
Pediatrics – branch of medicine

- Pediatrics is the science about healthy and sick children.
- Pediatrics studies regularities of growth and development of a child, methods of examination of a child, diagnosis of pathologic symptoms and syndromes of diseases in children.
- The study of Pediatrics is a component of the program for education of a physician. The knowledge of this science is necessary for professional activity of every physician.

Concrete aims:

- – to know the place of Pediatrics in general medicine;
 - – to interpret the historical stages of development of pediatrics in Moldova;
 - – to know the principles of organization of treatment and prophylactic attendance to children;
 - – to know the rules of sanitary-hygienic and epidemiologic regimens in children's medical-prophylactic institutions;
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- – to be able to interpret the criteria of a child's health;
 - – to analyze the main statistic data of medical-prophylactic institution activity;
 - – to analyze peculiarities of different periods of children's age;
 - – to know peculiarities of the newborn period.

- **Pediatrics is the science about healthy and sick children. The origin of the definition of this science is based on Greek words “*pais*”, a child, and “*iatreia*”, medical treatment. Pediatrics is a young branch of medical science, and in the same time Pediatrics is a branch of medical care.**

- The methodology, medical equipment and terminology of pediatrics have both common features with such course units as internal diseases, surgery, obstetrics and also its own special methods of diagnosis, treatment and special terminology.

The knowledge of pediatrics is necessary for the physician of any speciality for the traditional medical education.

It is necessary for proper understanding of human development as a biological type. Besides, it helps to understand and estimate pathological processes, whose onset starts in childhood.

- For example, tuberculosis starts in childhood, only children have it in such early stages, as primary TB complex; the clinical picture of TB process in children has some peculiarities such as a trend to generalization. It is clear, therefore, that the physician's correct knowledge of TB infection and its prevention has to be based on the knowledge of the early stage of TB.

The course of Pediatrics is large, it is composed of four parts.

The first part is propedeutics of childhood diseases.

Its course includes study of anatomic and physiologic features of the child during all stages of childhood, the specificity of medical examination of ill children, semiotics of the most frequently encountered diseases in childhood, dietetics, and the basic rules of nutrition for healthy children.

Propedeutics also includes principles of care for and management of healthy and ill children.

Pediatrics as a branch of medicine is quite young, but some attempts to substantiate the hygiene, dietetics and pathology of children can be found in old historical documents – in manuscripts of ancient Hindu, Egyptian and father of medicine – Hippocrates.

Pediatrics started to develop in the middle of XVII century, but as a special science is started to form only in the beginning of XIX century; it formed as a branch of therapy and obstetrics. Paediatrics developed successfully in Europe, where pediatric schools were founded in England, Germany and France.

The development of our national pediatrics is connected with its development in Russia.

Pediatrics as an independent branch of medicine started to form in Russia only in 1830-1834.

A certain part in the study of childhood diseases was played by a children's hospital, founded in St. Petersburg in 1834. At the same time a professor of the Obstetric Department of St. Petersburg Medical-Surgical Academy S.F. Khotovitsky started to deliver a theoretical course of Pediatrics for students.

- Many ideas of S.F. Khotovitsky about prophylaxis, treatment of some diseases, causes of children mortality and measures for its prevention were very progressive. Two paediatric schools (in St. Petersburg and Moscow) were founded in Russia.

Organization of treatment-and-prophylactic medical aid to children in Moldova

The knowledge of the principles of organization and methods of the medical-prophylactic service for children in Moldova, the contents and forms of the work of a paediatrician are important for a correct use of abilities of the paediatric medical service.

The knowledge about the sanitary hygiene and antiepidemiologic regimens are important for preventing infections in children.

***Organization of treatment-and-prophylactic
medical aid to children in Moldova***

The estimation of the efficacy of the action of the paediatric service can be done with consideration of the condition of children's health, with use of the criteria of its estimation and determination of the group of health in order to establish statistic indices for children (morbidity, lethality).

The following main principles of care for children were offered in Moldova: prophylaxis, free treatment, high medical professionalism, accessibility of the medical care.

Children's medical establishments are quite numerous: out-patient's clinics, hospitals, sanatoria, health centres, clinics of research institutes, and so on.

Establishments for healthy children, such as schools and kindergartens, are under pediatricians' observation too.

Children's medical establishments are created according to the territorial principle.

Every district or region has its medical establishment according to the amount of children's population.

- Sanitary hygiene and epidemiological regimen in medical establishments is one of the important methods of prophylaxis in pediatrics.
- Sanitary hygiene and epidemiological regime is a complex of measures for observation of the cleanliness in hospital and prevention of epidemics of infectious diseases.

These measures include: an epidemiologic anamnesis; a sanitary treatment (a hygienic bath, change of personal clothes and furnishing).

The staff must follow special rules of cooking for patients and taking food. Every member of the staff and every patient must keep to rules of personal hygiene.

Disinfection is one of the methods for impeding germs of infections in hospital and their eradication.

Disinfection can be: prophylactic, current or terminal.

A child may be sent to hospital by a district paediatrician, a specialist, and a family doctor. A child can be delivered by an ambulance. If a child is gravely ill, he may be admitted to hospital for treatment without any document for admittance.

The document for admittance must contain information about the patient's name, patronymic, surname, age, address, initial diagnosis, the date of the previous examination, the day of sending to the hospital, the name of the doctor, a seal of the doctor or a stamp of the establishment.

It is obligatory to provide information about any contacts of the child with infectious patients for preventing infections in the hospital.

If the child had some contact with an infectious patient, it is necessary to take into consideration the incubation period of the disease.

A child, who contacted an infectious patient, must be admitted to an isolation ward or transferred to an infectious hospital.

**The admittance of a child to the hospital
must be done according to the obligatory
standard plan:**

- registration: a nurse records a child's data to the hospital's register of admittance and fills in the passport part of a case history;. a nurse takes the child's temperature;
 - examination by a doctor includes: questioning (complaints, case history, life history), clinical examination (visual examination, palpation, percussion).
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- ✓ Results of the examination must be recorded in the case history by the doctor himself.
 - ✓ At the end of the examination an initial diagnosis must be made, a plan of laboratory and instrumental examinations and a plan of treatment must be drawn up.
 - ✓ After the examination of the child by the doctor, sanitary cleansing of the child will be done by a nurse:

Pediatric polyclinic is an institution for treatment and prophylaxis, whose personnel serves children before they are 18, outside the hospital (at home).

The number of polyclinics depends on the population of the residential area (the bigger the city, the more polyclinics it has). A polyclinic may be incorporated with a children's hospital and may be an independent institution.

A principal document, "The History of the Child's Development", is filled in by doctors and nurses for each child from his/her birth till he/she is 18-year-old.

This document contains all the information about the child, describing his/her life and health condition. "The History of the Child's Development" begins with a discharge note from a maternity hospital.

If a child arrives from another city or village, his parents are obliged to submit available history of development from the place of their previous residence to a polyclinic. When the child turns fourteen years old, the history of development is transferred to a polyclinic which serves adult patients.

Besides a district pediatrician, family doctor, specialists (neurologist, surgeon, dermatologist, ophthalmologist, etc.) see children in polyclinics too.

The purpose of prophylactic work consists in preventing possible diseases and disorders in the development of children.

Observation of child proceeds after birth:
During the first month of life – in-home observation in the first 3 days.

During the first year of life – once a month.

During the second year of life – once per quarter (quarter = 3 months), i.e. four times a year.

Observation of child proceeds after birth:

- ✓ During the third year of life – twice a year.
- ✓ During the fourth-fifth years of life – once a year.
- ✓ During the sixth year of life – twice a year the child is examined by a district doctor and specialists in a polyclinic.
- ✓ Decisions about physical, psychological, intellectual and other parameters of the child's development are made on the basis of these examinations.

Antiepidemic work is a complex of actions aimed at timely diagnosis and prophylaxis of infectious diseases. Basic moments of the antiepidemic work are as follows:

Vaccination. Observation of vaccinated children, especially if post-vaccination complications (allergic reaction, etc.) are present.

Diagnosis and treatment of patients with infectious diseases, and, if necessary, their hospitalization.

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In children's hospital whose main function is medical work, responsibilities of medical personnel include the following stages:

- to accept patients and, if necessary, render the urgent help;
- to diagnose correctly and quickly;
- to carry out a whole complex of medical measures;
- to strengthen the child's organism against repeated diseases or possible relapses of chronic pathology.

Regular medical checkups of different groups of ill children with chronic diseases (rheumatic fever, gastroduodenitis, cholecystitis, glomerulonephritis, etc.) are performed in polyclinics.

The main aims of this work are to continue the treatment of children after their treatment in hospitals and to prevent relapses of the diseases.

Organization of work of medical staff of a pediatric department.

The main functions of a paediatrician are as follows:

- admission of ill children to the hospital;
- a daily round of patients;
- a daily filling in of case histories;
- a daily checking of and making additions to lists of treatment;
- conversations with parents, giving of advice about care for children;

Organization of work of medical staff of a pediatric department.

- recommendations about future treatment;
- participation in the morning meeting of the staff;
- performance of some complicate manipulations (together with nurses), such as infusion of blood, intravenous infusions, lumbar punctures, pleural punctures;
- writing of epicrises in case histories after discharge of patients.

According to the definition of the WHO (the World Health Organization) experts, “health is condition of physical, intellectual, social welfare and not only absence of the disease”.

- The periods of childhood:
Ages and **Stages** is a term used to broadly outline key periods in the human development timeline.
During each stage of growth and development occur in the primary developmental domains including physical, intellectual, language and social-emotional.
All of these periods are unique and important factors in the child's growth.
Our goal is to help parents understand what is taking place in their child's brain and body during each period with the hope that they will be able to provide the necessary support, encouragement, structure and interventions to enable a child to progress through each stage as easily and successfully as possible based on each child's unique set of traits and interest.

- The periods of childhood:
The classification of periods of childhood is useful for pediatricians for their differential attitude to the care for and treatment of children of different age.

The periods of childhood:

The following periods of childhood are put forward according to the modern classification:

intrauterine period:

embryonic stage (stage of embryonic

development) – till 12 weeks of pregnancy

fetal stage (stage of placenta development) –

from 12 weeks of pregnancy to birth

The periods of childhood:

newborn period – 0-28 days

infant period – 29 days -1 year

pre-preschool period – 1-3 years

preschool period – 3-6 years

early school period – 7-11 years

middle school age – 12-15 years

late school period – 15-18 years

Embryonic stage:

The embryo secretes chemicals that suppress the mother's immune system so that the embryo will not be rejected

The embryo produce the chorionic gonadotrophin which stops the embryo being carried away by a menstrual period

The first trimester of human development is a period of morphogenesis – the major organs and basic tissues are laid down

During the first phase of embryonic differentiation there are a number of spontaneous abortions, often of embryos with major chromosomal defects

The umbilical cord, a soft tube containing blood vessels, connects the embryo to the placenta, which provides respiration and nourishment for the unborn baby

Growth rate is about 1 mm per day

By 12 weeks, crown-rump length is 5.4 cm and weight is 14 grams

- Fetal stage:

Most of the baby's external features that are observed at birth are now apparent

The heart beats at 140-150 per minute

The body begins to straighten and elongate

The head is large in comparison to the body

The unborn organism is no longer an embryo, but a fetus; not an it, but a he or she; not an indistinct cluster of cells, but an increasingly recognizable, unique human being in the making

The fetus not only looks more human; it is possible by 12 weeks to discern its gender

It now contains nearly the same number of neurons as an adult, and the nerves from the brain begin to be coated in myelin

This is a crucial stage in their maturation as it facilitates the passage of messages to and from the brain

Final month:

During the final 3 months *in utero* the fetus is reported to be capable of learning from the events in its environment

The uterine environment is a stimulating, interactive home for a now ceaselessly active – kicking, hiccuping, face-pulling, crying, hitting out – inhabitant

The fetus with the use of its rudimentary access to the fundamentals of experience and communication – touch, taste, smell, hearing, and vision – is preparing for life outside the womb

Newborn period:

Starts since the moment of birth and separation of the child from the mother

The duration of the newborn period is about 4 weeks

Early neonatal period (first 7 days of life) – the most responsible for children's adaptation to extra-uterine life

Late neonatal period (since the 8th to 28th days of life) – healthy child during this period is already at the home and followed up by pediatrician

The importance of newborn period:

The important characteristics of this period are intensive development of visual reflexes, the beginning of movement, development formation of conditional reflexes, formation of visual and sensational contact with mother

It is a very important period of human life because changes in the environment during this period are very serious

After birth the newborn infant is getting adaptation to the condition of the extrauterine existence

Physical characteristics of newborn:

In medical contexts, **newborn or neonate** refers to an infant in the first 28 days after birth; the term applies to premature infants, postmature infants, and full term infants

Full term newborn characteristics

Is a normal duration of pregnancy between 37-42 weeks of gestation

The average birth weight is around 3.5 kg, the normal range is 2.5-4.5 kg

Newborns often lose around 230 g (6-8%) in the first 4-5 days after birth but regain it by about 10 to 12 days of age

In the first month, the typical newborn gains about 20 g a day, or about 110-230 g a week.

The average length of full-term babies at birth is 51 cm, the normal range is 46-56 cm

In the first month, babies typically grow 4 cm to 5 cm

Newborn classification:

WEIGHT AND PERCENTILE CLASSIFICATIONS		
Classification	Birth weight	Percentile
Small for gestational age (SGA)	<2500 g	10 th percentile
Appropriate for gestational age (AGA)	2500-4500 g	10 th to 90 th percentile
Large for gestational age (LGA)	>4500 g	>90 th percentile

Newborn classification:

GESTATIONAL AGE CLASSIFICATION	
Classification	GESTATION
Premature	<37 weeks
Full-term	37 to 42 weeks
Post-term	>42 weeks

The typical pathology of newborn period:

The following pathology is typical for the newborn period:

- *sequelae of intrauterine development disorders* (malformation, prematurity)
- *sequelae of birth injury*
- *immunologic maternal-foetal incompatibility* (Rh factor, ABO system – hemolytic jaundice)
- *prenatal infection diseases* (toxoplasmosis, CMV infection, syphilis, and others)
- *acquired diseases* (sepsis, gastroenteritis, meningitis, etc.)
- newborn *infant death rate* is higher in comparison with other childhood periods

Newborn period needs:

- proper medical observation
special care
- hygienic regimen
nutrition that must be adequate to their
morphofunctional peculiarities

The infant period

Its duration is about 1 year

The connection between an infant and its mother
does not break off completely due to breastfeeding

During the infant period the growth and
morphofunctional development are very intensive

The infants characteristics

Everything is new and interesting to one-year-olds. They enthusiastically use their five senses to actively explore the world around them. They find pleasure in causing things to happen and in completing basic tasks.

During this year, language skills typically progress from grunting and pointing to speaking single words and experimenting with simple word combinations

Pronunciation is quite difficult, familiar adults almost always need to "translate" for others

One-year-olds steadily build their vocabularies by absorbing the language around them

They are able to understand common phrases and simple directions used in routine situations

Most infants typically move from crawling to running by about 20 months

They use their new mobility to push and pull toys, dance and climb

One-year-olds also improve in hand and finger coordination, but skills at this age are still immature

The typical pathology and the needs of infant period

The following pathology is typical for the infant period:

Infants are predisposed to *acute and chronic disorders of nutrition and digestion, rickets, anemia*

Infections can develop due to *transient immunodeficiency*

Prophylactic vaccination of infections must be followed in the infant period

There is functional immaturity of the digestive system, which demands the proper organization of nutrition

The period of deciduous dentition

- The duration is from 1 to 7 years
- It is possible to divide this period into 2 parts:
 1. pre-preschool period – the first 3 years
 2. preschool period – from 4 to 7 years
- These periods have some morphological and functional difference, but without any quality difference

- The importance of deciduous dentition period

Gradual perfection of basic functions of child's organism is marked in this period

The functions of the thymus, hypophysis and epiphysis dominate in the endocrine system within this period

In general children during the first two years of life quadruple their weight and increase their height by two-thirds, this rate slows down between 2-3 years

Quick development of movement activity, perfection of coordination, increase of strength are typical for children in this period

Their central and peripheral nervous systems become more differentiated, the analyzer synthesis function of the cortex becomes more perfect. The increasing activity of the cerebral hemispheres has a violent tempo and a grand scale.

The typical pathology of deciduous dentition period

Due to often contacts with other children, environment and domestic animals, children at this period suffer from

- *infectious diseases* (measles, scarlet fever, whooping cough)
- *parasites* (ascariasis, lambliasis, hymenolipidosis, trichocephaliasis)

The school period

After 7 years follows the school period

It may be divided into:

- the young school age (7-11 years)
- the middle school age (12-15 years)
- older school age (15-18 years)

- The importance of school period

Many systems and organs within this period develop both morphologically and functionally

The accomplishment of functions needs more time than intensive growth

At that time a change in the balance of functions of endocrine organs occurs:

- the dominating role of the thymus decreases
- functions of the thyroid and sex glands increase

It leads to changes in the body's forms, with the formation of the psychosocial and sexual orientation of boys and girls

The age from 7 to 11 years is the quietest one for the central nervous system development. Neural processes are quite powerful and balanced

Self-criticism is quite well expressed

The typical pathology of school period

Peculiarities in the growth and development during this period result in specific pathology

Disorders of normal affectivity can develop quite often due to inadequate progress of studies

Quite common are diseases caused by disorders of school hygiene regimen (myopia, habit scoliosis)

Acute infections occur as a pathology of children at the school age

Endocrinopathy and asthenia can be frequently diagnosed

It is necessary to note the increasing frequency of rheumatic fever and functional disorders of the cardiovascular and nervous systems

Some diseases have clinical manifestations like in adults

The period of sexual maturation (adolescence)

in girls since 12 to 16 years

in boys since 13-14 to 18-19 years

The importance of adolescence period

The period of adolescence , like the newborn or infant periods, is a stage of development, when children are very sensitive to a harmful environment

It is the period within which the organism starts to have new physiological changes and a lot of organs and systems rearrange their activity

As a result of this rearrangement, the child's organism turns into the adult's one

Characteristic of adolescence

Experience rapid, irregular physical growth
 Experience restlessness and fatigue due to hormonal changes
 Need daily physical activity because of increased energy
 Develop sexual awareness that increases as secondary sex characteristics begin to appear
 Have preference for junk foods but need good nutrition
 Are physically vulnerable because they may adopt poor health habits or engage in risky experimentation with drugs and sex
 Respond positively to opportunities to participate in real life situations
 Are often preoccupied with self
 Have a strong need for approval and may be easily discouraged
 Are generally idealistic, desiring to make the world a better place and to become socially useful
 Believe that personal problems, feelings, and experiences are unique to themselves

The typical problems of adolescence period

The pathology of puberty includes 2 groups of diseases
first group of diseases is typical only for this period – pathologic conditions of the sexual and endocrine systems, causing significant disorders of puberty
 precocious puberty, delayed puberty, disorder of sexual differentiation (intersexualism, homosexuality, genuine and false hermaphroditism, transsexualism and other sexual psychopathology, chlorosis of young girls, juvenile mastopathy)
The second group of diseases of the puberty period includes various diseases which can take place at any age; however, these have clinical peculiarities during the puberty period (tuberculosis, rheumatic fever)

There are 4 criteria for assessment of a child's health:

- the functional condition of the main systems (respiratory, cardiovascular, and others);
- the degree of resistibility and reactivity of the organism, i.e. how a child endures virus and bacterial diseases;
- the state of the physical, neural and behavioural development;
- presence or absence of chronic pathology.

Factors of health:

- the functional state of organs and systems;
- the resistance and reactivity of organism ;
- the level and harmony of physical and neuropsychic development;
- presence of chronic (including newborn) pathology.

On the base of these indexes the children are divided on 5 groups of health:

- first group – healthy children, having no deviations on all health indexes, not falled ill during the period of observation and also children with nonsignificant deviations which not influence the state of health and not needing correction;
- second group A – children with aggravated biologic (pathology of pregnancy, complicated occurrence of delivery, polygemelar pregnancy, preterm birth, presence of unclear expressed signs of immaturity, unfavorable occurrence of early neonatal period) and unfavorable familial anamnesis but with normal physical and neuropsychic development without functional deviations.

- second group B – children with functional deviations, frequently and long time suffering by acute respiratory diseases, making healthier after acute severe diseases;
- third, fourth, fifth groups – children with compensated, subcompensated and decompensated chronic pathology.

The risk groups

In this group we include the children in which the probability of diseases appearance or actual state worsening due to previous unfavorable factors is so high that needs especial attention and observation from the part of pediatrician.

In this group we include the following children:

- prematurely born;
- children with big body mass;
- children from polygemelar pregnancy;
- born from pregnancies which occurred with pathology (toxycosis, diseases of mother e.g. – gripple) or complicated deliveries (perinatal trauma, disorders of cerebral circulation);

The risk groups

- children born from mothers which work at factories with chemical, radioactive unfavorable factors, concern with hard physical work;
- born from sick mothers (rheumatic fever, anemia, pyelonephritis);
- children with unfavorable hereditary anamnesis (for example, the mother is carrier of hemophilia);
- infants with inborn developmental anomalies (e.g. hare lips, cleft palatinum);
- infants which have supported hemolytic disease of newborns;
- bottle fed infants;
- frequent and long term ill children (high risk group);
- children living in unsatisfactory moral and material conditions (high risk group)

The quality of medical care is characterized by a number of indices, children's mortality being an important one.

$$\text{The index of children mortality} = \frac{\text{number children died before 1 year}}{1000 \text{ children borned alive during 1 year}}$$

There are 3 indices within the index of children's mortality, which describe mortality of children of different age groups.

$$\text{Early neonatal mortality} = \frac{\text{number newborns died during 6 days}}{1000 \text{ children borned alive during 1 year}}$$

$$\text{Late neonatal mortality} = \frac{\text{number newborns died from 7 till 28 days}}{1000 \text{ children borned alive during 1 year}}$$

$$\text{Postneonatal mortality} = \frac{\text{number children died from 29 days till 1 year}}{1000 \text{ children borned alive during 1 year}}$$

$$\text{Perinatal mortality} = \frac{\text{number stillborn} + \text{number newborns died during 6 days}}{1000 \text{ children borned alive and stillborn}}$$

Morbidity index is an important index of quality of medical care.

$$\text{Morbidity} = \frac{\text{number new cases of disease during last year}}{\text{average amount children population in thousands}}$$

$$\text{Lethality} = \frac{\text{amount of lethal exits}}{100 \text{ cases of this diseases}}$$



World Health
Organization

Last update: 14-Jul-2012 (data as of 12-Jul-2012).
Next overall update: Sep 2012.

Vaccine schedule selection form

EUR	Republic of Moldova	BCG	Bacille Calmette-Guérin vaccine	2 days; 7 years;	
		DT	Tetanus and diphtheria toxoid childrens' dose	7 years;	
		DTwP	Diphtheria and tetanus toxoid with whole cell pertussis vaccine	22 months;	
		DTwPHibHep	Diphtheria and tetanus toxoid with whole cell pertussis, Hib and HepB vaccine	2, 4, 6 months;	
		HepB	Hepatitis B vaccine	birth;	
		MMR	Measles mumps and rubella vaccine	12 months; 7, 15 years;	
		OPV	Oral polio vaccine	2, 4, 6, 22 months; 7, 15 years;	
		Pneumo_conj	Pneumococcal conjugate vaccine		From April 2013
		Rotavirus	Rotavirus vaccine		From April 2012
		Td	Tetanus and diphtheria toxoid for older children / adults	15, 20, 25, 30, 35, 40, 50, 60 years;	