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DEPARTMENT OFPREVENTION OF DISEASES, HEALTHY LIFESTYLE AND EPIDEMIOLOGY

PREVENTION OF DISEASES

Study guide for foreign students of medical universities with teaching in English

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The Study guide corresponds to the working programs of the discipline "disease Prevention" in the specialties 31.05.01 Medical business. It includes questions related to individual and social aspects of health and motivation to form a healthy lifestyle, discusses in detail the main factors of a healthy lifestyle, and outlines the organizational and legal basis for preventive activities. The main attention is paid to the risk factors for the development of socially significant diseases and measures to prevent their negative impact on the human body. Each Chapter is completed by a block of control questions for students ' self-preparation and self-control.

This manual is compiled taking into account the requirements of the Federal state educational standard-3++ VO and is intended to ensure the educational process during classroom classes and for independent training of students.

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INTRODUCTION

In order to emphasize the preventive direction of modern medicine, the world health organization introduced the term "*health*» promotion health" promotion as a set of social, economic and other aspects of health aimed at improving the quality of human life.

However, health promotion is impossible without lifestyle changes. Being the main factor affecting health, lifestyle determines its condition by more than 50%. Therefore, the Central point in promoting health is the promotion *of a healthy lifestyle.*

The concept of "healthy lifestyle" is primarily focused on a specific person. It involves identifying individual risk factors and developing specific programs to reduce potential harm to health, as well as changing the individual's attitude to the state of their own health and understanding health as a fundamental human value.

It should be noted that the science of a healthy lifestyle is relatively young, and the main research in this area is conducted abroad. Therefore, the terminology and classifications used in this textbook are not well established in the Russian-language literature.

The proposed training manual is compiled in accordance with the requirements of the Federal state educational standard-3++. In for the subject "Basics of a healthy lifestyle" and includes sections on individual and social aspects of health and healthy lifestyles, motivation to healthy life style issues, health checks and health groups. The textbook focuses on a detailed review of individual factors of a healthy lifestyle, with an emphasis on potential risk factors for the development of socially significant diseases and measures to prevent their negative impact on the human body. A separate section of the manual is devoted to the modern organizational, legal and functional foundations of health centers.

To improve the quality of mastering the discipline, the textbook provides basic concepts, control questions for independent training and self-control of students, and tasks for independent work in the course of AI instructor classes. All topics in the tutorial are considered sequentially and are designed for step-by-step assimilation of the material.

This manual will allow students to systematize and concretize their knowledge of the basics of a healthy lifestyle, which will allow future specialists not only to follow the healthy lifestyle themselves, but also to contribute to its formation in patients.

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INTRODUCTION

A serious victory over many infectious diseases, which marked the first half of the twentieth century, thanks to the development of vaccine prevention methods, and then the discovery of antibiotics, antiviral, antifungal and antiparasitic drugs, led to a significant increase in life expectancy.

However, the progress of medical science, along with the development of the benefits of civilization, brought humanity new diseases that, if they were known earlier, did not pose such a serious problem. First of all, we are talking about non-communicable diseases (cardiovascular, endocrine, oncological, etc.).

The development of agriculture and food industry has led to the elimination of hunger and at the same time to increase food availability, reduce the cost, the appearance of the freeze-dried processed products. Excessive nutrition is no longer a rarity. Industrialization and urban climate change have led to a change in the environmental situation.

Thus, non-communicable diseases, being the reverse side of the development of human society, are often referred to as "diseases of civilization". At the same time, the risk of their development varies, and depends not only on environmental, genetic factors, on progress in the field of medicine, but also on the behavior of a particular individual. That is why in recent years the paradigm of a healthy lifestyle as an integral part of preventive medicine has begun to take shape.

Like everything new, a healthy lifestyle is deeply rooted in the past. However, the philosophy of a healthy lifestyle began to take shape only in the second half of the twentieth century. It became clear that many non-communicable diseases are cheaper and easier to prevent than to treat later. In addition, there is an idea of the primary role of health preservation of each individual in the prevention of non-communicable diseases. Therefore, a healthy lifestyle is a certain cultural tradition of society, which is widely instilled in many foreign countries.

The growing interest in this problem all over the world is due to the fact that there has been an awareness of individual health as one of the basic values of society, and the prevention of many diseases is impossible without changing the way of life. Therefore, the Central point in preserving and strengthening both individual and public health is to create and maintain motivation to develop a healthy lifestyle and commitment to leading a healthy lifestyle.

CHAPTER 1. *HISTORY OF THE EMERGENCE AND DEVELOPMENT OF PREVENTIVE MEDICINE. PREVENTION AS ONE OF THE PRIORITY AREAS OF PUBLIC HEALTH PROTECTION.*

For a long time, ideas about a healthy lifestyle andPrevention of diseases were primarily related to hygiene. So, even in Ancient Egypt, China, and Greece, there was a set of household rules, largely fixed at the expense of religious laws. For example, the need to wash your hands, a number of rules for cooking can be found in the old Testament. Hippocrates pointed out that environmental conditions affect the development of diseases. He also believed that the doctor should direct the patient's regime
a person in such a way that it contributes to a speedy recovery. The birth of hygiene as a science is associated with the works of Hippocrates.

In Ancient Rome, special importance was given to sanitation as a direction in the prevention of diseases. Food quality control was introduced in the markets, and water pipes were built to supply entire cities with fresh water. Baths were actively built, and the cult of a clean body developed. In later years, glazed dishes were replaced with wooden and clay dishes, which was also a positive step in the field of sanitation. The development of the Christian religion in the VI-XIV centuries A.D. in Europe was accompanied by a decline in medical and preventive knowledge. The Church called for taking care of the purity of the soul, not the body. In many ways, the neglect of basic hygiene skills led to the development of epidemics of cholera, plague, and leprosy. It is characteristic that Paris in the Middle ages was called "Lutetia "(literally - "city of dirt"). In it, as in other European cities, all sewage and garbage were dumped directly into the street. In the 11th century ad, Avicenna (Abu Ali) lived and worked in the middle East in Persia. Husayn Ibn Abdallah Ibn Sina), who summarized the works known before him in the field of hygiene and sanitation. For the first time, he suggested using physical exercises for health improvement and treatment. Avicenna researched a number of diseases related to sexual health. He was the first to describe both the beneficial and harmful properties of wine, and suggested a treatment with honey and vinegar.

The change in attitudes to hygiene in Western Europe was associated with the development of capitalism in the XVIII-XIX centuries. At the end of the 19th century, hygiene began to develop as an experimental science. Thanks to the works of M. Pettenkofer and A.P. Dobroslavina, there are ideas that "prevention is more profitable than treatment." Experimental hygiene is based on chemical, physical and biological methods for studying soil, water, air, working conditions, etc., which allowed us to experimentally substantiate hygiene standards and to consider the influence of environmental factors on health in a practical way. F. F. Erisman became the founder of school hygiene at the end of the 19th century. He came to Russia from Switzerland in 1869, and in 1896 was forced to leave it because of his oppositional views. Yes totally and F. F. Erisman were the founders of domestic

hygiene. G. V. Khlopin, F. F.'s student Erisman, head of hygiene departments in three cities: Tartu, Odessa, Leningrad. Professor V. A. Uglov became the success or of G. V. Khlopin. One of the students Uglova was an academician of the Academy of medical Sciences of the USSR, Professor A. A. Minx. He is known as a General hygienist and as the founder of the departments of hygiene at the Leningrad dental and Moscow dental institutes. Minkh has published works in the field of air ionization, municipal, sports, school hygiene, and food hygiene.

F. G. Krotkov did a lot for the development of military hygiene and radiation hygiene. During the great Patriotic war, as the chief hygienist of the Soviet Army, he led the sanitary and hygienic support. He formulated the basic rules for the sanitary welfare of troops. In the 1960s and 1970s, Y. p. Lisitsyn developed ideas about the social determinants of health. He published fundamental works on the problems of public health and its conditionality, organization of medical care, social and hygienic aspects of psychology and bioethics. They first proposed the term "sanology"(health of healthy people). In 1990, I. L. Brechmann suggested using the term "valeology" instead of "sanology". However, currently the term "healthy lifestyle", borrowed from foreign literature, is more often used. Some authors believe that this term was first used by academician of the Academy of Sciences of the Ukrainian SSR N. M. Amosov. He proposed a systematic approach to health, considering that it is promoted by a regime of limited physical activity.

In the second half of the twentieth century, high-and middle-income countries experienced a change in the main causes of death, primarily due to the widespread use of antibiotics-chronic non-communicable diseases (NCDS), which include diseases of the circulatory system (CVD), oncological and chronic bronchopulmonary diseases, as well as diabetes mellitus, came to the fore

In the late twentieth and early twentieth centuries, malaria control and the introduction of effective antiviral drugs made a similar difference in low-income countries.

In Russia, NCDS are responsible for 75% of all adult deaths. At the same time, BSCS account for about 57%, and oncological diseases account for more than 14% of all deaths. The very high mortality rate and, consequently, the low life expectancy of the world's population are mainly due to CVD mortality, which is 3-6 times higher among people of working age than in the European Union.

The economic damage caused by these diseases alone is about $ 1 trillion. rubles per year (about 3% of GDP). The main reasons for this state of Affairs are the severe socio-economic shocks that took place in the world at the end of the twentieth century, as well as the insufficient development of measures for the prevention of NCDS.

The experience of a large number of countries has shown that the implementation of evidence-based preventive and curative measures can reduce the mortality rate from CVD and NCDS in General by two or more times within 15-20 years. At the same time, the contribution of preventive measures, which are significantly less expensive in comparison with therapeutic ones, determines success by more, than 50%. In particular, in 1970 Finland had the highest mortality

rate in the world from CVD, which was largely due to the widespread use of tobacco among the population, high fat content in food and low consumption of vegetables and fruits. In a large-scale comprehensive interventions , primarily oriented on prevention at the individual and population level, including the adoption of the law banning tobacco advertising, promotion limit consumption of animal fats and the provision of low fat dairy products and polyunsaturated fats, provides additional incentives for producers of healthy food, to achieve the greatest reduction of cholesterol and control high blood pressure (BP) among the population, the prevalence of these risk factors of chronic noninfectious diseases began to decline. Against this background, in parallel (with a delay of 3-5 years) there was a decrease in mortality, both from BSC and other NCDS. Currently, Finland belongs to the group of countries with the lowest levels of mortality from chronic noninfectious diseases and the highest life expectancy.

MAJOR INTERNATIONAL ORGANIZATIONS IN THE FIELD OF HEALTH

A number of international organizations deal with health issues. According to their organizational structure, they can be:

- Governmental – that unites different States at the official level. At the international level, such a role is played by organizations established under the UN.
- Non-governmental organizations that unite voluntary participants.

Table 1 shows only some of the organizations. The goals and objectives of these organizations are different. Among them, the main one is the world health organization.

Table 1. Some international organizations working in the field of health protection.

The name of the organization	**The Internet site**	**Main goals and objectives of the organization related to health protection**
I the world organization of health (WHO)	http://www.who.int	Coordination of programs in the field of health protection, generalizati on of world experience
United Nations development programme educational, scientific and cultural organization (UNESCO)	http://www.unesco.org	Formation Saving of health-preserving behavioral skills in students
United Nations children's Fund (UNICEF)	http://www.unicef.org	Protecting children's health and rights
International labour organization (ILO)	http://www.ilo.org	Health protection of employees

Red cross	http://www.icrc.org	Assistance to victims of military conflicts and other emergencies situations
The world medical Association	http://www.wma.net	Definition of standards of medical activity
World Bank	http://www.world - bank.org	Financing of health-related projects
Fund for population UN	http://www.unfpa.org	Ensuring equal rights of men, women and children to a healthy life
Joint United Nations programme on HIV/On AIDS (UNAIDS)	http://www.unaids.org	Prevention and treatment HIV prevention and treatment/AIDS prevention and control of the spread of HIV/AIDS

The world health organization is a key international organization working in the field of health protection. It deals with statistical issues in the field of health, a generalization of the world of scientific research, cooperation on health, with recommendations.

The history of who begins with the organization in 1839 of the Constantinople high Council of health, which was responsible for monitoring ships in the ports of Turkey to prevent the spread of plague and cholera. In 1851, an international sanitary conference on quarantine in the Mediterranean sea was organized in Paris, in which Russia also participated. In 1902, the pan – American sanitary Bureau (Washington, USA) was established, and in 1907-the Public hygiene Bureau for Europe (Paris, France). They were engaged in spreading information about infectious diseases. In 1923, the international health organization of the League of Nations (Geneva, Switzerland) began to work.

As an independent organization, who was established in 1945 (a decision of the United Nations conference), and in 1946 the Charter of this organization was adopted. The date of adoption of the WHO Constitution (April 7) is celebrated as "world health day".

Thanks to the efforts of who, a smallpox eradication campaign was carried out (the last case was in 1981). the malaria Campaign reduced the incidence by 2 times. An immunization program has been organized against six of the most significant infectious diseases. Who participates in the development of primary health care services, medical schools, and training courses.

There is a permanent who representative office in Russia, located in Moscow.

Security questions for self-training:

1. *What is the primary science for the "healthy lifestyle" category of medicine?*

2. *Which of the ancient scientists was the first to talk about hygiene?*
3. *What international organizations deal with health issues?*
4. *Who gave the name "healthy lifestyle".*
5. *What are the functions of the world Health Organization?*

CHAPTER 2.*TERMS AND CONCEPTS USED IN MEDICAL PREVENTION. DEFINITION OF THE CONCEPTS "PREVENTION", "MEDICAL PREVENTION". TYPES OF MEDICAL PREVENTION. ROUTINE CHECKUPS AND PREVENTIVE COUNSELING.*

Health is a state of complete physical, mental and social well-being, not just the absence of disease (according to the who Constitution)**.**

Who views health as a fundamental human right. All people should have access to essential health resources. Who suggests a distinction between personal and public health.

Personal health characterizes the state of an individual. This expression implies that a person can be healthy and able to work for a certain short period of time. However, it is not guaranteed against diseases if the conditions in its environment change.

Public health – the state of society as a whole. It is characterized by such indicators as birth rate, mortality, and average life expectancy.

Public health is a system of scientific and practical measures and structures providing them of a medical and non-medical nature, which is aimed at protecting and strengthening public health, preventing diseases and injuries, increasing the duration and quality of life and working capacity by combining the efforts of society.

A healthy lifestyle is a way of life that is aimed at preserving and improving people's health.

A healthy lifestyle means a change in the attitude of an individual and society as a whole to the state of personal (and through it, public) health. If an individual does not drink alcohol, does not smoke, does not use drugs, does physical education, then his chances of getting sick are reduced. If the society prohibits advertising alcohol and tobacco, then their consumption decreases. If the state is engaged in building sports facilities and promoting active sports, the number of people engaged in physical culture is growing. Thus, only a combination of individual and social activities can improve both personal and public health.

When talking about a healthy lifestyle, it should be understood that the problems of public (social) health are not the same in different countries, so various measures may be required to address them.

Quality of life - according to WHO, is the optimal state and extent to which individuals and the General population perceive how their needs (physical, emotional, social, etc.) are met and opportunities for achieving well-being and self-realization are provided.

Health promotion is a process that allows people to increase their health control, as well as improve it. According to the who concept, health promotion is the process of strengthening the control of society and individuals over ***the factors that determine health***, which should allow achieving sustainable results in its improvement.

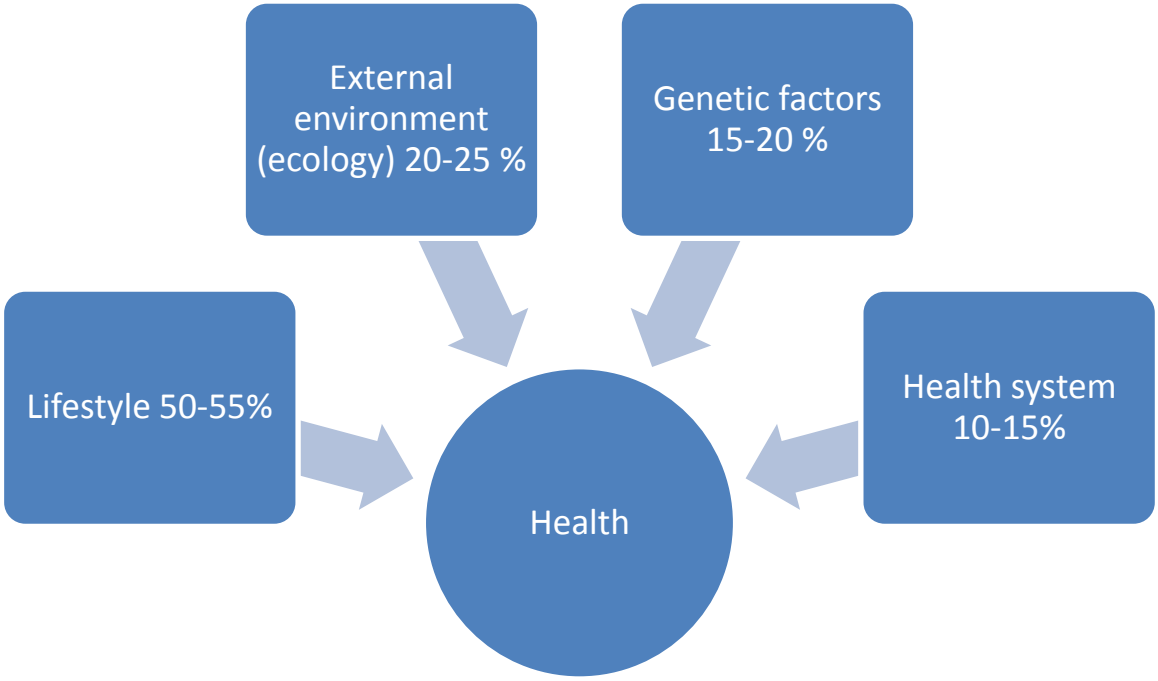


Figure 1. Factors and conditions that determine the health of the population.

The main objectives of programs aimed at promoting a healthy lifestyle are prevention.

According to the WHO definition,Prevention of diseases is measures aimed at preventing diseases: combating risk factors, immunization, slowing the development of diseases and reducing their consequences.

Table 2.The ratio of different types of prevention

	Individual	Group Service	Population structure
Primary			
Secondary			
Tertiary			

Medical prevention in relation to the population

(Forms of prevention)

1) individual-preventive measures are carried out with individual individuals,

2) group-preventive measures are carried out with groups of people who have similar symptoms and factors,

3) ***population (mass)*** - preventive measures that cover large groups of the population (population) or the entire population as a whole.

Distinguish between the following

Types of prevention:

1. Primary prevention – is aimed at preventing the development of diseases in healthy individuals.

2. Secondary prevention – conducted in individuals with risk factors to prevent development of a certain disease, and in patients with initial stage of chronic diseases, to slow the timing of disease progression, increase the time of remission

3. Tertiary prevention – it is intended for patients with chronic diseases. In the remission stage, it is carried out in order to reduce the number of relapses, their duration, severity, slow down the progression of the disease, and in the acute stage (manifestation). The main task of tertiary prevention is the speedy recovery of patients and social adaptation.

Rehabilitation (restoration of health) – a set of medical, psychological, and social measures aimed at eliminating or compensating for limited vital activity or lost functions. A synonym for the term "Quaternary prevention" used abroad.

Preventive medical examinations are a type of medical services aimed at identifying and evaluating the impact of various risk factors, deviations in health status and diseases in order to conduct subsequent health-improving activities.

Preventive counseling is the process of informing and educating the patient to increase their commitment to medical appointments and develop behavioral skills that help reduce the risk of disease (in the absence of diseases) and complications of diseases (in their presence).

Risk factors are potentially harmful factors of behavioral, biological, genetic, environmental, social, environmental and industrial nature that increase the likelihood of developing diseases, their progression, and an unfavorable outcome.

Security questions for self-training:

1. Define the concept of "health".
2. What types of health do you know (according to WHO)?
3. Define the concept of "healthy lifestyle".
4. Define the concept of "quality of life»
5. Define the concept of "health promotion".
6. Define the concept of "prevention".
7. Types of medical prevention?
8. Forms of medical prevention?
9. Describe the factors that affect human health.
10. What is called rehabilitation?
11. What is called a preventive medical examination?
12. Define the term "preventive counseling".

CHAPTER 3.*RISK FACTORS FOR THE DEVELOPMENT OF DISEASES: DEFINITION, CLASSIFICATION, PRACTICAL SIGNIFICANCE. DIAGNOSTIC CRITERIA FOR RISK FACTORS FOR CHRONIC NON-COMMUNICABLE DISEASES. SCREENING: DEFINITION, PURPOSE, AND TYPES.*

Usually, a *risk factor* is understood as a behavior pattern or other conditions associated with an increased probability of developing a certain disease or deterioration of health.

Who defines *a risk factor* as "any property or feature of a person, or any exposure to it, that increases the likelihood of developing an illness or injury. However, this definition does not describe the mechanism of action of risk factors.

The most complete definition is ***that of risk factors as elements of the social and natural environment, as well as features of human behavior and (or) the state of internal body systems that disrupt the action of compensatory and adaptive mechanisms, thereby contributing to the emergence and development of pathology.***

Classification of risk factors

There are several classifications of risk factors.

Who pays special attention to ***primary*** (such as: Smoking, alcohol abuse, poor nutrition, inactivity, psycho emotional stress) and ***secondary*** risk factors (impaired carbohydrate tolerance, arterial hypertension, dyslipidemia, allergic conditions, immunodeficiency). *Primary* risk factors usually relate to bad habits and depend on the people themselves, their behavior, their lifestyle and living conditions. But this group also includes factors caused by environmental pollution, burdened heredity, and unsatisfactory performance of the health service. Conditions that are classified as secondary are pathology (premorbid conditions).

Risk factors are also divided into:

- *external*, which are elements of the social and natural environment, and ***internal***, related to the peculiarities of human behavior or the state of the internal systems of his body;

- ***subjective***, depending on the behavior and condition of a person, and ***objective***, which do not depend on the person;

- ***obligate***, which provoke the development of pathology in more than 50% of people exposed to them, and ***optional***, which provoke the development of pathology in less than 50% of people exposed to them.

Also, risk factors are classified ***as correctable (managed),*** the impact on which is possible as a result of individual *or community prevention programs, and* ***uncorrected (unmanageable),*** which cannot be affected.

It should be noted that in economically developed countries, including Russia, most cases of premature deaths are associated with the same causes: cardiovascular diseases, malignant neoplasms, external causes of death, respiratory diseases, diseases of the digestive system. They have similar proven risk factors, which makes

it possible to build a unified strategy for the prevention and treatment of these diseases. These risk factors primarily include::

- high blood pressure,
- tobacco Smoking,
- alcohol abuse,
- increased blood cholesterol levels,
- overweight,
- low consumption of fruits and vegetables,
- physical inactivity,
-diabetes mellitus (an additional risk factor for cardiovascular diseases).

At the same time, each of the listed risk factors is usually common for at least two diseases. On the other hand, each disease is associated with at least, two of these risk factors.

Table 3.Main risk factors for non-communicable diseases and related pathologies (according to WHO)

Risk factor	***Disease***	***The level of reliability***
High blood pressure	Cardiovascular diseases	*High*
Tobacco Smoking	Chronic lung diseases , lung cancer	*High*
	Cardiovascular diseases	*Moderate*
Alcohol Abuse	Нарушения, связанные с Alcohol-related disorders	*High*
	External causes of death	*Moderate*
	Depressive mental disorders	*Limited*
Increase of level of cholesterol	Cardiovascular diseases	*High*
Overweight	Cardiovascular diseases	*High*
	Malignant neoplasms	*Limited*
Low consumption of vegetables and fruits	Cardiovascular diseases	*Moderate*
	Lung cancer	*Limited*
A sedentary lifestyle	Cardiovascular diseases	*Moderate*

These risk factors affect each person differently. The result of exposure is determined both by individual characteristics (heredity, gender, age, race and ethnicity, socio-economic status, etc.), as well as by the state of the health care system and the standard of living.

Risk groups are the part of the population that is more predisposed to various diseases.

In public health practice, it is customary to distinguish 5 groups of risk for health (for Y. P. Lisitsyn):

1. Groups based on demographic characteristics:
   - children;
   - elderly people;
   - single users;
   - widows, widowers;

– migrants and refugees.

2. Industrial and occupational risk groups: those working in industries that are harmful to health (heavy engineering, chemical and metallurgical industries, transport, etc.).
3. Risk group based on signs of functional or pathological condition:
   – pregnant women,
   – premature babies born with low body weight;
   – individuals with genetic risk, congenital anomalies, or defects;
   – disabled children.
4. Risk group based on low material standard of living, poverty, poverty:
   – poor, unsecured;
   – unemployed people;
   – persons without a specific occupation or place of residence.
5. Risk group of people with deviant behavior:
   – abusers of alcohol-containing products;
   – drug addicts;
   – substance abusers;
   – individuals with sexual disabilities.
   – persons with deformities of mental health and behavior (neuropathies, psychopathies, etc.).

Diagnostic criteria for risk factors for the development of chronic non-communicable diseases:

1. **Elevated blood pressure** - systolic blood pressure is equal to or above 140 mmHg, diastolic blood pressure is equal to or above 90 mmHg , antihypertensive therapy.
2. **Dyslipidemia** - abnormal one or more indicators of lipid metabolism (total cholesterol more than 5 mmol/l; cholesterol of high density lipoproteins in women is less than 1.0 mmol/l in men less than 1.2 mmol/l; cholesterol of lipoproteins of low density more than 3 mmol/l; triglycerides more than 1.7 mmol/l) or the holding of lipid-lowering therapy.
3. **Elevated levels of blood glucose** level fasting plasma glucose more than 6,1 mmol/l or conducting of hypoglycemic therapy.
4. **Tobacco Smoking**- daily Smoking of one or more cigarettes.
5. **Poor nutrition**- excessive consumption of food, fats, carbohydrates, consumption of table salt more than 5 grams per day (adding salt to cooked food, frequent use of salties, canned food, sausage products), insufficient consumption of fruits and vegetables (less than 400 grams or less than 4-6 servings per day).
6. **Overweight**- body mass index of 25-29.9 kg /m^2, obesity - body mass index of more than 30 kg / m^2.
7. **Low physical activity**- walking at a moderate or fast pace for less than 30 minutes a day.

8. **The risk of harmful alcohol consumption and the risk of using narcotic drugs and psychotropic substances** without a doctor's prescription is determined by a survey (questionnaire).

9. **The total cardiovascular risk** is determined if the citizen has no identified diseases associated with atherosclerosis.

To identify individuals with RF, screening is performed using simple and fast survey methods.

Screening is a public health strategy, a population survey aimed at identifying diseases in clinically asymptomatic individuals in the population, as well as the risk of developing diseases.

The goal of screening is early detection of diseases, which allows for an early start of treatment and a reduction in mortality. Screening studies should have sufficient sensitivity and an acceptable level of specificity.

There is a distinction ***between mass*** (universal) screening, which involves all people from a certain category (for example, all children of the same age) and ***selective screening***, used in risk groups (for example, screening of family members in case of detection of a hereditary disease).

To detect cases of tuberculosis, a skin tuberculin test (Mantoux test) is widely used.

Various screening tests are used for the earliest possible diagnosis of malignant neoplasms. Among the fairly reliable cancer-related screening tests:

- Test Vaginal Cytologyis used to detect potentially precancerous lesions and prevent cervical cancer;
- Mammography— to detect casesof breast cancer;
- Colonoscopy- to excludecolorectal cancer;

Security questions for self-training:

1. Define the concept of " risk factor»

2. What is a "risk factor" for WHO?

3. Classification of risk factors.

3. Risk groups identified in practical healthcare?

4. How is the monitoring of risk factors?

5. What are the diagnostic criteria for risk factors for chronic non-communicable diseases?

6. What is the definition of "screening"?

7. What types of screening do you know?

CHAPTER 4.*FEATURES OF PREVENTION IN DIFFERENT CATEGORIES OF THE POPULATION.*

Modern concepts of prevention presuppose, first of all, a differentiated approach to the organization and implementation of preventive measures, taking into account the age characteristics of the target group. The effectiveness of prevention is largely determined by the age at which it begins.

Features of prevention among children and adolescents

Prevention activities for children and adolescents consist of seven main priorities (who):

1. The health of mothers and newborns.
2. Ensuring a balanced diet.
3. Prevention of infectious diseases.
4. Providing an optimal physical environment.
5. The adolescent health.
6. Injury prevention.
7. Ensuring psychosocial development and mental health.

Let's take a closer look at these priorities.

Table 4. ***Features of prevention in different categories of the population.***

Stage and the result	Priority areas for the prevention
of D- I during childbirth: the birth of a healthy child	*D-I during pregnancy:* • the desired pregnancy • * ensuring the health of the mother; • quitting Smoking, alcohol, and psychoactive substances • * vaccinations against rubella and tetanus; * genetic counseling; • HIV prevention. *During pregnancy:* • early detection and treatment of complications • * monitoring of fetal health; • prevention of anemia * prevention of gestosis• * prevention of gestosis; • prevention and treatment of infections. *During and immediately after childbirth:* * obstetrician's assistance • * early detection and treatment of complications; • artificial respiration if necessary newborns • * caring for newborns; • providing breast-feeding; • early detection and treatment of complications in infants.

	newborns. * special attention to children with insufficient body weight, premature babies. *During the first month of life:* * immunization • * breast-feeding; • early detection and treatment of complications in pregnant women. newborns; * establishing trusting relationships with parents a newborn baby.
The first year of life: survival during the most vulnerable period	* breastfeeding for at least 6 months • * introduction of complementary foods according to age • * stimulation of communication and games • * vaccination; • prevention of eating disorders
Early childhood (up to 5-6 years): preparation- for school admission	• provision of a varied diet • * stimulation of communication and games • * vaccination • * regular deworming; • detection and treatment of visual and hearing disorders; • protection against environmental factors
Late childhood (up to 10-11 years): the beginning of puberty	• providing a varied diet • * promoting a healthy lifestyle; • injury prevention; • identification and treatment of visual and hearing disorders; • protection from bad habits; • training in reproductive health
Teen age Adolescence: a healthy adolescent	• promoting a healthy lifestyle that includes: ensure a healthy diet, optimal physical activity, prevention of bad habits, hygiene of the mouth; * postponing sexual debut; • training in reproductive health.
Throughout life	• creating a safe environment • * preventing injuries and violence; • vaccination.

Maternal and newborn health protection. The health of the mother largely determines the health of the newborn. During pregnancy, the following main measures are taken to protect the mother and fetus::

1. Provision of advice, provision of antenatal care.

2. Prevention of nutrient deficiencies (iron, iodine, folic acid, etc.) by their additional introduction into food in the form of vitamins or dietary supplements.

3. Limit (better - stop) Smoking and alcohol consumption.

4. prenatal diagnosis of the presence/absence of infectious diseases that may affect the health of the fetus (STIs, cytomegalovirus infection, hepatitis In, etc.).

5. Conducting a prenatal ultrasound evaluation of fetal development.

6. If necessary – conduct a genetic assessment of the risk of developing hereditary diseases.

Ensuring a balanced diet. Rational nutrition is the basis for the formation of the health of the mother and child. The first years of a child's life are crucial for normal physical and mental development. Young children are particularly sensitive to the effects of poor nutrition, as growth is more intense during this period than at any other time. After birth, mothers are advised about the need for breastfeeding. It is optimal if breastfeeding continues for at least 6 months, since all the necessary nutrients, including vitamins and minerals, the child receives with breast milk.

In order for breastfeeding to be successful and not cause difficulties, it is important to adhere to the following rules::

1. It is Necessary to explain to the mother that breast milk is the only product, unique in its biological properties, that provides the child with full nutrition and protection from infectious diseases.

2. You need to recommend mother:

* apply the baby to the breast within the first hour after delivery,
* make «skin-to-skin contact with the child;
* share a room/ward with your child.

3. it is Necessary to help the mother master the technique of proper application to the breast.

4. it is Necessary to recommend that the mother feed the child at his request, and not "by the hour"; night feeding is also recommended.

5. it is Necessary to explain to the mother that she does not need to introduce additional liquids (tea, juices) into the child's diet.

6. it is Necessary to recommend that the mother feed her baby exclusively with breast milk for up to six months, and then start introducing adequate complementary foods.

7. It is necessary to encourage breastfeeding to a year or more.

From the age of 6 months, it is necessary to introduce complementary foods in accordance with the following recommendations::

• it is necessary to choose the most appropriate time of day for introducing complementary foods (when the child is hungry or most predisposed to eating).);

• at first, you need to introduce complementary foods after breastfeeding;

• it is necessary to start introducing complementary foods with one teaspoon, gradually increasing to the full amount of food taken at a time;

• it is recommended to start with a homogeneous, moderate-density one-component puree made from the most typical products for this area (cereals, vegetable and fruit purees);

* you can add expressed breast milk to make it easier to get used to new foods;

• it is necessary to include in the diet foods rich in iron: liver, meat, fish, legumes to prevent iron deficiency anemia;

* try to avoid all types of tea and coffee;

* avoid drinking whole cow's or goat's milk before the age of 9 months, and introduce whole milk and low-fat dairy products into the diet from 9-12 months of age;

* complementary foods should have a certain caloric content;

* avoid adding sugar, spices, and salt to your food. If necessary, add salt to food, use only iodized salt.

From about the second year of life, the child is gradually transferred to food from the family table. During this period, it is very important to form the child's correct eating habits, lay down the principles of rational nutrition. Basic principles of healthy nutrition for a child over one year old:

• the child's daily diet should include a variety of foods, mostly vegetables and fruits, preferably fresh and locally sourced.;

* choose lean meats, poultry (without skin), fish, eggs, liver, and sometimes replace meat products with legumes: beans, peas, and lentils;

• the child should receive bread, cereals, pasta and potatoes several times a day;

• up to the age of two, the child can consume milk and dairy products of normal fat content. Subsequently, it is recommended to switch to dairy products with a reduced fat content.;

* only minimal amounts of salt and sugar are added to food. When salting, only iodized salt should be used;

• in the second year of life, the child is not recommended to give tea as a drink, preferably milk, plain water, vegetable and fruit juices;

* the recommended number of feedings is at least five times a day;

* food must be prepared in a safe and hygienic manner.

From an early age, prevention of oral diseases is carried out, which includes: a ban on constant sucking of pacifiers; a ban on sucking fingers; restriction of sugar consumption; ensuring oral hygiene; use of children's fluoride-containing toothpastes from 2.5-3 years of age; regular (at least once a year) visits to the dentist.

Prevention of infectious diseases. Prevention of infectious diseases in children, as well as in adults, is based on preventive vaccinations. At the same time, it is extremely important to ensure that all women of childbearing age are vaccinated against rubella.

Sanitary and epidemiological measures have a preventive value in relation to infectious diseases at the population level. Compliance with the rules of personal hygiene is an effective preventive measure for individuals. Therefore, it is important to train parents in proper hygienic care of the newborn. As children grow older, they are taught hygiene skills by both parents and health professionals.

At the beginning of puberty, adolescents are provided with measures aimed at protecting reproductive health, preventing abortions and STIs, which include: sex education of children before starting sexual relations; delaying sexual debut; forming a whole individual who is not interested in risky behavior; preventing unplanned pregnancy through the use of contraceptives, preferably condoms; providing support to single mothers.

Providing an optimal physical environment. The physical environment has a significant impact on the health status of children and adolescents. To reduce its negative impact, it is necessary to teach parents and children the following skills::

* boiling water before drinking it;

* washing vegetables and fruits before eating with boiled water;

• eat only those products that have not expired.;

* washing your hands after going outside, using the toilet, playing with Pets, before eating;

• ventilation of premises;

* avoiding smoke-filled rooms;

* avoid being near major streets and highways.

Physical inactivity has a significant negative impact on the health of children and adolescents. It is necessary that parents teach their children physical activity from an early age.

Adolescent health protection. In adolescence, a person's basic habits are formed. Therefore, it is important to pay special attention to the prevention of tobacco, alcohol and psychoactive substance use. Adolescents tend to reject information provided by adults. In addition, they are often unable to assess their health potential and the risk to it that may be associated with a bad habit. Therefore, many countries effectively implement peer– to-peer health promotion programs for adolescents – равному». At the same time, a limited group of teenagers (volunteers) is trained at the beginning, who then begin to communicate the information received to their peers under the supervision of medical professionals and psychologists.

Injury prevention. According to the results of statistical studies, 3-4 deaths out of 10 among children under 15 years of age are associated with injuries. The prevention of child injuries in everyday life is based on conversations with parents about the need for an injury-safe home (installing bars on Windows to prevent children from falling out, installing locks on the entrance door that cannot be opened by children, attaching vertically standing furniture to the walls).

Street injuries are largely preventable if children and their parents follow the rules of the road. Additional measures to protect children from injuries are helmets, knee pads, and elbow pads that they use when riding roller skates, bicycles, etc. reflective strips can be used to prevent road accidents. In adolescence, the likelihood of sports injuries increases. For their prevention, it is necessary to monitor the health status of adolescents before starting sports, as well as conduct classes with an experienced coach.

Ensuring psychosocial development and mental health. The main directions of prevention are, firstly, the earliest possible identification of children and adolescents at risk of deviant behavior and subsequent corrective work with them, and, secondly, Generale- preventive work on the formation of physical, mental and spiritual health, aimed at the entire population of children and adolescents.

One of the main requirements for preventive treatment is compliance with the principle *of cognitive adequacy*, that is, maximum compliance of forms and methods of ensuring psychosocial development and mental health with the specific features of age-related development of specific groups of children.

When working with children of preschool and primary school age, the greatest effect can be brought by the combined use of elements of various methods of psychological influence – art therapy, fairy-tale therapy, "classical" didactic methods and techniques, such as conversation, didactic games, as well as the method of group discussion and role-playing games adapted for the needs of preventive work.

The most optimal form of preventive work with adolescents and young people is an interactive training seminar. During classes on many topics, you should take into account the psychological difficulties of the audience when discussing intimate issues. To overcome these difficulties, it is important to encourage various types of discussions and apply various game techniques. During classes, it is advisable to use such technical techniques as «brainstorming», group discussion, role-playing games, and visual teaching methods.

Features of prevention among middle-aged people

In middle age, the main burden of chronic non-communicable diseases is realized at the expense of preventable diseases of four groups:

1. Cardiovascular diseases.
2. Oncological diseases.
3. Bronchopulmonary diseases.
4. Diabetes type 2 diabetes.

These diseases have four main risk factors associated with behavior::

1. Smoking and abuse of alcohol and other psychoactive substances.
2. Poor nutrition.
3. The lack of exercise.
4. Stress.

An important role in the prevention of chronic noncommunicable diseases in middle-aged people is assigned to the development of personal skills in people. They should include:

* optimize your diet and physical activity;
* stop or limit Smoking and alcohol consumption.

Preventive measures are carried out through education and training. The goal of such programs is to change the behavior of the individual.

The most important area of prevention among middle-aged people is the preservation of reproductive health and family planning. Family planning is considered today as a fundamental human right for the preservation of human dignity. For women, this is an opportunity to prevent unwanted pregnancies and complications of abortions. Men believe that the ability to plan the number and timing of children's birth allows them to provide a higher standard of living for their families. At the stage of pregnancy planning, a woman and her partner should be examined by specialists, get information about factors that may adversely affect pregnancy. The main goal is to give birth to a healthy child and preserve the health of the mother.

Counseling that helps women make their own reproductive health and family planning choices is crucial for choosing the right method of contraception. Counseling should be individual and take into account the needs of each couple.

Existing methods of contraception can be classified as follows:

I. Hormonal contraception (GC)

II. Intrauterine contraception (IUD))

III. Barrier contraception

IV. Chemical contraception (spermicides)

V. Natural methods of family planning

VI. Surgical contraception (sterilization)

VII. Methods of emergency contraception.

Features of prevention among elderly and senile people

According to who recommendations, the main directions of preventive measures for the elderly are (WHO):

* prevention and reduction of the burden of disability, chronic diseases and premature mortality;

* reduce risk factors for chronic non-communicable diseases;

* providing continuous care to people with chronic illnesses or disabilities;

* ensuring the safety and dignity of aging people;

* training of caregivers for the elderly.

The main problem for the elderly is disability, which leads to complete or partial loss of the ability to take care of themselves independently. Proven risk factors for developing disability include:

* depression;

• Smoking;

* low frequency of social contacts, social isolation;

* physical inactivity;

• restricted function of the lower extremities;

* dementia;

* increase or decrease in body mass index;

* blurred vision;

* low self-assessment of quality of life.

Also, a significant role in the development of disability can be played by:

* arterial hypertension;

• disorders of lipid metabolism;
* osteoporosis;
• type II diabetes mellitus;
* alcohol and drug abuse.

Maintaining physical activity plays a significant role in the prevention of disability in the elderly. Even minor physical activity can slow down the development of disability. In addition, physical activity helps slow the progression of chronic diseases. According to who, for the prevention of physical inactivity in the elderly, an invitation to participate in regular group physical education classes is most effective.

Security questions for self-training:

1. *What are the priority areas of prevention among children and adolescents?*
2. *What are the main directions of preventive measures to protect the health of the mother and newborn?*
3. *What are the main directions of preventive measures to protect the health of primary and school-age children?*
4. *List the main areas of preventive measures to protect the health of adolescents.*
5. *What are the optimal forms of preventive work with preschool and primary school-age children, teenagers, and young people?*
6. *Specify the specifics of prevention among middle-aged people.*
7. *What is the most important area of prevention among middle-aged people?*
8. *What methods are used for family planning?*
9. *What are the main directions of preventive measures for the elderly?*
10. *What are the proven risk factors for developing disability in the elderly?*

CHAPTER 5.*DISEASES OF THE CARDIOVASCULAR SYSTEM: SIGNIFICANCE, RISK FACTORS, PREVENTION. THE CONCEPT OF TOTAL RISK. SCORE SCALE.*

CVD is the leading cause of death in the population (contributing 57 % to overall mortality). According to official statistics, about 40 % of people in the world die in active working age (25-64 years). The mortality rate of working-age men from coronary heart disease (CHD) in Russia is more than 10 times higher than in France, and from cerebral stroke (MI) – 6 times.

CVD risk factors

Arterial hypertension (AH) – the most important CVD risk FACTOR, which mainly determines the high mortality rate in our country. The value of BP is considered as one of the elements of the system of stratification of total (total) cardiovascular risk, it is a determining one, due to its high prognostic significance and the most regulated variable.

A number of factors closely related to OJ contribute to the increase in blood PRESSURE: poor nutrition, Smoking, lack of FA, and psycho emotional overstrain. Hypertension develops 6 times more often in people who eat irrationally, abuse fatty and salty foods, alcohol, and have excessive MT.

There are two ways to deal with a high risk of infection: Blood PRESSURE – **non-drug** (correction of LV) and **drug therapy.**

Smoking. According to the world Health Organization, 23% of deaths from coronary heart disease are caused by Smoking, reducing the life expectancy of smokers aged 35-69 years, by an average of 20 years. Sudden death among people who smoke a pack of cigarettes or more during the day is observed 5 times more often than non-smokers.

Diabetes mellitus. With diabetes, CVD occurs 2-5 times more often than in people without this pathology. At the same time, there is a high risk of developing conditions such as coronary heart disease (CHD), myocardial infarction (MI), arterial hypertension (AH), and acute cerebrovascular accident (acvi). Thus, 69 % of DM patients have dyslipidemia, 80 % - hypertension, 50-75 % - diastolic dysfunction, 12-22 % - chronic heart failure (CHF). With a high level of evidence and a huge number of studies, the recommendations of the European society of cardiology and the European Association for the study of diabetes (EASC) present the following facts: an increase in the level of glycemia more than 8 mmol/l increases the risk of developing cardiovascular pathology by 2 times. At the same time, the highest mortality rate was observed in the group with elevated blood glucose levels 2 hours after eating (>11.1 mmol / l). While reducing this indicator by only 2 mmol / l reduced the risk of death in DM by 20-30 %. A similar 12-year study, which included 95,783 people, found that an increase in the level of glycemia to 7.8 % was accompanied by an increase in the risk of CVD by 1.58 times.

The excess body weight. Being overweight, especially obese, increases the risk of developing CHD and other diseases associated with atherosclerosis. To determine the presence of Central obesity, you can judge the waist circumference and the ratio of the waist circumference to the hip circumference. The risk of CVD increases in men with a waist circumference greater than 94 cm and especially increases in circumference more than 102 cm in women, respectively, with waist circumference more than 80cm and 88cm more. The ratio of waist circumference to hip circumference in men greater than 1.0 and in women greater than 0.85 is a more accurate indicator of the Central type of obesity.

Metabolic syndrome (MS). MS is characterized by an increase in the mass of visceral fat, a decrease in the sensitivity of peripheral tissues to insulin and insulin resistance, which cause the development of disorders of carbohydrate, lipid and purine metabolism, as well as hypertension. The prevalence of MS in the population is 20-40 %. This symptom complex is more common in middle-aged and older people. MS is associated with subclinical damage to target organs, which manifests itself in decreased renal filtration function, microalbuminuria, increased arterial stiffness, left ventricular (LV) myocardial hypertrophy, diastolic

dysfunction, increased LV cavity size, and thickening of carotid artery walls. The presence of MS in a patient allows us to classify him as a high-risk group for developing atherosclerosis, CVD, and type II diabetes: the risk of CVD, CHD, and type II diabetes is 34, 29, and 62% in men and 16, 8, and 47% in women, respectively. People with MS also have a higher cardiovascular mortality rate.

The criteria for MS

Main feature: Central type of obesity (from>94 cm in men and >80 cm in women).

Additional criteria: hypertension (BP>140/90 mmHg); increased levels of TG (>1.7 mmol/l); decrease in level of cholesterol-HDL (<1.0 mmol/l in men, <1.2 mmol/l in women); increase of level of cholesterol-LDL (>3.0 mmol/l); fasting hyperglycemia (glucose in blood plasma fasting>6.1 mmol/l) (glucose in blood plasma through 2 hours after the glucose load in the range of>7.8 to<11.1 mmol/l).

The presence of any two additional criteria in a patient with the main sign of MS (Central type of obesity) is the basis for the diagnosis of MS.

The abuse of alcohol. The relationship between alcohol consumption and mortality from ischemic heart disease has the following character: a non-drinking and especially drinking a lot, the risk is higher than moderate drinkers (up to 30 g per day in terms of "pure" ethanol for men and half for women, or approximately 70 g of vodka, 250 ml of dry wine or 2 small beer for banks). Higher doses are dangerous. Despite the fact that moderate doses of alcohol have a positive effect on the risk of CHD, other effects of alcohol (increased blood PRESSURE, risk of stroke and sudden death, cirrhosis of the liver, impact on psychosocial status) do not allow us to recommend it for the prevention of CHD. In addition, you should also take into account the high caloric content of alcohol, especially for overweight people. When" burning "1 g of ethanol, 7 kcal is formed, i.e. almost twice as much as when" burning " proteins and carbohydrates.

Physical activity (FA). People with low physical activity develop CVD 1.5-2.4 (on average 1.9) times more often than people who lead a physically active lifestyle. Walking at a brisk pace for half an hour a day can reduce the risk of cardiovascular -cdisease by about 18 % and stroke by 11 %. Running for at least an hour every week can reduce the risk of CVD by 42 %.

High physical activity contributes to weight loss or prevents the occurrence of overweight and obesity, it is associated with lower LDL and triglyceride (TG) levels and higher HDL levels, as well as lower blood PRESSURE and greater insulin sensitivity.

Psychosocial factors. These factors include: acute and chronic stress (at work and in family life), low social support (social isolation), low socio-economic status, negative emotional States, including anxiety and depression. The listed psychosocial factors , among 9 other RFS, determine the incidence of MI Psychosocial factors significantly burden the clinical course of CVD, significantly reduce patients ' adherence to treatment and implementation of non-drug recommendations for the correction of OJ, worsen the quality of life of patients, increase the risk of disability and health care costs. Adrenergic stimulation, which

occurs during psychological stress, can increase the need for oxygen in the myocardium and increase myocardial ischemia. In addition, during psychological stress, vasoconstriction occurs, especially in atherosclerotic arteries, which leads to a decrease in oxygen delivery to the myocardium. Catecholamines also promote thrombosis by increasing coagulation, which may play a role in blood clot formation, atherothrombosis, or destabilization of existing atherosclerotic plaques.

Genetic factors. Genetic information can be divided into three categories: family history, phenotype, and genotype. All three types of information are important for identifying patients at high risk for CHD who may need appropriate interventions.

The great importance of family history as a risk factor for CHD HAS been established in a large number of studies. The risk of developing CHD increases 1.5-1.7 times in the case of early manifestation of CHD or CVD in relatives of the first degree of kinship (in men <55 years and in women Burdened CHD heredity is a classic independent risk FACTOR. The higher the risk of CHD, the closer the degree of kinship. It is maximal in the presence of a burdened medical history in relatives of the first degree of kinship (parents, children, siblings), and decreases in relatives of the second degree of kinship (grandparents, aunts and uncles) and the third degree of kinship (cousins). The risk of CHD increases as the number of CHD patients in the family increases and at an earlier age of manifestation of CHD in relatives. The next of kin of patients with early-onset CHD should be screened for RF. Family members who have several cases of CHD should be advised to modify the LV and, if necessary, prescribe medication to correct RF.

CVD risk assessment

Assessment of total (total) cardiovascular risk is crucial for choosing a preventive strategy and specific interventions in patients who, as a rule, have a combination of several RF.

Total risk assessment methodology

The SCORE risk scale assesses the risk of any fatal complications of atherosclerosis, whether it is death from CHD, MI, or ruptured aortic aneurysm, and not just the risk of death from CHD, as many other risk calculators do. The SCORE scale evaluates the risk of all fatal cardiovascular events .

It is known that at a young age, the absolute risk of death from CVD within the next 10 years is very low, even in the presence of multiple RF, which can be disorienting for both doctors and patients. In this regard, in addition to the SCORE scale, which measures absolute risk, a relative risk scale has been created, which demonstrates that in young individuals, the correction of RF allows:

1) significantly reduce relative risk;

2) reduce the inevitable increase in absolute risk with age.

This scale measures relative risk, not absolute risk.

Technology for using SCORE scales

1. The Russian Federation is a country with a high risk of CVD. Use the version of the scales for high-risk CVD countries.

2. Select the column corresponding to the patient's gender and Smoking status.

3. The number in the cell corresponds to the 10-year cumulative risk of death from cardiovascular disease. The risk of less than 1% is considered low, within>1 to 5 % – increased, within> > 5 to 10 % - high,>>>10 % - very high.

4. if you are dealing with a young patient with a low total risk, use the relative risk scale in addition. The relative risk scale is not extrapolated to the patient's age and gender. otherwise, the technology of its use is similar to that of the main SCORE scale: find the cell corresponding to Smoking status, CCS and SBP levels.

SCORE scale: 10-year risk of death from CVD in high-risk populations, calculated based on age, gender, Smoking, SAD, and CCS. The scale is not intended for individuals with proven CVD of atherosclerotic origin, type II and type I diabetes, CKD, and individuals with very high levels of individual RF; their total risk is automatically considered VERY HIGH and HIGH and requires intensive correction.

Risk assessment with SCORE – what else to keep in mind:

SCORE scales do not replace a doctor's knowledge and clinical experience. So, many older people, especially men, have an increased risk of SCORE due to age and gender. This should not lead to excessive pharmacotherapy. At any age, women have a lower risk than men. This should not be misleading, as more women than men end up dying from CVD. Women's risk begins to increase about 10 years later.

The scale SCORE is not used in patients with proven CVD of atherosclerotic (coronary artery disease, TSVB, aortic aneurysm, atherosclerosis of peripheral arteries), diabetes type I and II with the defeat of target organs chronic kidney disease, in individuals with very high levels of individual FR, persons aged over 65 (these groups of individuals have a very high CC risk) and citizens under the age of 40 years, as regardless of the presence of the DF (except for very high levels of individual FR) they have a low risk of CVD on the scale.

The total CC risk may be higher than on the SCORE scale and the relative risk scale in individuals:

● overweight or obese people, especially young people with abdominal obesity, with low physical activity (sedentary work);

● the socially disadvantaged;

● with diabetes: the SCORE scale should only be used in patients with type 1 diabetes without damage to target organs (the risk increases with increasing blood sugar concentrations);

● low HDL cholesterol, high triglyceride levels, especially in combination with familial hypercholesterolemia;

● with a proven atherosclerotic lesion of the carotid arteries, but without clinical manifestations of cerebral circulatory insufficiency;

● with moderate to severe chronic kidney disease [glomerular filtration rate (GFR) <60mL / min/1.73 $m2^2$];

● with a family history of early CVD development in the next of kin.

Assessment of total cardiovascular risk is a key position, since the level of total risk determines the choice of a preventive strategy and specific interventions.

Features of cardiovascular prevention in women

There is a view that women, due to their gender characteristics, are relatively protected from CVD and that this problem is less relevant for them than for men. In fact, this is not the case. Medical statistics show that more women than men die from cardiovascular diseases, including in our country (a significant percentage of men die from external causes). The risk of CVD begins to increase in women about 10 years later, and women die from CVD at an older age than men. Women are slightly more likely than men to die from CHD, and MI is much more likely to die from MI. Women have worse survival rates after acute coronary syndrome (ACS), in particular, the mortality rate of women from the first MI is higher than in men. Women have a higher mortality rate and a poorer quality of life after myocardial revascularization operations, especially coronary artery bypass grafting (CABG). The recent decline in CVD-related deaths in Western countries affects men more than women. Moreover, taking into account the aging population, the incidence of CVD in women has actually increased, especially in the older age groups. Pre-menopausal women do have a lower risk of developing CVD than men, as the SCORE scale clearly demonstrates. Hormones that regulate the menstrual cycle, primarily estrogens, obviously protect women of the reproductive period (except for those who suffer from diabetes) from CHD and CVD. But after the onset of menopause, the cardiovascular risk increases dramatically and differs little from that of men of the same age.

In General, the epidemiology of CVD and cardiovascular RF in women follows the same laws as in men, but some features should also be taken into account.:

–the use of oral contraceptives further increases the risk of CVD in women who smoke;

- the level of total cholesterol in women reaches its maximum at the age of about 60 years, i.e. about 10 years later than in men;

- Diabetes in women significantly increases the risk of death from CVD to a greater extent than in men;

- in middle and old age, women are more likely to be obese, in addition, elderly women are more likely to have isolated systolic hypertension;

- deviations from the normal course of pregnancy (preeclampsia, placental abruption, or infarction) are markers of an increased risk of CVD in the future.

It should be noted that women are in a less advantageous position compared to men at almost all stages of the cardiovascular continuum. To begin with, the evidence base for the effectiveness of various types of preventive interventions, primarily pharmacotherapy, is much more modest for the female population than

for men. This is because many clinical trials involved relatively small numbers of women. A number of studies have shown that the effectiveness of therapy may depend on gender. It is necessary to take into account the lower level of CAUTION of both health professionals and women themselves regarding CVD. Women tend to ignore pain and other signs of heart disease, postpone doctor visits, checkups, and treatment, and as a result, medical care may be delayed. All this leads to the fact that often the quality of preventive care for women is inferior to that of men.

In accordance with current recommendations, it is necessary to pay close attention to the prevention of CVD in women. In practice, you should pay attention to the following important aspects::

1. Doctors should assess the overall risk of CVD in women. For young women, you should use the SCORE relative risk tables, because a low absolute risk can mask a high relative risk, which will turn into an absolute risk with age. Correction of RF will help to avoid this, and in this age group, modification of the coolant is preferred, rather than pharmacotherapy.

2. the Principles of risk assessment and management tactics for men and women do not differ, but in the female population, special attention should be paid to age (the risk is higher after 50-55 years), Smoking, excessive MT, taking oral contraceptives, and the state of carbohydrate metabolism.

3. postmenopausal Hormone replacement therapy does not always lead to a reduced risk of CVD and should be administered early after the onset of menopause.

4. Pregnant or planning to become pregnant women should not be prescribed classes of cardio protective drugs such as ACE inhibitors and ARBS.

Cardiovascular prevention in children and adolescents

It is known that the origins of many diseases lie in childhood and adolescence, and their prevention is most easily and effectively carried out during this period. This fully applies to CVD.

Atherosclerosis – is a very early-onset disease. The first signs of atherosclerosis – lipid spots and stripes (early precursors – atherosclerotic plaques – ASB) appear in the aorta in early childhood, up to 10 years, lipid spots in the coronary arteries appear later, in adolescence, and real ASB begin to form by 13-19 years. In this regard, it is obvious that prevention of atherosclerosis should be started as early as possible and especially actively carried out in adolescence, when behavioral habits that determine the life expectancy of an adult are formed. The PDAY study showed that in 15-year-old adolescents who died from injuries, accidents, etc., the severity of atherosclerotic vascular damage was closely related to the unfavorable profile of traditional RF. Children may have the same classic ΦРCVD risk FACTORS as adults – hypertension, Smoking, inactivity, hereditary burden of premature CVD development in the next of kin, excessive MT and obesity, dyslipidemia, and carbohydrate metabolism disorders; moreover, their prevalence is growing worldwide. The life expectancy of a significant part of the population has changed in such a way that children's outdoor games are replaced

by long hours spent in front of the TV and computer, and even in combination with popular "unhealthy" products-chips, fast food, sweet drinks, etc. It is estimated that fifty years ago, children spent 600 kcal more per day than their current peers. As a result, the prevalence of obesity among children and adolescents is increasing, which has led to an increase in the incidence of type II diabetes, which was previously extremely rare in pediatric practice. In addition, there are also specific RFS of CVD that are detected mainly in children, such as a previous Kawasaki disease or intrauterine fetal growth retardation.

Cardiovascular prevention in children, as in adults, is based on risk stratification.

Screening of children in relation to the following FRS is recommended :

Burdened family history. It is necessary to assess the presence of major RF AND premature development of CVD in the child's parents and grandparents (this information should be regularly updated).

Overweight and obese. Height, MT, and BMI should be evaluated at each examination.

Arterial hypertension. Starting with 3-clet, blood PRESSURE should be measured at each examination.

Poor nutrition and insufficient FA. Relevant questions should be asked at each examination.

Smoking. At each examination, the Smoking status of parents and family members living with the child should be evaluated; starting from 9-10 years, this question should be asked to the child himself.

Starting from the age of 2 years, fasting blood lipids should be determined in children and adolescents when::

- parents, grandparents of the child have (or had) some signs of coronary heart disease, damage to brain vessels, peripheral vessels before the age of 55 years;

–when one of the parents at a young age (up to 50-55 years) has ever been found to have an increased TC (>240 mg/l or 5.2 mmol/l);

–when the child has other ΦРCVD risk FACTORS – hypertension, obesity, diabetes.

-HDL-C in children should be more than 0.9 mmol / l,Tg-less than 1.7 mmol/l).

Thus, the children's population is the most successful target for early prevention of CVD. Algorithms for primary prevention in children and adolescents are largely similar to those in adults and are also based on individual risk stratification, but should take into account the physiological characteristics of children.

Security questions for self-training:

1) Principles of active cardiovascular prevention.
2) CVD risk factors.
3) Assessment of total cardiovascular risk (absolute and relative).

4) *Calculation method and risk assessment on the SCORE scale.*
5) *Priority patient groups for CVD prevention.*
6) *Main goals and strategy of cardiovascular prevention.*
7) *Features of CVD prevention in women.*
8) *Cardiovascular prevention in children and adolescents.*
9) *CVD-screening by children*

CHAPTER 6.*DIABETES MELLITUS: SIGNIFICANCE, RISK FACTORS, PREVENTION.*

Diabetes mellitus (DM) **- this is a group of metabolic (metabolic) diseases characterized by hyperglycemia, which develops due to absolute or relative insulin deficiency and is also manifested by glucosuria, polyuria, polydipsia, lipid disorders (hyperlipidemia, dyslipidemia), protein (dysproteinemia) and mineral (for example, hypokalemia) exchanges and the development of complications.**

Type I diabetes is a chronic disease caused by absolute insulin deficiency due to insufficient production of insulin by the pancreas (pancreas), leading to persistent hyperglycemia and the development of complications. The predominant age is children and teenagers. A separate group of type I diabetes is represented by patients who developed it at the age of 35-75 years and who are characterized by the presence of autoantibodies to various antigens of the pancreatic islet. Taking into account the peculiarities of the clinical course of this type of diabetes and the presence of cytoplasmic and other antibodies in the blood serum of such patients, it was called latent type I diabetes. It is characterized by a slow deterioration of the metabolic profile and the presence in the blood serum, in addition to cytoplasmic antibodies, autoantibodies to glutamate decarboxylase.

Type II diabetes is a chronic disease caused by relative insulin deficiency (reduced sensitivity of insulin-dependent tissue receptors to insulin) and manifested by chronic hyperglycemia with the development of characteristic complications. The prevailing age is over 40 years. The predominant gender is female. Risk factors – genetic and obesity. The disease is characterized by the presence of two fundamental pathophysiological defects: insulin resistance and insufficient beta-cell function to overcome insulin resistance by increasing insulin levels.

The term "prediabetes", traditionally used in the English-language literature, combines such conditions as impaired fasting glycemia (5.5–6.9 mmol/l), impaired glucose tolerance (7.8–11.0 mmol/l) and metabolic syndrome, according to the criteria of the Third National cholesterol education program.

The diagnosis of "metabolic syndrome" is established with a combination of three or more criteria, which include::

- visceral obesity, noted when the circumference of the abdomen (waist) is exceeded.) for men>102cm, for women>>88cm;

-hypertriglyceridemia (>1.7 mmol / l);

- reduction of HDL cholesterol (in men<1.0 mmol / l, in women);

–blood pressure level>135 / 85mmrt. St. or taking > antihypertensive drugs;

–at the level of venous plasma glucose>6.1 mmol/l.

Risk factors for type 1 diabetes

The role of heredity in the development of immune-mediated type 1 diabetes is well known. The risk of developing this form of diabetes clearly depends on the presence of certain histocompatibility antigens (B8, B15, DR3, DR4, etc.) in the patient.

● Viral infections (rubella viruses, Coxsackie B, mumps). Most important are viral infections that the child carries in utero (a relationship has been established between the development of DM1 and congenital rubella-this is the only environmental factor that is clearly associated with type 1 diabetes mellitus).

● Nutrition factor (for example, early introduction of cow's milk into the child's diet). This may be due to the effect of cow's milk protein, which is part of milk formulas, as well as the functional immaturity of the gastrointestinal tract of an infant, which does not allow providing a reliable barrier to foreign protein.

Another predisposing factor is stress. Its role in the development of type 1 diabetes is not so obvious. The phenomenon of transient (i.e. transient) hyperglycemia (increased blood glucose levels) in children under severe stress is described.

Risk factors for developing type 2 diabetes

Heredity.

● age 45 years and older. Although type 2 diabetes can occur at any age, the vast majority of patients develop it after the age of 40. Moreover, as the age increases, the incidence of type 2 diabetes increases.

● prediabetes – a violation of the indicators of the level of glucose in blood on an empty stomach, impaired glucose tolerance;

● arterial hypertension.

● both overweight and obese (body mass index greater than 25 kg/m2) – in addition to BMI indicators, a high waist circumference indicator (measured under the lower edge of the ribs above the navel) is a risk factor for developing type 2 DIABETES.

● diabetogenic nutrition – the role of systematic overeating and abuse of fast food products in the development2 of type 2 diabetes is well known. However, the qualitative composition of food is also essential. Increased accumulation of fatty acids in the pancreatic islets leads to accelerated apoptosis in beta cells, and other mechanisms of lipotoxicity are also possible. A low intake of dietary fiber, a significant excess of the required daily calorie requirement, and a high glycemic load can predispose to the development of diabetes.;

● polycystic ovary syndrome ;

● cardiovascular diseases of atherosclerotic origin;

● increased blood triglyceride levels (≥2.82 mmol / l) and decreased high-density lipoprotein levels (≤0.9 mmol/l);

previous gestational diabetes (GDM) – diabetes that first appears during pregnancy or the birth of a child weighing more than 4 kg.;

● habitually low physical activity;

● clinical conditions associated with severe insulin resistance (for example, severe obesity, black acanthosis – hyperpigmentation of the skin);

● sleep disorders – sleep duration of less than 6 hours or more than 9 hours may be associated with an increased risk of developing diabetes;

● diabetes induced by medications or chemicals that promote hyperglycemia or weight gain:

- nicotinic acid
-glucocorticoids
–oral contraceptives
-thyroid hormones
- alpha and beta adrenomimetics
- beta-blockers
-thiazides
–wacor
- alpha-interferon, etc.

● depression-some studies have shown an increased risk of developing type 2 diabetes in individuals with depression;

● low socio-economic status – the Association between SES and the severity of obesity, Smoking, CVD and diabetes is shown;

intrauterine disorders-individuals with both a high birth weight (>4000g) and a low adult weight (>2500g) have an increased risk of developingtype 2 diabetes. Children born prematurely, regardless of weight, may also have an increased risk of developing type 2 diabetes in adulthood.;

The presence of the above factors should encourage a person to regularly undergo an examination to control blood glucose levels:

● 1 every 3 years, all people aged 45 years and older should be examined; people who are overweight or obese and have another risk factor;

● 1 time per year – people with prediabetes in the past.

Risk factors for gestational diabetes

Risk factors for developing gestational diabetes (diabetes mellitus that first appears during pregnancy) are divided into high-risk factors and medium-risk factors.

High-risk factors include:

● obesity (body mass index≥25kg / m22);

● heredity (whether first-line relatives have type 2 diabetes);

● gestational diabetes mellitus or other carbohydrate metabolism disorders in the past;

* glucosuria (the presence of glucose in the urine) during this pregnancy.

Medium risk factors include:

● women over 30 years of age;

● birth of a child over 4kg or stillbirth in the past;

● the birth of children with congenital malformations in the past;

● "habitual" miscarriage (two or more spontaneous abortions in the 1st and 2nd trimesters);

● rapid weight gain during a given pregnancy;

* polyhydramnios during this pregnancy.

Prevention of type 1 diabetes mellitus

The causes of type 1 diabetes are not definitively clear, so its prevention can be discussed in General terms.

Prevention of type 1 diabetes should include:

● prevention of viral diseases,

● natural breastfeeding up to 1-1. 5 years. There is evidence that replacing breast-feeding with cow's milk is associated with an increased risk of T1DM in a number of populations, and cow's milk antigens can act as inducers of the autoimmune process to islets Langerhans, served as the basis for the implementation of a program for the prevention of type 1 diabetes as a result of the exclusion of cow's milk from the diet,

● stress management skills,

● commitment to a rational (natural) diet.

Prevention of type 2 diabetes

Primary prevention of DM includes measures that identify risk factors for the development of the disease and influence them, which helps to reduce the incidence and prevalence of the disease.

Primary prevention measures for type 2 diabetes include:

● detection of early carbohydrate metabolism disorders,

● manage the pre-diabetes (and obesity) is of paramount importance, as it allows to slow down the transformation of early disorders of carbohydrate metabolism in type 2 diabetes (primary prevention of type 2 diabetes) and promptly to establish the diagnosis of type 2 diabetes (secondary prevention), as individuals with the prediabetes and obesity for a long period of time that precedes the manifestation of type 2 diabetes are under the supervision of medical personnel and receive in a timely manner and in full with all necessary assistance,

● weight loss in overweight individuals,

● increased physical activity,

● eliminate Smoking,

● limit the intake of alcoholic beverages,

● a balanced diet.

Primary prevention measures should be aimed at identifying conditions associated with impaired glucose regulation and conducting non-drug interventions. The main interventions should be measures to reduce body weight and increase physical activity. Assessment of blood glucose levels in such patients, for timely detection of diabetes, is recommended to be carried out annually.

There are several groups of disorders, biological and behavioral risk factors, in the presence of which early disorders of carbohydrate metabolism can be detected in patients.

Risk group for detecting early disorders of carbohydrate metabolism. These include:

- leading a sedentary lifestyle,
- people with obesity (in particular abdominal obesity),
- hereditary burden of diabetes (first-degree relatives suffering from diabetes),
- with impaired lipid metabolism (hypertriglyceridemia, low HDL cholesterol),
- with arterial hypertension,
- fatty liver disease,
- polycystic ovary syndrome,
- men with erectile dysfunction,

individuals with clinical signs of atherosclerosis (CHD, stroke, intermittent claudication),

- re-infections of the skin,
- history of gestational diabetes,
- birth of a child weighing more than 4.5 kg,

Non-drug correction of early violations carbohydrate metabolism

1. Prevention of dm2 should begin with convincing the patient of the need for lifestyle modification.

2. Carrying out long-term programs of active preventive interventions with the aim of gradual weight loss by 5-7 % (0.5-1.0 kg per week).

3. Conduct screening tests to identify other CVD risk factors and provide medical care for their correction.

4. testing for the presence of diabetes mellitus in people with prediabetes at least once a year (the choice of diagnostic test is at the discretion of the doctor).

5. Informing the patient about the need for independent regular monitoring of body weight or waist circumference.

There are several methods of preventing and correcting early carbohydrate metabolism disorders, including lifestyle changes and the use of antihyperglycemic drugs.

The diet should be based on several principles, namely::

- Meals should be fractional: 5-6 times a day in small portions, preferably at the same time.

- You should eat complex carbohydrates (cereals, fruits, vegetables) that are rich in dietary fiber.

- It is necessary to reduce the content of simple, fast – acting carbohydrates in the diet- sweets, pastries, sweet carbonated drinks, desserts.

–Eating a large amount of fiber. The food should be rich in plant fiber. These are various types of cabbage, carrots, radishes, green beans, rutabagas, bell peppers, eggplants, etc., unsweetened fruits.

- Restriction of saturated fat intake (At least 2/3 of the total amount should be vegetable fats. You should eat low-fat varieties of meat and fish in boiled, baked and stewed form, but not fried.

- Limit salt intake to 3 g per day due to the high risk of arterial hypertension.

- Restriction of alcohol consumption, taking into account the high caloric content and negative impact on the liver (<30 g /day).

- Complete exclusion of fast food products.

- Increase the intake of proteins, including vegetable ones.

- Reducing the caloric content of food to 1500kcal/day.

- Modification of eating behavior.

Eating disorders are one of the main causes of obesity. There are the following **types of eating disorders:**

1. Emotiogenic ("binding" emotional discomfort):

● compulsive eating behavior;

● the syndrome of "food at night»;

● seasonal affective disorder.

2. External (increased reaction to external stimuli to eat: the type of food, food "for company", constant snacks, etc.).

3. Restrictive (chaotic self-restrictions in food intake, "dietary depression").

Causes of the formation of eating disorders:

■ genetic characteristics of the regulation systems of appetite (lack of serotonin etc.);

* improper upbringing in childhood (food is a means of encouragement, reward, comfort, the main regulator of child behavior and enjoyment);

* personality traits (low stress tolerance, poorly controlled emotionality, tendency to anxiety-depressive reactions, alexithymia).

Examples of recommendations for patients to correct their eating behavior:

● Buy products from a pre-made list.

● Avoid places and situations that provoke eating.

● Do not go grocery shopping when you are hungry.

● When buying products, read the labels.

Every time you eat, ask yourself, "do I Really want to eat?»

● Find ways to relax other than eating (walking, showering, music, talking on the phone, autogenic training, etc.).

Recommendations for physical activity

■ Obese patients are encouraged to engage in low to moderate levels of physical activity, such as walking, Cycling, rowing, or swimming. For the elderly, 30-45 minutes of daily walking is enough. The intensity of exercise is determined by the patient's age, initial physical activity, and General condition. Adequate daily physical activity is recommended, taking into account their tolerability, the state of the cardiovascular system and the level of blood pressure, and until the heart rate reaches 65-70 % of the maximum for this age. The maximum heart rate can be calculated using the formula: 220 – age in years. For patients with IHD, the exercise regimen is selected individually, taking into account the results of the exercise test.

■ If weight loss is the main goal of a physical activity program, daily aerobic activity is appropriate. It should be remembered that the utilization of 3,500 calories "burns" approximately 450 grams of fat.

Physical activity levels can be assessed using simple questionnaires and pedometers.

Secondary prevention of diabetes mellitus is aimed at diagnosing and preventing the progression of the disease. The measures of secondary prevention of diabetes mellitus include, first of all, all the listed recommendations for primary prevention, early diagnosis and control of the disease, medical supervision and special measures, the main of which are as follows::

● the diagnosis of diabetes;

● a healthy diet with a restriction of easily digestible carbohydrates, which allows you to maintain a normal body weight;

● sufficient age-and condition-appropriate physical activity;

● conduct primary assessment and treatment;

● when diet therapy is ineffective, the use of oral hypoglycemic agents;

● in case of insufficient effect of diet therapy and sulfonamide therapy, timely transition to insulin therapy;

● maintain continuous clinical monitoring to achieve optimal glycemic and metabolic control;

● normalization of lipid metabolism and blood PRESSURE in case of their violation;

● teach people with diabetes, their families and loved ones self-monitoring and self-help techniques.

Tertiary prevention is aimed at preventing and inhibiting the development of complications of diabetes. its main goal is to prevent disability and reduce mortality.

In modern conditions, the system of dispensary diabetological service should provide an opportunity for each patient to maintain a state of stable compensation of the disease in order to prevent late specific complications of

diabetes. This is possible only if self-monitoring of the disease is introduced into healthcare practice. In this regard, every patient with DM (in young children – parents) should be trained in the method of self-control in a special school for patients with DM. Consequently, the current problem of the modern diabetological service is the deployment of a network of such schools throughout the country. In recent years, our country has been very active in creating such schools.

Security questions for self-training:

1. *DM, basic concepts (type 1 diabetes, latent diabetes, type 2 diabetes, gestational diabetes, "prediabetes", metabolic syndrome)?*
2. *Risk FACTORS for the development of type 1 and 2 diabetes, gestational diabetes?*
3. *Risk group for detecting early disorders of carbohydrate metabolism?*
4. *List the types of eating disorders*
5. *Name the reasons for the formation of eating disorders.*
6. *Give examples of recommendations for patients to correct their eating behavior.*
7. *What are the recommendations for physical activity?*
8. *What principles should the diet be based on for DM2?*
9. *Secondary prevention of type 2 diabetes?*
10. *Tertiary prevention of DM 2?*

CHAPTER 7.*CHRONIC KIDNEY DISEASE: SIGNIFICANCE, RISK FACTORS, PREVENTION.*

Chronic kidney disease (CKD) is the presence of any markers associated with kidney damage that persist for more than three months, regardless of the nosological diagnosis.

Markers of kidney damage are any changes detected during a clinical and laboratory examination that reflect the presence of a pathological process in the renal tissue.

Diagnostic criteria for CKD:

1. Elevated albuminuria (persistent increase in urinary albumin excretion> 30 mg / >day or 3 mg /mmol) or the ratio of albumin to urinary creatinine> 30 mg / >day, pathological changes in urinary sediment (proteinuria, erythrocyturia, cylindruria, leukocyturia).
2. Changes in the electrolyte composition of blood and urine caused by tubular disorders.
3. Structural disorders detected by radiation methods (kidney abnormalities, cysts, hydronephrosis, changes in the size and shape of the kidneys, etc.).
4. Pathological changes in kidney tissue found in the study of nephrobioptata.
5. An isolated reduction in GFR <60 ml/min/1.73 m^3.

Normal renal function is considered GFR> 90 ml / min, reduced-GFR ><90 ml / min/1.73^{m3} (for persons 65 and older, GFR in the range of 60-89 ml / min/1.73^{m3} is considered as a variant of the age norm.

Epidemiology of CKD

At the turn of the twentieth and twenty-first centuries, the world community faced a global problem that is not only of medical, but also of great socio-economic importance – a pandemic of chronic non-communicable diseases, which annually claim millions of lives, lead to serious complications associated with disability and the need for high-cost treatment. Among them, kidney diseases occupy an important place due to their significant prevalence in the population, a sharp decline in the quality of life, high mortality of patients, and lead to the need for expensive methods of end – stage replacement therapy-dialysis and kidney transplantation.

At the same time, the development of medical science and pharmacology in the late twentieth century laid the Foundation for the development of new highly effective and affordable prevention methods that can significantly slow down the progression of chronic kidney diseases, reduce the risk of complications and treatment costs. Such approaches have proven to be applicable to the vast majority of patients with renal pathology, regardless of its cause.

Risk factors

There are groups of risk factors:

1) increasing the susceptibility of the renal parenchyma to damaging agents;
2) initiating the damage of renal tissue;
3) contributing to the progression of kidney damage;
4) factors of end-stage renal failure that are important for solving prevention issues in patients receiving renal replacement therapy.

Epidemiological studies indicate that **Smoking** is a dose-dependent risk factor for GFR reduction and the appearance of microalbuminuria. At the same time, the negative impact of Smoking on the condition of the kidneys occurs in both men and women. This effect is most pronounced in hypertensive smokers.

It is well known that high levels of dietary **sodium chloride** intake are clearly associated with the development and progression of hypertension, which in turn is an important determinant of kidney and heart damage. High salt intake increases the effects of angiotensin II and aldosterone. However, the damaging effect of a high-salt diet on target organs is not limited to the effect of sodium chloride on systemic and intrarenal hemodynamics; it can be realized by mechanisms that are not directly related to an increase in blood pressure. It has been shown that with a significant content of sodium chloride in the diet, the expression of an important profibrogenic cytokine – transforming growth factor-increases in the endothelium of the kidneys and aorta. Current evidence suggests that a daily sodium intake of <2.4 g should be recommended for patients with

CKD and those at risk for CKD (which corresponds to

Dyslipoproteinemia, obesity, and metabolic syndrome. Hyperlipidemia worsens the prognosis of any kidney disease, and lipid-lowering therapy contributes to the preservation of kidney function. However, only recently has the attention of researchers been drawn to the study of the relationship between dyslipoproteinemia and the functional state of the kidneys in individuals without primary pathology of this organ. Epidemiological studies have shown that hypercholesterolemia, hypertriglyceridemia, and low values of high-density lipoprotein cholesterol are predictors of decreased renal function in the General population of relatively healthy people.

Overweight and obesity are associated with many hemodynamic and structural changes in the kidneys, which are preceded by a number of metabolic disorders. People with these disorders have a higher risk of developing CKD and end-stage renal failure than the General population. In overweight and obese patients, microalbuminuria is more often detected, and in this category of individuals with pre-existing kidney disease, the growth rate of albuminuria and the progression of renal dysfunction outstrip those in the group of non-obese patients. Diabetic nephropathy, hypertensive nephrosclerosis, focal and oxalate nephrolithiasis are the most common nephrological and urological diseases in the population of obese people.

The likelihood of developing CKD increases when several risk factors are combined. This position is clearly confirmed in the case of metabolic syndrome. It turned out that the significance of the metabolic syndrome, as one of the potential conditions for the appearance of CKD, is most significant in relatively young (younger than 60 years) people.

Currently, drug-induced nephrotoxicity is becoming an important factor in the initiation and progression of CKD **drug-induced nephrotoxicity**. Potentially dangerous drugs for the kidneys include numerous painkillers and anti-inflammatory drugs that are widely used in neurology, rheumatology, surgery, radiopaque substances, a number of antibiotics, and diuretics. Many of these drugs are freely available in pharmacies, advertised in the media, and therefore taken without control. Patients with impaired renal function have a dramatically increased risk of adverse treatment events and unpredictable drug interactions. Especially significant in this regard are the consequences of the continuous increase in the number of radiopaque procedures. The available data clearly indicate that even short-term transient deterioration of renal function after the introduction of x-ray contrast is associated with a worsening of renal and cardiovascular prognosis and an increase in the overall mortality rate.

Some dietary supplements (Thai herbs, "fat burners", nutritional mixtures for building muscle mass) adversely affect the condition of the kidneys. In elderly patients with severe atherosclerosis, a sharp decrease in renal function can be caused by drugs from the ACE inhibitor group, which are widely prescribed for arterial hypertension and heart failure. The risk of this complication is especially high in people who sharply limit their water intake or take uncontrolled diuretics.

Prevention of chronic kidney disease

The primary prevention of CKD is based on the elimination or minimization of risk factors for its development in accordance with the principles of evidence-based medicine. An important area of prevention and treatment of CKD is the correction of lifestyle and dietary patterns in order to fully influence the modifiable risk factors for the development and progression of CKD.

Patients who are overweight should be advised to correct their body weight by changing the caloric content of the diet, sufficient physical activity, and limiting salt intake.

No less significant in the prevention of CKD is the restriction of alcohol consumption and the exclusion of Smoking (a dose-dependent risk factor for lowering GFR and the appearance of microalbuminuria).

Rehabilitation of chronic foci of infection.

Important in preventing the development and progression of CKD gets complex measures to prevent drug nephrotoxicity – wide informing patients about the dangers of self-medication, refusal of uncontrolled analgesics, antibiotics, food additives, etc., the careful selection of a doctor of medicines to prescribe to their patients with CKD and its risk groups, monitoring of indicators of renal function when the need for this category of persons Radiocontrast studies.

It is necessary to inform not only patients, but also the entire population about important components of a healthy lifestyle that are directly related to kidney health (popular print publications, radio, television, and the Internet).

Approaches to primary prevention of CKD are inseparable from measures for its screening and identification of risk factors. Screening for CKD should be understood as an early diagnosis of both CKD itself and its risk factors (RF). The primary prevention of CKD is based on clinical observation of representatives of risk groups, development of individual medical recommendations for the control of modified risk factors and monitoring their implementation.

Patients with CKD or risk factors for CKD should be monitored for GFR and albuminuria / proteinuria at least once a year.

Current guidelines from the national kidney Foundation (KDOQI) recommend evaluating GFR and the presence of proteinuria for CKD screening. To exclude / confirm the diagnosis of CKD, both studies are needed, since each of them can exist independently. It is recommended that all individuals with diabetes should be screened annually for albuminuria and serum creatinine. In patients with hypertension, it is recommended to conduct a urine test and serum creatinine, a urine test for albumin is not mandatory.

Clinical guidelines for screening

1. Patients with hypertension, diabetes, cardiovascular diseases, and a family history of kidney disease should be screened annually for kidney disease.

2. Screening for CKD can be carried out in other patients with a high risk of developing CKD:

a) with persistent hematuria (after excluding other causes, for example, a

urological disease);

b) recurrent urinary tract infection or urinary tract obstruction;

c) for systemic diseases that may affect the kidneys (for example, human immunodeficiency virus, systemic lupus erythematosus, hyperuricemia, multiple myeloma).

3. CKD Screening includes urinalysis and assessment of glomerular filtration rate (GFR).

4. Patients with diabetes mellitus with negative protein in the urine (tested by the test strip method) should be checked for micro albuminuria (MAU) using an MAU-sensitive test strip or measuring the ratio of micro albumin to creatinine in the morning portion of urine.

Table 5.Stratification of CKD stages by GFR level in adults

Designation	Characteristic of kidney function	The level of GFR
C1	High optimal	>>90
C2	Slightly reduced	60-89
C3A	Moderately reduced	45-59
C3B	Significantly reduced	30-44
C4	Sharply reduced	15-29
C5	End-stage renal failure	<15

Although CKD is asymptomatic in the early stages, however, as early as stages 1 to 3, reduced GFR and albuminuria are associated with mortality, cardiovascular disease, fractures, bone loss, infections, cognitive impairment, and bone fragility. The prevalence of cardiovascular disease increases from 6% in patients without CKD to 36% in patients with stage 3 CKD.

Secondary prevention of CKD should simultaneously be aimed at slowing the rate of CKD progression (reno protection) and preventing the development of cardiovascular pathology (cardio protection). Reno-and cardio protection is a two-pronged task that requires a comprehensive approach, since progressive decline in kidney function and the development of cardiovascular complications are closely interrelated, and each of these factors is crucial for the overall prognosis.

Cardiovascular complications are the leading cause of death in patients with CKD, while renal dysfunction and albuminuria are major cardiovascular risk factors.

Common causes (arterial hypertension, disorders of carbohydrate, fat, purine, calcium-phosphorus metabolism, etc.) and mechanisms of progression (e.g. , Hyper-activation of the renin-angiotensin-aldosterone system, expression of inflammatory mediators and factors of fibrogenesis) of renal and cardiovascular system gives grounds to highlight methods of prevention, non-pharmacological and drug treatment with dual positive effect: Renon- and cardioprotective, which is important for patients with CKD. These include a low - salt diet, the fight against

obesity and Smoking, correction of carbohydrate metabolism disorders, treatment with drugs that suppress the renin -angiotensin-aldosterone system (ACE inhibitors, angiotensin receptor blockers, renin inhibitors), statins, some calcium antagonists and drugs that improve microcirculation.

The effectiveness of new treatments for patients with CKD should be evaluated primarily by their impact on the combined outcome, including the development of CRF and cardiovascular complications.

Table 6.The focus of practical measures for the prevention and management of chronic kidney disease, depending on its stage

Stage	Recommended activities
Presence of CKD risk factors. C 1	Regular screening of CKD, measures to reduce the risk of its development
C 2	Stage 1 events + Assessment of the rate of progression and correction
C3A - C3B	Stage 2 activities + Detection, prevention and treatment of systemic complications of renal dysfunction (anemia, dyselectrolytemia, acidosis, hyperparathyroidism, protein-energy malnutrition)
C 4	Activities for stage 3 + Preparation for renal replacement therapy
C 5	renal Replacement therapy + Identification, prevention and treatment of systemic complications of renal failure (anemia, disorders of water-electrolyte, calcium-phosphate balance, acidosis, hyperhomocysteinemia, protein-energy deficiency).

Security questions for self-training:

1. *What is CKD?*
2. *What are the markers of kidney damage?*
3. *What are the criteria for diagnosing CKD?*
4. *What new highly effective prevention methods allow you to significantly reduce the risk of complications and treatment costs?*

5. *What groups of risk factors are identified in CKD?*
6. *List the main risk factors for CKD.*
7. *What are the clinical guidelines for screening?*
8. *What are the stages of CKD in terms of GFR in adults?*
9. *What is secondary prevention of CKD?*
10. *List the main practical measures for the prevention and management of chronic kidney disease, depending on its stage*

CHAPTER 8.*DISEASES OF THE BRONCHOPULMONARY SYSTEM (CHRONIC OBSTRUCTIVE PULMONARY DISEASE, BRONCHIAL ASTHMA): RISK FACTORS, PREVENTION.*

The most common forms of respiratory diseases are acute diseases: acute respiratory viral infections, acute bronchitis and pneumonia.

Under the General name "chronic respiratory diseases", a number of serious diseases are combined. These include: bronchial asthma, chronic obstructive pulmonary disease, occupational lung diseases, and pulmonary hypertension.

There are 4 main stages in the development of chronic non-specific lung diseases: a threat situation with the presence of risk factors; pre-illness; a detailed clinical picture of the disease; and complications of the disease.

Prevention of respiratory diseases

Depending on the state of health, the presence of risk factors for the disease or a pronounced pathology, two types of prevention are considered: primary and secondary.

Primary prevention (medico-social, active)

In the implementation of primary prevention tasks, an important place is occupied by the activities of medical institutions, where the General practitioner actively monitors the condition of healthy people through preventive and periodic medical examinations. At the same time, a standard questionnaire survey of the patient allows you to identify risk factors and symptoms of cnid, including AD and COPD, and a spirometric study clarifies the diagnosis, assesses the severity of the course and the degree of disease control.

In the departments and offices of medical prevention institutions, patients receive individual recommendations and training in the basics of healthy lifestyle, and the correction of risk factors for CNID, including chronic AML, is carried out, which is productive for the purposes of their prevention in both healthy and sick people.

Secondary prevention

The most effective method of secondary prevention is medical examination as a comprehensive method of early detection of diseases.

Chronic obstructive pulmonary disease (COPD) – a disease characterized by a violation of ventilation function in an obstructive type, partially reversible, which usually progresses and is associated with an increased chronic inflammatory

response of the lungs to the action of pathogenic particles or gases. In some patients, exacerbations and comorbidities may affect the overall severity of COPD. Traditionally, COPD combines chronic bronchitis and emphysema.

Table 7.Risk factors for COPD

Probability of factor values	External factors	Internal factors
Installed	–Smoking. - Occupational hazards (cadmium, silicon)	-A1-antitrypsin deficiency
High	–ambient air pollution (especially $SO2_2$, $NO_{, NO2,O3}$). –Other occupational hazards. - Poverty, low socio-economic status. -Passive Smoking in childhood	–Prematurity. - High level of IgE. Bronchial Hyper-reactivity. - Family nature of the disease
Possible	-Adenovirus infection. - Vitamin C deficiency	-Genetic predisposition [blood type A (II), no IgA]

The GOLD (GlobalInitiative for Chronic Obstructive Lung Disease) international guidelines address such COPD risk factors as: inhalation exposure, bronchial hyperreactivity, genes, gender and age, infections, socio-economic status, and lung growth and development.

Inhalation effects

Smoking. The chance of developing symptoms increases with the number of cigarettes you smoke per day. It is necessary to calculate the Smoking person's index (IR). So, IR exceeding 120 (the number of cigarettes smoked per day, multiplied by the number of months in the year during which a person smokes) it is a significant risk factor for COPD. There is another calculation formula: IR (batch-years) = number of cigarettes smoked per day, multiplied by years of Smoking experience, divided by 20. At the same time, IR>10 is a significant risk factor for COPD development.> The age of Smoking initiation, its duration, the quantity and quality of Smoking, and the social status of the smoker can serve as prognostic signs of COPD.

The role of passive Smoking. The Association of passive Smoking with the development of respiratory symptoms in children is proven. Maternal Smoking during pregnancy with an intensity of 10 cigarettes a day increases the risk of developing COPD in adulthood in her children by an average of 70 %.

Both active and passive Smoking are risk factors for COPD. The main consequence of the development of COPD as a result of tobacco Smoking is an

increase in the rate of natural decline in lung function, which is expressed in a decrease in FEV1 over the course of life.

According to the conducted studies, from 17 to 63% of all respiratory diseases are caused by occupational and environmental factors. Common and most dangerous поллютантамиenvironmental pollutants are diesel fuel combustion products, motor vehicle exhaust gases (sulfur dioxide, nitrogen and carbon dioxide, lead, carbon monoxide, benzopyrene), industrial waste – black soot, fumes, formaldehyde, etc.. Adverse weather conditions (fog, precipitation, low and high air temperatures, changes in wind speed) increase the toxic effect of aerosols on the respiratory tract. COPD of professional origin can be caused by prolonged exposure to dust of inorganic and mixed origin: coal, silicon-containing, many types of plant dust, and cadmium smoke. Most often, COPD develops in miners, metallurgists, grinders and polishers of metal products, electric welders, workers in the pulp and paper industry and agriculture. In recent years, special attention has been paid to the appearance of respiratory symptoms in connection with the violation of the ecology of the home. Home air pollution from the combustion of organic fuel in heating appliances, burning from cooking in insufficiently ventilated areas is considered a risk factor for COPD. For our country, the influence of the cold factor on the development of COPD is especially relevant, since most of the population lives in conditions of prolonged exposure to the cold factor.

Deficiency of α1-antitrypsin is the basis of the body's antiprotease activity and the main inhibitor of neutrophil elastase. The effects of Smoking are especially harmful in patients with a deficiency of α1-antitrypsin, which affects the manifestation of COPD symptoms in them approximately 10 years earlier (compared to normal).

Growth and development of the lungs. A large study has confirmed a positive correlation between a child's body weight at birth and FEV 1 in adulthood.

Infections. A severe childhood respiratory infection can lead to reduced lung function and more frequent respiratory symptoms in adulthood. Tuberculosis has been found to be a risk factor for COPD.

Socio-economic status. There is evidence that the risk of developing COPD is inversely related to socio-economic status.

Gender and age. Emphysema and other types of COPD in women develop at an earlier age and are accompanied by more pronounced lung damage. With the same Smoking rate, women report more severe respiratory symptoms than men and poorer self-reported health outcomes. In addition, with an increase in the cumulative dose of Smoking, women showed more deterioration in lung function. This may be due to the increased response of women's Airways to external influences, which is also due to the different volume geometry of the lungs in women.

To implement primary COPD prevention, it is necessary to::

● involve not only smokers but also non-smokers in anti-nicotine programs, in order to identify signs of developing COPD caused by various risk factors;

● draw public attention to the problem of developing COPD, which is a serious disease that leads to disability;

● increase public awareness of the harmful effects of risk factors, primarily tobacco smoke, and the need to control the content of harmful substances in the air;

● promote a healthy lifestyle;

● to form public opinion on the need to prioritize the solution of problems related to people's health;

● draw the attention of business leaders to the need to create smoke-free jobs;

● inform the public about effective methods of examination of the bronchopulmonary system and treatment of its pathologies;

● identify the true prevalence of bronchopulmonary diseases among the population, in groups of smokers and non-smokers;

● draw the attention of health authorities to the need for further development of the pulmonology service in the country.

Due to the fact that in 80-90% of cases, the development of COPD is associated with Smoking, the main direction of prevention should be to prevent the onset of Smoking and stop it.

To reduce the harmful effects of air and industrial pollutants on public health, increase labor efficiency, reduce morbidity, ensure medical and technological safety, and extend the professional longevity of the population, it is necessary to::

● practical application of scientific data in the field of preventive medicine and experience in eliminating a number of socio-hygienic and biomedical risk factors;

● implementation and persistent application of strict legally permitted methods of control of air in the workplace;

● intensive and continuous education of employees who are exposed to professional influences, managers, health workers of the enterprise, General practitioners and legislators;

● inform employees and business leaders about how Smoking contributes to occupational diseases and why efforts to reduce Smoking are important.

Screening groups:

–**screening should** be carried out in patients who smoke, as well as in patients who have smoked in the past and have certain clinical signs of COPD;

-**spirometry should** be performed in patients with shortness of breath that does not correspond to the level of exercise, frequent episodes of acute bronchitis associated with upper respiratory tract infection, sleep disorders associated with coughing and shortness of breath, General decreased performance, increased fatigue and a decrease in the load threshold due to shortness of breath.

Secondary prevention

It should be based and conducted on the assumption that COPD is a progressive disease, especially if exposure to pathogenic agents continues. Stopping their influence and, if possible, earlier, even if the patient already has a

significant decrease in the air flow rate, can lead to some improvement in lung function and even slow down the progression of the disease.

To prevent the progression of the disease, it is necessary to start treatment of mild and moderate COPD as early as possible, including the removal of risk factors and careful monitoring of symptoms with medication, and medical follow-up.

For the purpose of secondary prevention, it is necessary to appoint a doctor and follow an adequate COPD treatment plan, which includes four components::

1) assessment and monitoring of clinical manifestations of the disease;
2) reduction (termination) of exposure to risk factors;
3) prevention and treatment of exacerbations;
4) continuous treatment of stable COPD.

Principles of treatment for stable COPD

1. The amount of treatment increased with increasing severity of disease. Its reduction in COPD, in contrast to AD, is usually possible.

2. Drug therapy is used to prevent and reduce the severity of symptoms, complications, frequency and severity of exacerbations, increase exercise tolerance, and improve the patient's quality of life.

3. None of the available medications affects the rate of decline in functional patency, which is a hallmark of COPD.

4. Bronchodilators are Central to COPD treatment.

They reduce the severity of the reversible component of bronchial obstruction. These tools are used either on-demand or on a regular basis.

5. IGCs are indicated for severe and extremely severe COPD (with FEV1 less than 50% of the required value and frequent, usually more than 3 in the last 3 years or 1-2 exacerbations in 1 year) exacerbations that are treated with oral steroids and antibiotics. These drugs are prescribed in the absence of an effect from a properly selected bronchodilator therapy.

6. Combined treatment with inhaled glucocorticoids long-acting b2-adrenomimetics have a significant additional effect on lung function and clinical symptoms of COPD compared to monotherapy with each of the drugs. The greatest impact on the frequency of exacerbations and quality of life was obtained in patients with COPD with FEV1 less than 50 % of the required level.

These drugs are preferably administered in the form of an inhaler containing the fixed combination.

7. Long-Term use of glucocorticoids in tablets is not recommended due to the risk of developing systemic side effects.

8. Physical training programs that increase exercise tolerance and reduce the severity of shortness of breath and fatigue are highly effective at all stages of COPD.

9. Long-Term administration of oxygen (more than 15 hours per day)to patients with respiratory failure increases their survival.

Getting vaccinated

In order to prevent exacerbations of COPD during epidemic outbreaks of influenza, it is recommended to use vaccines containing killed or inactivated viruses, administered once in October – the first half of November annually (reduces the severity of the course and mortality in patients with COPD by 50%).

Pneumococcal vaccine (23 virulent serotypes) - data on its effectiveness in COPD are insufficient, but COPD patients are considered to be at high risk of developing pneumococcal infection and are included in the target group for vaccination.

Rehabilitation services

Rehabilitation is a disciplinary program of individual assistance to patients with COPD, which is designed to improve their physical and social adaptation.

Components of rehabilitation:

1. Physical training (walking, increasing endurance and strength, Cycling Ergometer, lifting dumbbells 0,2-1,4 kg).
2. patient Education (energy-saving technologies – how to breathe, cough, and wash properly).
3. Psychotherapy.
4. Rational nutrition: a high-calorie diet with a high protein content and dosed physical activity that has an anabolic effect.

Bronchial asthma (BA) is a chronic inflammatory disease of the respiratory tract that involves many cells and cellular elements.

Key provisions:

● the development of bronchial asthma is associated with a complex effect of internal and external factors;

* internal (innate) factors determine the genetic predisposition of a person to the occurrence of bronchial asthma, atopy, and bronchial hyperreactivity and today remain unmanageable;

● external factors are numerous and manageable, directly triggering the manifestation of bronchial asthma or causing its exacerbation. The main ones include exposure to allergens, mainly viral infections, diet, Smoking, and the socio - economic status of the family;

● exposure to allergens and respiratory infections is the most common factor responsible for the onset and exacerbation of asthma in children.

All known and suspected risk factors for bronchial asthma are divided into two groups: internal and external.

There are factors that contribute to the development of bronchial asthma – **INDUCERS** and factors that provoke an exacerbation of an existing disease- **TRIGGERS**.

The table 8.Factors that contribute to the development of asthma (inducers).

Factors	Description
1.Internal factors	1.Genetic predisposition to atopy 2. Genetic predisposition to bronchial hyperreactivity. 3. Gender (in childhood, AD develops more often in boys; in adolescence and adulthood-in women) 4.Obesity
2.Environmental factors	**1.Allergens** 1.1.Indoor: house dust mites, pet hair and epidermis, cockroach allergens, fungal allergens. 1.2.Outdoors: plant pollen, fungal allergens. **2.Infectious agents (mainly viral)** **3.Occupational factors** **4. Aeropollutants** 4.1. External: ozone, sulfur and nitrogen dioxides, diesel fuel combustion products, etc . 4.2. Inside the home: tobacco smoke (active and passive Smoking). **5. Diet** (increased consumption of highly processed foods, increased intake of omega-6 polyunsaturated fatty acids and reduced intake of antioxidants in the form of fruits and vegetables and omega-3 polyunsaturated fatty acids in fatty fish varieties).

Endogenous factors

Genetic predisposition

At least three groups of genes are known to be responsible for controlling allergic sensitization and total IgE levels (atopic genes), bronchial lability (bronchial hyperreactivity genes), and the development of inflammation (eosinophilic inflammation genes). Sensitization is controlled mainly by genes linked to HLA alleles.

Paul

In the early and preschool years, bronchial asthma is more common in boys than in girls. With age (older than 10 years), the difference in the frequency of bronchial asthma between boys and girls decreases gradually. In girls with obesity and especially early onset of puberty, bronchial asthma is more common. Anatomical and functional differences in the structure of the bronchial tree are erased. With the onset of puberty and in the future, bronchial asthma occurs more often in girls than in boys.

Obesity. It was found that patients with bronchial asthma and obesity often have gastroesophageal reflex disease, which negatively affects the course of the disease.

External factors

Allergens

Home allergens. House dust allergens are the most important factor inducing the onset of bronchial asthma, especially in infants. There are many types of house dust mites adapted to survive in various conditions (from the genus Dermatophagoides and the genus Euroglyphus). Ticks usually infest carpets, mattresses, and upholstered furniture. Domestic warm-blooded animals are sources of allergens that are present in their saliva, urine, fur, and exfoliated epithelium. Sensitization to allergens of cats, dogs and rodents is most common. Allergens can include fluff, feathers, and bird feces. It should be borne in mind that the sources of these allergens can be down and feather (including bedding). Sensitization to cockroach allergens is currently recognized as a significant risk factor for the development of bronchial asthma.

The role of household allergens can be played by mold and yeast fungi. The best place for fungi to grow is in dark, humid and poorly ventilated areas. The most common indoor fungi are Penicillium, Aspergillus, and Alternaria.

The reason of development of pollen bronchial asthma can be allergens of trees and shrubs (birch, alder, hazel or hazel, willow, oak, chestnut, poplar, ash, elm, etc.), grasses (mostly wild – Timothy, hedgehog, ryegrass, fescue, foxtail, bluegrass, bonfire, Wheatgrass, rarely cultivated: rye, buckwheat, wheat etc.), weeds (goosefoot, ragweed, dandelion, hemp, nettle, wormwood, Buttercup, etc.), etc.

In infants, food allergies are more important in the development of skin, gastrointestinal, and respiratory symptoms than inhaled allergies.

Mechanical and chemical factors – pollutants, irritants. Cause increased sensitivity to hypertension and bronchial hyperreactivity, especially against the background of physical activity (pairs irritants; tobacco smoke; wood, cotton and metal dust; industrial aerosols; pollutants , a nitrogen oxide, nitrogen oxides, carbon monoxide, formaldehyde etc.

Industrial chemicals. The main indoor pollutants are nitric oxide, carbon monoxide and dioxide, and formaldehyde. Sources of pollutants are gas stoves, stove heating, low-quality construction and finishing materials, which emit harmful volatile organic compounds (volatile organic compounds VOC).

Tobacco Smoking

When Smoking, a number of components of tobacco smoke (carbon monoxide and carbon dioxide, acrolein, etc.) enter the respiratory tract and act as household irritants. Tobacco smoke causes oxidative stress and stimulates inflammation in both the upper and lower respiratory tracts. Smoking predisposes

to increased levels of Jg E, sensitization to occupational diseases Hypertension and bronchial hyperreactivity.

Respiratory infections

Lower respiratory tract infections (viruses, bacteria, Mycoplasma, fungi). Severe respiratory infections experienced at an early age increase the risk of developing bronchial asthma in older children.

Food

Particular importance is attached to breastfeeding, which can provide a protective effect against the development of allergic diseases in the first years of a child's life. Food allergies in infancy can contribute to the development of bronchial asthma. Fish and seafood can cause some children to have acute asthma. Certain food substances, including salicylates, spices, food preservatives, sodium glutamate, and a number of food coloring agents, can trigger asthma symptoms. Several studies have shown that the salt content and balance of lipids and antioxidants in food affect the severity of asthma.

Socio-economic status of the family

Socio-economic status often determines the way of life, the components of which (eating habits, access to medical care, Smoking, etc.) can influence the formation of bronchial asthma.

Table 9. Trigger factors

Respiratory infections (virus, Mycoplasma) Irritants (cigarette Smoking, ozone, dust) Exercises Allergens of food inhalation (food additives) Endocrine factors	Weather changes(cold weather) Time of day Emotional stress (laughing, crying) Medications (aspirin, b-blockers) Gastroesophageal reflux Chemicals (dyes)

Occupational asthma

From 5 to 20 % of cases of newly developed asthma in adults may be caused by exposure to factors of the working environment :

Table 10.Main causal factors of PBA

Factors	Employees whose professional activity is associated with the risk of PBA
animal Proteins (domestic animals, birds, mice, fish feed, etc.)	Agricultural workers, veterinarians, laboratory workers

Vegetable proteins (flour, grain, tobacco dust, coffee bean dust, cotton, flax, etc.)	Agricultural workers, bakers, textile workers, food industry workers
Wood dust (Western red cedar, mahogany, oak, birch, etc.)	Carpenters, furniture and woodworking industry workers
Paint (anthraquinon, Carmine, paraphenylenediamine etc.)	Fabric and fur dyers, cosmetics and perfume industry workers, hairdressers
Rosin	Employees of the radio-electronic industry, soldering irons, electricians
Enzymes (Pancreatin extract, papain, trypsin, pectinase, detergents isolated from Bacillus subtilis, etc.)	Employees of the pharmaceutical, food and chemical industries
Metals (chromium salts, chromic acid, potassium dichromate, Nickel sulfate, vanadium, platinum, cobalt, manganese compounds, etc.)	Employees of chemical industries, Metalworking industry, electric welders, construction workers, etc.

Prevention of bronchial asthma

Primary prevention should be performed before exposure to known risk factors associated with the disease. Its purpose is to prevent the occurrence of high-risk individuals. Accumulating data indicate that allergic sensitisation is the most common precursor to AD.

Prenatal activities. It is extremely important in the prenatal period to exclude Smoking and exposure to tobacco smoke, taking paracetamol. There are currently no other effective prenatal measures for the primary prevention of bronchial asthma.

Postnatal measures are limited to the formation of tolerance and attempts to avoid exposure to allergens by correcting the nutrition of the newborn. For this purpose, it is recommended to exclusively breastfeed up to the age of 4-6 months. As a preventive measure in the first years of life in children with a high risk of atopy, it is recommended to exclude smoke in the premises, contact with household pollutants to reduce the allergenic load on the child. It is also recommended to limit exposure of pregnant and lactating women to various occupational and household chemical allergens and irritants. Avoid Smoking and exposure to tobacco smoke during pregnancy and lactation.

Secondary prevention is performed after the primary sensitization has already occurred, but there are no symptoms of the disease yet. Its goal is to

prevent the development of a chronic, persistent disease in predisposed individuals who have early signs of the disease.

To select individuals who are at risk for developing bronchial asthma, the following predictors are used (signs indicating a high risk of developing bronchial asthma):

● a positive family history of asthma or allergies, especially if the inheritance is burdened by the mother's side;

● the child has other allergic diseases (atopic dermatitis, allergic rhinitis);

● high level of total IgE (>30 IU / ml) in combination with detection of specific > IgE to cow's milk/chicken egg, to aeroallergens.

If sensitization is present, elimination of the corresponding effects is recommended. In addition to early termination of contact with causally significant allergens, the main measures of secondary prevention of bronchial asthma are: preventive pharmacotherapy and, in cases of monosensitization to unavoidable allergens, allergen – specific immunotherapy.

Tertiary prevention includes the elimination of allergens and non-specific triggers in already diagnosed bronchial asthma. Its goal is to improve the control of asthma and reduce the need for medication and prevent exacerbation or deterioration that may develop through contact with identified allergens or irritating agents. The most common provoking factors are allergens, pollutants, food and medicines. Identifying triggers requires constant educational work with patients and parents of children, proper organization of monitoring of symptoms of bronchial asthma, peak flowmetry, and keeping a diary.

Measures to reduce the effects of household, tick-borne, and pet allergens:

● reducing humidity in residential areas with appropriate equipment, adequate ventilation of the home, ensuring that the humidity in the house is maintained to 50 % or lower;

● regular washing of bed linen (1-2 times a week) at a temperature of 55-60 °C;

● using covers made of tick-proof fabrics;

● application for home cleaning of vacuum cleaners;

● replace carpets and carpeting with easy-to-clean linoleum or parquet, bedroom curtains and curtains with washable blinds, fabric-covered furniture with washable leather or vinyl;

● remove stuffed animals from the bedroom, wash them in 55-60 °C hot water if necessary, or freeze them in the freezer;

● kill cockroaches with appropriate insecticides;

● blockage of their habitats (putty cracks in walls, ceilings, floors);

● elimination of the access of insects to the remains of food;

● wash the floor with water and detergents to eliminate dirt and allergens;

● ventilate rooms during the hours when pollen concentrations in the air are lowest (for example, in the evening) and close Windows during the day during peak pollination;

● wearing sunglasses to reduce pollen exposure to the eye mucosa;

● exclusion of contact with grass, hay, participation in seasonal agricultural work;

● conducting daily wet cleaning in the apartment;

● limit walking in hot, dry, or windy weather. Do not go to the Park, field, or forest in this weather. The best time to walk is after the rain;

● when you come home from the street, wash not only your hands, but also your face. Only tap water can be used for washing your face. A lot of pollen is deposited on the surface of reservoirs and open water tanks;

● wash your hair and change your towel every evening;

● exclusion of food products with cross-allergenic reactivity from the diet;

● refusal to use herbal medicines for treatment, from the use of herbal cosmetics (Soaps, shampoos, creams, balms, etc.).

● if possible, find a new owner for the pet and do not have any new Pets;

● after removing the animal from the apartment, perform repeated thorough cleaning of the room to completely remove traces of saliva, excrement, dandruff, and animal hair. Usually, the symptoms of bronchial asthma disappear within 6 months after any Pets that may have been the source of the allergen that caused the development of the disease are removed from the house.;

● keep the animal out of the bedroom and, if possible, keep the animal out of the house;

● regularly vacuum-clean carpets, mattresses, and coverings;

● do not visit the circus, zoo or houses where there are animals;

● do not wear clothing made of wool or animal fur;

● use high-efficiency filters, use dehumidifiers for rooms with high humidity (more than 50-60 %) ;

● store books, clothes, and bed linen only in closed closets. Out-of-season clothing and shoes, unused toys can be Packed in polythene;

● do not keep a lot of indoor plants – in flower pots, mold fungi multiply, which is a source of fungal allergens. Regularly replant the flowers in fresh soil;

● use antifungal agents to treat surfaces in the bathroom and other areas to kill fungi;

● replace carpeting and Wallpaper with easy-to-clean materials;

● immediately fix any water leaks in the home to prevent high humidity and mildew spots;

● do not take part in garden work in autumn and spring, as dead leaves and grass are a source of mold in the air;

● eliminate active and passive Smoking;

● provide adequate ventilation and use exhaust devices to reduce the concentration of nitric oxide and dioxide, carbon monoxide and carbon dioxide, and household aerosols;

● during periods of particularly intense air pollution (smog) due to weather and atmospheric conditions, strive to stay at home in a clean, well-conditioned room.

Measures to reduce food allergies:

● preservatives, colorants , flavorings, stabilizers and medications that are present in food products cause severe exacerbations of asthma; therefore, such products should be excluded from the diet of patients with hypersensitivity to them;

● it is recommended to completely avoid those foods that are clinically and allergically proven to play a role in the development of bronchial obstruction;

● carbonated drinks, canned food, and chewing gum containing various essences, colorants, preservatives, and emulsifiers are restricted.

Table 11.Patient management and prevention occupational asthma (PA):

Drug treatment of PA is not able to prevent its progression in cases of continued work in contact with the causal factor
Timely transfer to work outside of contact with the causal factor provides relief of PA symptoms
Reducing the concentration of agents in the air of the work area can lead to a reduction or relief of PA symptoms. However, this approach is less effective than completely stopping contact with the etiological factor of asthma
The use of personal respiratory protection equipment against exposure to industrial aerosols can lead to an improvement in the course of asthma, but not to the complete disappearance of respiratory symptoms and airway obstruction.

Table 12.Education and training of patients with ASTHMA

	The results of the research	Recommendations
Patient education	The training is based on providing the necessary information about the disease, drawing up an individual treatment plan for the patient, and training in the technique of guided self-management.	It is necessary to teach patients with ASTHMA the basic techniques of monitoring their condition, follow an individual action plan, and conduct a regular assessment of the condition by a doctor. At each stage of treatment (hospitalization, repeated consultations), the patient's managed self-management plan is reviewed самоведения пациента

	The results of the research	Recommendations
Physical rehabilitation	physical rehabilitation improves cardiopulmonary function. As a result of training during physical exertion, the maximum oxygen consumption increases and the maximum ventilation of the lungs increases.	There is no sufficient evidence base. According to the available observations, the use of aerobic exercise, swimming, training of inspiratory muscles with a threshold dosed load improves the course of AD

Security questions for self-training:

1) COPD. Risk factors. The index of the smoker.
2) Implementation of primary prevention of COPD. Screening groups.
3) Secondary prevention of COPD.
4) Principles of COPD treatment in a stable condition.
5) Bronchial asthma. The key provisions.
6) Factors contributing to the development of bronchial asthma (inducers).
7) The ad trigger factor.
8) Prevention of bronchial asthma (prenatal, postpartum measures, secondary and tertiary prevention)
9) Measures to reduce exposure to household, tick-borne and household allergens:
10) Measures to reduce food allergies:
11) Management of patients and prevention of occupational asthma
12) Education and training of patients with bronchial ASTHMA.

CHAPTER 9.*DISEASES OF THE DIGESTIVE SYSTEM: SIGNIFICANCE, RISK FACTORS, PREVENTION.*

Diseases of the digestive system remain an urgent problem in clinical medicine, attracting the attention of both practicing doctors and health care organizers. Worldwide, the number of people suffering from diseases of the gastrointestinal tract and hepatobiliary system is increasing every year.

The overall morbidity rate of the world's population in the class of "digestive diseases" has increased. Over the past 15 yearsстабильным, the level of primary morbidity in this class has remained stable. In recent years, not only is the prevalence of diseases of the digestive system increasing, but there has also been a change in the structure of this pathology: pathology of the upper gastrointestinal tract has begun to prevail, there is a leveling of sex differences in the frequency of cholelithiasis, gastric ulcer and duodenal ulcer; there is an expansion of the age

boundaries of the formation of digestive pathology. There is a clear trend towards an increase in the incidence of pathology of the upper gastrointestinal tract, in particular, gastroesophageal reflux disease, gastritis and duodenitis, and fatty гепатозaliver hepatosis.

Gastroesophageal reflux disease

Gastroesophageal reflux disease (GERD) – a chronic relapsing disease caused by impaired motor-evacuation function of the organs of the gastroesophageal area and is characterized by spontaneous or regularly repeated throwing into the esophagus of gastric or duodenal contents, which leads to damage of the distal esophagus with the development of functional disorders and /or degenerative changes of the neorogovevayuschy squamous epithelium, simple (catarrhal), erosive or ulcerative esophagitis (reflux esophagitis), and in some patients with time – cylindromatosis (ferrous) metaplasia (esophagus Barrett).

Factors predisposing to the development of GERD

- recurring stresses;
- obesity;
- prolonged constipation;
- systematic inclinations (poses of "drinking from the stream" or " gardener»);
- pregnancy (due to increased intra-abdominal pressure and

actions of progesterone that reduces the activity of esophageal pulp);

- Smoking;
- alcohol abuse;
- hiatal hernia;
- taking certain medications: antagonists
- calcium supplements, anticholinergic drugs, beta blockers,

benzodiazepines, sleeping pills, theophylline, etc.:

- frequent consumption of certain foods: fats,

chocolate, coffee, fruit juices, hot spices, tomatoes, carbonated drinks.

Primary prevention of GERD

The goal of primary prevention of GERD is to prevent the development of the disease. It consists in following a number of recommendations:

- ❖ it is necessary to exclude-overeating, "snacking" at night

time, lying down after a meal; limit foods that are rich in fat (whole milk, cream, fatty fish, goose, duck, pork, fatty beef, lamb, cakes, pastries), drinks containing caffeine (coffee, strong tea, or Cola), chocolate, foods containing peppermint and pepper (they all reduce the tone of the NPC); citrus and tomatoes, fried onion and garlic as they have a direct irritating effect on the sensitive mucosal lining of the esophagus, sodas;

- ❖ recommended 3-4 meals a day;

- ❖ abstinence from Smoking;
- ❖ abstinence from alcohol abuse;
- ❖ if necessary, reduce body weight;
- ❖ taking strictly prescribed medications that cause reflux (anticholinergics, antispasmodics, sedatives and tranquilizers, calcium channel inhibitors, beta blockers, theophylline, prostaglandins, nitrates) and damage the mucous membrane (nonsteroidal anti-inflammatory drugs);
- ❖ normalization of bowel function;
- ❖ constraint loads that increase intra-abdominal pressure,

wearing corsets, bandages and other belts; weight lifting; work involving bending the torso forward; physical exercises associated with overexertion of the abdominal muscles;

- ❖ minimization of stress factors.

The goal of secondary prevention of GERD is to reduce the frequency of relapses and prevent the progression of the disease.

To maintain long-term remission of the disease, the most effective treatment regimens are used.

In the presence of both esophageal and extra esophageal manifestations of GERD, the appointment **of proton pump inhibitors (PPIS) is effective.** In clinical studies, PPIS consistently demonstrate the greatest effectiveness in the treatment of erosive esophagitis and relief of GERD-associated symptoms. Standard doses of PPIS (omeprazole, lansoprazole, pantoprazole, rabeprazole) have comparable rates of persistent remission in Gerd reflux esophagitis. Patients whose clinical symptoms of the disease are not accompanied by the development of esophagitis need to take **pro re nata drugs** - on demand.

Patients with GERD are subject to active medical observation with a control examination at least once a year. In the presence of complications, it is necessary to examine such patients 2 times a year, including with the use of endoscopic and morphological studies. A special group should include patients who have been diagnosed with esophagusBarrett.

Chronic gastritis

Chronic gastritis is the most common somatic disease. This diagnosis is morphological and, as a result, in the absence of morphological examination results, the risk of overdiagnosis of the disease is high.

Disease polietiologic. There are two groups of reasons:

Table 13. Causes of chronic gastritis

Exogenous factors	Endogenous
- infection Hwith H.Pylori; - alimentary factors: long-term violation of the diet and rhythm of eating food that	- prolonged nervous tension; - endocrine pathology; - chronic Vit deficiency.B_{12}, iron;

irritates the stomach; - alcohol abuse, prolonged Smoking; - long-term use of medications that irritate the gastrointestinal tract: glucocorticoids, nonsteroidal anti-inflammatory drugs, etc.; - long-term professional contact (dust, fumes of irritating substances).	- chronic renal failure; - chronic liver failure; - duodenogastric reflux; - autoimmune mechanisms.

Numerous epidemiological studies have revealed the widespread spread Hof H. Pylori infection – it affects about 60% of the world's population.

Risk groups:

1. The high level of infection among the population in a number of countries is primarily determined by the unsatisfactory socio-economic living conditions of people in childhood.
2. Risk factors for the development of Helicobacter pylori infection are: overcrowding of residential premises, shared beds, lack of sufficient hot water.
3. Risk groups are families of Helicobacter-positive patients.
4. Medical personnel of gastroenterological clinics (surgeons, endoscopists, service personnel), contingents of special boarding schools, psychiatric hospitals, orphanages.

The process of gastritis development is based on inflammation caused by exogenous, endogenous factors or a combination of them. As a result, it is possible to develop morphological changes in the structure of the mucous membrane with a violation of the processes of proliferation, differentiation and peeling of the epithelium, changes in the structure of the mucous membrane. There is a different degree of mucosal atrophy, as well as the processes of metaplasia and dysplasia. The result of these phenomena can be the appearance of various variants of secretion disorders, motor disorders.

Prevention of the development of chronic gastritis

- ❖ Personal hygiene aimed at preventing H.Pylori infestation ..
- ❖ Compliance with the daily routine.
- ❖ Rational physical activity.
- ❖ Stop Smoking and limit alcohol intake.
- ❖ Rational nutrition.
- ❖ Minimize the impact of stressful factors.
- ❖ Taking NSAIDs strictly according to the indications, using selective COX-2

inhibitors, or using NSAIDs together with misoprostol or proton pump inhibitors PPIS.

❖ Eliminate or minimize the impact of professional practices harmful effects.

❖ The earliest possible detection of helicobacteriosis anderadication of HH.Pylori (complete destruction of vegetative and coccoid forms Hof H.Pylori in the stomach). In Russia, a standard triple regimen of eradication therapy is used, including PPIS (at a standard dose 2 times a day), clarithromycin (500 mg 2 times a day), and amoxicillin (1000 mg 2 times a day) for 10-14 days.

❖ Much attention should be paid to identifying and effective treatment of acute gastritis, intestinal infections, helminthiasis, chronic diseases of the liver, biliary tract, and pancreas.

Secondary prevention of chronic gastritis is a successful course эрадиоf H. Pylori eradication .This applies to all H.Pylori-positive patients with CH. Eradication of H.Pylori allows you to interrupt the tragic sequence of progression of changes in the gastric mucosa (inflammation →atrophy→metaplasia→dysplasia→cancer).

Endoscopic monitoring of long-term NSAID users is required.

Given the increased risk of cancer in individuals with chronic gastritis (antral superficial gastritis under 40 years of age) and mucosal polyps, regular endoscopic monitoring is required.

Spa treatment plays an important role in prevention. Sanatorium treatment includes drinking mineral waters, therapeutic nutrition, balneo-and climatotherapy, and physiotherapy. Drinking mineral waters is an effective therapeutic factor.

Peptic ulcer of the stomach and duodenum

Ulcers disease stomach and duodenal ulcers (pus and PUD) - a chronic recurrent disease that occurs with alternating periods of exacerbation and remission, the main manifestation of which is the formation of a defect (ulcer) in the wall of the stomach and (or) duodenum, penetrating (in contrast to erosions) into the submucosal layer.

The prevalence of YB.

Duodenal ulcer in patients younger than 15 years is rare, and gastric ulcer occurs even in five-year-olds. It is possible that duodenal ulcer develops only in those patients who were infected with Helicobacter pylori in late childhood or in adulthood, since from this time the number of lining cells does not change.

Risk factors for peptic ulcer disease

Both modifiable and unmodifiable factors play a role in the development of peptic ulcer disease.

Table 14. Risk factors for peptic ulcer disease

Non-modifiable	Modifiable
- genetic predisposition - increased number of parietal cells in the glands of the stomach and as a consequence high levels of hydrochloric acid in gastric juice; - a high content in blood serum of pepsinogens I, II, and the so-called «ulcerogenic» fractions of pepsinogen in the gastric contents; - an increased release of gastrin in response to food intake and increased sensitivity of parietal cells to gastrina; - blood group 0(I); - reduced activity of the I-antitrypsin deficiency, and 2-macroglobulin; - the impaired production of secretory immunoglobulin A; - the absence of the intestinal component and a decrease in alkaline phosphatase; - the lack of a 3rd faction cholinesterase	infection Helicobacter pylori (H. Pylori); the NSAIDs; - stress situation; - the presence of harmful habits (Smoking, alcohol abuse); - occupational hazards; - the violation of the stereotype of power.

Risk factors for NSAID-gastropathy

1. Elderly age of patients.

2. Previous and concomitant diseases. The presence of a history of peptic ulcer increases the risk of developing gastropathy by 4 times, and with a combination of anamnestic ulcerative lesions and elderly patients, this risk increases by 17 times.

Other diseases that increase the likelihood of developing NSAID-gastropathy are GERD, esophageal strictures. c, systemic scleroderma with esophageal and gastric lesions, cirrhosis of the liver, and diseases of the cardiovascular system.

3. The risk of NSAID-gastropathy also depends on the dose of the drug and the duration of treatment.

4. The risk of developing gastroduodenal erosive and ulcerative lesions increases when taking NSAIDs before meals, as well as in smokers and alcohol abusers.

5. The likelihood of erosive and ulcerative lesions of the stomach and duodenum when taking NSAIDs may increase with the simultaneous use of other

medications, primarily anticoagulants (warfarin), corticosteroids (in particular, taking prednisone at a dose of more than 10 mg per day for more than 3 months), alendronate, potassium chloride.

6. The risk of developing gastroduodenal erosive and ulcerative lesions also depends on which drug from the NSAID group was chosen for treatment. The relative risk of NSAID-gastropathy with ibuprofen is 1.19, piroxicam-1.66, diclofenac-1.73, naproxen-1.81.Indomethacin and Ketoprofen also have a pronounced ulcerogenic effect.

7. Form of the medicinal product and method for the occurrence of NSAID-gastropathy is saved with a parenteral NSAID, and when instant forms of drugs (for example,aSpirin) and drugs (aspirin) with enteric coating.

Prevention

Primary prevention of peptic ulcer disease is aimed at preventing the development of the disease. The priority area of prevention is:

- ❖ Personal hygiene aimed at preventing invasion (oral hygiene, timely treatment of teeth and gums, hand hygiene).
- ❖ Compliance with the daily routine.
- ❖ Rational physical activity.
- ❖ Stop Smoking and limit alcohol intake.
- ❖ Rational nutrition.
- ❖ Minimize the impact of stressful factors.
- ❖ Use of NSAIDs strictly according to indications, exclude uncontrolled use.
- ❖ Eliminate and minimize the impact of occupational hazards.
- ❖ Prevention and treatment of hormonal disorders.
- ❖ Prevention of Helicobacter pylori infection.
- ❖ The earliest possible detection of Helicobacter pylori infection and eradication of Helicobacter pylori (HP).

Eradication of HP infection in patients with functional dyspepsia (especially in countries with a high infection rate) helps to reduce the risk of peptic ulcer disease and stomach cancer in patients.

Secondary prevention of peptic ulcer disease is aimed at reducing the risk of exacerbations and relapses of an existing disease. Secondary prevention includes dispensary monitoring of patients with peptic ulcer disease, non-medicinal and drug-based methods of prevention:

- With secondary prevention of peptic ulcer disease, all measures of primary prevention will be relevant.
- The conduct of the eradication of H. pylori infection in patients with a complicated form of peptic ulcer disease and further lifelong use of half-dose PPIS. It is recommended to take the following PPI medications (omeprazole 20 mg or lanzoprazole 30 mg or rabeprazole 20 mg or esomeprazole 20 mg) - 1 time a day.
- After the eradication of H.pylori reduces the rate of recurrence of ulcers after

surgical treatment.

- An important place in the prevention of peptic ulcer disease and its relapses is occupied by sanatorium-resort treatment, which is carried out no earlier than 2-3 months after the exacerbation subsides in sanatoriums, which includes mude- and peattreatment, coniferous sea baths, drinking alkaline mineral waters.

Diseases of the biliary tract

Chronic cholecystitis

Chronic cholecystitis is a chronic inflammatory disease of the gallbladder wall, accompanied by motor-tonic disorders of the biliary system and changes in the biochemical properties of bile.

Risk factors for chronic cholecystitis

- ❖ bile stasis – functional disorders of the neuromuscular system of the biliary system with the development of Hypoo- and atony of the gallbladder;
- ❖ infection (bacterial and viral); parasitic invasion (opisthorchiasis, fasciasis, strongyloidosis, ascariasis); pathogenic fungi (Candida genus);
- ❖ hereditary burden on the pathology of the gastrointestinal tract;
- ❖ injuries to the gallbladder and liver;
- ❖ intestinal dysbiosis;
- ❖ immunodeficiency States;
- ❖ diseases of the gastrointestinal tract that lead to impaired bile flow;
- ❖ pregnancy;
- ❖ alimentary errors (irregular meals, heavy meals at night, excess of flour and sweet foods, protein foods, lack of dietary fiber);
- ❖ age, gender – women over 35 are more likely to get sick;
- ❖ diseases of the endocrine system;
- ❖ psychovegetative instability.

Gall-stone disease

GI is a disease of the hepatobiliary system caused by a violation of cholesterol and (or) bilirubin metabolism and characterized by the formation of concretions in the gallbladder and (or) in the bile ducts.

Risk factors for cholelithiasis

- ❖ heredity;
- ❖ gender, age – women over 35 are more likely to get sick;
- ❖ pregnancy and childbirth, menopause;
- ❖ diseases of the biliary system that lead to impaired bile outflow;
- ❖ concomitant diseases: diabetes mellitus, Crohn's disease, small bowel resection;
- ❖ medications (clofibrate, estrogens, oral contraceptives, nicotinic acid);
- ❖ hyperlipidemia;

❖ unbalanced diet – food with a high cholesterol content;

❖ hemolytic anemia;

❖ chronic liver diseases involving the biliary tract in the inflammatory process (chronic cholestatic cholecystitis, primary and secondary biliary cirrhosis of the liver).

Primary prevention of biliary tract diseases:

- normalization of body weight;
- physical education and sports classes;
- exclusion of easily digestible carbohydrates from high-calorie meals (sugar, cakes, sweet cookies, sweets) since endogenous cholesterol is formed from them, it is also necessary to limit cholesterol-rich foods (egg yolk, liver, kidneys, etc.);
- eating foods rich in polyunsaturated acids, antioxidants, and phospholipids (vegetable oil, buckwheat groats, green peas, etc.);
- sufficient amount of vegetables and fruits;
- regular meals (every 3-4 hours), exclude a long break between meals;
- intake of sufficient fluids (at least 1.5 liters per day);
- eliminate Smoking, limit alcohol intake;
- eliminate rapid weight loss (as a result of using diets);
- limit stressful influences as much as possible;
- treatment of endocrine pathology;
- treatment of diseases of the gastrointestinal tract;
- rehabilitation of chronic foci of infection;
- people with an increased risk of developing GI should not be prescribed fibrates, thiazide diuretics, cholestyramine, nicotinic acid, somatostatin analogues, Ceftriaxone, progestin-based contraceptives, as well as estrogens and their analogues;
- after operations on the stomach and intestines, when reducing body weight with the help of hypocaloric diets, prolonged immobilization, estrogen replacement therapy , parenteral nutrition, patients are recommended to take long-term bile acid preparations (ursaleoxycholic).

Security questions for self-training:

1. The significance of digestive diseases?
2. Risk factors for gastro esophageal reflux (GERD)?
3. Prevention of GERD?
4. What are the causes of chronic gastritis?
5. List the risk groups for h-infection. pylori .
6. Risk factors for gastric ulcer and duodenal ulcer ?
7. Primary prevention, a strategy for secondary prevention of gastric and duodenal

ulcer disease?
8. What is meant by eradication ? Write an extermination scheme.
9. Risk factors for developing gastropathy caused by taking NSAIDs?
10. Risk factors, primary prevention of cholelithiasis pathology?

CHAPTER 10.*DISEASES OF THE MUSCULOSKELETAL SYSTEM: SIGNIFICANCE, RISK FACTORS, PREVENTION.*

Pathology of bones and joints is widespread in the population and is one of the most common human diseases. These diseases are the leading cause of disability, often have a chronic course and are accompanied by constant and periodically increasing pain. They limit the physical activity of patients, thus having a severe economic and psychological impact on families.

Currently, the pathology of bones and joints is one of the diseases that place a heavy burden on society, being associated with the loss of labor, huge costs for treatment, care and social support of patients. This trend is growing all over the world as a result of changing urban lifestyles, and increasing life expectancy.

Osteoporosis

Osteoporosis (OP) is a systemic skeletal disease characterized by a decrease in bone mass and a violation of the microarchitectonics of bone tissue, leading to increased bone fragility with a subsequent increase in the risk of fractures.

Significance and distribution.

Osteoporosis is one of the most common diseases, which occupies a leading place in the structure of morbidity and mortality of the population. Numerous epidemiological studies have shown that there is not a single race, nation, ethnic group, or country that does not have osteoporosis. Osteoporosis is found in 75 million people living in the United States, Europe, and Japan. Every third woman in the menopausal period and more than half of those aged 75-80 years suffer from osteoporosis. The incidence of osteoporosis increases with age, so the increase in life expectancy in developed countries in recent decades and, consequently, the increase in the number of elderly people (especially women) leads to an increase in the incidence of osteoporosis, making it one of the most important health problems worldwide. .

Osteoporosis ranks 4th in the structure of mortality after cardiovascular pathology, diabetes mellitus, and cancer, which determines its high significance.

Studying the epidemiology of osteoporosis presents certain challenges, since low bone mineral density (BMD) itself is not the cause of complaints, and people with osteoporosis do not seek medical help until back pain, posture changes, or fractures of various localization occur.

Fractures of the distal forearm, vertebrae, and proximal femur are the most characteristic of osteoporosis, although fractures of any localization can occur with a significant decrease in bone mineral density (BMD). The most serious complication is a hip fracture. It is associated with high mortality rates, which vary depending on the population studied during the first year after the fracture from 12 to 40 %. The incidence of hip fractures varies widely between different regions of the globe, reaching tenfold differences between countries. For example, the incidence of hip fractures is high (350 or more per 100,000 population) in Scandinavia and the United States, average (150-349/100,000) in Finland and the United Kingdom, and low (less than 150/100000) in Singapore and South Africa.

Classification of osteoporosis

- **Primary osteoporosis:**

there are two main forms:

type I-occurs in 5-20 % of women, most often at the age of 50-75 years, the development of which is associated with a decrease in estrogen synthesis during menopause,

type II or senile OP-occurs equally in men and women and is associated with impaired coordination of bone resorption and formation processes.

This division is conditional, since both types of OP can occur simultaneously in older women.

- **Secondary OP** is usually a complication of various diseases (endocrine, inflammatory, hematological, gastroenterological, etc.) or drug therapy (for example, glucocorticoid). This form accounts for 60% of all cases of OP in men, is most often diagnosed with chronic alcohol intoxication and somatic pathology, and approximately 50% of all cases of OP in premenopausal women, the use of glucocorticoids, thyroid hormones, and anticonvulsants.

Risk factors for osteoporosis

According to experts of the International osteoporosis Foundation, there are no early symptoms and markers of OP that make you need to see a doctor. Therefore, targeted screening of patients to identify their risk factors for OP is of great importanceФР. These factors are usually divided into modifiable and unmodifiable

Table 15.Modifiable and non-modifiable factors risk of osteoporosis

Non-modifiable:	Modified:
1. Low bone mineral density. 2. Female gender 3. Age over 65 years 4. The white race 5. Family history of OP and / or	1. Low physical activity 2. Smoking 3. Insufficient calcium intake 4. Vitamin d deficiency 5. A tendency to fall

fractures in blood relatives over the age of 50 6. Previous fractures 7. Hypogonadism 8. Early menopause 9. Taking glucocorticoids 10.Prolonged immobilization	6. The abuse of alcohol 7. Low body mass index and / or low body weight

Gender. OP is more common in older women. After the onset of menopause, bone loss accelerates dramatically – up to 2-3 % per year, and this continues until 65-70 years, after which its rate decreases again to 0.3–0.5% per year. Estrogen deficiency, which occurs due to age-related decline in ovarian function, leads to a decrease in the content of mineral and organic elements of bone tissue. Estrogens have a direct and indirect effect on the processes of metabolism in bone tissue.

The biological effect of estrogens is to reduce the rate of destruction processes in bone tissue and stimulate the release of biologically active substances that are involved in the formation of structural elements of bone tissue. In turn, the mediated effect of estrogens on bone tissue is realized by increasing the secretion of calcitonin, a hormone produced by thyroid cells and suppressing the processes of resorption in bone tissue. Another indirect mechanism of osteopenia is also associated with estrogen deficiency, which reduces the synthesis of vitamin D and decreases the absorption of calcium in the intestine. Estrogens alter the sensitivity of bone cells to parathyroidhormone , slow down the bone resorption stimulated by them, and inhibit the collagenase activity of macrophages, which can be precursors of osteoclasts. It is believed that low androgen levels may play an additional role in the development of postmenopausal osteoporosis.

The role of progestins in postmenopausal bone loss is discussed. Experimental and clinical studies have shown the potential role of progesterone deficiency, as well as the possibility of this steroid's involvement in the regulation of bone remodeling.

In the case of surgical menopause, the process of reducing bone density (osteopenia) begins literally from the first days after surgery. If the normal reduction in bone mass is 0.5-1.5 % per year, then in the case of surgical menopause, the loss of bone mass will be significant (from 5 to 15 % per year).

Premature aging of the female body is usually associated with the early termination of sexual activity.

Age. Skeletal growth mainly occurs during puberty and post-puberty, when bone mass increases mainly due to endosteal deposits in the long bones and thickening of the trabecular bones. During this period, bone formation prevails over bone resorption. When the peak bone mass is reached, there is a relatively short period of equilibrium between the rates of bone resorption and bone formation (age from 25 to 35 years), and then age-dependent bone loss begins.

Initially, it is insignificant – 0.3-0.5 % per year. It was found that women lose an average of 35 % of cortical and about 50% of trabecular bone mass during their lifetime. In men, bone loss is 20% and 15%, respectively, over the course of life.

The main reasons for the development of age-dependent osteoporosis in individuals of both sexes are considered to be a decrease in calcium intake, impaired intestinal absorption, and vitamin d deficiency. These mechanisms lead to hypocalcemia, the development of secondary hyperparathyroidism, which in turn accelerates bone remodeling.

One of the factors that may be important in the Genesis of osteoporosis is considered to be a decrease in physical activity in old age. The immobilization factor increases hypercalcemia, which suppresses hypersecretion of PTH. This leads to a decrease in vitamin d synthesis and a decrease in intestinal calcium absorption for the second time.

Genetic and constitutional factors. The role of genetic factors is evident in cases of familial osteoporosis, which are more often traced along the maternal line. Using family data, it was shown that the degree of influence of hereditary factors on bone mineral density can be mediated by a number of factors such as nutrition, physical activity, medication intake, etc.

Constitutional factors also play a role in the development of osteoporosis. It has long been known that fragile blondes with blue eyes are much more susceptible to the disease than heavy-bodied brunettes with brown eyes.

Nutrition factor. Insufficient intake of calcium salts was considered one of the most important risk factors for osteoporosis.

When conducting special studies, scientists noticed that people who do not consume dairy products have a lower bone mineral density and are significantly more likely to suffer femoral fractures. The calcium content in food with this diet is an average of 450 mg per day. For comparison, in the diet of people who consume dairy products, this indicator is 950 mg.

In addition, long-term high-protein diet contributes to the development of osteopenia due to increased calciuria and secondary-negative calcium balance. Studies conducted in a group of vegetarians over 60 years of age showed that the mineral content in the radius was 40% higher than in a group of women of the same age who ate a high-protein diet. It should be noted that the study was conducted in vegetarian women who ate dairy products.

Vitamin D intake and adequate sun exposure are also important to prevent osteoporosis.

Influence of lifestyle and bad habits. It is known that low physical activity for many years contributes to the development of osteoporosis in the elderly. Immobile lifestyle and immobilization lead to rapid bone loss due to accelerated bone resorption and delayed bone formation. Studies conducted in a group of young volunteers show that during bed rest for 120 days, there was a significant decrease in BMD in the tibia and femur bones by 4-8 %, in the lumbar vertebrae by 0.9-1.7 % per month.

On the other hand, high physical activity in young women, menstrual disorders and changes in estrogen status can cause a decrease in bone mass in the menopausal period. These changes can be observed in high-class athletes, from a young age, who experienced intense physical activity.

According to research, moderate physical activity can increase bone density and prevent the development of OP.

Alcohol abuse is dangerous in terms of the development of osteopenia. . In some patients with alcoholism, the development of osteopenia is associated with malabsorption syndrome and malnutrition. This leads to osteomalacia (bone demineralization) and even contributes to the development of typical osteoporosis.

Smoking is an important risk factor for developing osteoporosis. According to epidemiological studies, women who smoke have earlier menopause, a higher rate of compression fractures of the spine, and a greater loss of cortical bone mass in the wrist area. Women who smoke more than 12 cigarettes a day have low levels of estrogen in their blood. This indicates an indirect negative effect of nicotine on bone tissue. Therefore, quitting Smoking is a measure to prevent osteoporosis.

Caffeine can have a negative effect on bone metabolism. A study of the metabolic balance of calcium showed that even small amounts of caffeine (2 cups of coffee a day) lead to a daily loss of 6 mg of calcium. A study of 980 menopausal women revealed a statistically significant correlation between increased coffee consumption and decreased BMD in the spine and proximal femur.

Interestingly, BMD did not decrease if women who regularly consumed coffee drank at least one glass of milk every day .

Reproductive history and sexual status. Lack of sex hormones, both in women and men, is of great importance in the development of osteoporosis and the occurrence of bone fractures.

For women, risk factors for developing osteoporosis, in addition to menopause itself, are: its early onset, prolonged periods of amenorrhea during reproductive age, diseases associated with impaired sexual function, infertility. In men, it is important to reduce the production of sex hormones. Overt hypogonadism leads to osteoporosis. A thorough study of sexual functions in men with idiopathic osteoporosis revealed a decrease in testosterone production or a violation of gonadotropin secretion in some of them.

Effect of acid-base balance on calcium metabolism

In the pathogenesis of OP, a certain role is played by a violation of the acid-base balance. The body to restore balance in acidosis (normal pHblood pH is 7.4-arterial blood; 7.35-venous blood) is forced to spend calcium (as, indeed, magnesium, potassium, sodium, etc.), which is washed out of bones and other tissues and enters the blood (hypercalcemia), as if it borrows it. However, unlike other minerals, it is not so easy for the body to restore normal calcium levels. And the more often the condition of acidosis occurs (alcohol hangover, diabetic coma, etc.), the higher the risk of developing OP.

Scientists have previously noted that the frequency of bone fractures is associated with the use of mainly animal food, which causes the accumulation of acid radicals. At the same time, people who eat a lot of vegetables and fresh fruits have an alkaline environment in the body. Although it is not necessary to go to the extreme and completely exclude food of animal origin, since protein deficiency can also adversely affect the processes of bone restoration. Therefore, modern orthopedists advise people of all ages to rationally combine meat, vegetable and fruit dishes in their diet, without rejecting dairy products, especially cheese.

Diseases of the digestive system. Since the gastrointestinal tract plays a major role in the absorption of nutrients, it is not surprising that there is a violation of bone and mineral metabolism in patients with its pathology. In any diseases of the stomach, intestines, liver, and pancreas, the absorption and metabolism of vitamin D and its metabolites are disrupted,as well as calcium malabsorption. The prevalence of one or another type of metabolic osteopathy is determined by the duration, nature of the course of the pathological process, and the severity of malabsorption.

Drug exposure. Steroid osteoporosis occurs as a result of exposure of bone tissue to excessive amounts of glucocorticoids (ha). In exogenous hypercorticism (as a result of therapeutic use of ha, for example, prednisone), osteoporosis develops in 20-40 % of patients and depends on the duration of use, doses of ha and the age at which treatment is performed.

For the convenience of screening in daily clinical practice, it is advisable to use the international minute risk test developed by who experts for OP.

Identification of at least one risk factor is a serious reason for conducting bone densitometry and prescribing preventive therapy. When several risk factors are combined, a cumulative effect occurs, i.e. when their number increases, the risk increases.

Special diagnostic methods

This method allows you to quickly, safely and accurately determine the mineral density of bone tissue: the higher it is, the more resistant the bones are to fractures. Densitometry is able to capture even a minimal 2-5 % loss in bone mass.

Densitometry should be performed every 2 years for all women over the age of 45. Men are advised to check their bone strength after the age of 50.

Indications for densitometry:

- women during and after menopause, due to a decrease in the level of sex hormones (aged about 45-50 years and older);
- women with menstrual disorders, early menopause (earlier than 45 years), amenorrhea (no menstruation), after ovarian removal;
- elderly people (over 65-70 years of age);
- patients with diseases of the endocrine system (pathology of the thyroid, parathyroid glands, diabetes mellitus);

●patients with diseases of the gastrointestinal tract (gastritis, cholecystitis, pancreatitis, gastric and duodenal ulcers);
●patients with kidney diseases (pyelonephritis, chronic renal failure);
●patients with diseases of the blood (leukemia);
●patients who take medications for a long time: hormone therapy-glucocorticoids (prednisone), L-thyroxine, anticonvulsants, antidepressants, diuretics, anticoagulants;
●cancer patients;
●bedridden patients who are not moving for a long time;
●for patients before dental implants are installed;
●all people who have had one or more fractures over the age of 40 years that are not related to a serious injury;
●before prosthetics of joints;
●patients who are suspected of having osteoporosis during routine bone x-ray examinations;
●patients receiving drug therapy for osteoporosis to monitor the effectiveness of treatment.

Prevention of osteoporosis:

Prevention of osteoporosis can be divided into primary and secondary.

The primary measures include:

- control of adequate calcium intake, starting from early childhood;
- providing the body with calcium during pregnancy and childbirth.
- sufficient sun exposure for the elderly;
- active lifestyle, regular exercise with moderate exercise. Numerous studies have shown that physical activity has a positive effect on bone tissue, and mechanical stress on the bone as a result of muscle stretching or pressure helps prevent bone loss.;
- maximum reduction of the influence of risk factors (alcohol, Smoking, drinking a lot of coffee, craving for various unbalanced diets, fasting).

Indications for secondary prevention of osteoporosis are the presence of significant risk factors. These include early or artificial menopause, hypogonadism, corticosteroid therapy or the consequences of endogenous hypercorticism, long-term thyrotoxicosis or thyroid replacement therapy during, pre-and post-menopause, history of hyperparathyroidism, insulin-dependent diabetes mellitus, a certain range of gastrointestinal and renal diseases, long-term anticonvulsant therapy, and so on. In these cases, dynamic bone mass measurements are necessary.

Nutrition for osteoporosis

● Sufficient dietary calcium intake of 1200 mg. The main suppliers of calcium: milk (in 0.5 liters – 600 mg of calcium), cheese, eggs, fish. Calcium, to a lesser

extent than in milk and cheese, is represented in green vegetables: in fodder cabbage, leeks, broccoli, fennel, mineral water.

● Food should contain sufficient amounts of fluoride: cottage cheese, cheese, walnuts, fish, eggs, beef liver. The ratio of calcium/ fluoride in food should be 1/2 (cottage cheese, rye bread, beef). It is advisable to eat bread with cheese, porridge with milk, meat and fish dishes with vegetable side dishes.

Alcohol, caffeine, and nicotine help to eliminate calcium from the body. Excess table salt in food contributes to the elimination of calcium from the body. You need a sufficient amount of protein.

● Calcium absorption is positively affected by the consumption of fermented dairy products, animal protein, and sufficient intake of vitamin D. Negatively affect phosphates, oxalates, alcohol, caffeine, a large excess of fat.

In addition to nutritional factors, physical activity plays a significant role in forming the optimal peak of bone mass and maintaining it in the future.

Numerous studies have shown that physical activity has a positive effect on bone tissue, and mechanical stress on the bone as a result of muscle stretching or pressure helps prevent bone loss. At the onset of decrease in bone mass (i.e. osteopenia) prevention measures should be aimed at the preservation or improvement of posture and expanding physical activity.

Patients with osteopenia should avoid heavy loads and exercises that exceed the biomechanical capabilities of the vertebrae and can cause their compression. Therefore, exercises that straighten the spine and stretch the muscles seem to be more acceptable for patients with osteoporosis. Muscle strength plays an important role in maintaining posture and preventing falls, and daily exercise helps maintain muscle tone. In addition, daily exercises maintain the range of motion in the joints. A daily set of exercises should start with warming up, stretching exercises for 5 minutes.

In high-risk groups, it is necessary to start regular physical activities such as long-distance walking, swimming, gymnastics, Cycling, and exercise equipment classes as early as possible (after the age of 35).

Postmenopausal women first need to consult a gynecologist and, in the absence of contraindications – hormone replacement therapy. First-line medications for the treatment of osteoporosis include calcitonins (Miacalcic) and bisphosphonates (Fosamax, Osteotab, Alemaks). Miacalcic has proven itself very well in fractures, as it has an analgesic effect and accelerates the healing of fractures. From other drugs, doctors often prescribe Osteogenon and fluoride preparations (Ossin).

Active metabolites of vitamin d play a significant role in the prevention of senile and secondary osteoporosis. Vitamin D supplementation is necessary for patients with malabsorption syndrome of various origins, patients with gastric resection, biliary cirrhosis, treatment with anticonvulsants, heparin for more than 3 months, impaired канальцевыхrenal tubular functions and the risk of developing renal osteopathy.

Preventive use of vitamin d preparations is indicated for elderly people who rarely leave the premises, move little, especially those who live in boarding houses for the elderly.

Groups of drugs used for prevention and treatment osteoporosis

● ***Drugs that inhibit bone resorption***
● Estrogens, bisphosphonates, calcium, thiazide diuretics
● ***Drugs that stimulate bone formation***
● Fluoride derivatives, anabolic steroids, parathyroid hormone (PTH) fragments, growth hormone
● ***Drugs that affect resorption, bone formation and have extra-skeletal effects***
● Active metabolites of vitamin D, ipriflavone (osteochin), ossein-hydroxyapatite complex (osteogenon)

Osteoarthrosis

Osteoarthrosis (OA) is a heterogeneous group of diseases of various etiologies with similar biological, morphological, clinical manifestations and outcome, which are based on damage to all components of the joint, primarily cartilage, as well as subchondral bone, synovial membrane, ligaments, capsule, and periarticular muscles.

Osteoarthrosis is one of the most ancient diseases of humans and animals. In paleontological studies, changes in the bone skeleton such as osteoarthrosis were found in people who lived in the stone age.

In 1802. Heberden was the first to describe osteoarthrosis of the distal inter phalangeal joints (nodules Heberden). However, an independent nosological form of osteoarthrosis was officially recognized only in 1911, when at the International Congress of physicians in London, N. Miiller proposed to divide all joint diseases into primary inflammatory and primary degenerative and attributed osteoarthrosis to the latter.

Classification of osteoarthrosis

Osteoarthrosis can be primary or secondary.

If the cause of the development of the disease is not established, then such osteoarthrosis is usually called ***primary, or idiopathic.***

Secondary osteoarthrosis has a clear cause.

The main reason for the development of OA is a mismatch between the mechanical load falling on the articular surface of the cartilage and its ability to resist this load, which eventually leads to degeneration and destruction of the cartilage. This situation is created primarily in the presence of mechanical overload, for example, during heavy physical work with often repeated

stereotypical movements that load the same joints (arthrosis of the shoulder in a blacksmith, wrist joint in a painter, spine joints in a loader), or excessive sports (arthrosis of the knee joints in runners, football players), with severe obesity, etc.

Another group of causes leading to cartilage overload is a violation of the normal congruence of the articular surfaces of healthy cartilage. As a result, there is an uneven distribution of the load over the entire surface of the cartilage, and the main load falls on a small area in the place of the greatest convergence of the articular surfaces. At this point, the cartilage quickly degenerates. Violation of the congruence of the articular surfaces is observed in congenital anomalies of skeletal development: hip dysplasia, as well as in static disorders: scoliosis, kyphosis, hyperlordosis, flat feet and гиперподвижностиjoint hypermotion due to weakening of the ligamentous-muscular apparatus.

In some cases, the load remains normal, but the physical and chemical properties of the cartilage significantly change, which makes it less resistant to normal load. This leads numerous causes of primary changes of the articular cartilage injury or concussion, bone change – violation of subchondral circulation changes arising from the synovial membrane, various arthritis (infectious and noninfectious), hemarthrosis, metabolic disorders (gout, hemochromatosis , etc.), disorders of the endocrine and nervous systems (diabetes, acromegaly, etc.); hereditary factor.

Risk factors for osteoarthrosis

Determination of risk factors for the development and progression of osteoarthrosis is directly related to its primary and secondary prevention. These factors are divided into ***modified*** ones , which can be corrected, and ***unmodified*** ones, which cannot be actively affected.

Also, risk factors are divided into genetic and non-genetic

Table 16.Genetic and non-genetic risk factors for osteoarthrosis:

Genetic resources	Non-genetic
– Female gender -mutation of the collagen II gene – Hereditary disorders of collagen II (syndrome Stickler's disease) – Hereditary pathology of bones and joints (dysplasia of the femoral head) –Ethnicity	– Age over 45лет – overweight (a body mass index> 30 kg/m^2) – non-Smoking – Postmenopausal – vitamin D Deficiency – micronutrient Deficiency – a violation of the development (dysplasia) and acquired diseases of bones and joints – Neurodystrophic manifestations of the pathological process in the lumbar-sacral syndrome (lumbar-iliac muscle), or in the cervical spine (scapular-humeral

	periarthritis) – Inflammatory process in the joint – Surgical interventions on the joints -Occupational loads (for example, standing work) - Excessive exercise – joint Injuries -Endocrinopathies: diabetes mellitus, acromegaly, hyperparathyroidism, hypothyroidism. - Metabolic disorders –gout, hemochromatosis, etc.

Environmental factors affect the development and progression of osteoarthrosis:

* hypothermia;
* disturbance of ecological balance;
* the effect of chemical toxins.

Gender-in adolescence, young men most often suffer from osteoarthrosis, but in later life the picture changes – in the period from 40 to 50 years, women are ahead of men in the number of joints affected by diseases. There is a number of epidemiological evidence for the involvement of sex hormones in the development of osteoarthrosis. These include a higher incidence of osteoarthrosis in menopausal women as a result of insufficient regulatory system of cartilage synthesis and differentiation, controlled by somatotropic hormones and their mediators. This system is activated by estrogens and inhibited by glucocorticoids.

Age – changes in metabolic processes occur in aging cartilage, the synthesis of proteoglycans and water consumption decrease. As a result, the articular cartilage becomes less elastic and more sensitive to normal loads, and loses its ability to recover from damage. Over time, there is a "loss" of cartilage.

Obesity leads to an excessive load on the joints, regardless of what position the body is in, and regardless of whether the person is working or resting. As a result of this constant pressure, the structure of the joints begins to change. Every extra 5 kilograms increases the risk of developing osteoarthrosis by one and a half times. But obesity is not only a mechanical factor in the development of OA, but also a systemic one due to concomitant endocrine disorders.

When taking measures aimed at reducing body weight, it is necessary to remember that a sharp weight loss can lead to a decrease in muscle tissue. Weakened muscles and ligaments are not able to provide the necessary support for the body's bone system, lead to joint looseness, and increase the likelihood of joint diseases.

Prolonged inactivity leads to metabolic disorders in the body, as a result of which the joints will not be able to receive the necessary amount of trace elements

and nutrients necessary for the normal functioning of the human musculoskeletal system.

Occupational factors – risk miners (osteoarthrosis of the knee and lumbar spine), dockers and shipyard workers (osteoarthrosis of knee joints and hand joints), cotton pickers and workers of the mill production (osteoarthrosis of individual joints of the hands), operators of pneumatic tools (osteoarthrosis of the elbow and wrist joints), painters and concrete workers (osteoarthrosis of the knee), farmers (osteoarthrosis of the hip joints), salespersons, hairdressers, waiters, cooks (osteoarthrosis of the knee), operators of personal computers (osteoarthrosis joints of the hands).

Professional sports (football, track and field, etc.) are associated with a high risk of developing osteoarthrosis. The risk of osteoarthrosis of the knee and hip joints does not differ from the General risk in the population of people engaged in physical culture unprofessionally.

OA often develops **against the background of inflammatory diseases of the joints** (rheumatoid arthritis, reactive arthritis, etc.) due to the fixation of immune complexes on the joint surface and local autoaggression. Therefore, it is not surprising that in patients with rheumatoid arthritis, for example, radiologically often detected and symptoms of osteoarthrosis.

OA is **(**gout, hemochromatosis) the result of deposits in the articular cartilage of various substances directly acting negatively on chondrocytes.

Increased blood lipids and diabetes mellitus are considered risk factors for the development of osteoarthrosis. With inadequate treatment of diabetes, the vessels of the lower extremities are very often affected, as a result, the nutrition of the joints worsens and the likelihood of cartilage pathology increases significantly.

The hereditary factor is undoubtedly the presence of a genetic predisposition to osteoarthrosis, which is realized under the influence of unfavorable external factors. There ***is a primary genetic form*** associated with the pathology of the gene involved in encoding the structure of cartilage elements – the collagen matrix, enzymes, receptors, growth factors, etc. This group includes erosive osteoarthrosis of the inter phalangeal joints of the hands, accompanied by the formation of nodules Heberden and Bouchard. It occurs 10 times more often in women and is inherited through the female line (grandmother-mother-daughter). Poly-osteoarthrosis of young persons, due to a defect of the second type of collagen gene.

Secondary form, where OA is caused by the presence of congenital connective tissue diseases. Thus, hereditary transmission of congenital skeletal anomalies, weakness of the tendon-ligamentous apparatus and joint capsule, and other disorders leading to changes in the congruence of the articular surfaces and joint hypermotion is possible, therefore, to the development of OA.

However, very often osteoarthrosis is the result of a simultaneous combination of several etiological factors, for example, injuries, dysplasia, static disorders, obesity, and occupational microtraumatism. Latent, or compensated,

osteoarthrosis may develop under the influence of some random (provoking) factor.

Risk factors ***for gonarthrosis*** include the following::

- older age, female gender,
- prolonged and significant physical overload of the joints,
- intense sports activities,
- obesity,
- history of injuries,
- hormone replacement therapy,
- vitamin D deficiency,
- violation of congruence of articular surfaces (hallux valgus or varus deformity),
- weakness of the quadriceps muscle mechanical factors,
- Smoking,
- metabolic joint diseases and endocrine pathology

Немаловажное значение имеет *Flat feet are also important*, which significantly increases the load on the knee joint and contributes to the progression of gonarthrosis. Significant mechanical overload of the joints (mechanical stress) causes the expression of metalloproteinases and cytokines by activating mechanoreceptors of chondrocytes, while, moderate exercise stimulates the synthesis of the cartilage matrix. Risk factors for rapid progression остеоартрозаof knee osteoarthrosis, in addition to the above, include a diet low in vitamins C and$_3$D3, as well as synovitis and subchondral bone edema (MRI).

As for ***nodular osteoarthrosis of the hand***, the following factors are considered as factors of its development:

- old age, the compression force of the brush,
- body mass index,
- nature of work,
- intense sports activities

For the development ***of coxarthrosis*** of great importance is

- congenital dysplasia of the hip joint with structural features.

Thus, osteoarthrosis is a multifactorial disease. But the level of modern diagnostics does not always allow us to find out the relationship between the development of OA and the presence of one or more of the listed factors, as a result of which the true cause of osteoarthrosis remains unclear, and it is classified as primary.

Primary prevention of osteoarthrosis

Prevention of OA should be based on current understanding of the causes of the disease. However, these causes often remain unknown to both the patient and the doctor, which makes it difficult to develop measures for primary prevention of the disease.

Primary prevention of osteoarthrosis should be carried out in childhood. It is necessary to monitor the correct position of the child at the school Desk in order to avoid the formation of juvenile scoliosis with the subsequent development of deforming spondylosis. Children need systematic gymnastics classes to strengthen the musculoskeletal system. In the presence of at least minor flat feet, it is necessary to strongly recommend wearing arch supports to prevent further lowering of the arch of the foot. For congenital and acquired static disorders (scoliosis, kyphosis, hip dysplasia, O-shaped or X-shaped lower limbs, flat feet), an orthopedic specialist should be consulted to correct these disorders as early as possible.

Rational nutrition. Reduction of excess body weight. It is recommended to eat lean meat, low-fat fish varieties, the use of black or bran bread, cereals containing a lot of fiber, vegetables and fruits up to 400 g per day. It is necessary to limit the amount of table salt in food to 5 g / day for adding to ready meals (food is prepared without salt). Limit the intake of easily digestible carbohydrates.

Avoid bad habits!!!

Regular physical activity (without overloading the joints), especially swimming with mandatory subsequent rest is recommended.

Restorative activities – small walks with rest, morning showers or RUB-UPS that improve blood supply and metabolism.

Adequate therapy of endocrine and metabolic diseases.

Young people should take into account the family predisposition to osteoarthrosis, and when choosing a profession, avoid types of work associated with overload and microtraumatization of individual joints (for example, if the mother has nodules Heberden and/or Bouchard nodules. It is not advisable to engage in work that involves an increased dynamic load on the joints of the fingers, for example, typing on a typewriter). These people should also not engage in heavy sports (weightlifting, track and field, Boxing, speed skating, etc.).

If you have at least minimal dysplasia and static disorders (for example, a small scoliosis), you need to consult an orthopedic surgeon and appropriate treatment.

Secondary prevention

In order to prevent the progression of OA, a complex is used to mechanically relieve the affected joints, ensure the patient's personal safety and environmental safety, and prevent falls.

Recommended:

* healthy nutrition;
* reduce excess weight;
*walking with a support or using a walking stick;
* use soft, comfortable shoes;
* dosed walking;
* light labor;

*physical therapy;
* Spa treatment.

Also, long-term medical treatment is carried out with drugs that help slow down and prevent the destruction of articular cartilage, and improve joint functions (chondroprotectors).

Security questions for self-control :

1. *The most common diseases of the musculoskeletal system?*
2. *Osteoporosis-definition?*
3. *Significance and prevalence of osteoporosis*
4. *Classification of osteoporosis?*
5. *Risk factors for developing osteoporosis?*
6. *Characteristics of risk factors for osteoporosis?*
7. *Dietary recommendations for the prevention of osteoporosis?*
8. *What are the indications for densitometry?*
9. *Prevention of osteoporosis?*
10. *Osteoarthrosis -definition?*
11. *Manageable risk factors for osteoarthrosis?*
12. *Characteristics of controlled risk factors for osteoarthrosis?*
13. *Unmanageable risk factors for osteoarthrosis?*
14. *Prevention of osteoarthrosis?*

CHAPTER 11.*TRAUMATISM: CONCEPT, SIGNIFICANCE, CLASSIFICATION OF INJURIES. RISK FACTORS FOR VARIOUS TYPES OF INJURIES. PREVENTION OF INJURY* .

Prevalence and significance of injuries

The problem of injuries, starting with the twentieth century, when gaining increasing importance, which is determined by the, first, its prevalence is, second, its medical and social importance (high value medical at power and high levels of mortality and disability and thirdly, its economic significance (direct and indirect losses due to loss of labor potential of the society). Injuries lead to a decrease in" human capital " on a societal scale. The main consequences of injuries include: long-term expensive treatment, prolonged temporary disability, a high proportion of disability and mortality of victims.

By *"The international statistical classification of diseases and related health problems" 10th revision (ICD-10)* injuries have a double division: for the causes of accidents, poisoning and injuries, and for the localization of injuries. In ICD-10, they are designated as *XIX class* and include 199 headings. We also use the division of injuries into

- ✓ *industrial* (industrial, agricultural, construction, transport, etc.) and

- ✓ *non*-industrial (household, street, road transport, sports, etc.).

Accidents are responsible for about 120 million medical visits and 220,000 deaths annually in the European region. Injuries and poisoning account for the tenth-part of the death rate in Europe (6% in the Western part and 12% in the Eastern part). And out of 10 deaths of children under the age of 14 in Europe, 3-4 cases are caused by injuries and poisoning.

In Russia, as in no other developed country of the European and North-American continents and Japan, the problems of injuries and deaths from external causes are particularly acute. In recent years, the Russian Federation has seen a steady increase in victims of injuries, poisoning and some other consequences of exposure to external causes. The annual increase in injuries is at least 2%, primarily due to the increase in the number ***of road*** and ***domestic injuries***. Every year, about 12.5 million people suffer various injuries, of which injuries account for about 93%, poisoning-1%, and other accidents-6%. In the structure of the General morbidity and disability of the population of our country, injuries and their consequences occupy the fourth place, and among the causes of temporary disability – the first.

Indicators of the frequency of injuries vary significantly among people of different ages. The highest rate of injuries is observed among people aged 30-39 years, the minimum - in the age group of 60-69 years. However, gender differences seriously correct this picture. Among men, the highest rate of injuries is observed at the age of 20-49 years, and among women-30-59 years, and in all age groups this indicator is significantly higher in men. Among the male population aged 15-30 years, injuries are the main cause of morbidity, disability, and mortality.

It was revealed that injuries have pronounced seasonal features. The peak rates of injuries occur in the months of may and January. The may rise is likely to be due to the start of the summer season and the holiday season, and in January, injuries resulting from ice and other bad weather conditions are traditional. In the summer period, the proportion of wounds and bruises prevails, and in the winter months, the proportion of fractures of the upper and lower extremities increases.

The problem of injuries is becoming more and more important not only because of its growth, but also because of the increasing weight of fatal injuries. Today, most economic developed and developing countries injuries occupy third place among causes of death population (after CVD and EIT), and the faces are more young, working age, they are leading in the structure of causes of death. .

Of particular concern is the high level of injuries and the tendency to increase in children and adolescents. The problem of child injuries and their prevention attracts the attention of health workers, both in Russia and abroad. In recent decades, many times more children have died from injuries and other accidents than from infectious diseases.

On average, children and adolescents make **up 1/8** (13%) of the total number of people injured in road accidents. Almost every third cyclist injured on the roads and every fifth pedestrian is a child. At the same time, more than half of all affected children are aged 7-14 years, and every fifth is aged 14-18 years. Children affected by road accidents are disabled in 15% of cases.

Numerous epidemiological studies have established that the level, structure andconsequences of injuries are determined by the social, economic andpolitical state of society. The lack of funding for the healthcare system, the decline in industrial production, employment problems, and the aggravation of the criminal situation contribute to the growthof all indicators and consequences of injuries.

Risk factors for injuries

In order to effectively search for accident risk factors, it is necessary to analyze the features of the structure of injuries. So, a very important factor for finding the causes of injuries and understanding their mechanism is information about the place where the injury occurred, and the circumstances surrounding the injury.

The leading ***risk factors for occupational injuries*** are organizational factors: *unsatisfactory organization of work, violation of labor and industrial discipline, shortcomings in training in safe working methods, unsatisfactory content and shortcomings in the organization of workplaces, etc.* Alcohol is a serious problem as a risk factor for occupational injuries *алкоголь*. Traditionally, a calm attitude towards the appearance of some employees at work in a drunken state and the use of alcoholic beverages during working hours is a very important source of occupational injuries not only in rural areas, but also in cities.

The main type of injuries, which is about 90%, is non-industrial injuries. Both adults and children are dominated by domestic (about 85%) and street (9%) injuries, while road traffic and sports injuries account for 4% and 2%, respectively.

Risk factors for domestic and street injuries: carelessness of victims, ice, hooliganism. Other risk factors include poor condition of sidewalks; insufficient supervision of animals; poor lighting and unsatisfactory sanitary condition of streets, courtyards and stairs; carrying out repairs on streets without installing fences; faulty electrical wiring, etc.

Risk factors for road traffic injuries are such as: poor training of drivers, their psychophysiological features, poor health, fatigue driving; violation of traffic rules by drivers and pedestrians; poor condition of roads, the richness of narrow transport tracks, the lack of underpasses and overpasses, the lack of traffic regulatory signs and marking lines; the fault and imperfection of vehicles; lack of effective personal protective equipment.

Alcohol is also one of the leading factors associated with a high risk of road traffic injuries. It was found that almost half of fatal injuries among men (49%) and women (42%) in Russia are related to alcohol intoxication, while in the EU countries these figures are significantly lower and amount to 17% and 3%, respectively.

Risk factors for sports injuries: non-compliance with sports rules; insufficient training of athletes, their overload and overwork; poor condition of playgrounds, equipment and equipment; insufficient control of coaches; incorrect installation of sports equipment.

Causes of injuries

To find the causes of injuries, it is important to know the location of the

injury.. It was revealed that more than half of the injured people are injured in everyday conditions – in apartments, garages, on stairwells. Almost a third of the victims are injured on the street, in pedestrian traffic.

One in ten of the injured persons suffers from an occupational injury. The causes and circumstances of injuries are largely determined by the social composition of the population. Thus, about half of the victims (44%) are people of working professions, 20% are employees, 7% are schoolchildren and students, 14% are pensioners and 15% are non-working people.

Injuries in a significant number of cases associated with poor coordination and slower reaction to external stimuli, due to the behavior or health of the victim (endogenous causes), and the latter often "work" in violation of the standards of conduct. It was found that among the adult population leading individual causes of injury (negligence, carelessness, painful condition), in second place – contact with blunt or sharp objects, thermal agent, the third – bullying.

The research conducted by the Institute of traumatology revealed a wide range of causes of modern injuries.

Almost 40% of the injured, both men and women, were caused by a person falling on a plane, and almost a fifth of the injured were victims of hooliganism. The remaining causes of injuries accounted for no more than 10%.

The greatest number of injuries occurs in the evening and at night, and mainly on rest days - from Friday evening to Sunday night. As the age of victims decreases, the proportion of injuries sustained at night increases (among 20-29-year-old victims, the proportion of those injured during night hours is almost 2/3).

Women are more likely to have domestic injuries, men – industrial, sports, and injuries received in road accidents. At the same time, the male part of the population is more characterized by traumatization under the influence of alcohol, while among women this proportion of people is half as low. The age of victims who are under the influence of alcohol is also significant - men aged 30-49 years are most often injured.

Security questions for self-training:

1. The main problems with injuries?
2. Classification of injuries?
3. Risk factors for road traffic injuries?
4. Risk factors for domestic and street injuries?
5. Risk factors for industrial injuries?
6. Risk factors for sports injuries?
7. What time of day accounts for the largest proportion of injuries?
8. What are the most common causes of injuries in women?
9. What are the most common causes of injuries in men?
10. What are the most common causes of injuries in children?

CHAPTER 12.*MALIGNANT NEOPLASMS: RELEVANCE, RISK FACTORS, PREVENTION. DEVELOPMENT OF CANCER ALERTNESS IN THE POPULATION*

Relevance.

Malignant neoplasms occupy the second rank in the overall structure of mortality in the world. The continuing increase in cancer incidence is primarily due to the imperfect state of cancer prevention. In almost 60% of cases, the disease is diagnosed in stages 3-4, when hopes for the possibility of a cure are lost. Every year, about 200 thousand cancer patients are recognized as disabled for the first time, of which 40% are of working age. Of particular importance is the impact of this pathology on the level of premature mortality among people of working age. In the structure of cancer mortality, people of this age occupy more than 30%. Therefore, oncological diseases are considered socially significant diseases.

Early diagnosis of malignant neoplasms depends mainly on *the oncological alertness* of primary care doctors and their knowledge, further tactics in relation to the patient.

Risk factors.

When ranking the main causes that form the incidence of cancer, the leading position is occupied by poor nutrition (up to 35 %), the second place belongs to Smoking (up to 32%).

Thus, 2/3 of cancer cases are due to these factors. Further, the degree of decreasing importance followed by viral infections (10 %), sexual factors (7 %), sedentary lifestyle (5 %), occupational carcinogens (up to 4 %), alcoholism (3 %), direct environmental pollution (2 %); family history of cancer (2 %); nutritional supplements, ultraviolet light from the sun and ionizing radiation (1 %). Unknown causes account for about 5 % of cancer cases.

Poor nutrition.

Table 17.Foods that have a carcinogenic effect:

1. Nitrites, nitrates, heavy metal salts (arsenic, beryllium, cadmium, lead, Nickel, etc.) of drinking water and food products: enhance the action of carcinogens and are a material for the endogenous synthesis of carcinogens (nitroso compounds)
2. Fats: a) excess body weight is the cause of an increased level of estrogens synthesized mainly by adipose tissue (peripheral aromatization); b) stimulation of bile production (changes in the intestinal flora, formation of carcinogens from cholesterol and fatty acids)
3. Canned food, dried fish (contain nitrates, nitrites), smoked products (contain polycyclic hydrocarbons)
4. Carbohydrates subjected to cooking, combining with amines of gastric juice, lead to the formation of nitroso compounds
5. Aflotoxins (peanuts, cereals)

There ***are 6 basic principles of an anti-cancer diet***, compliance with which can significantly reduce the risk of cancer:

1. Prevention of obesity (being overweight is a risk factor for many cancers, including breast cancer and uterine cancer).

2. Reduction of fat intake (with normal physical activity, no more than 50-70 g of fat per day with all products). Epidemiological studies have established a direct link between fat intake and the incidence of breast cancer, colon cancer, and prostate cancer.

3. Mandatory presence in food of vegetables and fruits that provide the body with dietary fiber, vitamins and substances that have an anti-carcinogenic effect.

These include:

-yellow and red vegetables containing carotene (carrots, tomatoes, radishes, etc.);

- fruits and berries that contain a large amount of vitamin C, bioflavonoids (citrus fruits, kiwis, etc.);

- cabbage (especially broccoli, cauliflower and Brussels sprouts); garlic and onions.

The greatest preventive effect on reducing the risk of cancer is the consumption of fruits and non-starchy vegetables. In particular, it has been proven that their sufficient intake (at least 400 g/day) reduces the likelihood of developing oral, esophageal and stomach cancer, and lung cancer.

4. Regular and sufficient consumption of plant-based fiber (up to 35g daily), which is found in whole grains of cereals, vegetables, fruits, and greens. Plant fiber binds a number of carcinogens, reduces the time of their contact with the colon by improving motor skills.

5. Limit alcohol consumption. Alcohol is known to be one of the risk factors for developing cancer of the oral cavity, esophagus, liver and breast.

6. Limit the consumption of smoked and nitrite - containing foods. Smoked food contains a significant amount of carcinogens. Nitrites are found in sausage products and are still often used by manufacturers for tinting in order to give the product a marketable appearance.

Smoking. Numerous scientific studies have established a strong link between tobacco use and cancer. In particular, epidemiological studies have shown that cigarette Smoking is a causal factor in the development of cancer of the lung, oral cavity, esophagus, bladder, kidney, pancreas, stomach, cervix and acute myeloid leukemia. At the same time, there is strong evidence that an increase in the prevalence of Smoking among the population leads to an increase in cancer mortality and, conversely, a decrease in the prevalence of Smoking reduces the death rate from lung cancer in men.

Quitting Smoking leads to a gradual reduction in the risk of cancer, an increase in life expectancy, and a decrease in overall morbidity and mortality.

Infections. Infectious agents account for 26% of all cancer cases in developing countries and 8% in developed countries. Infection with a high-risk human papillomavirus (HPV) strain (types 16, 18, 31, 33) is considered a

necessary event for the subsequent development of cervical cancer, and HPV vaccination leads to a noticeable reduction in precancerous conditions. Oncogenic HPV strains have also been linked to cancers of the penis, vagina, anus, and oropharynx. Other infectious agents that cause cancer include: hepatitis B and hepatitis C virus (liver cancer), Epstein - Barr virus (Burkitt's lymphoma), and Helicobacter Pylori (stomach cancer).

Vaccination against HPV and hepatitis is recommended as an active preventive measure for people at risk.

Ionizing and ultraviolet radiation. Exposure to radiation, primarily ultraviolet radiation and ionizing radiation, is a well-established cause of cancer. Exposure to solar ultraviolet radiation is the main cause of skin cancer, which is by far the most common and most preventable malignancy. The most dangerous time to stay in the sun is between 10 and 16 hours. No less harmful is staying in tanning salons to get artificial tanning. Avoiding direct sunlight on exposed areas of the body, wearing appropriate summer clothing, wide-brimmed hats, umbrellas, staying in the shade and using sunscreens are effective measures to prevent skin cancer.

Currently, on the basis of numerous epidemiological and biological studies have convincingly proven that there is no dose of ionizing radiation that should be considered absolutely secure, for this reason must be taken all measures in order to reduce the dose of any ionizing radiation to human, including those associated with medical studies (fluoroscopy, radiography, fluoroscopy, computed tomography, radioisotope diagnosis and treatment of) both in relation to patients and medical personnel.

Limiting unjustified medical and diagnostic studies related to the use of ionizing radiation is an important prevention strategy.

Alcohol. Excessive alcohol consumption, especially drinking alcohol, has the most significant effect on the development of oral, esophageal, breast and colorectal cancer in men. The Association between alcohol consumption and women's risk of developing liver and colorectal cancer is less reliable.

Physical activity. A growing body of evidence suggests that people who are physically active have a lower risk of developing certain malignancies (CNS) compared to those who are physically inactive and sedentary. The greatest and most significant protective effect of physical activity was found in relation to the risk of developing colorectal cancer. The "likely" category includes the impact of physical activity on the risk of developing breast cancer after menopause and endometrial cancer. There is reason to believe that physical activity is inversely associated with at least several cancers, the development of which provokes obesity.

Obesity. Obesity is increasingly recognized as an important cancer risk factor.

It is strongly associated with the development of postmenopausal breast cancer, esophageal cancer, pancreatic cancer, colorectal cancer, endometrial cancer

and kidney cancer. There is evidence that obesity is a risk factor for developing gallbladder cancer.

Vitamins and dietary supplements. Vitamins and dietary supplements are considered preventive interventions with unproven effectiveness.

Environmental factors and harmful substances. Some associations between environmental pollutants and the development of lung cancer have been clearly established, including through passive tobacco Smoking, air pollution, especially asbestos dust. Another environmental pollutant that is causally linked to skin, bladder, and lung cancer is inorganic arsenic in high concentrations in drinking water. Many other environmental pollutants, such as pesticides, have been evaluated for their risk to human cancer, but uncertain results have been obtained.

Occupational hazards. Some cancer induced by chemical substances assigned to the category of professional: the cancer workers of hot shops of the winemakers (cancer of the hands and feet), cancer from working with paraffin (cancer of the hands and scrotum), sailors, peasants, and many are on the air (cancer of the face, hands), cancer when working with substances aniline (cancer of the urinary tract), x-rays (doctors, staff, x-ray laboratories), resins, pitch (from shoemaker – cancer I finger), rubber (working with rubber cables–skin cancer and bladder), from contact with asbestos, chrome, gas generators (lung cancer is contact with asbestos, beryllium, uranium or radon). It is also important that to eliminate occupational carcinogenic effects, in many cases it is enough to carry out local measures aimed at a specific workshop, technological process, etc.Therefore, the greatest success in the world has been achieved in the field of prevention of malignant tumors associated with the profession.

Genetic factors. A small number of tumors can occur as genetically determined diseases. Dependence on "tumor" genes is associated with the appearance of congenital or hereditary neoplasms. They are proven for about 50 types of tumors. Dominant inherited tumors include basal cell carcinomas, auditory nerve neurinoma, osteochondromas, multiple lipomas, cervical polyposis, and neurofibromatoses. As recessive inherited are considered plasmacytoma and embryonal nephroma.

The Association between "tumor" and other genes is interesting, for example, an increase in the incidence of stomach cancer in people with blood type A (II). Hereditary neoplasms can occur as congenital or develop immediately after birth, but they can develop in older children or even in adults.

The relationship between carcinogens

Another aspect that should be considered is the relationship between carcinogens. For example, increasing alcohol intake has been shown to multiply the risk of esophageal cancer caused by a risk factor such as Smoking. Alcohol alone can facilitate the transport of tobacco or other carcinogens to cells or susceptible tissues. Multiple links can be traced between some carcinogens, such as the effects of radon decay products and Smoking in uranium mine workers. Some exogenous agents may contribute to the development of cancer caused by other

agents. This, in particular, applies to the role of dietary fats in the development of breast cancer (obviously, due to an increase in the production of hormones, breast stimulants). The opposite effect may also occur. For example, vitamin A delays the development of lung cancer and possibly other cancers initiated by tobacco Smoking. Similar relationships can occur between exogenous factors and constitutional features of the body. In particular, the genetic polymorphism of enzymes involved in the metabolism of carcinogens or DNA repair is an important factor that determines individual susceptibility to the action of exogenous carcinogens.

From the point of view of cancer prevention, the significance of the relationship between carcinogens is determined by the fact that eliminating exposure to one of two (or more) interrelated factors can provide a more significant reduction in cancer incidence than would be expected given the degree of exposure to this agent in isolation. For example, quitting Smoking can almost completely eliminate the high incidence of lung cancer among workers in the asbestos industry (although the incidence of mesothelioma will remain almost unchanged).

Table 18.Comprehensive prevention of malignant neoplasms.

Stage	Content	Goal
Primary prevention	Prevention of the occurrence of malignant tumors and previous precancerous conditions	Reduction in the incidence of
Secondary prevention	Early detection and treatment of the initial stages of cancer and precancerous conditions preceding them.	Reducing mortality and disability.
Tertiary prevention	Prevention of the occurrence, as well as treatment of possible relapses of the disease in the period after the completion of the main course of treatment.	Prevention of relapses.

Primary prevention

Primary prevention should play a leading role in reducing cancer incidence.

It is necessary to distinguish between individual and state measures for the prevention of malignant tumors.

Individual prevention

Individual prevention provides for public awareness of oncological diseases and compliance with a number of rules.

Based on the risk factors for malignant tumors, everyone should remember:

● about a balanced diet. Pickles and pickled foods should be excluded from the daily diet, as they contain nitrites and nitrates. To prepare food for future use, it is recommended to use quick freezing instead of canning. This is what has played a role in reducing the incidence of stomach cancer in the United States. It is

necessary to limit the intake of animal fats, smoked and fried foods, increase and diversify the consumption of fresh vegetables and fruits. During periods of shortage of fresh vegetables and fruits, it is advisable to regularly take synthetic vitamins. Clinical observations have shown that taking vitamins a and E reduces the frequency of intestinal metaplasia of the gastric epithelium, has a therapeutic effect on pre-tumor changes in the mucous membranes, in particular, the oral cavity;

● about the dangers of active and passive Smoking. Quitting Smoking reduces the risk of cancer by 30 %;

● about endocrine and metabolic disorders. Obesity and multiple abortions increase the risk of developing cancer of the reproductive system;

● about the existence of hereditary forms of cancer. In case of" family forms " of cancer, timely consultation of proband's relatives with a specialist doctor is necessary;

● about the dangers of excessive sun exposure;

● about the need to maintain oral and genital hygiene;

● about the dangers of excessive consumption of strong alcoholic beverages. Low-alcohol and medium-strength beverages, such as table grape wines, do not have such a detrimental effect.

Mass prevention

State measures for primary prevention of oncological diseases consist in controlling the content of carcinogenic and radioactive substances in drinking water, food, air and soil. The state should solve environmental problems by developing and applying filters at enterprises that pollute the atmosphere, increasing the efficiency of internal combustion engines in motor transport, using environmentally friendly fuel, eliminating occupational hazards in production, etc.

Diagnosed at an early stage, malignant tumors of most organs can currently be cured in 70-100 % of patients.

Table 19.Directions of primary prevention oncological diseases

The direction of PPR	The main goal
Incoherency prevention	Identification and elimination of the possibility of human exposure to carcinogenic environmental factors, correction of lifestyle features
Biochemical prevention (chemoprophylaxis)	Prevention of the blastogenic effect from exposure to carcinogenic factors by the use of certain chemicals, products and compounds, as well as biochemical monitoring of the action of carcinogens on the human body
Medical and genetic prevention	Identification of families with hereditary tumor and precancerous diseases, as well as individuals with chromosomal instability, and organization of measures to

	reduce the risk of tumors, including possible exposure to carcinogenic factors
Immunobiological prevention	Identification of persons with disorders of the immune status that contribute to the appearance of tumors, implementation of measures for their correction, protection from possible carcinogenic effects. Vaccination
Endocrine and age-related prevention	Identification of dyshormonal conditions, as well as age-related homeostasis disorders that contribute to the occurrence and development of tumors, and their correction

Secondary prevention

It is aimed at detecting and eliminating precancerous diseases and identifying malignant tumors at the early stages of the process. Studies that can effectively detect precancerous diseases and tumors include: mammography, fluorography, cytological examination of smears from the cervix and cervical canal, endoscopic examinations, preventive examinations, determination of the level of cancer markers in biological fluids, etc.

Development of early diagnosis and screening programs is one of the priority areas of cancer development and can significantly improve treatment outcomes. Regular passing of preventive examination and examination in accordance with the age (or risk group) allows you to prevent the occurrence of a malignant tumor or detect the disease at an early stage, which allows for effective organ-preserving specialized treatment.

Table 20.Diagnostic methods recommended for screening of the most common cancer diseases:

Disease	Research method and frequency	Description	The age of onset
Cervical cancer	PAP test, 1 time per year	During the gynecologist's examination, a smear of the vaginal and cervical mucosa is taken. This method also allows you to diagnose benign and inflammatory diseases, as well as endometrial cancer	3 years after the onset of sexual activity.
Breast cancer	Mammography, 1 time per year	X-ray examination of the breast	40 years old
	Clinical examination, 1 time in 3 years	Palpatory examination by a specialist mammologist	20 years old
	Self-study, 1 time per		

	year		
Cancer of the colon and rectum (colorectal cancer)	Fecal occult blood test, 1 time per year	Laboratory examination of faeces for the presence of blood. In case of a positive result, a colonoscopy	45 years old
	Oral manoscopy and / or sigmoscopy 1 time in 3 years	Endoscopic examination of the intestine with a short tube with a built-in camera	45 years old
	Colonoscopy, 1 time in 10 years	Endoscopic examination of the intestine with a flexible tube with a built-in camera	50 years old
	Finger examination, 1 time per year	Rectal finger	45 years old
Prostate cancer	Анализ крови на PSA blood test (prostate-specific antigen), 1 time per year Digital examination of the rectum, 1 time per year	Finger examination, as well as in the diagnosis of rectal and anal cancer	40 years old 50 years old

The screening methods listed above are effective for early detection of cancer and improving treatment outcomes for the entire population, regardless of the presence of risk factors.

However, there are other common oncological diseases for which there is not yet enough data for the effectiveness of preventive examinations for the entire population, but screening is certainly indicated for people with certain risk factors.

Tertiary prevention

It consists in preventing relapses and metastases in cancer patients, as well as new cases of malignant tumors in cured patients. For the treatment of a malignant tumor and tertiary cancer prevention, you should only contact specialized oncological institutions. An oncological patient is registered for life in an oncological institution, and regularly undergoes the necessary examinations prescribed by specialists.

Currently, one of the youngest and most promising areas of preventive Oncology is the chemoprophylaxis of malignant tumors – reducing cancer morbidity and mortality due to the long-term use of special oncoprophylactic drugs or natural remedies by healthy people or people from groups of increased cancer risk. Chemoprophylaxis must be used in conjunction with other preventive measures.

A separate area of prevention in patients with malignant neoplasms is the prevention of complications of chemotherapy that occur due to the low selectivity

of the action of most of the drugs used for this purpose. One of the most common complications of chemotherapy is toxic liver damage. Unfortunately, in cancer practice, it is not always possible to cancel or replace a drug that adversely affects the liver with another, safer one without creating an immediate or delayed threat to the patient's life. One of the ways out of this difficult situation is the preventive use of drugs with hepatoprotective properties, among which S-adenosyl-L-methionine has a good evidence base for its high clinical effectiveness.

Security questions for self-training:

1) The relevance of cancer incidence.
2) Individual primary cancer prevention
3) List the main risk factors for cancer
4) Principles of the anti-cancer diet
5) Types of primary cancer prevention?
6) What does individual cancer prevention include?
7) Mass prevention of oncological diseases
8) Main directions of secondary prevention?
9) Principles of secondary prevention of oncological diseases
10) Diagnostic methods recommended for screening the most common oncological diseases.

CHAPTER 13.INFECTIOUS DISEASES: RELEVANCE, FEATURES OF INFECTIOUS PATHOLOGY AT THE PRESENT STAGE, RISK FACTORS, PREVENTION.

The relevance of infectious pathology in the modern world is due to the fact that 25% of the mortality rate of the world's population is associated with infectious and parasitic diseases. More than 70 million cases of infectious diseases are registered annually in the world. Every 3rd case and every 5th day of temporary disability due to illness is associated with infectious pathology..

Despite the success achieved in the fight against infectious diseases, in Russia, as in other economically developed countries, these diseases continue to cause great damage to people's health and the country's economy.

Features of infectious pathology at the present stage:

- increase in the proportion of atypical, prolonged and chronic forms of infectious diseases;
- more frequent development of mixed infections;
- prevalence of viral infections over bacterial ones;
- prolonged persistence of the pathogen in the body;
- updating of conditionally pathogenic microflora;
- increase in the frequency of hospital-acquired (nosocomial) infections;

- increased frequency of mycoses.

Humanity in the fight against infectious diseases not only failed to achieve the goal of eliminating infections, but, on the contrary, received an ever-expanding range of tasks. This is due both to changes in the socio-economic living conditions of the population, urbanization, migration processes, pollution of the biosphere, and to the expansion of the number of nosological forms of infections, the evolution of pathogenicity and virulence of opportunistic pathogens.

Risk factors that contribute to the development of infectious diseases:

- wars, socio-economic disasters, natural disasters, disruption of the ecological balance;
- moral, mental injuries, stress;
- long-term, debilitating diseases;
- poor living conditions, hard work, overcrowding;
- hypothermia or overheating of the body;
- non-compliance with personal hygiene rules;
- poor-quality food, use of poor-quality water;
- the presence of bad habits;
- untimely or poor-quality provision of medical care;
- refusal of vaccinations.

The infectious process is a complex of mutual adaptive reactions to the introduction and reproduction of pathogenic microorganisms in a macroorganism, aimed at restoring disturbed homeostasis and biological balance with the environment. The current understanding of the infectious process includes the interaction of three main factors-the pathogen, the macroorganism and the environment, each of which can have a significant impact on its outcome. The infectious process can manifest itself at all levels of the human body-submolecular, subcellular, cellular, tissue, organ, and organizational - and is the essence of an infectious disease.

Epidemic process – a set of consecutive cases of an infectious disease, the continuity and regularity of which is supported by the presence of the source of infection, transmission factors, and population susceptibility.

Thus, this process consists of three stages:

1) source of infection;

2) mechanism of transmission of pathogens;

3) a receptive population.

The absence or elimination of any of these links leads to a break in the chain of the epidemic process and to the cessation of the spread of an infectious disease.

The source of infection is an object that serves as a place of natural residence and reproduction of pathogens, and from which the pathogen can infect healthy people in one way or another. The source of infection may be:

- human patient (from the end of the incubation period, the entire period of prodrome and the height of the disease) and the carrier (in the form of transient and convalescent carriers – **- anthroponosis;**

- animals (domestic, wild) **- zoonosis;**

- external environment (soil, water) - **sapronosis.** Classical sapronoses (pathogens of botulism, tetanus, etc.) are pseudoparasites, since their existence does not require a human or animal body. In such cases, transmission of the infection to humans occurs directly from the reservoir of the pathogen.

Transitional forms of infections are **anthropozoonoses** and **saprozoonoses**, the causative agents of which can live in two reservoirs (respectively, human-animal and abiotic substrate-animal).

The transmission mechanism is the way a pathogen moves from a source of infection to a susceptible organism. *It consists of three consecutive phases: release of the pathogen into the environment → presence of the pathogen on environmental objects → introduction of the pathogen into the susceptible organism.*

Pathogens of infectious diseases are released into the environment with varying intensity depending on the stage, period of development of the disease and its form. At the same time, transitory carriers, which are clinically healthy people who emit pathogens of infectious diseases into the environment, are of exceptional epidemic importance.

As a rule, the transmission of pathogens from a sick organism to a healthy one is mediated by various elements of the external environment, which are called *transmission factors,* and their combination, which ensures the transfer of pathogens under certain conditions, is *transmitted*. The possibility and duration of pathogens ' presence in the environment are determined by their properties. Therefore, it is the phase of stay of pathogens on environmental objects that should be used for anti-epidemic measures in order to interrupt the epidemic process. Direct introduction into a susceptible organism can occur in various ways. These methods are the mechanisms of transmission of the pathogen.

Table 21.Mechanism of transmission of pathogens:

Mechanism of infection transmission	***Route of infection***	***Factors of infection transmission***
Fecal-oral	alimentary	Food, products
	water	water
	contact-household	household items, dirty hands, insect vectors
Aerogenic	airborne droplets	air
	-dust	dust
Vector-borne	inoculation	of blood-sucking insects
	contamination	
Contact	direct contact (wound, sexual contact)	skin, mucous membranes
	indirect contact	household items
	germinal	germ cells

Vertical	transplacental	placenta
	ascending	vagina, cervix
Artificial	injection	medical instruments, medical supplies
	transfusion	
	inhalation	
	associated with invasive manipulations	

The final link of the epidemic process is **a susceptible organism,** the state of the immune system of which mainly depends on the manifestation of the infectious process.

Immunity is a way of protecting the body from living bodies and substances that carry signs of genetically alien information. The functions of the immune system include recognition of foreign antigens with subsequent response, which consists in neutralizing, destroying and removing them from the human body.

Types of immunity:

Innate immunity is a hereditary system of protection of multicellular organisms from pathogenic and non-pathogenic microorganisms, as well as endogenous products of tissue destruction.

Acquired immunity is the specific individual immunity that a particular individual has to certain pathogens or agents. *Acquired immunity is divided into natural and artificial, and each of them is divided into active and passive, and, in turn, active is divided into sterile and non – sterile.* Acquired immunity is due to specific cellular (phagocytosis) and humoral (antibodies) factors or cellular reactivity only to a specific pathogen or toxin.

Natural immunity is acquired naturally in the process of vital activity of the body, artificial-as a result of medical manipulations. Natural active immunity is developed by the body itself as a result of ingestion of antigens, pathogens and is often referred to as post-infectious. Artificial active immunity is formed after the introduction of vaccines or toxoids into the body, and therefore it is also called post-vaccination.

Both natural and artificial active immunity can be sterile and non-sterile. If the body has got rid of the causative agent of the disease, then immunity is called sterile. If the death of the pathogen does not occur, and it remains in the body, then immunity is called non-sterile. Most often, this variant is formed in chronic infections (tuberculosis, brucellosis, syphilis, etc.), often – in rickettsiosis and viral infections (typhus, herpes, adenovirus infection, etc.). With the disappearance of the pathogen from the body, after a certain period of time, the immune system also disappears.

Active immunity is developed within 2-8 weeks and, depending on the type of infection, can persist for up to 1 year (cholera, plague, anthrax, etc.), for several years (smallpox, diphtheria, tetanus, etc.) or for life (measles, rubella, scarlet fever, etc.).

With passive immunity, antibodies are not produced in the body, but are acquired by the body from the outside. In natural passive immunity, antibodies are transmitted to the child from the mother from the mother transplacentally or with breast milk, and in artificial immunity, antibodies are administered parenterally to people in the form of immune sera, plasma or immunoglobulins. Passive immunity in the body occurs quickly (after 2-4 hours with intravenous administration of antibodies, after 6-8 hours-with intramuscular administration, and within 20-24 hours – with subcutaneous administration), but it does not last long – up to 2-8 weeks. Passive immunization is used for the treatment of a number of infectious diseases, for bites of poisonous animals, as well as in epidemic foci for emergency prevention of contact persons with the threat of infection.

Factors influencing the development of the epidemic process:

1) social factors – level of economic development, sanitary and municipal improvement, public health care, diet, conditions of work and life, national and religious customs, wars, migration – played a leading role;

2) environmental factors – physical, chemical, and biological-have an indirect meaning, affecting both the human body and the causative agents of infectious diseases.

Prevention and control of infectious diseases

Based on the considered links of the epidemic process, it is theoretically and practically justified to divide all preventive and anti-epidemic measures into three groups:

1. Measures in relation to the source of infection, aimed at its neutralization (or elimination).

2. Measures concerning the mechanism of transmission of infection, carried out with the aim of disrupting transmission routes.

3. Measures to increase the immunity of the population.

Activities related to the source of infection

The group of preventive and anti-epidemic measures for **anthroponoses** includes diagnostic, isolation, therapeutic and regime-restrictive measures. Active and complete identification of patients is carried out on the basis of comprehensive diagnostics. Subsequent isolation and treatment is carried out in a hospital setting (if there are clinical and/or epidemiological indications for hospitalization) or at home. Rational complex therapy of hospitalized patients is also one of the preventive measures against infectious diseases. Discharge of convalescents is carried out after complete clinical recovery, and in the presence of convalescent carriers-upon receipt of negative results of bacteriological research.

One of the most important preventive measures is *the active detection of bacterial excretors*, which is carried out in the focus of infection, among convalescents at discharge and in the long term after it, as well as among people of

decreed professions. Identified bacterial excretors are suspended from work, registered and carried out a bacteriological examination and sanitation.

Prevention of further spread of infectious diseases is provided *by regime-restrictive measures* taken against persons who have come into contact with patients and are at risk of infection. Contact persons should be considered as a potential source of infection, since they may be infected and are in the incubation period or are secreting pathogens. *Restrictive measures include medical supervision, separation and isolation.*

Medical supervision is carried out during the period determined by the maximum duration of the incubation period for this disease. It includes interviewing, examining, thermometry, and laboratory testing of contact persons. Medical supervision allows you to identify the first symptoms of the disease and isolate patients in a timely manner.

Separation as *a regime*-restrictive measure is applied to organized children and to adults who have decreed professions. During the period set by the instructions for each infectious disease, they are prohibited from visiting institutions.

In case of a number of infections (including particularly dangerous ones), all those who have come into contact with patients are subject *to isolation* and medical supervision in an isolation ward. This activity is called *an observation* and continues during the maximum incubation period for a given disease. In those historical times, when the incubation period was not yet known, the isolation of contact persons during the plague lasted 40 days, hence the name "quarantine" (from ital. quarantena, quaranta giorni – 40 дней).

Preventive measures against the source of infection in *zoonoses* have some peculiarities. If the source of infection is domestic animals, then sanitary and veterinary measures are taken to improve their health. In cases where synanthropic rodents are the source of infection, deratization is performed. In natural foci where wild animals are the source of infection, if necessary, their population size is reduced by extermination to a safe level that prevents human infection.

Measures for the sanitary protection of the country's territory carried out by sanitary-epidemiological and specialized anti-epidemic institutions stationed in sea and river ports, airports, highways and Railways are also of great preventive importance. The scope of activities and the procedure for their implementation are determined by the "rules for sanitary protection of the territory" of our country, which take into account the requirements of the" International sanitary rules " adopted by who. In accordance with these "Rules", infections of international importance are divided into: particularly dangerous (quarantine) infections (smallpox, cholera, plague, yellow fever) and diseases subject to international surveillance (typhus and recurrent typhus, malaria, influenza, polio). Who member countries are required to inform this organization in a timely manner about all cases of diseases covered by health regulations and about anti-epidemic measures taken in this regard.

Activities related to the transmission mechanism

Currently, all preventive measures aimed at the second stage of the epidemic process are divided into three groups: *sanitary and hygienic, disinfection, and disinsection.*

In intestinal infections with a fecal-oral mechanism of infection, the main factors of transmission of the pathogen are food and water, less often-flies, dirty hands, household items. In the prevention of these infections, measures of General sanitary and hygienic plan, various methods of disinfection are of the greatest importance. General sanitary measures are municipal and sanitary measures, food, school, industrial sanitary supervision, and raising the level of General and sanitary-hygienic culture of the population. Disinfection is carried out in foci of infectious diseases (focal disinfection), as well as in public places (railway stations, transport, dormitories, etc.), regardless of the presence of an outbreak of an infectious disease (preventive disinfection).

In the case of respiratory tract infections, compared with intestinal infections, carrying out measures to prevent the transmission of the pathogen is very difficult. Microbial aerosols (droplet and nuclear phases) and infected dust contribute to the spread of these infections through the air, so preventive measures are sanitization of the indoor air environment and the use of respirators. As for disinfection, it is almost not used for those respiratory tract infections whose pathogens are poorly resistant in the external environment (for example, children's infections of a viral nature).

Disinsection agents aimed at destroying vectors of pathogens – blood-sucking insects-are of great importance for the prevention of vector-borne infections. Collective and individual measures of protection against attacks and bites of vectors are also applied.

Interventions for susceptible populations

Increasing the immunity of the population is carried out through the introduction of two areas of prevention – non-specific and specific (immunoprophylaxis). Due to the planned mass implementation of preventive vaccinations, the incidence of diphtheria, polio, whooping cough, measles, etc. immune-controlled infections decreased to sporadic levels. No less important is the implementation of preventive vaccinations for epidemic indications, especially for the prevention of rabies, tetanus, when immunoprophylaxis is the main means of preventing diseases.

Immunization **(**from lat. immunis-free, free of anything**) -** a method of creating artificial immunity in humans and animals. There is a distinction between active and passive immunization.

Active immunization involves the introduction of antigens into the body. The most widespread form of active immunization is vaccination, i.e. the use of vaccines-preparations derived from microorganisms (bacteria, rickettsiae, viruses) or products of their vital activity (toxins) for the specific prevention of infectious diseases among humans and animals. Active immunization is carried out by

applying the drug (for example, a vaccine) to the skin, injecting it intradermally, subcutaneously, intramuscularly, intraperitoneally, intravenously, by mouth and by inhalation.

Types of immunobiological drugs

In healthcare practice, the following types of vaccines are used for immunoprophylaxis of infectious diseases.

Live vaccines. They contain vaccine strains of infectious disease pathogens that have lost their ability to cause the disease, but have retained high immunogenic properties.

Inactivated (corpuscular) vaccines. It is obtained by acting on pathogenic bacteria and viruses by physical (high temperature, ultraviolet rays, gamma radiation, etc.) and chemical (phenol, formalin , merthiolate, alcohol, etc.) factors.

Chemical (molecular) vaccines. They are protective antigens of microorganisms isolated by physico-chemical and / or immunochemical methods.

Recombinant vaccines. It is obtained using a genetically engineered technology.

The toxoids. They contain neutralized waste products (exotoxins) of pathogenic microorganisms.

Passive immunization is carried out by introducing sera or serum fractions of the blood of immune animals and humans subcutaneously, intramuscularly, and in urgent cases – intravenously. Such drugs contain ready-made antibodies that neutralize toxins, inactivate pathogens and prevent their spread. Passive immunization creates short-term immunity (up to 1-2 months) and is used to prevent the disease in case of contact of a susceptible person with the source of infection (seroprophylaxis), as well as in case of occurrence of the disease in order to facilitate its course (serotherapy).

Security questions for self-training:

1. *What is the relevance of infectious diseases?*
2. *What are the features of infectious pathology at the present stage?*
3. *Specify the main risk factors that contribute to the development of infectious diseases.*
4. *What is an infectious process? How does it differ from the epidemic process?*
5. *Describe the links of the epidemic process.*
6. *What is immunity? What types of immunity do you know?*
7. *Name groups of measures for the prevention of infectious diseases.*
8. *what measures are being taken in relation to the source of infection?*
9. *What measures are being taken regarding the mechanism of transmission of infection?*
10. *what activities are being implemented in relation to the susceptible population?*
11. *Name the types of immunobiological drugs.*

CHAPTER 14.TUBERCULOSIS: SIGNIFICANCE, EPIDEMIOLOGY, RISK FACTORS, AND RISK GROUPS. TYPES OF PREVENTION.

Tuberculosis is an anthroponosis, bacterial infectious disease with an aspiration mechanism of transmission of the pathogen. It is characterized by a chronic undulating course with a predominant lesion of the lungs, intoxication and allergization of the body.

Relevance

- In 2019, a total of 1.4 million people died from tuberculosis (including 208,000 people living with HIV). Worldwide, tuberculosis is one of the top 10 causes of death and the leading cause of death due to any single infectious agent (ahead of HIV/AIDS).
- An estimated 10 million people worldwide fell ill with tuberculosis in 2019, including 5.6 million men, 3.2 million women and 1.2 million children. Tuberculosis is common in all countries and age groups. Tuberculosis is curable and preventable.
- Globally, 1.2 million children became ill with tuberculosis in 2019. It can be difficult to diagnose and treat tuberculosis in children and adolescents, and the disease often remains unrecognized by health professionals at this age.
- In 2019, 30 countries with a heavy TB burden accounted for 87% of new TB cases. Two-thirds of cases were reported in eight countries, among which the world health organization ranked first. **India,** followed by Indonesia, China, the Philippines, Pakistan, Nigeria, Bangladesh and South Africa.
- Multidrug-resistant tuberculosis (MDR-TB) continues to pose a critical situation and a threat to health security. In 2019, a total of 206,030 people with multidrug-resistant or rifampicin-resistant tuberculosis (MDR/RU-TB) were identified and registered, which is 10% more than in 2018 (186,883 people).
- Worldwide, the incidence of tuberculosis is declining by about 2% per year, with a cumulative decline of 9% between 2015 and 2019. This is less than half of the target set out in the TB eradication Strategy for the period from 2015 to 2020, which is 20%.
- An estimated 60 million lives were saved by TB diagnosis and treatment between 2000 and 2019.
- **One of the health objectives of the sustainable development Goals is to end the tuberculosis epidemic by 2030.**

The causative agent of tuberculosis is a bacterium (*Mycobacterium tuberculosis),* which most often affects the lungs. Tuberculosis is curable and preventable.

Tuberculosis spreads from person to person through the air. When you cough, sneeze or spit, they propel people with pulmonary tuberculosis isolated in the air tubercle bacilli. To infect a person, it is enough to inhale only a small amount of such bacteria.

About one quarter of the world's population is infected with tuberculosis. This means that people are infected with TB bacteria, but (as yet) are not sick and cannot transmit it.

People infected with TB bacteria are 5-15% more likely to develop TB in their lifetime. People with weakened immune systems, such as people with HIV infection, people who suffer from malnutrition, or people with diabetes, as well as people who use tobacco, are at a much higher risk of the disease.

When a person develops an active form of tuberculosis, symptoms (cough, fever, night sweats, or weight loss) may remain mild for many months. This can lead to delayed medical treatment and transmission of the bacteria to other people. In a year, a person with an active form of tuberculosis can infect 5-15 people with whom he has close contacts. Without proper treatment, an average of 45% HIV-negative people with TB and almost all HIV-positive people with TB die.

Who is most at risk?

Tuberculosis mainly affects adults during their most productive years. However, all age groups are at risk. More than 95% of cases and deaths occur in developing countries.

People infected with HIV are 18 times more likely to develop an active form of tuberculosis (see the section on tuberculosis and HIV infection below).

People who suffer from other health problems that weaken the immune system are also at a higher risk of developing an active form of tuberculosis ослабляющих иммунную систему.

In people suffering from malnutrition, the risk increases by 3 times. In 2019 globally, 2.2 million new cases of tuberculosis were reported, which were linked to malnutrition.

Alcohol-related disorders and tobacco Smoking increase the risk of tuberculosis by 3.3 and 1.6 times, respectively. In 2019, 0.72 million new TB cases worldwide were associated with alcohol-related disorders, and 0.70 million cases were associated with Smoking.

Global impact of tuberculosis

Tuberculosis is widespread all over the world. In 2019, the highest number of new TB cases occurred in the South-East Asia Region (44% of new cases), followed by the African region (25%) and the Western Pacific Region (18%).

In 2019 87% of new TB cases occurred in 30 countries with a heavy TB burden. Eight countries — China, India, Indonesia, the Philippines, Pakistan, Nigeria, Bangladesh and South Africa-accounted for two-thirds of new TB cases.

Symptoms and diagnosis

Common symptoms of active pulmonary tuberculosis include coughing sometimes with phlegm and blood, chest pain, weakness, weight loss, fever, and night sweats. Who recommends the use of rapid molecular diagnostic tests as an initial diagnostic test for all people with signs and symptoms of tuberculosis, as these tests have high diagnostic accuracy and will lead to significant improvements in the early detection of tuberculosis and drug-resistant tuberculosis. As the rapid tests Who recommends Xpert MTB/RIF, Xpert Ultra, and Truenat.

Diagnosis of multidrug-resistant tuberculosis and other resistant forms of tuberculosis, as well as HIV-associated tuberculosis, can be complex and expensive.

It is especially difficult to diagnose tuberculosis in children.

Tuberculosis and HIV infection

People with HIV infection are 18 (15-21) times more likely to develop an active form of tuberculosis-than people who are not infected with HIV.

HIV infection and tuberculosis are a deadly combination and accelerate the development of each other. In 2019, approximately 208,000 people died from HIV-associated tuberculosis. In 2019, the proportion of registered TB patients who had a documented HIV test result was 69%, compared to 64% in 2018. In the who African region with the heaviest burden of HIV-associated tuberculosis, 86% of TB patients had a documented HIV test result. Overall, in 2019, 88% of TB patients who were diagnosed with HIV infection received ART.

Features of clinical manifestations of tuberculosis yin HIV-infected patients:

1. Extrapulmonary disease. Especially often there is a lesion of the lymph nodes. Often there is a generalized enlargement of the lymph nodes, which is not characteristic of other forms of tuberculosis.

2. Often found miliary process. TB can be isolated by culturing blood (which is never the case with normal tuberculosis).

3. The radiograph. With the pulmonary process, an increase in the shadow of mediastinal lymph nodes is often noted. Often the process is localized in the lower lobe of the lung. The formation of cavities is less common, although reports from different locations indicate that their frequency varies. Pleural effusions are more common. The shadows in the lungs are very dynamic.

4. Tuberculosis can develop in unusual places (туберкуломы brain tuberculomas, chest wall abscesses, or other places).

5. Sputum bacterioscopic tests ***are negative***, despite the presence of significant changes in the lungs on the x-ray (although some researchers in Africa believe that sputum bacterial excretion is detected by bacterioscopy as often as in patients not infected with HIV).

6. Tuberculin skin test is often ***negative.***

To reduce mortality, who recommends a 12-component collaborative approach to tuberculosis and HIV infection, including prevention and treatment of infection and disease.

Multidrug-resistant tuberculosis

TB drugs have been used for several decades, and strains that are resistant to one or more drugs have been reported in every country covered by the survey. Drug resistance occurs when antituberculous drugs are used improperly, as a result of their incorrect administration by health care workers, poor quality of medicines, or premature discontinuation of treatment by patients.

Multidrug-resistant tuberculosis (MDR-TB) is a form of tuberculosis caused by a bacterium that does not respond to isoniazid and rifampicin, two of the most

effective first – line anti-TB drugs. MDR-TB can be treated and treated with second-line medications. However, such treatment options are limited and require extensive chemotherapy (lasting up to two years) with expensive and toxic drugs.

In some cases, broader drug resistance may develop. Tuberculosis caused by a bacterium that does not respond to the most effective second-line anti-TB drugs can leave patients without any further treatment options.

In 2019, a total of 206,030 people with multidrug-resistant or rifampicin-resistant tuberculosis (MDR/RU-TB) were identified and registered, which is 10% more than in 2018 (186,883 people). About half of the global MDR-TB burden falls on 3 countries-China, India and the Russian Federation.

Currently, treatment success is achieved in only 57% of MDR-TB patients. In 2020 Who recommended a new fast track (9-11 months) an oral-only treatment regimen for MDR-TB patients. The study found that it is easier for patients to complete this treatment regimen compared to longer regimens lasting up to 20 months. Before starting treatment with this regimen, resistance to fluoroquinolones should be excluded.

By the end of 2019 89 countries have started using accelerated MDR-TB treatment regimens, and 109 countries have imported or started using *bedaquiline* to improve the effectiveness of MDR-TB treatment.

Global commitments and activities of the who

On September 26, 2018, the United Nations (UN) held the first-ever high-level meeting on tuberculosis, where heads of state and government discussed the status of the tuberculosis epidemic and how to end it.

Who is working closely with countries, partners and civil society to scale up TB-related activities. Who performs key functions that contribute to the achievement of the goals of the UN high-level political Declaration, the sdgs, the goals of the tuberculosis eradication Strategy, and who strategic priorities.

The following are highlighted

FACTORS CONTRIBUTING TO THE DEVELOPMENT OF TUBERCULOSIS INFECTION:

1. ***Age and gender.*** Newborns and young children of both sexes have weak defenses. Infection before the age of 2 years often leads to the development of the most severe forms of miliary tuberculosis and tuberculous meningitis with hematogenous spread of infection. Under the age of 17, the incidence of girls is higher than in boys. In Europe and North America, when tuberculosis was widespread, the peak incidence of pulmonary tuberculosis usually occurred in young adults. Morbidity among men is quite high in all age groups; among women, this indicator decreases sharply after the reproductive period. Women often develop tuberculosis after giving birth. The overall morbidity rate in women is lower and its rise with age is less steep than in men. It reaches its maximum values among women aged 40-50 years and then falls. Among men, it continues to grow until at least 60 years of age.

2. ***Power status*.** There is strong evidence that fasting or malnutrition reduces the body's resistance to the disease. This factor is important for children and adults in poor countries.

3. ***Consumption of toxic products*.** Smoking tobacco and drinking large amounts of alcohol significantly reduce the body's defenses. The same influence is exerted by corticosteroids and other immunosuppressants used for the treatment of certain diseases.

4**.** ***Other diseases*.** In many countries, the problem of HIV infection is now acute. Damage to the body's defense mechanisms often results in the development of tuberculosis. People with diabetes, leukemia, or leprosy are also susceptible to tuberculosis. In children, miliary tuberculosis can develop after HIV infection, after measles, whooping cough and other acute infections. Chronic malaria and helminth infestation are important factors predisposing to tuberculosis in tropical countries.

5. ***Poverty*.** Poverty is associated with poor housing and working conditions, as well as overcrowding. These factors weaken the body's defenses and contribute to the spread of infection. People living in such conditions usually do not eat well, which also facilitates the development of tuberculosis.

Tuberculosis prevention is an important link in the fight against infection and includes:

1. National measures (*social prevention*) - a set of measures to improve the health of the population (improving the material and cultural standard of living, improving housing conditions, improving working conditions, improving settlements, greening cities, etc.).

2. Special medical measures that are carried out by medical and preventive and sanitary-epidemiological institutions) and include::

• *Early and timely detection and treatment of tuberculosis patients* is a strategy that is an essential element of prevention, as it allows you to isolate the source of infection and treat it as early as possible, which prevents healthy people from getting infected from this source and allows you to treat tuberculosis in its very initial stages with good effect.

• *Sanitary prevention* – a system of measures aimed at combating tuberculosis as an infectious (contagious) disease. The goal is to prevent infection of healthy people in the family, at work, and in public places.

• *Specific prevention* – measures to prevent tuberculosis infection and disease with BCG vaccine prophylaxis and preventive treatment (chemoprophylaxis) of high-risk groups.

Early and timely detection and treatment of tuberculosis patients. Recommendations of the International Union for the control of tuberculosis and lung diseases and who as the main direction of anti-tuberculosis work call the identification of bacillary patients in whom mycobacteria are detected in sputum by microscopy, and their chemotherapy. Effective treatment can prevent the death of such patients with a progressive course of the disease, which leads to a decrease in mortality; stop the spread of tuberculosis infection; prevent the development of a

chronic tuberculosis process with the constant release of mycobacteria, often drug-resistant, and, finally, achieve a cure for the patient.

Identification of bacillary patients is recommended among people who have sought medical help in connection with bronchopulmonary symptoms: cough with sputum, shortness of breath, hemoptysis, as well as with intoxication syndrome with increased body temperature, weight loss. In our country, it is customary to conduct x-ray fluorography simultaneously with sputum examination in antitubercular dispensaries. исследование.

Mass fluorography surveys are conducted annually in cities, and every two years in rural areas.

Treatment. Tuberculosis can be treated and cured. In the case of active drug-sensitive tuberculosis, a standard six-month course of treatment with four antimicrobial drugs is provided, while ensuring that the patient is informed and supported by a health care professional or a specially trained volunteer assistant. Without such support, it is more difficult to follow the treatment regimen.

An estimated 63 million lives have been saved by TB diagnosis and treatment since 2000

Sanitary prevention (environmental hygiene). Since the discovery of the causative agent of tuberculosis, hygienists and phthisiologists have developed a system of sanitary and preventive measures aimed at preventing people from becoming infected with tuberculosis. The scientific basis of sanitary prevention is the epidemiology of tuberculosis, the doctrine of the causative agent of this disease, the sources of infection and ways of spreading tuberculosis infection, and the doctrine of anti-tuberculosis immunity.

The main method aimed at breaking the mechanism of transmission of the pathogen is *disinfection***,** the main methods of disinfection in which are:

* means and techniques of mechanical disinfection (washing, wet cleaning, washing, cleaning, ventilation, etc.);
* physical methods (boiling Laundry, dishes, toys, incineration of garbage), which also have a fairly strong effect on MBT;
* chemical method that ensures the destruction of MBT with disinfecting solutions.

Each patient with tuberculosis should have a separate room, they need to have separate dishes that are stored and washed separately. A patient with tuberculosis should observe the culture of coughing - close his mouth when coughing with a disposable napkin or the back of a brush, collect sputum in a special container for collecting sputum (spittoon). The patient's dishes should be thoroughly cleaned of food residues, and then decontaminated by boiling in a 2% soda solution for 15 minutes from the moment of boiling, or dipping in an upright position for 1 hour in a 0.5% activated chloramine solution.

Bed linen and underwear of the patient are collected in a special bag and stored until decontamination and washing. Disinfection of Laundry is carried out by soaking in a 2% solution of soda followed by 15-minute boiling, or by immersion in a 1% activated chloramine solution for 1-2 hours at a temperature not lower than 14°C. Patients ' clothing should be ventilated in the sun as often as

possible and ironed with a hot iron. Pillows, blankets, mattresses are subjected to chamber disinfection at least 4 times a year, ventilated and dried in direct sunlight. Books, notebooks, toys, etc. must be used individually by the patient and cannot be passed on to other people without prior chamber disinfection.

Cleaning of the patient's premises is carried out daily in a wet way with a hot 2% soap-soda solution with open Windows or vents, depending on the season. At the same time, you should use separate cleaning items.

In order to prevent transmission of infection, it is necessary to control flies. For this purpose, it is necessary to observe a sanitary and hygienic regime, eliminate substrates suitable for breeding flies, destroy larvae and pupae in their breeding areas and protect living spaces with metal nets or gauze.

Specific prevention. Bacillus Calmette—Guerin or BCG (Bacillus Calmette—Guerin Guerin , BCG) is a vaccine against tuberculosis (Latin *Mycobacterium bovis* BCG). Controlled studies conducted in a number of Western countries have shown that BCG can prevent the development of tuberculosis in 80% of cases within 15 years.

Routine specific immunization of the population with live BCG and BCG-M vaccine, which is administered to children and adults who are not infected with mycobacteria, plays an important role in increasing the body's immunity to tuberculosis. Newborns receive the BCG-M vaccine once on the 3rd-7th day after birth. The vaccine is administered intradermally on the outer surface of the upper third of the left arm shoulder in 0.025 mg of live dry vaccine.

The duration of the BCG effect is approximately 15 years, at least in a well-fed population. It provides protection against tuberculosis in childhood, but gradually loses its power, so it is necessary to carry out revaccination (re-vaccination).

Revaccination of BCG vaccine at a dose of 0.05 mg by intradermal method is subject to uninfected tuberculosis-resistant children and adolescents aged 7 years (in the 1st grade of school) and 14 years.

Tuberculinodiagnostics, is used for the selection of patients to be revaccinated, as well as primary vaccination conducted at the age of 2 months or older. An intradermal tuberculin Mantoux test with 2 tuberculin units (2 TE) of purified tuberculin is used. The reaction is considered negative (no papule, hyperemia, only a prick reaction of 0-1 mm), doubtful (papule 2-4 mm or hyperemia of any size without infiltrate) or positive (papule greater than or equal to 5 mm or vesicle, lymphangoitis or necrosis, regardless of the size of the infiltrate). BCG vaccine is administered only to children with negative R. Mantoux.

Security questions for self-training:

1. *What is TB? Name the causative agent of tuberculosis.*
2. *Who is most at risk of tuberculosis?*
3. *What are the features of the manifestation of multidrug-resistant tuberculosis ?*

4. What are the clinical manifestations of tuberculosis in children? HIV-positive people ?
5. What factors contribute to tuberculosis?
6. What groups of measures does TB prevention include?
7. How is early and timely detection and treatment of tuberculosis patients performed?
8. What are the main measures of sanitary prevention of tuberculosis?
9. How is tuberculosis vaccination implemented?
10. What is tuberculin? How and to whom is the tuberculindiagnosis performed ?

CHAPTER 15.*CHEMICAL ADDICTIONS. ALCOHOL AND RELATED PROBLEMS. SMOKING TOBACCO (NICOTINE) AND ITS HARM TO HEALTH*

Currently, the number of dependent people is growing catastrophically all over the world, including in our country. According to the World Health Organization, at the beginning of the XXI century, the abuse of alcohol, drugs and psychotropic substances took on the character of an epidemic.

Addictive behavior (from the English *addiction* - vicious tendency) is one of the forms of deviant behavior with the formation of a desire to escape from reality. The presence of addictive behavior indicates a violation of adaptation to the changed conditions of the micro-and macro-environment. Classification of addictive behavior1) chemical addiction: alcoholism, drug addiction, substance abuse, tobacco smoking 2) non-chemical addiction:

computer addiction, gambling, love addiction, sexual addiction; 3) intermediate addictions (anorexia, bulimia, orthorexia).

According to official data, alcohol consumption per capita in our country has almost doubled over the past 20 years and is at a level that is dangerous for the health of the nation as a whole. Excessive alcohol consumption is associated with high mortality rates, primarily among men of working age.

A whole Arsenal of terms is used to refer to surfactants, for example, alcohol abuse causes drug addiction, namely alcoholism; drug abuse – drug addiction, and abuse of toxic substances – substance abuse.

In the diagnostic criteria, all these substances are referred to by the General term psychoactive substance, and any drug-related disease is referred to as substance dependence.

Table 22.Classification of psychoactive substances (according to ICD-10)

Psychoactive substance	Components and varieties
Alcohol F10	Ethanol + impurities
Opioids F11	Natural, semi-synthetic, synthetic
Cannabioids F12	Marijuana, Hashish, Hash oil

Sedatives, sleeping pills F13	Barbiturates, benzodiazepines
Cocaine F14	Traditional cocaine, New cocaine ("crack»)
Other stimulants F15	Amphetamines Caffeine
Hallucinogens F16	LSD Mescaline Psilocybin Ecstasy Ketamine Cyclodol
Tobacco F17	Nicotine, tar, etc. ingredients
Volatile solvents F18	Acetone, Trichloroethyl, Nitrocracks, Adhesives, Varnishes, Gasoline, etc.

Traditionally, in most countries of the world, strong alcoholic beverages were not consumed, which to a certain extent was associated with concern for the health of the population. In antiquity, they drank only diluted wine and only on holidays. In Ancient Rome, the use of alcohol was allowed from the age of thirteen. In Russia, alcoholic beverages were made from honey and bread and were very expensive. Only a few centuries ago, humanity learned to produce cheap alcohol, and cheap alcoholic beverages began to appear. Modern technologies make it possible to quickly and inexpensively produce strong alcoholic beverages, which leads to mass alcoholization of the population not only in our country, but also in the world.

First of all, alcohol consumption affects the Central nervous system. Ethyl alcohol destroys nerve cells, as a result of which the volume of the brain decreases, and the psyche changes. In the end, there is a psychic destruction of the personality.

Alcohol affects the hypothalamic centers of positive emotions, causing an improvement in mood. The basis of irritation of nearby centers (thirst, hunger, sexual behavior, etc.) is a change in the structure of human behavior after drinking alcoholic beverages.

The effect of alcohol on the Central nervous system with its single use is stage-based . The first stage is the stage of arousal, it is characterized by a surge of strength, talkativeness, increased gesticulation. The second stage - = braking. It is characterized by depression of the brain activity, fatigue, irritability. Strong alcoholic beverages (stronger than 9-15%) cause irritation of the mucous membranes of the gastrointestinal tract. With their regular use, there is an atrophy of the papillae of the tongue (which is accompanied by the loss of taste sensations), atrophy of periodontal tissues, ulceration of the mucous membranes. Under the influence of alcohol, the secretory activity of the stomach is disrupted.

With chronic alcohol use, the liver's activity is disrupted. 98% of alcohol

and its metabolic products are rendered harmless in this organ. Alcohol consumption leads to an increase in the size of hepatocytes, the accumulation of fat droplets in them. Fatty hepatosis precedes the development of cirrhosis of the liver.

Alcohol is pancreatrophin poison. Drinking large amounts of alcohol can lead to the development of acute pancreatitis. Chronic alcoholism is accompanied by chronic pancreatitis.

Alcohol causes kidney damage. It stimulates the release of glucose, protein and other useful substances through the kidneys. Products of alcohol metabolism cause inflammation of the renal tissue. Especially dangerous for the kidneys are fusel oils and alcohol substitutes (brake fluid, technical alcohol, cosmetics, etc.) that can cause necrosis of the cells of the renal tubules, kidney failure.

The products of alcohol metabolism are partially released through the lungs, causing their damage. Fusel oils are especially dangerous for the lungs. Products of alcohol metabolism and fusel oils affect the trachea and bronchi, causing their inflammation.

Alcohol is a poison for the cardiovascular system. It causes" leaching " of electrolytes from the myocardium, as a result of which its functioning is disrupted. As a result of this action, as well as toxic damage to the products of alcohol metabolism, arrhythmias, heart failure, and cardiomyodystrophy develop. In blood vessels, alcohol (especially in high doses) can contribute to the development of atherosclerotic plaques and blood clots.

Alcohol also adversely affects the endocrine glands. In chronic alcoholism, partial atrophy of the adrenal cortex develops. Alcohol disrupts the production of sex hormones, reduces the fertilizing ability of spermatozoa.

Alcohol is a good solvent. It easily penetrates cells and tissues that have a large amount of fat. Therefore, chronic alcoholics suffer from a lack of weight. However, with a single use of alcohol does not contribute to weight loss, because it is extremely high in calories.

Influence of alcohol on pregnancy

Intrauterine exposure to alcohol leads to a number of problems-from birth defects to neurological disorders in the newborn. The nature of alcohol exposure during pregnancy was first described by Lemonnier in France in 1968. And named by Jones in 1973 ***as fetal alcohol syndrome'(PAS)***. The amount and duration of alcohol intake by a mother has a direct impact on the severity and extent of physical and neurological signs associated with PAS. Drinking moderate amounts of alcohol leads to a more "mild" syndrome called **the "*fetal alcohol effect'(PAE)***.

According to calculations, the daily consumption of 150 ml of pure alcohol by the expectant mother (2-3 times 150 ml of vodka or whiskey) leads to the fact that 1/3 of children will have fetal alcohol syndrome (PAS), 1/3 – some toxic prenatal effects and 1/3 - will be normal children. Children born to mothers who are in the late stages of chronic alcoholism are most likely to develop PAS, but any pregnant woman, young or old, is at risk if she drinks during pregnancy.

Although the effects of alcohol on the fetus are well recognized, the mechanisms of their formation under the influence of alcohol penetrating through the placenta and /or its metabolites are not exactly known.

Mechanisms of alcohol influence on the fetus:

1. Ethanol accumulates in the amniotic fluid and is present there even when it is no longer present in the mother's blood. This means that alcohol taken once has a long lasting effect on the fetus.

2. Alcohol Consumption by the expectant mother in the first trimester of pregnancy can lead to significant and often recurring problems in the learning and behavior of the newly born child in the future.

3. Postnatal environmental conditions can change the effects of alcohol on the fetus.

Pregnancy complication. When the future mother uses alcohol, the risk of miscarriage increases 2-4 times.

Consequences of alcohol exposure on the fetus.

Fetal alcohol syndrome is characterized by a triad: growth retardation, mental retardation, and specific facial features of the newborn. In fact, alcohol is the most recognized and preventable cause of mental retardation, occurring at a rate of 17/1000 live births (compared to 1.3/1000 for down syndrome).

PAE and PAS are the consequences of exposure to the fetus of alcohol consumed by the mother. The severity of their manifestation depends on the sensitivity to alcohol of the embryo. The effects of PAS do not decrease over time, although the specific manifestations change as the child grows older. Attention disorders, hyperactivity, which are observed in 75-80% of patients with PAS, poor adaptive and social skills lead to learning difficulties. Although developmental disorders such as microcephaly and short stature tend to persist as the child grows older, specific features that appear in facial features are more difficult to recognize over time.

Even in the absence of these obvious signs, prenatal alcohol exposure can adversely affect fetal development. Characteristics of the child's behavior in PAE, including stubbornness, aggressiveness, hyperactivity, and sleep disorders, may reflect either less alcohol exposure to the fetus, or less sensitivity of the fetus to alcohol exposure.

In the mother, withdrawal syndrome develops within 48 hours after stopping drinking alcohol, and in addition to its typical symptoms, the risk of premature birth increases. The effects of alcohol withdrawal syndrome on the fetus are not entirely clear. Safety of using disulfiram (antabuse) during pregnancy is not established.

Finally, it is important to know that alcohol can enter the infant's body through breast milk.

Medicinal products containing ethyl alcohol

Some medications contain ethyl alcohol as a stabilizer, preservative, or solvent. In order to correctly calculate the daily amount of alcohol consumed, you need to know these drugs and take into account the amount of ethyl alcohol contained in them.

The metabolism of ethanol

Once in the human body, ethyl alcohol not only has an exciting and emotional effect, but also , being a xenobiotic, undergoes biotransformation. There are two alternative routes of ethanol metabolism.

1. Metabolism involving *alcohol dehydrogenase* is normally the main route of metabolism for alcohol, it includes two stages:

1) *oxidation to acetaldehyde.*

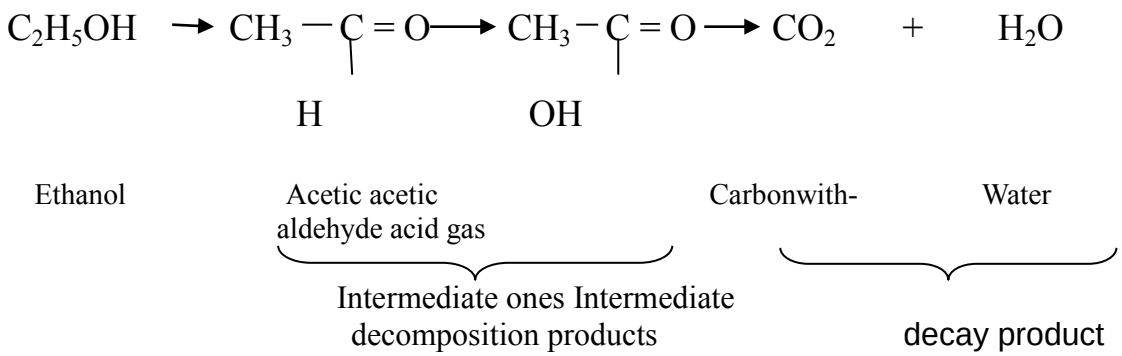
When the rate of oxidation of ethanol slows down, its resistance to alcohol decreases.

Individuals with a genetic low activity of the enzyme quickly become intoxicated. On the contrary, with increased activity of the enzyme, a person does not manage to get drunk even with a significant amount of alcohol drunk.

The resulting acetaldehyde is highly toxic, so the faster the second stage of ethanol metabolism proceeds, the less pronounced its toxic effect.

The accumulation of acetaldehyde in its delayed oxidation is associated with the development of intoxication in hangover syndrome. In adolescents, the enzymatic oxidation of acetaldehyde is practically absent, so even small amounts of alcohol can cause poisoning.

Conversion of alcohol in the body



2) *conversion to acetic acid under the influence of acetaldehyde dehydrogenase.*

When the speed of the process slows down, intoxication is observed, which is all the more pronounced the more the process is slowed down.

On the ability to block acetaldehydrogenase is based the treatment of alcoholism with disulfiram or cyamide ("torpedo"). However, other drugs have similar properties, for example, chloramphenicol, metronidazole, griseofulvin, cephalosporin antibiotics, so their simultaneous use with alcohol may develop toxic reactions.

2. Oxidation with the participation of cytochrome P450. Cytochrome P450-$2E_1$ is an inducible enzyme, its induction is observed under the influence of ethanol. Chronic alcohol intake leads to the activation of this enzyme. With its participation, carcinogens are formed from tetrachlorocarbon, gasoline , nitrosamines, and paracetamol.

The rate of alcohol metabolism involving alcohol dehydrogenase is determined at the genetic level. Thus, most Europeans have low alcohol dehydrogenase activity, so they quickly become intoxicated and do not suffer from hangover syndrome. The Russian rate of oxidation of ethyl alcohol to acetaldehyde is high, and the subsequent metabolism is relatively low. Therefore, it is difficult for a Russian to get drunk, but the hangover proceeds with pronounced intoxication. In Mongoloids, the activity of alcohol dehydrogenase and acetaldehyde dehydrogenase are approximately the same, i.e. there are no natural mechanisms for "inhibiting" drunkenness, so if Mongoloids start drinking, then as a rule, they easily get drunk.

Principles of treatment of alcoholism

Treatment of alcoholism begins after detoxification therapy. There are three main methods of treatment:

1. The use of antabuse-like substances ("torpedoes"). Similar substances in the form of capsules are sewn to the patient. Drinking alcohol even in small quantities after such an operation leads to the development of a strong intoxication syndrome.
2. The use of psychotherapeutic techniques ("coding"). The effectiveness of coding is not shown in cases where it is performed against the patient's will.
3. The appointment of antagonists of opiate receptors.

Security question for self-control :

1. How does alcohol affect your health?
2. How alcohol affects pregnancy?
3. How does the metabolism of ethanol occur?
4. What are the main principles of treatment of alcoholism?
5. What is your personal attitude to alcohol?
6. Can alcohol consumption lead to death?
7. What are the features of the action of the enzyme alcohol dehydrogenase on people of different nationalities?

SMOKING TOBACCO (NICOTINE) AND ITS HARM TO HEALTH

Smoking: statistics and risks.

According to WHO, 1.3 billion people in the world are addicted to tobacco. This leads to 6 million deaths each year, more than 5 million of which are attributed to tobacco users and former users, and more than 600 thousand cases occur among non-smokers exposed to second-hand smoke.

The physical and chemical mechanism of Smoking consists in the fact that air is absorbed through the ignited and slowly smoldering tobacco. The oxygen contained in the inhaled air, passing through the layer of smoldering tobacco, increases its combustion, and all these combustion products, along with the rest of the air, enter the lungs.

Tobacco smoke, inaddition to nicotine that causes dependence, contains more than 4,000 chemicals, more than 200 of which are dangerous to the body, and more than 40 are carcinogens, such as carbon monoxide, ammonia, radioactive substances (polonium-210), lead, bismuth, arsenic, prussic acid, hydrogen sulfide, formaldehyde, etc. Regular smokers have a 3-fold higher risk of developing cardiovascular diseases (myocardial infarction, stroke, obliterating endarteritis), and a 10-fold higher risk of developing bronchopulmonary diseases (COPD, emphysema, tuberculosis) than ynon-smokers. Smoking increases the risk of diseases of the gastrointestinal tract (stomach ulcer, esophagitis), the reproductive system (decreased fertility, placental abruption, premature birth), intrauterine death, oral diseases (leukoplakia, gingivitis), other organs and systems (early menopause, osteoporosis, cataracts, premature aging).

Smoking and pregnancy

Substances included in the composition of inhaled cigarette smoke affect the the development of the fetus is as follows:

- nicotine causes narrowing of blood vessels in the placenta and thereby reduces the delivery of oxygen and nutrients to the placenta;
- carbon monoxide reduces the oxygen capacity of the mother's and fetus ' blood, binding to hemoglobin at the site of oxygen attachment;
- polycyclic aromatic hydrocarbons contained in cigarettes alter the metabolism of exogenous organic compounds by the placenta and fetus.

Smoking during pregnancy increases the risk of complications, especially the risk of premature birth; 14% of all births occurring before 37 weeks of pregnancy are caused by Smoking by expectant mothers during preterm pregnancy.

Smoking during pregnancy causes characteristic fetal disorders:

- lower birth weight is associated with a lower infant survival rate during the first year of life;
- nicotine can cause atrophic and hypovascular changes in placental villi, impairing utero-placental blood circulation, which leads to a slowdown in fetal growth;
- nicotine accumulates in breast milk. Therefore, the toxic effect on the child's body is manifested even after its birth;
- increased levels ***of thiocyanate*** in the body of the expectant mother can contribute to slowing down the growth of the fetus, its metabolites can interfere with the metabolism of vitamin$_{B12}$, cause degenerative nerve damage and alter the function of the thyroid gland;
- exposure to smoke in infants can cause them to become more susceptible to respiratory infections and lung damage in the future.

The effect of nicotine on those around the smoker

Passive Smoking is a condition when non-smokers are forced to breathe tobacco smoke from smokers. The smoker causes harm not only to his own health, but also to the health of others. This is something you have to deal with all the time on the streets and indoors, in restaurants, Nightclubs, and cars.

When Smoking in the surrounding air, levels of carbon monoxide are formed that exceed permissible concentrations. Non-smokers can have asthma attacks, develop allergies, and exacerbate the course of coronary heart disease due to their fumigation by smokers. Children of Smoking parents are more susceptible to respiratory diseases than children of non-Smoking parents. In particular, in such children, the frequency of bronchitis and pneumonia doubles.

Polonium, radioactive lead and bismuth in tobacco smoke are dangerous not only to those who smoke, but also to everyone who breathes this smoke, especially children.

With mass distribution, Smoking becomes a socially dangerous phenomenon. After all, smokers poison the atmosphere, increase the concentration of carcinogenic substances in the air, and contribute to the frequency of fires. Non-smokers are forced to breathe poisoned air. But the main riska factor is psychological. Many, looking at others, obeying the herd feeling, begin to smoke. A smoker, once in a Smoking company, takes out a cigarette and lights it for the company.

Headache, dizziness, palpitations, and bruising are common complaints of non – smokers who have to spend long periods in smoke-filled rooms. Therefore, measures against Smoking in public places are necessary.

Who's anti-Smoking policy consists of two main pillars:

1. ***Prevention of Smoking.*** The basis of prevention is educational work. Work for the future.
2. ***Smoking cessation*** among smokers.

In addition, who proposes to raise taxes on the circulation of cigarettes, introduce restrictions on their advertising, sale and use.

Nicotine replacement therapy..

The main mechanism of action of nicotine replacement therapy is the delivery of free nicotine into the arterial blood, which, when combined with nicotine receptors, stimulates the release of dopamine and, as a result, relieves withdrawal symptoms. The content of nicotine in arterial blood thus reaches only 50% of the level relative to its content when Smoking. In addition, the patient stops receiving toxic, carcinogenic and toxic substances from tobacco smoke. To these doses of nicotine addiction does not develop, but the depletion of nicotine receptors develops, and the nicotine dependence decreases completely. As the degree of nicotine dependence decreases, the patient reduces the dose of drugs.

The NRT consists of two components:

1. ***Basic therapy***, which is prescribed for permanent use. Its goal is to

maintain the concentration of nicotine in the patient's blood at the usual level in the first weeks, in order to exclude the appearance of withdrawal symptoms. Then the level of basic therapy gradually decreases until it is completely discontinued.

2. ***Additional intake*** of nicotine-containing drugs (NSPs) when withdrawal symptoms occur or worsen, as well as when a situation occurs that habitually causes the patient to want to smoke.

To increase the effectiveness of therapy with a high or very high degree of nicotine dependence, it is recommended to use combinations of nicotine-containing drugs (patch+chewing gum or patch+inhaler). In this case, the use of a patch provides a constant level of nicotine in the blood, and additional forms of nicotine-containing drugs allow you to increase the level of nicotine if necessary and overcome the acute desire to smoke. Additional therapy can be prescribed longer than the basic one and last more than 6 months, depending on the patient's needs. NZT can be used for temporary Smoking cessation (air travel, лечениихospital treatment, being in places where Smoking is prohibited).

Taking nicotine-containing medications begins from the day of quitting Smoking. In the case of relapse of Smoking, the initial course of treatment ends, the mistakes made are analyzed and a new course is planned.

The recommended doses of nicotine-containing drugs do not cause serious adverse effects. NRT can be used almost without restrictions, but patients with unstable heart disease, pregnant women and adolescents should take this therapy under the supervision of a doctor. A contraindication to the use of nicotine-containing drugs may be hypersensitivity to nicotine or other components of the drugs.

Technique of taking nicotine-containing drugs.

Nicotine-containing chewing gum is available in two doses-2 mg and 4 mg with the taste of mint and fresh fruit. Taking chewing gum consists of its slow periodic chewing for 30 minutes.

Nicotine is extracted from the inhaler into the mouth using sucking movements (2-3 movements). The inhaler has cartridges in a dose of 10 mg. The cartridge is used several times and refilled in the inhaler for a maximum of 24 hours.

It is recommended to apply the patch on an undamaged, clean and dry area of the skin and change the place of application of the patch daily. There are patches that are attached for 24 hours, to deliver a maximum dose of 21 mg of nicotine per day, and systems that are attached for 16 hours and that deliver a maximum dose of 25 mg of nicotine. The patch is applied immediately after waking up and peels off before going to bed, because usually patients do not smoke at night and the intake of nicotine at night can disrupt the patient's sleep.

Weight gain

Smoking cessation, gradual elimination of symptoms of chronic tobacco intoxication are accompanied by an improvement in taste sensitivity, appetite, normalization of digestive gland secretion, which generally leads to an increase in food intake and, consequently, weight gain.

This can be avoided if you follow some simple dietary advice: avoid overeating, observe the basics of rational nutrition, food should contain a large amount of vitamins, mineral salts, and trace elements. Recommended: increase intake sources of vitamin With (rose hips, black currants, green onions, cabbage, lemons, etc.), vitamin b_1 (wholemeal bread, cereals), vitamin b_{12} (green peas, oranges, cantaloupe), vitamin PP (beans, cereals, yeast, cabbage, dairy products, potatoes), vitamin A (vegetables, especially carrots), vitamin E (bread flour, vegetable oil, green vegetables, wheat germ).

In order to prevent relapse of Smoking, the doctor should actively continue psychotherapeutic influence on the patient, involve in the sphere of influence of his microsocial environment. Autogenic training and increased physical activity have a good effect. Relief of symptoms is promoted by pharmacotherapy – varenicline, bupropion (slows down weight gain) or nicotine chewing gum.

Electronic cigarettes (electronic nicotine delivery systems).

Electronic cigarettes are devices in which, instead of burning the tobacco leaf, the solution evaporates for its subsequent inhalation. Cigarettes have been developed to replace conventional cigarettes and are virtually identical in appearance. Tests of 19 types of electronic cigarettes were conducted, the manufacturers of which claim that they are safe for health.

The main components of the solution, in addition to nicotine, are propylene glycol, with or without glycerin, and flavoring agents.

Propylene glycol is a colorless liquid that tends to accumulate in the body, causes allergic reactions, irritation and contributes to the appearance of ulcers, causes a violation of the liver and kidneys.

In half of the tested cigarettes , various forms of the carcinogenic substance ***nitrosamine***, which can cause cancer in people, were detected in the laboratory. Despite the manufacturers ' claims, in fact***, nicotine*** is present in electronic cigarettes. Laboratory analysis of samples of electronic cigarettes also revealed the substance ***diethylene glycol-*** an ingredient in antifreeze.

Therefore, professional health professionals should not recommend this product, as e-cigarettes contain carcinogens and toxic substances.

In the process of Smoking, a smoker who has switched from conventional cigarettes to electronic cigarettes often lacks the sensations that he received when inhaling tobacco smoke. Trying to achieve the same sensations, many smokers try to increase the strength of the liquid to get the desired "blow on the throat", which leads to an overdose of nicotine with all the accompanying symptoms – dizziness, headache, nausea, increased salivation, abdominal pain, diarrhea and pronounced General weakness.

The total suspended particle (TSP) emissions produced by an e - cigarette

are about 60 micrograms /^{m3}, 10 to 15 times lower than those produced by conventional cigarettes. Electronic cigarettes, compared to conventional cigarettes , have a lower density (from 6 to 21 times less), for each OF the different PM fractions (PM1, 2, 5, 7, 10). However, these levels are still slightly higher than the values given in the who guidelines on outdoor air quality.

"An electronic cigarette will not serve you well!» - this statement was released by the who.

The FDA urged Americans to refrain from using electronic cigarettes, WebMD reports. According to the organization's specialists, the use of these devices is not a safe alternative to Smoking.

Consequently, e-cigarettes, after short-term use, have immediate adverse physiological effects that are similar to those observed when Smoking tobacco. The long-term effects of using e-cigarettes have not been sufficiently studied, are potentially adverse and deserve further research.

Hookah

Many smokers believe hookah is harmless. However, hookah smoke is just as harmful to health as cigarette smoke, because it contains the same toxic substances – ***nicotine***, **tar** , and various ***carcinogens***. Compared to cigarette smoke , hookah smoke has higher levels ***of arsenic***, ***chromium, and lead***. Scientific evidence shows that those who smoke hookah have higher levels ***of carboxyhemoglobin*** compared to those who smoke cigarettes. Researchers from the University of Izmir (Turkey) found that those who smoke only hookah, the vital capacity of the lungs is reduced by 30%, and those who smoke both hookah and cigarettes – by 40%. Hookah Smoking causes the same diseases as cigarettes.

The main advantage of hookah is that the smoke passing through the water almost does not go out and therefore remains relatively clean. However, hookah smokers still pollute the air with tobacco smoke when exhaling, and therefore it is better to avoid rooms where hookah is smoked.

Security questions for self-training:

1. Describe the effect of nicotine and other components of tobacco smoke on the organs and systems of the human body.
2. What mechanisms underlie nicotine addiction?
3. What are the principles for treating tobacco addiction?
4. What medications are used to relieve withdrawal symptoms when quitting tobacco?
5. Does WHO recommend e-cigarettes as an alternative to quitting smoking?
6. What substances are present in hookah smoke?
7. What are the toxic and carcinogenic substances contained in e-cigarettes?

CHAPTER 16.*DISEASE DEPENDENT BEHAVIOR (continued). DRUG ADDICTION AND SUBSTANCE ABUSE: RELEVANCE, RISK FACTORS, PSYCHOSOMATIC PATHOLOGY. LEVELS OF PREVENTION OF DISEASES OF DEPENDENT BEHAVIOR.*

The social degradation of drug addicts is the cause of crime and the development of illegal drug trafficking. Illegal drug production leads to the spread of low-quality drugs.

Drug addiction is largely a problem of the younger generation, which exacerbates its social consequences. According to the United Nations Office on Drugs and Crime, about 230 million people have used illicit drugs at least once, accounting for 5 percent of the world's adult population. And 0.6 percent of the adult population is classified as a problem drug user

Drug addiction is a type of addiction characterized by the development of attraction (mental and / or physical dependence), due to the abuse of surfactants, as well as mental degradation and persistent somatoneurological disorders.

Abuse (addictive behavior, use with harmful consequences) – episodic, although repeated non-medical use of surfactants in the absence of signs of dependence (mental, physical dependence, increased tolerance, withdrawal syndrome, etc.). thus, abuse is like a "pre-illness", occurs during the "trial" of the substance. In this case, there is physical (for example, hepatitis as a result of injecting forms of surfactants) or mental (for example, secondary depressive disorders) harm to health. Abuse is often accompanied by certain negative social consequences (family problems, criminal acts, etc.). However, it should be noted that the presence of social difficulties is not yet proof of use with harmful consequences.

In its development, addictive behavior goes through a number of stages:

1) "first trials" – an occasional use of surfactants that occurs "out of curiosity", "for the company", etc.;

2) "search for poly-drug addiction" – the use of different types of surfactants in order to choose a more "pleasant" one»;

3) "choice of preferred substance" – fixation on the use of one type of surfactant, as the most preferred for a given individual for the narcotic effect.

Addiction, according to ICD-10, is understood as a painful process that naturally passes through successive stages and has its beginning and outcome. However, not all stages can be detected in the dynamics of dependence on individual psychoactive substances (for example, hallucinogens, tobacco, etc.).

Mental dependence syndrome – a mental (obsessive) attraction to the use of surfactants and the ability to achieve mental comfort in a state of intoxication.

Physical dependence syndrome – physical (compulsive) attraction to alcohol and the ability to achieve physical comfort in a state of intoxication.

Withdrawal syndrome (withdrawal condition, withdrawal syndrome) - it is a manifestation of physical dependence.

Withdrawal syndrome consists of two groups of symptoms: mental (mental stress, emotional disorders in the form of depression, anxiety, decreased appetite, libido, sleep disorders , etc.) and peripheral (vegetative disorders – hyperhidrosis, chills, dyspepsia, impaired function of internal organs and systems). Depending on the type of addiction, one or another component prevails.

Acute intoxication

According to ICD-10, acute intoxication is a transient state following the use of a psychoactive substance, consisting of disorders of consciousness, cognitive functions, perception, emotions, behavior or other psychophysiological functions and reactions, statics, coordination of movements, vegetative and other functions.

The diagnosis of addiction is made when there are 3 or more of the following signs that have been observed for a certain time over a period of 12 months:

1. A strong desire or feeling of an overwhelming craving for a substance

2. Reduced ability to control the intake of the substance: its beginning, end and dose, as indicated by the use of the substance in large quantities and for a period of time longer than intended, unsuccessful attempts or a constant desire to reduce or control the use of the substance.

3. A withdrawal condition or withdrawal syndrome that occurs when the intake of a substance decreases or stops, as indicated by a complex of disorders characteristic of that substance or the use of the same (or similar substance) to relieve or prevent withdrawal symptoms.

4. Increased tolerance to the effects of a substance, consisting in the need to increase the dose to achieve intoxication or the desired effects, or in the fact that chronic administration of the same dose of a substance leads to a clearly weakened effect.

5. Preoccupation with the use of a substance, which manifests itself in the fact that: -they completely or partially give up other important alternative forms of enjoyment and interests for the sake of taking the substance, or in particular. that a lot of time is spent on activities related to acquiring and taking the substance and recovering from its effects.

6. Continued use of the substance despite clear signs of harmful effects, as evidenced by chronic use of the substance with an actual or perceived understanding of the nature and extent of the harm

Risk factors for exposure to psychoactive substances

I. Biological resources

* alcoholism and various addictions in parents;

* perinatal and early postnatal harm that negatively affects the child's mental development;;

* organic brain lesions;

* chronic somatic diseases;

* the degree of initial tolerance**.**

II. Individual psychological

* limited interests;
* lack of attitude to social activities,
* low level of internal control;
* emotional-volitional imbalance.

III. Social network

1. Ciallye Macros

• the presence of surface-active substances;
* deterioration of the socio-economic situation in the country
* traditions of the society;
* value pluralism.

2. Microsocial problems in the family:

* substance abuse in the family,
* the discrepancy between social norms and the behavior of family members
* wrong parenting style;
* single-parent family;
* the presence of family conflicts;
* permanent employment of parents
* academic failure rate;
* conflicting relationships with peers and teachers
* the presence in the immediate environment of people who use surfactants, or people with deviant behavior;;
* approval of anesthesia in the immediate environment.

The main forms of drug addiction

The most common classification of drug addictions is their division into clinical forms.

The form (type) of drug addiction is a characteristic symptom complex caused by consumption and dependence on specific surfactants.

The most common forms of drug addiction are:

• opium addiction;
• drug abuse in the use of cannabis preparations (of cannabinoidal);
• drug abuse with the use of cocaine;
• drug abuse in the use of stimulants;
• drug abuse in the use of hallucinogens, etc.

Opium addiction

It develops with the use of narcotic substances of the opium group (opium and its drugs-morphine, codeine, heroin, omnopone, pantopone, etc. synthetic morphine-like drugs-fenadone, promedol, etc.).

Diagnostic criteria for acute opioid intoxication of opioids:

There are signs of changes in the mental state: apathy and sedation; disinhibition; psychomotor retardation; attention disorders; impaired judgment; violations of social functioning. The following symptoms may occur: drowsiness, blurred speech, constriction of the pupils (with the exception of anoxia from a severe overdose, when the pupils dilate), depression of consciousness (for example, SOPOR, coma). Severe acute opioid intoxication may include respiratory depression(and hypoxia), hypotension, and hypothermia.

The course of opium addiction

Stage I. Take the drug regularly. There is a decrease in the duration of sleep without feeling sleep deprivation. Mental dependence syndrome (achieving mental comfort during intoxication). Before taking the drug, the patient is alert and mobile, after that he is sluggish and inactive. The duration of the stage when using morphine is 2-3 months, opium-3-4 months, codeine-up to 6 months.

Stage II. The syndrome of altered reactivity is fully formed (tolerance increases by 100-300 times compared to therapeutic doses, regular consumption with an individual rhythm of anesthesia, sleep is normalized. Stool and diuresis before intoxication, in contrast to stage I, is sluggish and powerless, and after it revives). Quantitative control is not lost. The addictive syndrome is formed in the form of physical dependence (compulsive attraction and the achievement of physical comfort during intoxication). Completely abstinent symptoms are fully formed.

Stage III. The form of consumption is constant. Tolerance drops, to achieve comfort, 1/8-1/10 of a constant dose is quite enough. The effect of the drug is exclusively tonic. Without intoxication, there is no energy to the point of being unable to move. Withdrawal is severe and occurs within the first day after discontinuation of the drug. It is determined by somatic exhaustion, a deficit of body weight of 7-10 kg, a sharp premature aging.

For the development of addiction, 3-5 injections of heroin, 10-15 injections of morphine, 30 doses of codeine are enough. After use, morphine is detected in the urine for 48-72 hours, heroin-for 36-72 hours, codeine - for 48 hours.

Drug abuse in the use of cannabinoids

There are three main forms of cannabinoids produced from the cannabis plant: marijuana, hashish, and hashish oil.

The most pronounced manifestations of dependence and intoxication with cannabis drugs are manifested in hashishism.

Diagnostic criteria for acute intoxication and the use of cannabinoids

There are signs of a change in the mental state: euphoria and disinhibition; anxiety, suspicion; a sense of slowing down time and / or experiencing a rapid flow of thoughts; impaired reason; impaired attention; changes in the speed of reaction; auditory, visual or tactile illusions; hallucinations with preserved orientation.

The course of hashish addiction

During the first year – occasional use. The addiction does not develop. There is no active search for drugs.

Stage 1. Occurs in 1.5-3 years after the start of use, the first phase disappears with intoxication. The use is systematic, there is an active search for the drug. There is an increase in tolerance. Mental dependence manifests itself. The duration of the stage is 2-5 years.

Stage 2. Develops after 3-5 years from the beginning of systematic use. There is a physical dependence. With intoxication, there is a short-term psychosomatic relaxation, which is quickly replaced by a state of elation, motor activity, efficiency, laughter and concentration. The pace of thinking accelerates. At the end of intoxication (after 1-1. 5 hours), there is a decrease in tone and performance. Tolerance to the drug reaches its maximum values. The drug becomes a means to achieve the necessary physical and mental comfort. Withdrawal syndrome is formed.

Stage 3. It is formed after 9-10 years of systematic drug use. It develops after 9-10 years of constant anesthesia. Tolerance is falling. The drug has only a tonic effect. There is a progressive decrease in energy potential, physical and mental exhaustion, loss of social ties**.**

Addiction to cocaine and other stimulants.

The most important are cocaine, amphetamine, methamphetamine, ephedrine.

Diagnostic criteria for acute cocaine intoxication

There are the following signs: euphoria, a feeling of increased energy (a rush of energy), an increased level of wakefulness, an overestimation of one's own personality, rudeness or aggressiveness, mood instability, auditory, visual or tactile illusions, hallucinations usually with preserved orientation, psychomotor agitation. Symptoms may include tachycardia, cardiac arrhythmia, hypertension (sometimes hypotension), sweating and chills, nausea and vomiting, dilated pupils, muscle weakness, chest pain, and seizures.

Course of addiction

Dependence occurs after 2-3 weeks of irregular oral administration or after 3-5 injections.

Stage 1. The attraction to the drug is very strong. Tolerance increases rapidly due to an increase in the frequency of taking the drug. Gradually, the anesthesia becomes continuous, ends with psychophysical exhaustion.

Stage 2. The nature of intoxication changes. The period of intoxication is reduced to 2 hours. Motor hyperactivity disappears. Withdrawal symptoms appear.

Stage 3. When intoxicated, somatic sensations are weak. Mental and motor arousal is insignificant. Mood swings are fickle. The speech is thick and slow. Physical fatigue, apathy, and insomnia increase. Within 1.5–2 years, the psychic sphere is destroyed. It is characterized by a rapid loss of moral and ethical ideas.

Spice is a so-called smoking mixture, which includes various components in its composition. At the same time, some (and the least of them) are considered non-hazardous, while others (of which the majority) are classified as narcotic substances. Such narcotic substances include cannabinoids, which are very often sprayed with smoking mixtures with spices.

Among other things, according to the conducted research, the main components - sage fortune teller, Hawaiian rose, blue lotus-have psychotropic and narcotic effects and contain substances that are toxic to the human body.

Amphetamines

Drugs that have a stimulating effect. This group includes synthetic substances containing amphetamine compounds. In most cases, they are administered intravenously. These drugs are obtained from preparations containing ephedrine (solutan, ephedrine hydrochloride). In nature, ephedrine is found in the plant "ephedra". Most often they are found in the following form::

Ephedron-a ready-to-use solution obtained as a result of a chemical reaction, has a pink or transparent color, a characteristic smell of violets.

Pervetin is a ready-to-use solution obtained by a complex chemical reaction. An oily liquid that has a yellow or transparent color and a characteristic smell of apples.

Ephedrine is a white crystal derived from the plant ephedra. It is used for medicinal purposes, and is also used for the preparation of ephedron and pervetin, most often by manipulating drugs.

Speed -ready-to-eat yellow crystals, inhaled or smoked. Their use is most dangerous in adolescence due to the fact that the devastating consequences for the psyche come very quickly.

General properties of amphetamines: they cause a state of euphoria, increased excitability. The reaction to the first reception can be very different-from an acute desire to repeat the reception to poisoning and extremely negative feelings. Extremely destructive effect on the body.

Signs of use. They lead to motor activity, fearfulness, activity is unproductive and monotonous, there is no feeling of hunger, sleep and wakefulness are disturbed, there is a strong sexual emancipation. The effect of the drug lasts 2-12 hours (depending on the type). Mental and physical dependence is formed. Long-term use requires a constant increase in the dose of the drug. Amphetamine addiction is of a session nature — the period of drug use is replaced by "cold" periods, the duration of which is reduced over time. Abstinence is characterized by depressive and dystrophic disorders. Acute short temper, anger and suspicion, there are suicide attempts.

Consequences of amphetamine use. Exhaustion, irreversible changes in the brain, changes in the cardiovascular system and other internal organs, the risk of contracting AIDS and hepatitis when using conventional syringes, liver diseases, decreased immunity, the risk of overdose up to death.

Clinical manifestations of drug intoxication with hallucinogenic substances

Mescaline is a hallucinogenic alkaloid that is obtained from peyote cactus or synthesized in the laboratory. Mescaline is very similar in its effects to LSD and psilocybin, disrupting the normal functioning of the sensory organs within two hours of taking it, there may be partial or complete loss of vision, but all the other sensory organs of the subject are aggravated. There are certain changes in perception. For example, objects may appear to float in a liquid, and an addict may make movements that resemble a bird in flight. He may be afraid of himself, the feeling of fear and danger is compounded by a painful perception of the color of the surrounding objects.

LSD-25 or lysergic acid diethylamide is a semi-synthetic chemical preparation; its natural component is L-lysergic acid — the basis of all the main ergot alkaloids, and the diethylamide group is added in the laboratory.

Physical symptoms: increased heart rate, increased blood pressure, darkening of the field of view, the allocation of thick saliva, reducing peripheral arteries, leading to a sense of chills and bruising of the hands and feet, lifting the hair on the body; slowing heart rate, lowering blood pressure, lacrimation, increased salivation, diarrhea, nausea, vomiting; malaise, chills, feeling cold, heat, fatigue, increased muscle tension, diverse tremor, twitching, and convulsions or twisting (full relaxation of all muscles of the body); headache, pain in various parts of the body, the feeling of heaviness in the limbs, a variety of strange sensations, including sexual.

Ecstasy is a common name for a group of synthetic stimulant drugs (MDMA — "Adam", MEDA — "Eve", etc.). Some of them have a hallucinogenic effect. White, brown, pink or yellow capsules contain about 150 mg, the drugs often come with a pattern. It is distributed in night clubs and discos, and is popular with high school students. It is expensive enough for daily use.

Animal studies have shown that even short — term use of ecstasy kills brain cells that produce serotonin-a substance that the brain uses to control mood swings.

Symptoms of intoxication. The narcotic effect of the drug lasts from 3 to 6 hours. Excitement of the Central nervous system, increases the tone of the body, increases endurance, physical strength. All body reactions are accelerated. Under the influence of this drug, those who take it can withstand extreme physical and emotional stress, do not sleep and do not feel tired. For artificial "acceleration" of the body, you have to pay: after the drug stops working, a state of apathy, depression, severe fatigue and drowsiness is observed. This condition can last for several days, because the body needs to restore the spent forces.

Consequences of the application. Mental dependence develops rapidly - without a drug, a person is not capable of productive activity. Over time, "paging" is required to perform quite normal work. The use of the drug leads to physical and nervous exhaustion. The body's resources are rapidly depleted, and the nervous system, heart, and liver suffer. Prolonged use leads to dystrophy of the internal

organs. The drug affects the genetic code and future offspring. Mental exhaustion leads to severe depression, up to suicide.

Substance abuse

Substance abuse is a disease that manifests itself as a mental and sometimes physical dependence on a substance that is not included in the official list of drugs.

Types of substances that cause substance abuse:

* Sleeping pills, barbituric acid derivatives: Nembutal, medinal, veronal, phenobarbital (luminal). This also includes sleeping pills that are not related to barbiturates: bromural, eunoctin, radedorm, pagegopmetk.

* Group of sedatives-tranquilizers: seduxen, Relanium, meprobamate, tazepam, phenazepam, Elenium, phenibut, etc.

* A group of central nervous system stimulants that are not classified as medicinal products, for example, strong tea (extract) - "chifir", caffeine, centedrine.

• Group anticholinergics: trihexyphenidyl, Artan, remarking, NAC etc.

* Group of antihistamines: diphenhydramine, pipolfen, suprastin.

* Household and industrial chemicals: volatile solvents, ether, chloroform, gasoline, acetone, kerosene, toluene, ethylene glycol, stain removers, synthetic adhesives, lacquers, nitrocracks, deodorants in bottles, etc.

Substance abuse with central nervous system stimulants can develop with the abuse of caffeine, sidnocarb, centedrine, etc. These drugs are usually prescribed in order to reduce asthenic disorders and increase efficiency, alertness and improve mood. However, with prolonged use of a particular drug, tolerance to it initially increases, and there is a desire to constantly increase the dose in order to achieve another increase in mood, improve performance, accelerate thought processes. But then chronic stimulant use leads to the development of emotional instability and psychopathically personality. There may also be disorders of the cardiovascular system, gastrointestinal tract, vegetative disorders.

Withdrawal symptoms are usually mild. In the form of lethargy, drowsiness, irritability. Sometimes there is emotional lability with a predominance of dysphoric disorders, ideas of self-flagellation, in rare cases with suicidal attempts. In severe withdrawal states, mental disorders with delusional consciousness disorders and psychomotor agitation may develop.

Substance abuse, which develops as a result of the abuse of tranquilizers, is characterized by the fact that pathological dependence on them occurs rarely. Usually psychotropic drugs are abused by people with chronic neurotic conditions, psychopathic personalities, people with persistent hypochondriacal experiences. Getting used to them is accompanied by the phenomena of mental attachment. Withdrawal syndrome is poorly expressed, signs of its instability are manifested in the form of incoming autonomic disorders (nausea, chills, hypertension, dizziness, etc.). However, over time, even in this case, psychopathic personality changes are detected. Irritability, selfishness, hypochondria, excessive attention to everything related to taking medications appear; the circle of interests narrows

Substance abuse to antiparkinsonian drugs is somewhat less common. Even after the first doses of the drug, there may be euphoria, a sense of detachment from the outside world, the surrounding reality is perceived illusorily, sometimes with episodic delusions. Refusal of long-term abuse of cyclodol is difficult and is accompanied by irritability, anxiety and cramps of the extremities.

Substance abuse with household chemicals is more common among children and adolescents. As already mentioned, these products are usually used in gasoline, stain removers, solvents, paint and varnish materials, deodorants, acetone, etc. They are usually administered by inhalation.

Inhalation of drugs leads to the fact that after 1-2 minutes there is a feeling of fog in the head, whistling and loss of balance (the phase of vegetative-vestibular disorders, lasting 2-3 minutes). Then comes the state of bliss, there is causeless fun. After that, a fantastic picture appears in my head. This condition lasts about 10-15 minutes. After the end of the inhalation, the 4th phase begins, critical, lasting 1-2 hours, accompanied by a mild headache, moderate nausea and clarity in the head of a subjective nature. The syndrome of mental dependence is formed very quickly, during the first month of inhalation, there is an attraction to repeat the state of intoxication. After 2-3 months, there is a transition to a single appointment. This shows that the attraction has already formed. Withdrawal syndrome, which usually occurs on the 2-3-th day of withdrawal of the toxicant, is a psychovegetative reaction (tremor, hyperreflexia, rhinitis, dyspeptic disorders, subfebrility, cephalgia, lability of pulse and blood pressure) in combination with behavioral activity aimed at ensuring the possibility of using the toxicant with pronounced affective disorders. The duration of the withdrawal syndrome usually rarely exceeds 1-2 weeks and is subsequently replaced by astheno-apathetic disorders-manifested by a non-specific psychovegetative reaction of varying intensity.

Somatic and neurological complications of drug addiction

With drug addiction, cellular and humoral immunity is disrupted, which leads to the occurrence of many diseases. But not only this is associated with the defeat of internal organs. The genesis of organ damage is due to the direct toxic effect of the drug on the organ, auto-allergic processes, immunopathology, and neurotransmitter disorders. It is also associated with the lifestyle of drug addicts, unsanitary conditions, the use of non-sterile needles and syringes, the use of artisanal drugs, as well as the sexual behavior of drug addicts

The use of certain drugs is characterized by its own characteristics of damage to systems and internal organs. Let's focus on the most common diseases that are characteristic of almost all drug addictions.

Drug addicts "with experience" look much older than their age. The skin takes on a yellowish tinge, it becomes dry and wrinkled. Teeth are affected by massive caries, crumble, fall out. With the development of drug addiction in adolescence, growth retardation occurs. Characterized by exhaustion and trophic disorders.

Drug users have a perverse immune response to the introduction of an infectious agent. This is due to "immunodeficiency".

This is closely related to the fact that patients with drug and substance abuse are considered as potential carriers of diseases such as **HIV infection, viral hepatitis B and C**.

The problems of drug addiction, AIDS and tuberculosis epidemics are interrelated and interdependent. A big and important problem is the defeat of the hematopoietic organs in drug addiction.

In connection with the widespread use of intravenous drugs, purulent lesions are noted at the injection sites: phlebitis, phlegmon. The veins at the injection sites are affected by an aseptic process – thrombosis and growth of connective tissue, the skin is pigmented by traces of injections.

Disorders of the nervous system: encephalopathy (brain disorder, manifestations from minor violations to mental processes to psychosis) neuropathies (nerve disorders symptoms from minor infractions to serious coordination of the musculoskeletal system, paralysis, paresis).

A specific psychological consequence **of heavy cocaine** use is cocaine psychosis. In its extreme form, it is a toxic psychosis characterized by manic behavior, accompanied by hallucinations, often with a paranoid tinge. The use of cocaine against the background of severe arterial hypertension can lead to brain hemorrhage and stroke. Heavy cocaine use can cause epileptoid seizures. Irreversible changes in the nervous system that occur as a result of drug poisoning of the body cause the degradation of the individual. The psyche becomes extremely unstable, the tendency to lie and misappropriate other people's property prevails, ingenuity decreases, and labor results deteriorate significantly. The addict becomes indifferent to others, devoid of moral motives for behavior in society. His noble aspirations and interests are lost, and his interest in his family is lost. This is especially tragic for young people, potentially the most valuable to society, who are just beginning to develop their personality.

Respiratory system damage: In drug addicts, especially those who inhale narcotic poisons, the respiratory system is affected and their function is inhibited. This affects both the upper respiratory tract and the lungs. The delicate mucous membrane of the nose, mouth and larynx of "sniffers" is constantly injured, irritated by narcotic poisons. This leads to chronic inflammation, a gradual decrease in the sense of smell and, ultimately, to its loss. At the same time, ulceration, the development of polyps and their cancerous degeneration are not uncommon. Possible perforation of the nasal septum. Many people develop bronchial asthma, chronic bronchitis, tracheitis, and pneumonia. As a result of inhaling drugs, precancerous processes occur, and then lung cancer.

Damage to the cardiovascular system: drugs have a toxic effect on the heart. Currently, the pathogenetic role of neurotransmitter disorders has been proven. Cardiomyopathies, myocarditis and myocardial dystrophy, heart attacks develop. Cocaine use causes cocaine-induced ischemia caused by vasoconstriction, changes in blood clotting. In drug addicts, after using cocaine, platelet aggregation

increases, and the tendency to form blood clots increases. Cocaine also contributes to the progression of atherosclerosis, the accelerated formation of atherosclerotic plaques in the coronary and cerebral arteries. It is important that the use of cocaine stimulates the progression of early atherosclerosis, even in young people.

The most common complication is the development of infectious inflammation of the endocardium (with damage to the tricuspid and mitral valves) and other structures of the heart, which lead to disability and death of the addict. The probability of transformation of bacteremia into endocarditis in drug addicts is 6 times higher than in people who do not abuse drugs. This is due to repeated intravenous injections of "foreign" substances that injure the endocardial surface, causing its roughness in the future, these areas serve as a place of platelet adhesion and aggregation, followed by the formation of platelet clots.

Infection in the venous bed is probably responsible for the predominant lesion of the tricuspid valve in drug addicts (45-50% of cases). The mitral and aortic valves are involved in the pathological process less often-in 30 and 35%, respectively, the pulmonary artery valve-in 2-3%. A feature of infectious endocarditis in drug addicts is an unfavorable prognosis of the disease. Mortality, despite medical treatment, reaches 80-90%. One year after surgery, 55% die, and 3 years later – 89% of drug addicts. The high mortality rate is probably due to the continued use of drugs and the persistence of infection.

Damage to the digestive system: a high frequency of lesions of this system (especially barbiturates). Addicts have a sharply reduced appetite. They are exhausted. Develop biliary dyskinesia, cholecystitis, cholelithiasis. Damage to parenchymal organs is caused by disorders of the general metabolism. The violation of lipid metabolism is explained by fatty liver dystrophy. Of course, in the development of pathology, the toxic effect of the drug on the liver is also important. Liver damage is manifested by inflammatory, stagnant or dystrophic processes in it. Develop hepatitis, toxic and fatty liver dystrophy, cirrhosis. Characteristic of stomach lesions, gastritis and peptic ulcer disease.

The defeat of the urinary system is associated with the toxic effect of narcotic substances on the kidneys, the development of microcirculation disorders and immune pathology. In drug addicts-glomerulonephritis, interstitial nephritis, amyloidosis (often amyloidosis of the kidneys and liver), nephrosis. Acute kidney failure is often the cause of death of drug addicts, as due to their lifestyle, it is not always possible to provide qualified medical care in time.

Reproductive system: drug use at the beginning of the formation of the disease, as a rule, leads to an increase in libido and potency. This is especially pronounced when taking hashish and stimulants. Promiscuous sexual relations occur, which increases the risk. Of Contracting sexually transmitted infections (syphilis, gonorrhea, chlamydia infections, hepatitis, HIV/AIDS, etc.). With the development of the disease, there is a decrease in libido and potency. Intimate relationships become possible only in a state of intoxication, and the use of drugs of addiction group during the withdrawal syndrome. In the second stage of the development of drug addiction is caused impotence. At this stage there are

violations to sexual orientation. Promiscuity and group sex in the "family" quickly become commonplace. In the adolescent environment, homosexual relationships begin to form. It is often necessary to earn money to buy a drug by passive homosexual partnership. Cases of pedophilia in drug addicts are described.

The effects of drugs on pregnancy and fetus drug Abuse during pregnancy increases the likelihood of spontaneous abortion and stillbirth. In addition, the risk of premature placental abruption increases, which can lead to intrauterine fetal death. Placental abruption can be caused by reduced blood flow in the placental vessels.

Neonatal drug withdrawal syndrome. If a woman takes drugs during pregnancy, it is likely that the child will be born with developmental abnormalities and with signs of neonatal drug withdrawal syndrome (NNAS). The frequency and severity of NNAS manifestations depends on the duration of administration and dose of the drug.

If a woman took more than one drug during the entire pregnancy, the frequency of NNAS in children reaches 100%. If you stop taking it in the early stages of pregnancy, the frequency of NNAS decreases. The symptoms of NNAS consist of non-specific disorders of the central nervous system, gastrointestinal tract, metabolic, vasomotor and respiratory disorders. Children have increased excitability, tremor, hyperactivity, increased muscle tone, sleep disorders. Vegetative disorders may occur. Children are born with a small body weight, with a violation of the sucking reflex, vomiting, diarrhea is noted.

Acute manifestations of NNAS continue for about 2-3 weeks. In the acute form, the symptoms of NNAS can be observed for a long time (up to 6 months after birth). The duration of the course of NNAS depends on how many drugs the mother took, on the degree of maturity of the mechanisms that ensure the metabolism and excretion of drugs in the newborn.

LEVELS OF PREVENTION OF DISEASES OF DEPENDENT BEHAVIOR.

In accordance with the target groups of impact, preventive measures can be assigned to a certain level: primary, secondary or tertiary.

Primary prevention.

This is a set of measures aimed at the population that does not yet have problematic behavior associated with the use of psychoactive substances (surfactants). *Primary prevention is the most widespread, non-specific one, using mainly pedagogical, psychological and social influences.*

The main target group of primary prevention measures is the General population of children, adolescents, and young adults.

The main goal of primary prevention is to prevent the use of alcohol and drugs, to form a stable orientation and psychological attitudes of the population towards a healthy lifestyle.

Organizers and performers of primary prevention activities are specialists of all state institutions working with the population, as well as employees of

institutions and organizations of other formations whose charters indicate the promotion of a healthy lifestyle as one of the areas of activity.

Contingent of impact: children, adolescents and young people in and out of school groups, in higher education institutions, teachers and parents, families.

What to avoid:

- the use of scare tactics
- distortions and exaggerations of the negative effects of alcohol and drug abuse when describing their effects on the body
- one-time actions aimed at prevention. This approach does not allow teenagers to develop skills in countering surfactants.
- false information. Even after submitting it once, all further information will be rejected by teenagers.
- yremembering the cultural background of the use of surfactants.
- about the truth of the use of surfactants for any reason.

Secondary prevention.

This is a set of measures aimed at rehabilitation and social adaptation of people who already have little experience of alcohol and drug use.

A special target group at this stage of prevention is minors who are pregnant, registered in juvenile Affairs departments, and registered in drug treatment institutions.

The main goal of secondary prevention is psychological, pedagogical and social correction of the experimenter with psychoactive substances for positive socialization and prevention of the development of the process of further involvement in alcoholism, drug addiction and related illegal actions.

Organizers and performers of secondary prevention activities are specialists who have psychological, pedagogical and medical training, work in state institutions or in institutions and organizations of other forms of ownership, whose charters indicate socio-psychological and psychological-pedagogical assistance to the population as one of the areas of activity. Individual variants of medical and social rehabilitation measures within the framework of secondary prevention are introduced by medical specialists.

Tertiary prevention.

This is a set of measures aimed at social adaptation of individuals with severe medical and social problems associated with the use of surfactants.

The target group of the activities of tertiary prevention – persons who are at the dispensary in drug treatment agencies, persons returning from correctional facilities of closed and open type who have undergone treatment for alcoholism, substance abuse, drug addiction, persons likely to commit offences and who are registered in the departments of juvenile in the Commission on Affairs of minors and protection of their rights, having a painful addiction to psychoactive substances.

The main goal of tertiary prevention is to maintain a state of remission, i.e., to prevent a breakdown and complete rehabilitation.

Organizers and performers of tertiary prevention activities are specialists of medical and law enforcement agencies with special training.

Tasks of tertiary prevention:

They consist in creating a supportive and developmental environment (social-supportive and therapeutic communities, local and territorial programs, workplace programs, social programs that are alternative to drug use).

Security questions *for self-training:*

1. What is called addiction?
2. What are the two groups of drug withdrawal symptoms?
3. Risk factors for substance use.
4. Describe the main forms of drug addiction
5. What is substance abuse?
6. Classification of substances that cause substance abuse?
7. List the main somatic and neurological complications of drug addiction.
8. What is the effect of drugs on pregnancy and the fetus?
9. Describe the neonatal symptoms of drug withdrawal.
10. What levels of prevention of addictive behavioral diseases are you aware of?

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