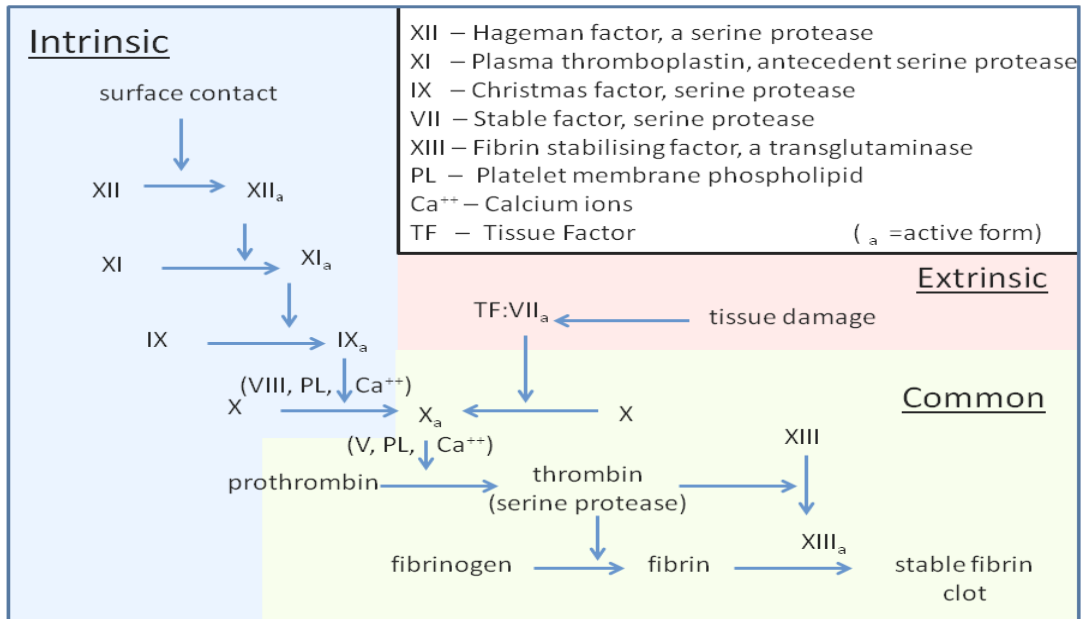
2. _____

3. _____

31. Fill the table 4: **Blood-clotting factors**

Factor number	Synonyms
I	
II	
III	
IV	
V	
VII	
VIII	
IX	
X	
XI	
XII	
XIII	

The three pathways that makeup the classical blood coagulation pathway



32. Coagulation tests:

1. Partial thromboplastin time _____
2. Prothrombin time (PT) _____
3. Thrombin time _____
4. Concentration of fibrinogen in plasma _____
5. Bleeding time Lee-White _____
6. Clotting time _____

Semiotics changes of erythrocytes

33. Definition:

What is erythrocytosis? _____

What is anisocytosis? _____

What is poikilocytosis? _____

What is normochromia? _____

What is hypochromia? _____

What is hyperchromia? _____

What is polychromatophilia? _____

34. Fill the table 5: Changes the content of hemoglobin in the blood (red blood cell) observed under what diseases and conditions

Reduced values	Increasing values

35. Increased erythrocyte sedimentation rate observed at:

1. _____
2. _____
3. _____
4. _____
5. _____

Semiotics changes of leukocytes

36. Definition:

What is leukocytosis? _____

What is leukopenia? _____

What is **neutrocytosis** and under what diseases it has a diagnostic value?

37. Definition:

Leukocyte formula shift to the left _____

Leukocyte formula shift to the right _____

38. Definition:

Lymphocytosis _____

Lymphopenia _____

Monocytosis _____

Monotsitopeniya _____

Basophilia _____

Bazopeniya _____

Eosinophilia _____

Eosinopenia _____

39. Fill the table 6: Reasons for changes in the number of certain types of leukocytes

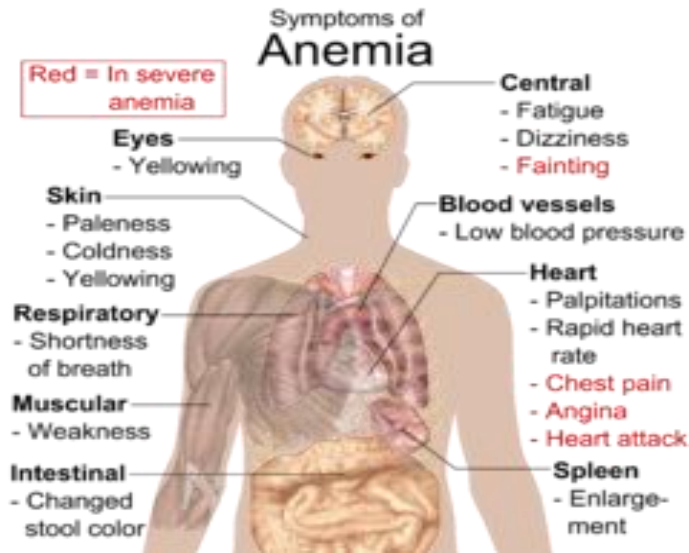
Types of leukocytes	Causes reduction	Reasons for the increase
Eosinophils		
Basophils		
Neutrophils		
Lymphocytes		
Monocytes		

40. What is the leukemoid reaction? _____

Semiotics of basic diseases of the blood system

41. Definition: Anaemic syndrome: _____

42. What are the main symptoms of Anaemic syndrome ? _____



43. Fill the table 7: Comparative characteristic of anaemias

Types of anemias	Causes	Clinical manifestations,	Laboratory indicators
Posthemorrhagic			
Iron deficiency			
Hemolytic			
Hypoplastic and aplastic			

44. Fill the table 8: Classification based on Hb level:

Stage of anemia	Name	Hb level	RBC count
I			
II			
III			

45. Fill the table 9: Classification based on color index:

Hypochromic CI < 0,85	Normochromic CI 0.85-1,05	Hyperchromic CI > 1,1

46. Definition: Hemorrhagic syndrome _____

47. Fill the table 9: There are 5 types of hemorrhagic syndrome

Type of bleeding	Characteristic	Diseases for which there is
Gematomy		
Petechial-spotted		
Mixed		
Vasculitis purple		
Angiomatous		

49. Definition: Match the definitions in Column I with the correct words in Column II

Column I	Column II
1. ___ Extreme fatigue, pale skin, weakness, shortness of breath, chest pain, frequent infections, headache, dizziness, inflammation or soreness of your tongue, brittle nails, fast heartbeat, poor appetite	A. A. Iron deficiency anemia
2. ___ Chronic anemia (pallor), mild jaundice, splenomegaly, hepatomegaly. Inflammation or soreness of tongue	B. Chronic hemolytic anemia
3. ___ Purpura (“petechiae” and “ecchymoses”), bleeding (bleeding gums, progressive anemia, infections, peripheral blood (pancytopenia), bone marrow (aplasia)	C. Aplastic pancytopenia

<p>4. Purpura, bleeding, fatigue, peripheral blood (thrombocytopenia, anemia), blood in urine or stools</p> <p>5. Unexplained and excessive bleeding from cuts or injuries; many large or deep bruises, pain, swelling or tightness in joints, blood in urine or stool</p> <p>6. Anemia, purpura and bleeding, splenomegaly, hepatomegaly, lymphadenopathy, arthritis and bone pains, prolonged fever, peripheral blood (blast cells)</p>	<p>D. Idiopathic thrombocytopenic purpura</p> <p>E. Hemophilia A</p> <p>F. Acute leukemia</p>
---	---

1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____

48. What a presumptive diagnosis? _____

Describe the main signs of the disease _____

any laboratory tests confirm the diagnosis _____



49. What a presumptive diagnosis? _____

Describe the main signs of the disease _____

any laboratory tests confirm the diagnosis _____



50. Hematology Laboratory

Patient's name.....

Age.....

CBC

RBC* 10^{12} /L.....NEUTRO.....

Hb g/L.....bands%

Hct.....segs%

MCV (fl).....LYMPHO.....%

WBC* 10^9 /LMONO.....%

Platelets* 10^9 /L.....EOSINO.....%

ESR (mm/hr).....BASO.....%

Patient's Name	
Age	
Sex	
Date	
Hemoglobin (Hb) (120-180g/L)	
Hematocrit (Hct) (40%-54%)	
Mean Cell Vol(MCV) (78-98 fl)	
RBC (3.5-5.5* 10^{12} /l)	
Platelet Count (150-400 * 10^9 /l)	
Total WBC (4-11* 10^9 /l)	
Differential WBC (%)	
Neutrophils:	
Bands	
Segs	
Lymphocytes	
Monocytes	
Eosinophils	
Basophils	
Myelocytes	
Promyelocytes	
Blast Cells	
E.S.R. (1-10 mm/hr)	
Reticulocytes (10-100* 10^9 /l or 0.1-1%)	
Blood film comment/Results:	

Biochemistry Laboratory

Patient's name.....

Age.....

Date.....

S/PL SODIUM (135-145) mmol/l

S/PL POTASSIUM (3.6-6) mmol/l

S/PL CHLORIDE (95-105) mmol/l.....

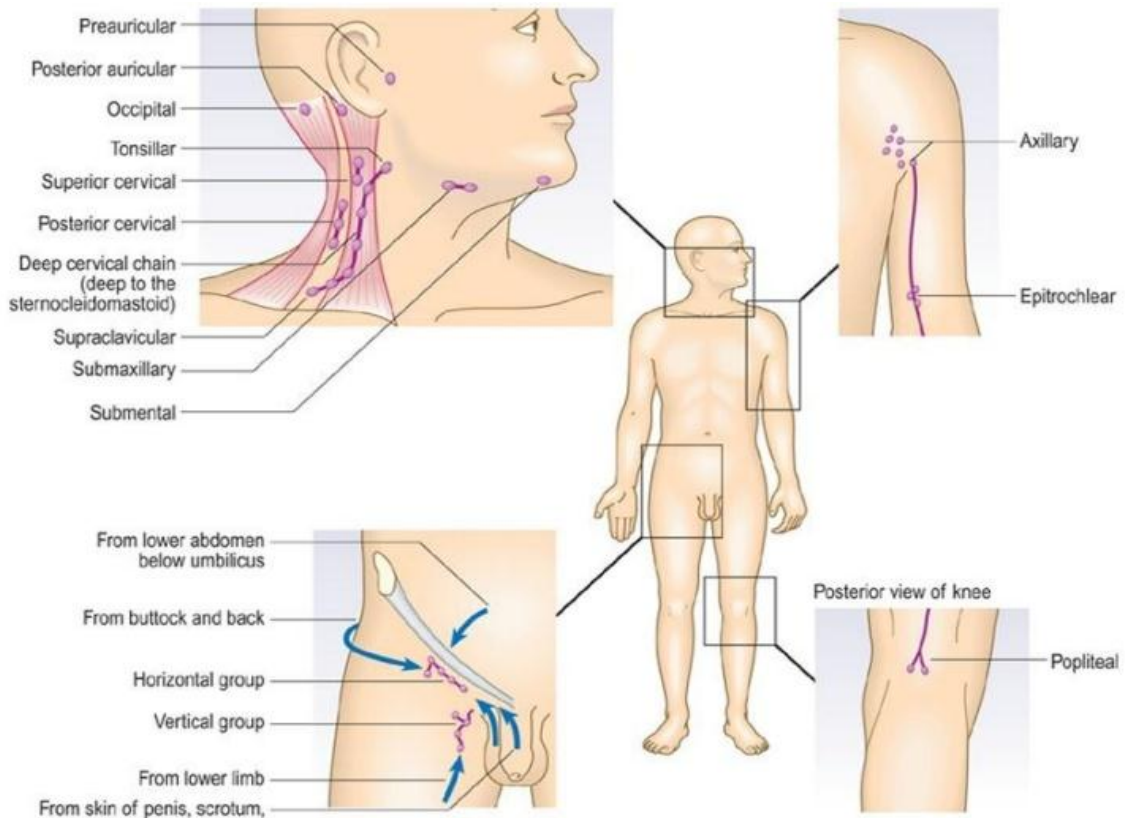
S/PL UREA (3.3-6.6) mmol/l.....

Total PROTEIN (60-80) g/l.....

S/PL CREATININE (60-120)μmol/l

S/PL GLUCOSE (3.6-5.8) mmol/l.....

51. Describe the palpation of the lymph nodes (localization and their size in cm if enlarged, their consistence, tenderness, mobility, connection with underlying tissues and skin)



Theme: Anatomical and physiological peculiarities of endocrine system. Examination of endocrine system. Semiotics of endocrine system diseases.

1. What is function of the endocrine system?
2. What does the endocrine system consist of?
3. What is hormone?
4. What do you know about control of hormone secretion and neuroendocrine interrelationships?
5. What hormones are produced in various endocrine glands? What are their effects?
6. What are the age features of hormones biosynthesis and their influences on growth and development of the child?
7. What do you know about normal sexual development in embryo and fetus?
8. Hormonal changes of puberty. Sexual maturation and developmental stages of secondary sex characteristics in girls and boys.
9. What laboratory tests and radiologic procedures can help in diagnosis of endocrine diseases?
10. Disorders of the pituitary gland: clinical manifestation hypofunction and hyperfunction (giantism, nanism, diabetes insipidus, Simonds disease).
11. Disorders of the thyroid gland (hypothyroidism, hyperthyroidism).
12. Disorders of the parathyroid glands.
13. Diabetes mellitus (signs of hyperglycemia and hypoglycemia).
14. Disorders of the adrenal gland (congenital adrenal hyperplasia, Cushing syndrom, acute adrenal insufficiency, Addison disease).
15. Disorders of the gonads (delayed puberty, precocious puberty).

Practical part:

1. Gather appropriate complaints and health history information for a child with endocrine disorders.
2. At physical examination of the child to reveal symptoms characteristic for endocrine diseases:
 - Assess physical development (accurate measurement of height and weight and comparison to standard growth charts)
 - Assess mental development
 - Assess skin and subcutaneous tissue
 - Palpation of the thyroid gland
 - Reveal sign of hypocalcaemia (Trousseau's sign, Chvostek's sign)
 - Assess sexual development
3. Interpret laboratory results and instrumental investigation methods used in children with endocrine disorders (serum level of glucose, cholesterol, calcium, potassium, sodium, chlorine; excretion of 17-hydroxycorticosteroid with urine). Determine bone age.

The recommended literature:

1. Propaedeutics of children's diseases and nursing of the child. T. Kapitan, Vinnitsa: The State cartographicae Factory. 2012. P. 671-684.
2. O. Ivanko. Course lectures to propaedeutic of pediatrics. - 2206. CD
3. Mohammed El-Naggar. Basic clinical Pediatrics. -1992. P. 82-83.
Meharban Singh. Pediatric clinical methods. The 2-nd edition. New Deihi. -2000.
4. Manual of Propedeutics Pediatrics Nykytyk S.O., Ternopil, 2005, P. 303-332.
5. Essential Pediatrics-Ghai OP, 7-th edition. 2009.
6. Pediatric student's case history and peculiarities of Pediatric Physical Examination. Kyzyma N.V, Ivanko O.G, Krut A.S, Radutnaya E.A, Pidkova V.Y, Pashenko I.V, Nedelskaya E.V. Zaporozhye. 2013. P. 128.

1. *Definition:*

Endocrine system: _____

By the endocrine glands of the body are _____

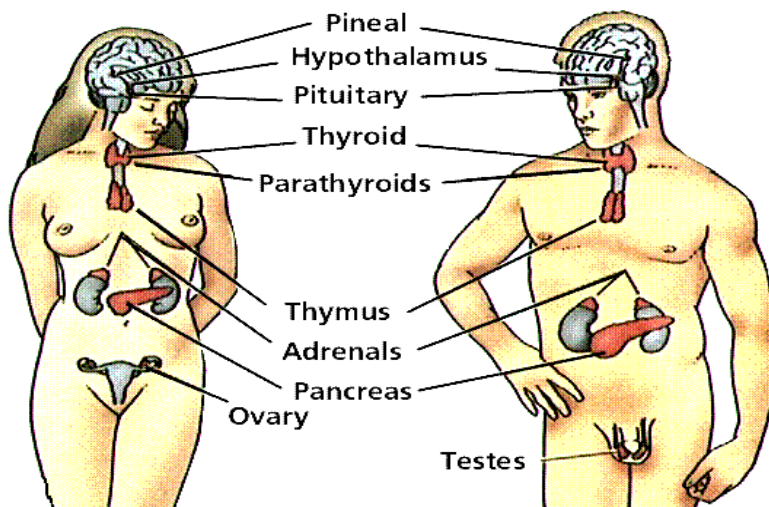
2. The functions of the endocrine system are:

- 1. _____
- 2. _____
- 3. _____
- 4. _____

3. The endocrine system consists of three components:

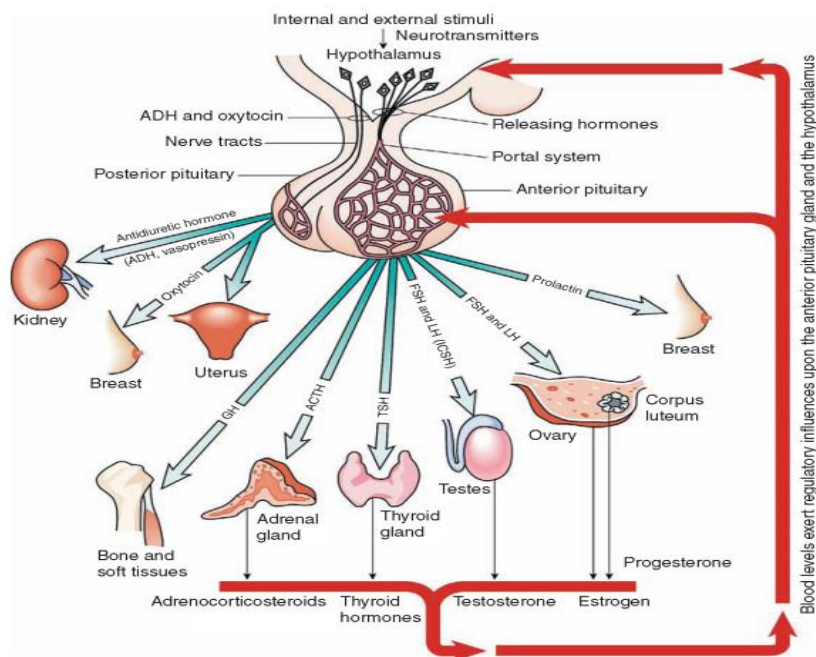
- 1. _____
- 2. _____
- 3. _____

Endocrine glands



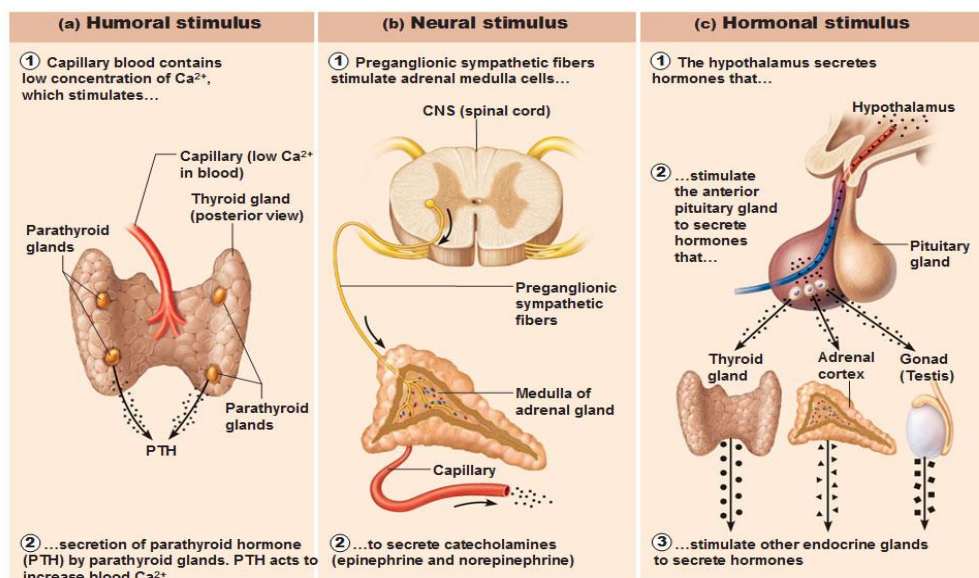
4. The most important properties of the hormone:

5. The main center, which regulates the production of hormones by endocrine glands and release them into the bloodstream, is the hypothalamus



6. Describe what endocrine glands depend on feedback mechanism regulation:

Types of Endocrine Gland Stimuli



What endocrine glands are not under pituitary stimulation regulation?

What normal level Ca and glucose in blood?

7. Fill the table 1: **Endocrine glands and hormones**

Endocrine glands	Hormones	Functions
Hypothalamus		
Hypophysis		
Thyroid		
Parathyroid glands		
Pancreas (the islands of Langerhans)		
Adrenal glands		
Reproductive glands		

Epiphysis		
Thymus		

8. Fill the table 2: Dysfunction of some endocrine glands

Hormones	Hypofunction	Hyperfunction
Hypophysis		
Thyroid		
Parathyroid glands		

Pancreas (the islands of Langerhans)		
Adrenal glands		
Reproductive glands		
Epiphysis		
Thymus		

9. *Definitions: Match the definitions in Column I with correct words in Column II*

<i>Column I</i>	<i>Column II</i>
1. High growth, pubertal age, pain in the joints, delayed sexual development, elevated GH	A. Cushing's syndrome
2. Weakness, enlargement of the distal parts of the body, thickening of facial features, widening of the fingers, hypogonadism, narrower field of vision, increase of the level of somatotropin hormone in the plasma, excessive hairiness	B. Congenital adrenal hyperplasia
3. Height below 3 rd percentile, prepubertal growth velocity less than 4 cm per year, bone age below the chronological age, abnormal 24-hour GH secretory pattern	C. Addison disease
4. Nervousness, irritability, emotional lability, tremor, excessive appetite, weight loss; smooth, moist, warm skin; increased perspiration, and heat intolerance. Goiter, exophthalmos, tachycardia, widened pulse pressure (systolic hypertension). Thyroid function studies elevated (eg, TT4, FT4, T3 RU). TSH concentration suppressed.	D. Waterhouse–Friderichsen syndrome
5. Growth retardation, diminished physical activity, impaired tissue perfusion, constipation, thick tongue, poor muscle tone, hoarseness, anemia, and intellectual retardation. Thyroid hormone concentrations low, TSH levels are elevated in primary disease.	E. Diabetes mellitus
6. Fatigue or muscle weakness, mood swings, nervousness or anxiety, depression, fragile bones that easily fracture (osteoporosis), kidney stones, excessive urination, abdominal pain, depression, bone and joint pain, nausea, vomiting or loss of appetite	F. Hypoparathyroidism
7. Tingling or burning (paresthesias) in fingers, toes and lips, muscle aches or cramps, fatigue or weakness, dry skin, brittle nails, headaches, depression, mood swings, memory problems, hypocalcemia	G. Hyperparathyroidism
8. Polyuria, polydipsia, polyphagia, weight loss, bedwetting, dry mucous membranes in the mouth, itching of the skin and mucous membranes, increased nervous irritability, headache; hyperglycemia, glycosuria	H. Hypothyroidism
9. Fever, rigors, vomiting, headache, dyspnea, petechial, purpuric, low blood pressure, cyanosis, diarrhea. Peripheral blood: hypoglycemia, hyponatremia, hyperkalemia, leukocytosis	I. Hyperthyroidism
10. Brown color of the skin, progressive fatigue, loss of weight, anorexia, loss of blood pressure, anemia	J. Growth Hormone Deficiency

11. Ambiguous genitalia in girls, enlarged penis in boys, poor weight gain, weight loss, dehydration, vomiting. Laboratory findings: elevated blood content of testosterone and ACTH, a significant increase in urinary excretion of urinary 17-ketosteroids (17-KS), (daily urinary excretion of 17 hydroxycorticosteroids (ACS) is normal or reduced).

K. Acromegaly

12. Growth retardation, hypotonia, obesity, moon face, stretch marks on the skin, hirsutism, osteoporosis, permanent increase in blood pressure, depression

L. Gigantism

1. ___ 2. ___ 3. ___ 4. ___ 5. ___ 6. ___ 7. ___ 8. ___ 9. ___ 10. ___ 11. ___ 12. ___

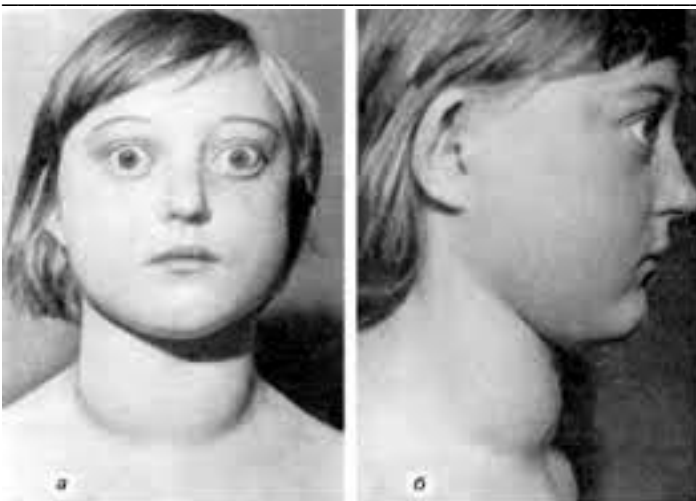
10. What a presumptive diagnosis? _____

Describe the main signs of the disease _____



11. What a presumptive diagnosis? _____

Describe the main signs of the disease _____



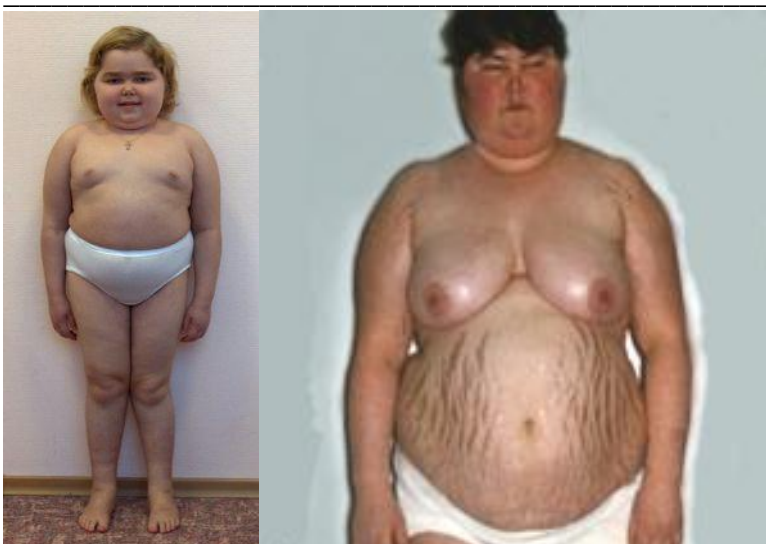
12. What a presumptive diagnosis? _____
Describe the main signs of the disease _____



13. What a presumptive diagnosis? _____
Describe the main signs of the disease _____



14. What a presumptive diagnosis? _____
Describe the main signs of the disease _____



15. Give a brief description (causes, clinical manifestations) of endocrine diseases




Cushing's syndrome	Pituitary basophilia

16. Define concepts, call their causes and main clinical manifestations:

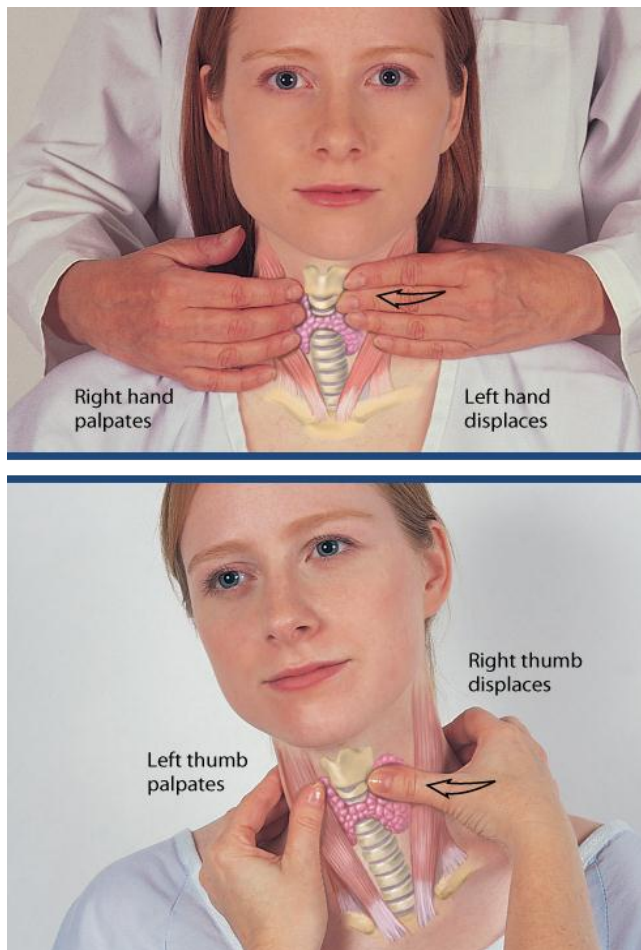
Syndrome of premature sexual development	Syndrome of delayed sexual development

17. Evaluation of the thyroid gland includes a description of the gland and a functional assessment.

Match the disorders thyroid glands in the foto whis appropriated discription

	<p style="text-align: center;">Multinodular Goiter</p> <p>This term refers to an enlarged thyroid gland that contains two or more identifiable nodules. Multiple nodules suggest a metabolic rather than a neoplastic process, but irradiation during childhood, a positive family history, enlarged cervical nodes, or continuing enlargement of one of the nodules raises the suspicion of malignancy.</p>
	<p style="text-align: center;">Single Nodule</p> <p>A clinically single nodule may be a cyst, a benign tumor, or one nodule within a multinodular gland, but it also raises the question of a malignancy. Prior irradiation, hardness, rapid growth, fixation to surrounding tissues, enlarged cervical nodes, and occurrence in males increase the probability of malignancy.</p>
	<p style="text-align: center;">Diffuse Enlargement</p> <p>A diffusely enlarged gland includes the isthmus and the lateral lobes, but there are no discretely palpable nodules.</p>

18. Describe the palpation of the thyroid gland _____



19. Exam patients and describe Endocrine System:

- growth (gigantism, nanism) _____
- body weight (malnutrition, obesity) _____
- allocation of subcutaneous adipose tissue _____
- Condition of thyroid gland (lobular and isthmus size) _____
- Observation of genitals (development of genitals correlate with the age, degree of development of secondary sexual characteristic). Delay or precocious puberty _____
