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FUNDAMENTALS OF A HEALTHY LIFESTYLE

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The textbook corresponds to the working programs of the discipline "Fundamentals of a healthy lifestyle" in the specialties of 31.05.01 Medical business. The training manual is adapted to the previously published manual "Fundamentals of a healthy lifestyle". It includes practical questions for students to perform in the classroom, which touch on individual and social aspects of health and motivate students to healthy behavior. The main attention is paid to the elements of a healthy lifestyle, its categories that make up the quality of life, which are of a public nature, risk factors for diseases and measures to prevent their negative impact on the human body. The chapters consist of blocks of control tests and tasks for practical work and self-control of students on the topics under study.

This manual is designed to meet the requirements of work programs and is intended to ensure the educational process during practical classes and for independent training of students.

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PREFACE

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

However, improving health is not possible without changing your lifestyle. 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 a life style» first of all, it is focused on a specific person. It involves identifying individual risk factors and developing specific programs to reduce potential health harm, as well as changing the individual's attitude to their own health and understanding of health as a fundamental human value.

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

We offer the manual drawn up in accordance with the requirements of the FSES-3 + education on the discipline "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 main attention in the textbook is given to a detailed consideration 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 modern organizational, legal and functional foundations of health centers.

To improve the quality of learning of the discipline, the textbook provides basic concepts, provides control questions for independent training and self-control with tudents, presents tasks for independent work when conducting 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 knowledge in the field of the basics of a healthy lifestyle, which will allow future specialists not only to follow a 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 was marked by the first half of the twentieth century, thanks to the development of methods of vaccination, 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, has brought humanity new diseases that, if known before, did not present such a serious problem. We are talking, first of all, about non-communicable diseases (cardiovascular, endocrine, oncological, etc.).

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 rooted in the deep past. However, the philosophy of a healthy lifestyle began to take shape only in the second half of the twentieth century. It has become clear that many non-communicable diseases are cheaper and easier to prevent than to treat later. In addition, there is an understanding of the primary role of health saving 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 in our country is due to the fact that there has been an awareness of individual health as one of the basic values of society, and the need to strengthen the preventive component of health care has been repeatedly noted in speeches by the President of the Russian Federation and other top officials of the state. Of course, the prevention of many diseases is impossible without changing the lifestyle. Therefore, the Central point in preserving and strengthening both individual and public health is to create and maintain motivation to form a healthy lifestyle and commitment to leading a healthy lifestyle.

TOPIC 1.
***HISTORY OF THE DEVELOPMENT OF IDEAS ABOUT A HEALTHY
LIFESTYLE. THE MAIN INTERNATIONAL ORGANIZATIONS IN THE
FIELD OF HEALTH***

For a long time, ideas about a healthy lifestyle and disease prevention were primarily associated with hygiene. So, even in Ancient Egypt, China, and Greece, there was a set of household rules, which were largely fixed at the expense of religious laws.

Hippocrates pointed out that environmental conditions affect the development of diseases. He believed that a doctor should direct the regime of a sick person in such a way that it would contribute to a speedy recovery. The origin of hygiene as a science is associated with the works of Hippocrates.

In Ancient Rome, special importance was attached to sanitation as a direction in the prevention of diseases. Food quality control was introduced in markets, and water pipelines were built to supply entire cities with fresh water. Baths were actively built, and the cult of the pure body developed. Later, wooden and clay dishes were replaced by glazed ones, which was also a positive step in the field of sanitation.

The development of the Christian religion in the VI-XIV centuries in Europe was accompanied by the decline of medical and preventive knowledge. The Church called for concern for the purity of the soul, not the body. In many respects, 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 was dumped directly on the street.

In the XI century in the middle East in Persia lived and worked Avicenna (Abu Ali 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 exercise for healing and treatment. Avicenna studied a number of diseases related to sexual health. He first described both the useful and harmful properties of wine, suggested 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 XIX century, hygiene began to develop as an experimental science. Thanks to the writings of M. Pettenkofer and A. P. Dobroslavin, there are some ideas that "prevention is more profitable than treatment". Experimental hygiene was based on chemical, physical and biological methods of 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 at the end of the XIX century became the founder of school hygiene. He came to Russia from Switzerland in 1869, and in 1896 was forced to leave.

F. G. Krotkov did a lot for the development of military hygiene and radiation hygiene during the great Patriotic war (1941-1945). He formulated the basic rules for the sanitary welfare of troops.

In 1960-1970, Y. p. Lisitsyn proposed the term "sanology" (the health of healthy people).

In 1990, I. L. Brekhman suggested using the term "valeology" instead of "sanology". However, nowadays the term "healthy lifestyle", borrowed from foreign literature, is more commonly 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.

MAJOR INTERNATIONAL ORGANIZATIONS IN THE FIELD OF HEALTH

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

- Governmental – uniting various States at the official level. At the international level, such a role is played by organizations established under the UN.
- Non-governmental organizations-associations of voluntary participants.

Table 1.1. 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 1.1. Some international organizations working in the field of health protection.

Name of the organization	Internet site	The main goals and objectives of the organization related to health protection
World Health Organization (WHO)	http://www.who.int	United in the areas of health protection, generalization of world experience
Nations educational, scientific and cultural organization development programme (UNESCO)	http://www.unesco.org	Formation of skills saving of health-saving behavior in students
UN 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 working people
Red cross	http://www.icrc.org	Assistance to victims of military conflicts and other emergencies situations
The world medical Association	http://www.wma.net	Determining the standards of medical activity

The world Bank	http://www.world-bank.org	the Financing of projects related to the health
Fund in the field of population UN	http://www.unfpa.org	Ensuring equal rights of men, women and children to a healthy life
Joint United Nations programme on HIV / AIDS (UNAIDS)	http://www.unaids.org	Prevention, treatment of HIV/AIDS, 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 issues of health statistics, the synthesis of world scientific research, cooperation on health protection, and the development of recommendations.

The history of who begins with the organization in 1839. The Constantinople high Council of health, which was responsible for controlling ships in Turkish ports to prevent the spread of plague and cholera. In 1851, an international sanitary conference on the issues of quarantine in the Mediterranean sea was organized in Paris, in which Russia also participated. In 1902 the pan American sanitary Bureau was established (Washington, USA), 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 working.

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 campaign to eliminate smallpox was carried out (the last case was in 1981). the Campaign to combat malaria reduced the incidence by 2 times. A program of immunization against six of the most significant infectious diseases has been organized. WHO participates in the formation of primary health care services, medical schools, and training courses.

There is a permanent WHO representative office in Russia, with an office located in Moscow.

Control questions for self-training:

- 1. What science is considered the primary one for the category of "healthy lifestyle" medicine?*
- 2. Which ancient scientist was the first to talk about hygiene?*
- 3. What international organizations deal with health protection issues?*
- 4. Who gave the name "healthy lifestyle".*
- 5. What are the functions of the World Health Organization?*

TOPIC 2.

HEALTH. HEALTHY LIFESTYLE. HEALTHY LIFESTYLE AND DISEASE PREVENTION.

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

Who suggests distinguishing 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 from diseases when the conditions in its environment change.

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

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

A healthy lifestyle means changing 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 training, then his chances of getting sick are reduced. If the society prohibits advertising of alcohol and tobacco, then their consumption is reduced. If the state is building sports facilities and promoting active sports, then 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 in different countries are not the same, so different measures may be required to address them.

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

According to the WHO definition, **disease prevention** is activities aimed at preventing diseases: controlling risk factors, immunizing, slowing the development of diseases and reducing their consequences.

Table 2. The ratio of different types of prevention

	Individual	Group	Population-based
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 with similar symptoms and factors,
- 3) **population (mass)**- preventive measures that cover large groups of the population (population) or the entire population as a whole.

There are the following differences Types of prevention:

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

2. **Secondary prevention**– carried out in individuals with risk factors, in order to prevent the development of a particular disease, as well as in patients with the initial stages of chronic diseases, to slow down the progression of the disease, increase the period of remission

3. **Tertiary prevention**– 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 to restore patients as soon as possible and to adapt them socially.

Control 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 "prevention»
5. Types of medical prevention?
6. Forms of medical prevention?

TOPIC 3.

ELEMENTS OF A HEALTHY LIFESTYLE. HIERARCHY OF ELEMENTS OF A HEALTHY LIFESTYLE. MOTIVATIONS UNDERLYING THE FORMATION OF A HEALTHY LIFESTYLE.

The formation of a healthy lifestyle consists of two main directions:

Table 3. Formation of a healthy lifestyle

The creation and development of positive health factors	Overcoming risk factors
<ul style="list-style-type: none"> • physical activity, • environmental literacy • rational (balanced) nutrition, • compliance with personal hygiene rules • vaccination • prevention family planning (the desired child at the right time), • timely medical examination 	<ul style="list-style-type: none"> • inactivity • environmental pollution • irrational nutrition • bad habits • stress • self-medication

Experts identify the following main elements of a healthy lifestyle that can be arranged in a hierarchy:

The main elements of a healthy lifestyle can include:

- rational (balanced) nutrition;
- optimal physical activity (movement, strengthening exercises);
- hygiene measures (personal and public hygiene, sex education, family planning);
- giving up bad habits (alcohol, Smoking, drugs);
- prevention of infectious diseases (vaccination, hardening, environmental literacy)
- rehabilitation measures (recovery from diseases, stress prevention)



Figure 1. Hierarchy of elements of a healthy lifestyle

Health motivation is an incentive to take actions that are intended to maintain or improve health. The problem is that it is difficult for a person to want to be healthy if he is healthy at the moment and does not experience any discomfort.

Types of motivation for the formation of a healthy lifestyle:

☺ *The motivation of self-preservation.*

No special activity is required here. The goal is to preserve what is already there. You simply don't do anything that can harm your health.

☺ *Motivation is the prevention of illness.*

We suffer when we are ill. We are forced to go to the clinic, take medications, put up

with some physical limitations, spend time on medical procedures, etc. All these activities are not very pleasant and the desire to avoid them is often a powerful incentive for leading a healthy lifestyle.

☺ *Motivation to maintain working capacity and self-improvement opportunities.*

The disease is a serious obstacle to learning and career development. An employer is more likely to hire and promote a healthy person than someone who has health problems.

☺ *Motivation to get pleasure from feeling good.*

It takes place when a person enjoys his healthy state, his ability to physically improve, engage in sports, dance, etc.

☺ *Motivation for the possibility of sexual fulfillment and obtaining full-fledged offspring.*

☺ *Motivation to comply with ethno-cultural requirements.*

Almost all ethnocultural traditions are based on the observance of healthy lifestyle factors, and attributing oneself to a particular culture requires mandatory compliance with these traditions.

Control questions for self-training:

- 1. What are the most important elements of a healthy lifestyle in your opinion important? (Hierarchy)*
- 2. What elements of a healthy lifestyle are you familiar with?*
- 3. What are the main directions of a healthy lifestyle that you know?*
- 4. Define the concept of "health motivation»*
- 5. What types of motivations underlie the formation of a healthy lifestyle?*

TOPIC 4.

HEALTH PROMOTION. QUALITY OF LIFE. FACTORS AND CONDITIONS THAT DETERMINE THE HEALTH OF THE POPULATION.

Quality of life is a concept that is broader than just material security. The term was originally proposed by sociologists, and then moved to medicine. From the point of view of medicine quality of life depends not only on health status but also their ability to communicate, psychological and social status, freedom of activity, presence of stress, leisure time, level of education, access to social assistance.

The term "quality of life" was first coined by J.R.Elkkinton in 1966. The growing interest in it is largely due to the dissatisfaction of the population with the level of services provided. The doctor should not only treat or prevent the disease, but also improve the quality of life of the patient.

According to // recommendations, the following main criteria are used to assess the quality of life:

- 1. Physical – strength, energy, fatigue, pain, discomfort, sleep, rest.*
- 2. Psychological-positive or negative emotions, thinking, learning,*

remembering, concentration, self-esteem, appearance, experiences.

3. *Level of independence*—daily activity, working capacity, dependence on medications, treatment, or someone else's care.
4. *Life in society* – personal relationships, social value of the subject, sexual activity.
5. *Environment* – well-being, safety, everyday life, security, availability and quality of medical and social services, availability of information, ability to obtain knowledge and obtain qualifications, leisure, ecology.
6. *Spirituality*—personal and religious beliefs.

There is an International society for quality of life research (<http://www.isoqol.org>). In Russia, the leading organization for the study of quality of life is the International center for quality of life research (<http://quality-life.ru>).

The use of quality of life criteria in modern medicine can be explained using the a pyramid Maslow (figure 1)

According To A.Maslow, there is a hierarchy of human values: without satisfying the lowest level, it is impossible to satisfy the next. Medieval medicine could only satisfy the physical needs of individuals. For example, to help preserve life in extreme situations. Medicine of the late XIX- early XXcentury.due to the development of vaccination, it made it possible to feel safe in the conditions of epidemics. Modern medicine offers services of aesthetic dentistry, plastic surgery, etc .. At the same time, it should be noted that A.Maslow believed that the hierarchy of needs is not fixed and depends on the individual characteristics of the individual.

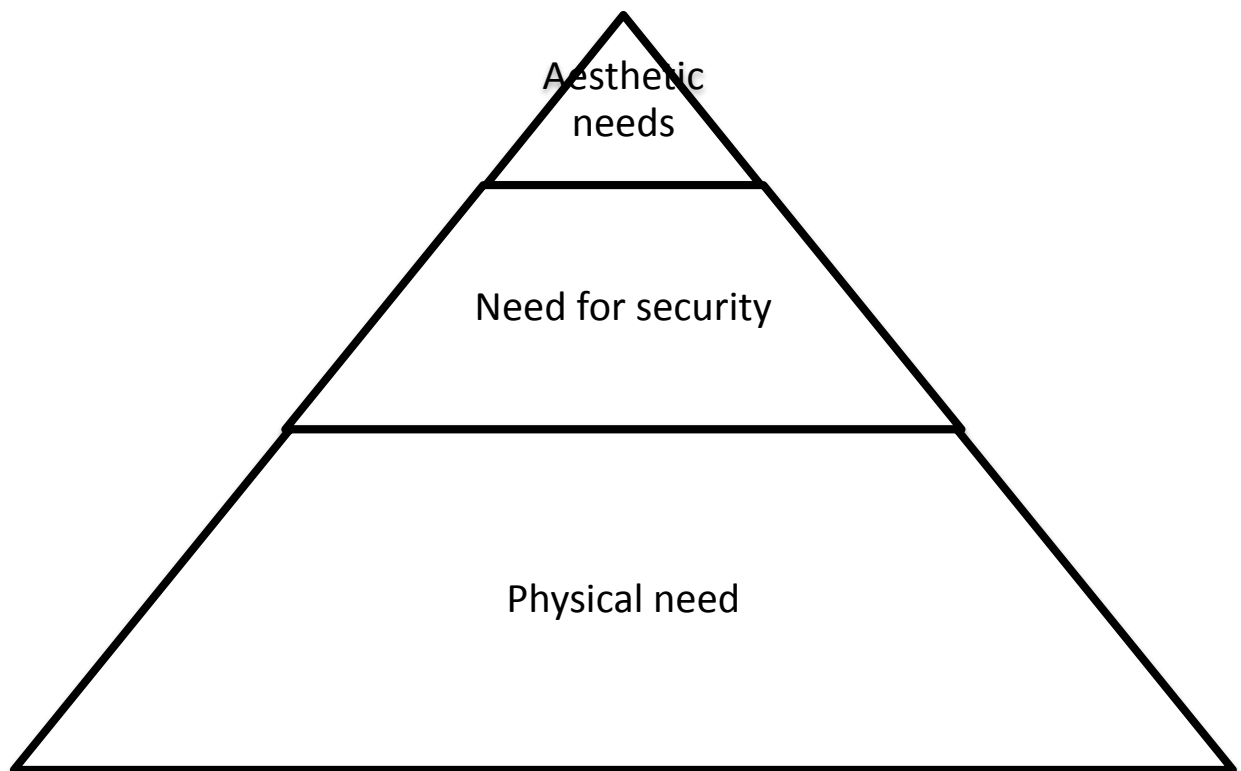


Fig. 2. Pyramid A.Maslow

FACTORS AND CONDITIONS THAT DETERMINE THE HEALTH OF THE POPULATION.

Calculations based on data on morbidity of the population show (Y. p. Lisitsyn) that the 1st place among the factors determining health is occupied *by lifestyle*. The share of lifestyle-related health risk factors is 50-55%. Approximately 15-20% is taken *up by hereditary factors* and *environmental pollution*, and 10-15% is taken up by the work *органов u of health authorities and institutions (services)*.

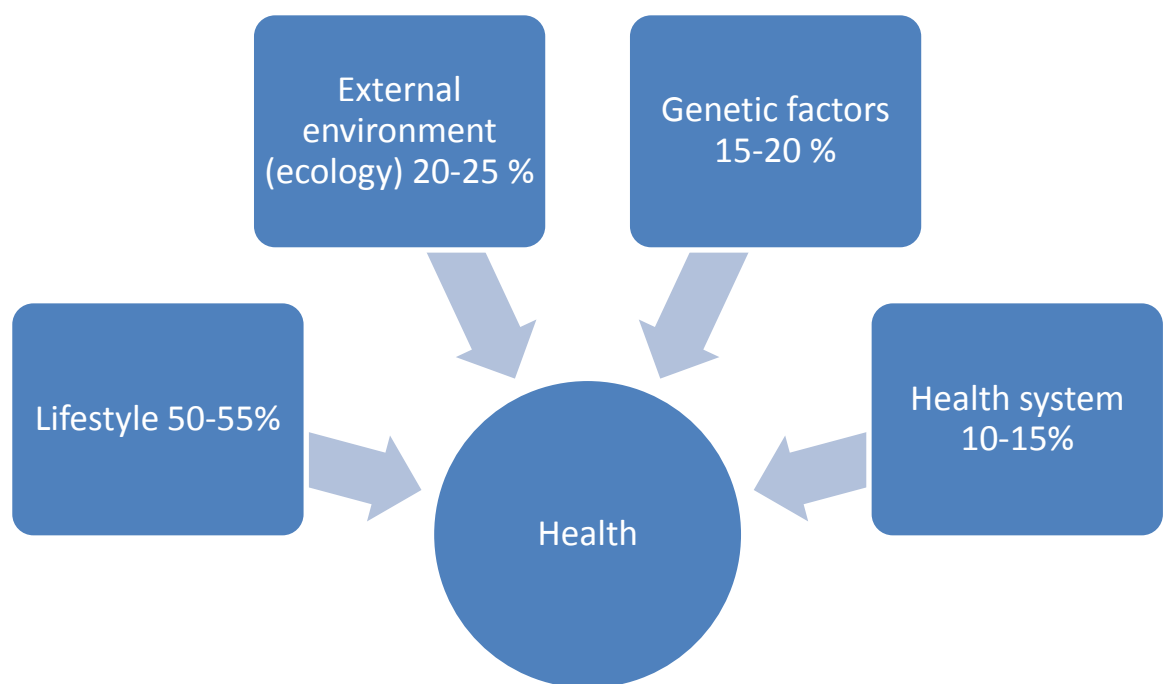


Figure 3. Factors and conditions that determine the health of the population.

Table 3. Grouping of factors determining morbidity

Category of factors	Example of risk factors	Share %
Lifestyle	Bad habits: Smoking, alcohol consumption, drug use An unbalanced diet Stressful situations Harmful working conditions, Low physical activity (physical inactivity) Low cultural and educational level	50-55

Environmental	Pollution of air, water, and soil with carcinogens and other harmful substances Sudden changes in the state of the atmosphere Increased heliocosmic, radiation, magnetic and other radiation	20-25
Genetic factors	Hereditary predis position to certain diseases	15-20
Public Health	Ineffective preventive measures Poor quality and untimely medical care	10-15

What is certain is that the impact of lifestyle on health is 2-2.5 times higher than other factors. Thus, according to who, 80% of cases of cardiovascular diseases and type 2 diabetes, as well as about 40% of cases of malignancies, can be prevented by modifying the lifestyle of the population and reducing the impact of risk factors.

Control questions for self-training:

- 1. What is the quality of life?*
- 2. What criteria does quality of life include, according to WHO?*
- 3. What do the lifestyle criteria look like in the form of a pyramid A Maslow asked.*
- 4. Factors and conditions that determine the health of the population.*
- 5. What is the role of lifestyle effects on health?*
- 6. Give examples of risk factors that relate to the image life?*
- 7. Please provide examples of the risk factors that are relevant to your business her environment?*

TOPIC 5.

RATIONAL FOOD – MAIN MENU ELEMENT OF HEALTHY LIFESTYLE. BODY MASS INDEX

- Rational nutrition***– food that provides energy companies needs of the organism and balanced receipt nutritional values substances.

Nutritious foods substances (nutrients), required the body, you can *to share* into several groups:

majors substances (macronutrients)- contained in large cities quantities: proteins, fats, sugar;

minor characters substances (micronutrients)- contained in small cities quantities: vitamins and minerals substances;

dietary fiber – cellulose, pectins, etc.;

water;

optional features substances (optional contained in food): bioflavonoids, polyphenols and others.

Need of the organism in nutritional values substances defined by genetic tests factors and changes in dependencies depending on your age, physical loads, etc. factors'. Therefore any tables with an indication recommended values consumption levels nutritional values but you can consider just as an indication.

Any of them deviations from the rational power supply can be name it *irrational power supply*.

Accepted select the following ***types irrational power supply***:
insufficient nutrition (malnutrition) – low consumption all nutritional values substances and insufficient receipt calories from food;
unbalanced diet – disproportionate consumption necessary the body nutritional values substances when adequate caloric values food;
redundant nutrition (overeating) – unnecessary receipt nutritional values substances in the body.

present insufficient time food meets relative rarely. Proved, what is irrational the power supply is the main reasons for this are: non-infectious diseases diseases (who, 2004):

- cardiovascular diseases diseases;
- sugar type 2 diabetes;
- some types neoplasms.

Also irrational nutrition is reliable related to development caries and osteoporosis. With a large share confidence levels it can be argued that what is irrational power leads to appear redundant body weight. Probably a development many diseases gastro-intestinal the path is connected with the irrational power supply.

On based on conducted research in Russia, the following standards have been developed and approved recommended features consumption levels food grade substances (2004). This document it has no analogues in world practice and serves as an important the tool for professionals, which allows you to navigate recommended values daily dosages food substances.

2. Energy balance and body weight, requirements to power mode

Food, which one he uses individual, as a result chemical reactions are converted into energy. This energy is used the following way:

- maintenance permanent temperatures bodies;
- implementation all biological systems functions and biochemicals processes; execution with my muscles. works;
- digesting it and assimilation food.

You should note that cannot be clearly defined delineate direction expenditures energy. So, during physical activity exercises generated by heat. Also you should have keep in mind that part of energy in process chemical transformations dissipates in the form of heat.

For not very much it is important to maintain zero balance energy (Fig. 4.). energy Balance means a difference between the consumed amount and expendable energy efficiency:

Your balance energy=incoming energy-consumed energy

When zero balance energy, mass bodies of an organism it doesn't change. Negative energy balance the reduced weight the body of the individual (Gurr M., 1998). When positive energy balance body weight increases according to the ratio:

Incoming mail energy= consumed energy+excess body weight

Incoming energy	=	Spent energy	Body weight constant
Incoming energy	<	Spent energy	Body weight decreases
Incoming energy	>	Spent energy	Body weight increases

Drawing 4. Your balance energy and mass bodies

Extreme degree of magnification body weight manifests itself in the form of *obesities*.

For rational power is required not just compliance zero balance energy, but also correct answer power mode. Below you can find main features

REQUIREMENTS TO POWER MODE:

- *power supply it must be four or five times a day;*
- *necessary exclude big breaks (more than 4-5 hours) between with meals;*
- *energetically with Breakfast necessary get approximately 25% of food, with lunch - 35%, dinner-15% and 25% - with others with meals you can't;*
- *accept food directly before going to bed (for 1 hour or less).*

3. Definition mass index bodies

- **BMI (mass index bodies)** - characterizes body weight, attributable per unit of it the surface. BMI is calculated as an attitude weights in kilograms on the height in meters, erected in the square. **BMI** (kg / m²) = mass of the person in kg / his height in m². Drawback and excess BMI it may lead to towards development diseases (table 4).

Table 4. Classification body mass index (BMI) adults and children frequency of occurrence chronic diseases non-infectious diseases diseases for adults

Classification	BMI,	The probability development diseases Cardiovascular
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	kg / m ²	diseases	Bronchopulmonary	Endocrine
Insufficient body weight	<18,5	Low	increased	low
Norm	18,5 – 24,9	Low	low	low
Excess weight	>25,0			
Pre-obesity	25,0 – 29,9	Average	low	low
Obesity I degree	30,0 – 34,9	Increased	low	average
Obesity II degree	35,0 – 39,9	Significantly enlarged	possible increased	increased
Obesity III degree	>40,0	Significantly enlarged	increased	significantly or significantly enlarged

They exist automatic evaluation methods energy saving measures requirements the organism. They implemented in the scales that are used simultaneously with body weight measure electrical equipment resistance of the organism and they count the ratio fat and muscle cells tissue analysis (bioimpedance analysis). This method submitted by most convenient for practical use goals.

Control question:

1. *Give it to me definition rational nutrition?*
2. *What are your goals? basic principles rational power supply?*
3. *How corresponds to energy balance and body weight?*
4. *What are your goals? requirements to the power supply mode?*
5. *Which ones basic errors in the diet there is from you?*
6. *What kind you see the ways overcoming them?*

TOPIC 6.

BASIC NUTRIENTS. BASIC

PRINCIPLES ORGANIZATIONS RATIONAL NUTRITIONS. PYRAMID NUTRITIONS

1. Main nutrients

Rational the power supply must covering energy companies and plastic ones needs the organism. In other words, consumption the food should provide zero balance energy and contain all necessary information the body nutritious foods substances (nutrients).

The main ones sources energy for of the organism serve proteins, fats and carbohydrates. Optimal the ratio protein: fat: sugar for security features energy

saving measures requirements of the organism it must be approximately equal to 1:1:4. in this case, you should keep in mind, what is the caloric value 1 g of ugevodov it makes up 4 kcal, and fat – 9 calories. Like this thus, when identical weight of carbohydrates food less calorific value, less than fat.

No one food grade the product does not contains all users necessary the body nutrients. Therefore who recommends as much as possible diversify food ration. According to estimates experts, in particular daily menu must be present at least 15-17 items products, a weekly — 32-34. In the daily amount the menu should be no less than 400 g of fruit and vegetables vegetables and not more than 10 g of salt

1. PROTEINS

To the main *functions of proteins* in the body include:

1. *plastic function,*
2. *energy industry software function up to 15% of energy consumption exchange,*
3. *the formation of hormones and enzymes,*
4. *transport function*
5. *fertile function,*
6. *hereditary function,*
7. *immune system function-education antibody testing,*
8. *software oncotic pressure drop,*
9. *participation in reactions deamination.*

Proteins they consist of amino acids, which are shared on:

a) *interchangeable ones* - can be synthesized in the body from other sources amino acids;

b) *irreplaceable* - cannot be synthesized from other sources amino acids.

Proteins, containing everything is irreplaceable amino acids, they are called *full*.

Generally accepted, what's new on a daily basis the human body must receive full-fledged programs proteins. Example similar proteins serve: meat, bird, fish. In recent years revised recommendations by daily value consumption proteines aside reduction. She must make up about 0.8 g / kg the weight of the person. Consumption protein of meat more than 80 g / day associated with high risk Tolstoy's cancer bowel movements (CINDY, 2000).

European countries experts (Gurr Moscow, 1998) recommend for persons older 45 years old opt out from daily use consumption meat and poultry, replacing them fish. With our company points of view, this recommendation it is not associated with properties fish protein, and co next facts:

- usually fish less than calorific value, less than meat and poultry;
- how rule, fish contains less than fat than meat and the bird;
- fish is the source calcium and phosphorus;
- fish is the source omega-3 acids, which, like they show you results some of them research, may interfere with development atherosclerosis.

When a disadvantage the protein is developing protein starvation, manifesting by decreasing its body weight, decline immune protection, development edema. Excess protein in food leads to the development of putrefactive processes in intestines.

1.2. Fats

Food grade fat is a mixture various triglycerides. Triglycerides they consist of three-atom alcohol glycerine, which one attached three different ones fatty acids.

Essential acids – linoleic acid and linolenic acid - they are irreplaceable, since not synthesized in the body a human being. From of them in the body formed other fat ones acids, as well as large group highly active users regulators metabolism (prostaglandins, thromboxanes, leukotrienes). Fats are native media fat-soluble vitamins A and C, E, D and to.

To avoid magnification body mass index (BMI) the result excessive consumption fat, at the expense of fat should be getting covered no more than 20-25% energy saving measures requirements the organism. However complete exception fat from the diet power supply is not possible, considering

Functions of fat in the body.

- 1) *are important source code energy efficiency,*
- 2) *included in the cellular membranes,*
- 3) *provide assimilation fat-soluble vitamins,*
- 4) *improve the taste buds food quality,*

Except in addition, cholesterol, included in the composition of fats, responsible for turgor of fabrics, hormone synthesis.

Between TEM, redundant body weight is a factor development risk sugar type 2 diabetes, cardiovascular diseases diseases and some of them other chronic diseases non-infectious diseases diseases.

Excessive zoom in body weight, in mainly related to with magnification fat percentage tissues in the body, which is at 85% consists of fat.

Especially closely related consumption problems with development atherosclerosis. At the heart of pathogenesis atherosclerosis there is a violation lipoprotein balance blood. Atherosclerosis is the host link of pathogenesis stroke, ischemic heart disease and other cardiovascular diseases diseases. Lipoprotein balance and cholesterol levels blood is defined consumption fat from food. Lowering cholesterol blood supply and normalization lipoprotein balance reduces risk development of ischemic heart disease in healthy individuals (primary prevention) and for individuals who previously transferred users myocardial infarction (secondary prevention).

In recent years nutritionists a number of countries considered the question of the negative impact on the body a person ***TRANS-fat products*** acids'. Such as acids usually a lot of ready-made products food, in particular, in restaurants fast food. TRANS fats can be formed in progress culinary food processing (frying).

Who offers as much as possible restrict receipt saturated ones *fatty acid* and *TRANS fat products acids*, as much as possible replacing them unsaturated fatty acids..

1.3. Carbohydrates

Main *functions carbohydrates* in the body the following:

- 1) *they are source code energy - up to 56%, participate in the synthesis of substituables amino acids,*
- 2) *provide activity the nervous system (lecithin and glucose),*
- 3) *glucose is involved in synthesis glucuronic acid, hyaluronic acid acids and COA.*

Sahara by chemical the structure includes to simple carbohydrates. They are with sweet nutrients, containing in fruit, unripe vegetables. Also sugar added in food when it is used preparation. During the organization rational sugar nutrition they must be the main source energy.

Monosaccharides – usually solid crystal forms substances, all right they dissolve in the water, they have sweet taste. Main features representatives groups are glucose, fructose and galactose.

Glucose – Vinogradny sugar, widely used common in nature, it contains in fruit, especially in the grapes, eh also seeds, green parts plants, berries, honey. A number of experts believes that redundant consumption glucose can be alone among the reasons for development sugar diabetes.

You need to note that a large number of monosaccharides contains in carbonated beverages. It can reach 40 g per 100 ml. That's enough often monosaccharides in large quantities added in lactic acids products for improve them taste. Monosaccharides can be used when cooking sauces. In the structure rolls in restaurants fast food frequently included monosaccharides.

Fructose – fruit juice sugar, free of charge state contains in honey, fruit, berries, seeds, green parts plants. In liver fructose turns out in glucose, accordingly using it patients with diabetes mellitus diabetes is not a disease maybe unlimited. Fructose in to a lesser degree causes development caries, than glucose.

Disaccharides. The largest value in human nutrition have sucrose, lactose and maltose. Sucrose – the most famous and widely used in nutrition and food industry regular sugar. Lactose-dairy product sugar, consists of from the remainder galactoses and glucose levels. Contributes to suction calcium b gastro-intestinal on the highway.

1.4. Dietary fiber

By chemical structure of food products the fibers are carbohydrates. Dietary fiber stimulate fine motor skills and Tolstoy bowel movements.

Food, rich in dietary fiber with fibers. usually requires more thorough and long-term chewing, than products with a low content fibers. In the stomach dietary fiber swell and contribute to quick formation feelings of satiety. So it's easier restrict consumption calories, increasing the content food fibers in the diet.

Epidemiological data research show, what are pectins, related to food fibers, they lower the level glucose after food. Also available limited data that pectins can reduce the level cholesterol levels bloods (Gurr M.I, Asp N.G., 1994).

Low consumption food fibers considered as a factor development risk cardiovascular diseases (Kritchevsky D, Bonfield C., 1995).

From food rich food fibers, better happens suction mineral resources substances. Phytic acid incoming acid in the composition of fibers cereals, increases digestibility iron and zinc. The contents phytic acid can to be improved in the process culinary treatment, with the fermentation test.

Part food fibers resistant to action of enzymes gastro-intestinal the route. Such the fibers are called *indigestible*. Indigestible dietary fiber do not have an energy rating values, however they are the main ones stimulants Tolstoy's motor skills bowel movements.

Large number of indigestible items food fibers contains in whole grains, bran. When destruction grain size decreases content indigestible fibers.

Food grade fibers that break down in the gastrointestinal tract in the main road, they are called *digestible*. They split up to mono-go- saccharides and in this form are absorbed in the blood. Suction monosaccharides from digested foods food fibers it's happening more slowly, than from monosaccharides food. Therefore with sugar diabetes is common recommended replace monosaccharides food fibers.

Daily value consumption food fibers in the EU countries located on at the level of 20 g.

WHO recommends zoom in consumption fruits and vegetables up to 400 g / day. By according to expert estimates, average value consumption vegetables and fruits Russians it makes up about half of it from the recommended value standards.

Because in progress culinary processing can take place partial destruction food fibers, then no less half the vegetables and fruit recommended use it in its raw form. Simultaneously recommended usage bread on each side food.

1.5. Vitamins and minerals substances and optional features nutrients

The most important ones irreplaceable food grade substances are vitamins and mineral fertilizers substances. They participate in functioning enzymes. So like most people there are no vitamins synthesized your body a person, then insufficient receipt ***vitamins'*** with food leads to the deficient ones States.

Under *avitaminosis* understand deep deficit of moreover or any other vitamin with an expanded page clinical status picture insufficiency. K *hypovitaminosis* assign States moderate vitamin deficiency with non-specific conditions manifestations.

Usually vitamin deficiency and mineral resources substance development if they are not enough in food. Vegetables and fruits contain more vitamins, than others food products. The process of storing and cooking treatment can negative impact on the content vitamins. No not a single product the power supply that is used would contain all vitamins and mineral fertilizers substances. So, potatoes are

rich vitamin C, but poor in iron; grain products contain iron, but not the vitamin C. Therefore, the diet the power supply must be as high as possible diverse.

Important source *mineral substance* serves as a drinking station water. If there is a shortage mineral resources substances in water can develop serious ones diseases. So, the deficit Yoda is paired with endocrine glands violations, fluorine – with an increased risk of development risk caries.

Large number of regions Land and Russian Federation Russian Federation they are characterized by iodine deficiency. Who recommends in all iodine deficient countries regions (Krasnodar region edge) entering yodel salt in the diet power supply..

Optional features nutrients sold as biologically active additives to the food. It is considered that that many of them optional services nutrients contribute to protection from oncological services diseases (William GM, 1992).

A special one role among the optional services nutrients retract *antioxidants*. A whole series research shows, what are antioxidants reduce your risk development cardiovascular diseases diseases. Some experts do conclusion, what are antioxidants they lower the level cholesterol levels bloods.

Usage antioxidants reliable reduces the probability of cancer development lungs, gastrointestinal tract path, neck uterus, prostate, breast, ovary (Block Getal., 1992). At the same time, the main source code antioxidants are vegetables, fruits and greens (table 5). Except in addition, vegetables and fruits contain magnesium reducing agent development risk arterial pressure hypertension.

You should note that antioxidant properties properties they also have vitamins E and C With, β -carotene.

Table 5. Some sources antioxidants (Langseth L., 1995)

Food supply	Antioxidants
Legumes	Isoflavonoids, phenolic compounds acids
Tea (black, green)	Polyphenols, catechins
Coffee	Phenolic compounds ethers
Red wine	Phenolic acid
Rosemary, sage, greens	Carnosine acid
Fruit	Bioflavonoids, halcony
Onion, garlic	Quercetin, kaempferol
Olives	Polyphenols

Corn, rapeseed, sunflower, soy	Phytosterol
Onion, lettuce, tomatoes, pepper, citrus fruits, soy	Flavonoids
Citrus fruits, cherry trees	Terpenes

1.6. Water and salt

Water it is the main one the component the organism. Her share during the year all my life hesitates and it makes up about 75% of the mass bodies for newborns and 55% are elderly.

In what are happening in the water main features biochemicals reactions in the body. For normal use their course an important factor is the presence of in water dissolved some of them mineral resources substances, the main ones among which are sodium, chlorine and potassium.

Water can be formed as a result a number of biochemicals reactions. However it is synthesized too little to ensure all vitally important important features of the organism, therefore, it is necessary her constant receipt. Without water man able to live a few days.

Between receipt and output water exists equality. Water withdrawal defined by by temperature environment air and intensity physical loads. According to recommendations WHO sufficient consumption the water content is with a calculation of 30 ml multiply per 1 kg of weight bodies/ day. for an adult. In in a hot climate this value should achieve a larger one quantities.

Water goes to the human body not just how drinking. Part water comes in with products power supply, when these are the latest ones vegetables and fruits more affluent water than meat and fish dishes.

During heat time, at intensive physical work, vomiting, diarrhea occurs the loss is not only water, but also mineral substances. Therefore it is important to make up for it not just water, but also mineral substances.

Needs in the water. from individual clients features. So, the diet power supply provides impact on consumption water. For example, at a higher level consumption proteins are required large quantity water for them digestion.

Consumption water is regulated with a sense of thirst, which depends not just from water loss, but also concentration mineral resources substances. If the person strenuously sweating, then clean water can't quench the feeling thirst. In this case if necessary add salt into the water or use it juices. However in this case, you should remember that many ready-made products juices contain sugar.

The formation of the feeling of thirst can be broken in the elderly. Therefore, individuals elderly people usually recommended regular usage small ones water quantities regardless from appearance thirst.

To quench the feeling thirst, it must be pass some time time. Therefore fast usage water can be used lead to her redundant receipt into the body.

Special offer value for of the organism a person has receipt with various options drinks and products cooking food salt. Shown direct communication between consumption salt and sugar development cardiovascular diseases diseases.

Recent events recommendations recommend stick to it consumption salt on the level 5-8 g / day.. Diet with content salt less than 5 g. (*salt-free* diet) can be recommended persons who have other factors development risk cardiovascular diseases diseases.

Recommended restrict consumption salt. To add taste of food you can use soy sauce, herbs and spices. It is also recommended replace cookware iodized salt. It's connected with practically ubiquitous distribution iodine deficiency in drinking water water. The deficit iodine makes impossible synthesis of hormones thyroid. Depending depending on your age this leads to:

- 1) *during pregnancy* – to miscarriage;
- 2) *in early childhood education age limit* – to lag behind in the mental and physical development;
- 3) *as a teenager age limit* – to lag behind in intellectual property the sphere;
- 4) *in adults period* – to the increased fatigue.

Receipt iodine with food is the only one proven a method of prevention iodine deficiency. At the same time, iodized the salt is the most studied substance for a similar purpose prevention.

2. **Main features organization principles rational power supply**

So as a line-up most products the power supply is known, then you can make a list balance of consumption basic nutrients. Diversified diet, perhaps pick it up so that it matched principles rational power supply. However balance sheet approach extremely bulky and in practice difficult to implement .

Table 6.. Example calculating the balance diet plan

Product	Weight, g	Calorific, kcal	Squirrels/ fats/ carbohydrates, g	Content vitamins and micro-elements, which ones)
<i>Monday</i>				
<i>Breakfast</i>				
Egg	50	35	2,5/2,5/0	A, D, E, Fe, Mg, Cu
<i>Lunch</i>				
<i>Total for Day</i>				
<i>Tuesday</i>				

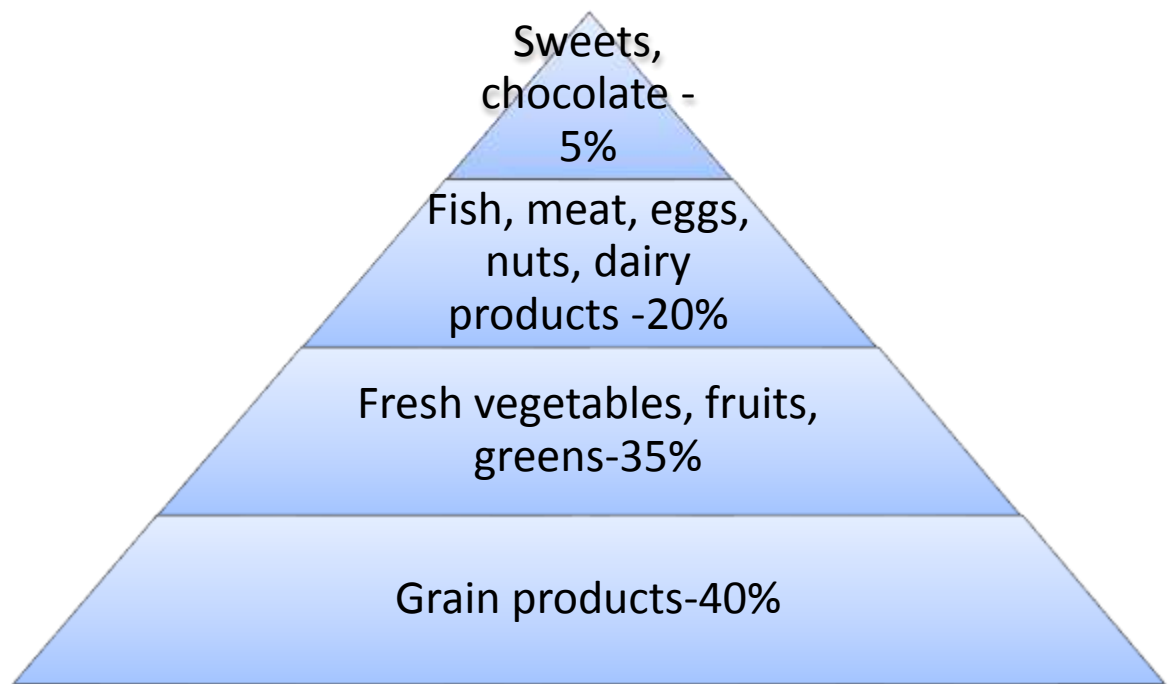
The second one approach based on the division products software power supply colors. Color chart the diagram reminds you of traffic lights. Green they are shown in color main products recommended diets to the daily schedule to be used, yellow – the ones that are used usage which ones are needed restrict, red is better avoid it. Graphically this approach they depict in the form of a " pyramid power supply".

Pyramid rational power supply allows you to illustrate as a variety, so are the ratios food products, which are necessary for rational use power supply. Products from green layers should be to be used every day. Grain products: bread, pasta products, unpolished rice, etc. should be make up the basis of the diet. Daily consumption vegetables and fruits it must be at least 400 g.

Products power supplies designated by yellow. they are needed in restricted areas quantities. Redundant their use it may lead to towards development chronic diseases non-infectious diseases diseases. Preferred meat replacement fish and dairy products products, which contain calcium.

Products, designated in red, contain a lot of energy and not enough vitamins and mineral resources substances. From a point of view prevention point of view chronic diseases non-infectious diseases diseases, these products it is better to exclude from the diet power supply. Maybe only limited their use.

Pyramid rational power supply of the most acceptable for usage in programs fortifications health. Submitted by graphically information, visually good perceived.



Drawing 6. The food guide pyramid.

Verbal description of the pyramid rational power supply formalized as a principle "12 steps to a healthy lifestyle nutrition information» (Who, 2005):

1. You need to use as much as possible various food products, most of them of which plant-based origin. Food products they should not be called development of allergies.
2. Bread, products made from croup should be to be used several times per day.
3. Daily several times per day should be use it fresh vegetables and fruit. Preferred grown in the area accommodation. Daily consumption vegetables and fruits it must be at least 400 g.
4. Necessary daily moderate physical version load.
5. Daily value consumption there should be no fat exceed 30%, at the same time it is preferable vegetable-based fats origin.
6. Necessary replace bold text meat and meat products products on the site lean meat, poultry, fish or legumes.
7. Necessary use it milk and dairy products products with low content fat and salt.
8. Necessary choose products with a low content sugar. Need restrict consumption sugar and sweeteners drinks.
9. Necessary use it no more than 1 teaspoon spoons (6 g) of salt per day. Need replace table salt is iodized.
10. Necessary restrict usage alcohol 20 g recalculated on pure alcohol.
11. You need to provide security cooking food. The food should get ready with the following conditions sanitary measures norm. Need to avoid frying. Optimal preparation – for a couple, in microwave furnaces, cooking. Prepared the food should stored in the refrigerator, and better-to be used in fresh form.
12. To provide breastfeeding newborns at least up to 6 months, but less than 4 months.

By data from the world wide web organizations health care (WHO)

More 1.4 billion adults at the age of 20 years old or older suffer from redundant weights.

From there are more than 200 of them millions of individuals male version and almost 300 million female persons the floor.

In overall, more than 10% of adults suffer obese.

In 2019 more than 40 million children of all ages up to 5 years of experience redundant weight or obesity

Control question:

1. *Which ones do you know the nutrients?*
2. *What is it like it must be the ratio proteins and fats and carbohydrates in daily value your diet?*
3. *List them main functions proteins.*

4. *List them main functions carbohydrates.*
5. *List them main functions fats.*
6. *Why frequent use fast food stores harmful for health?*
7. *Why TRANS fats most harmful for your health?*
8. *What is it meaning of the pyramid rational power supply?*
9. *Which ones beriberi, hypovitaminosis do you know?"*
10. *Name it components principle " 12 steps to a healthy one nutrition", according to WHO .*

TOPIC 7. PHYSICAL ACTIVITY AND A HEALTHY LIFESTYLE

Physical inactivity – lack of physical activity. Currently, there is an increase in physical inactivity and its associated pathologies. With hypodynamia, there are metabolic changes that lead to obesity, sexual disorders, insomnia, as well as deadly diseases: arterial hypertension, coronary heart disease and stroke.

Hypodynamia is considered as a "disease of civilization".

Mechanization of labor and the development of means of transportation have reduced the need for daily physical activity.

Lack of physical activity leads to serious health system costs.

Physically active people have a lower risk of developing chronic degenerative diseases, coronary heart disease, hypertension, stroke, and osteoporosis compared to those leading a sedentary lifestyle. There is limited evidence that exercise can reduce the risk of colon cancer.

According to international recommendations, several types of physical activity are distinguished (table 7). At the same time, the most significant risk factor for the development of chronic infectious diseases is hypodynamia.

It has been demonstrated that physical activity reduces the risk of developing cardiovascular diseases, while the preventive effect of walking is comparable to that of other types of physical activity.

Physical activity can reduce the concentration of glucose in the blood and increase the sensitivity of tissues to insulin. Based on the results of epidemiological studies, it can be assumed that physical activity reduces the risk of developing type 2 diabetes mellitus. According to some experts, the risk of developing type 2 diabetes is reduced by about 6 % for every 500 calories spent per week due to physical exertion.

Physical exercises stimulate the musculoskeletal system and delay the age - related process of bone mass depletion.

However, in women within five years after menopause, no Association was found between the risk of fractures and physical activity. In the later post-menopausal period, daily walking reduced the likelihood of developing a hip fracture by 18%.

Table 7. Classification of types of physical activity (according to the International Physical Activity Prevalence Study)

The presence of inactivity	Type of physical activity	Criteria		
		Work	Daily walking	physical education Classes in your free time
There are	Physically inactive persons	Sedentary or home-based work	Less than 30 minutes	There is no
	Low level of physical activity	Sedentary or home work	30-60 minutes	No
No	Average level of physical activity	It is mainly associated with walking	.	Absent
		Any	60-90 min	
			Any	20-40 min /day 1-4 days a week
	High level of physical activity	Hard physical work	Any	Any
		Any	More than 90 minutes	
			Any	

Regardless of its intensity and duration, physical exercise contributes to the consumption of energy. Thanks to them, it is easier than with a diet to achieve a negative energy balance, i.e. to promote контролю за weight control. It is also proven that people with low physical activity are more likely to increase their weight in the next ten years than those who lead an active lifestyle.

The risk of developing a myocardial infarction is reduced by three to four times in men who consume 2000 kcal /week. physical activity, compared with those leading a sedentary lifestyle.

In the elderly, physical activity contributes to endurance. In addition, physical exercise stimulates appetite, which is important for most older people, who are characterized by its decline.

There are constantly new studies on the use of moderate physical activity in rehabilitation and treatment. Moderate physical activity reduces blood pressure in

hypertension. Due to the appointment of physical exercises, rehabilitation of patients with myocardial infarction is accelerated.

However, it should be borne in mind that excessive or incorrectly selected physical activity adversely affects the condition of the body. It can cause injuries. Therefore, individuals with hypodynamia are recommended to increase physical activity gradually, starting from 5-10 min/day, depending on the individual's physical performance, so that the load does not cause discomfort.

Getting used to physical activity begins with childhood. During this period, the organization of mass sports events and the use of visual agitation tools that promote the need for movement are effective as health promotion programs. A major role in the formation of physical activity of children and adolescents is played by the state policy that determines the availability of sports facilities.

For middle-aged and elderly people, an effective method of health promotion is individual conversations about the need to lead a more active lifestyle if hypodynamia is detected. At the same time, it should be remembered that a change in physical activity entails a change in the existing patterns of behavior, so you should carefully recommend additional physical activity. In addition, physical exercises should be selected individually, taking into account the interests and capabilities of the individual.

Physical culture and sports activities during the period of growth and development largely determine the constitutional characteristics of an adult.

However, the human Constitution, in addition to hereditary factors, is influenced by lifestyle and environmental factors. The physical condition of an adult depends on the mode of motor activity and the nature of nutrition. With aging, morphofunctional indicators of physical development are subjected to involution. Therefore, optimal physical activity in all periods of life is one of the most important factors of a healthy lifestyle.

Physical activity should be selected individually, under the supervision of a specialist: a doctor of physical therapy or a sports doctor.

Physical education classes can serve various purposes: to increase the amount of muscle mass, reduce the amount of subcutaneous fat, correct posture, improve well-being. Based on the purpose of classes, personal characteristics and selected set of exercises.

Rational construction of physical activity.

Proper physical activity planning allows you to increase work efficiency and reduce injuries and the risk of developing diseases of the musculoskeletal system. During OFC classes, there are three periods of changes in the functional state of the human body: pre-start (typical for professional athletes), main (work period) and recovery.

In the pre-start state, which occurs a few minutes or hours before the start of the competition, the heart rate, systolic and minute volume of blood circulation increases, blood pressure increases, pulmonary ventilation increases, energy consumption, энерготраты body temperature increases. Pre-start changes in functions

are conditioned-reflex, accelerate the processes of working in and prepare the body for the upcoming load.

The working period begins with a warm-up session. Warm – up-a set of special procedures of special exercises performed before a training session or competition that helps to accelerate the process of working out, improve performance.

Warm-up sessions can be General or special. The General warm-up consists of exercises that can increase the excitability of the Central nervous system, body temperature, and activate the oxygen transport system. The special part of the warm-up should be structured as closely as possible to the nature of the upcoming activity.

After a properly conducted warm - up period begins to develop-the period of increasing performance. With the same nature and power of exercises, the development occurs the faster, the higher the level of training. After the period of working in with prolonged aerobic work, a stable state occurs, during which the performance and indicators of physiological functions that provide oxygen transport change slightly. Lactic acid does not accumulate in the muscles, which ensures the preservation of acid-base balance. However, under the influence of prolonged or intensive work, fatigue may occur. Fatigue is a temporary functional condition of a person that leads to a decrease in work efficiency and increases the risk of injury.

Hydrotherapeutic procedure

Water procedures not only have hygienic properties, but also promote relaxation after physical training and sports.

The shower has a thermal and mechanical effect on the body. The intensity of the impact is determined by the force of mechanical action and the temperature of the water. Hot shower increases the intensity of metabolic processes, can help reduce the intensity of pain in the muscles. A warm shower has a calming effect. Cold shower improves the tone of the cardiovascular and muscular systems. Contrast shower is an effective restorative tool.

Baths promote relaxation and recovery, so they are recommended before bedtime. The duration of the bath is 10-15 minutes. An additional relaxing effect can be achieved in the Jacuzzi bath and when spraying aromatics.

The relationship between exercise and nutrition

Physical exertion alone is not enough to combat hypodynamia; it requires a combination of physical exertion and rational nutrition. Carbohydrates are the most important sources of energy that comes from food.

When food enters the body there are three main ways to use glucose:

- * Glucose is oxidized to produce energy;
- When the amount of glucose exceeds the amount needed for energy, it is converted into muscle and liver glycogen;

- When the glycogen depot is also saturated, glucose is converted into fats, which are deposited in fat cells.

Who global strategy for physical activity and nutrition

Problem statement:

1. Insufficient physical activity and poor nutrition are the leading causes of noncommunicable diseases, including cardiovascular diseases, type 2 diabetes, certain types of cancer, and osteoporosis. Insufficient physical activity contributes to a significant share of the global burden of disease, mortality and disability.

2. The main burden of non-communicable diseases is borne by developing countries, where their sufferers are on average younger than those in developed countries. The rapid decline in physical activity due to progress makes the situation even worse.

3. A comprehensive approach to correcting reduced physical activity levels can help reduce the burden of chronic noncommunicable diseases.

4. The experience of a number of countries shows that the structure of unhealthy behaviors and related diseases is embedded in the most affluent segments of society. However, over time, all the major risks of chronic infectious diseases tend to cluster in the poorest communities and become an important component contributing to social class-related inequality.

5. The underlying determinants of infectious diseases are the same in all countries. They include a reduced level of physical activity. Of particular concern is the reduced physical activity of children and adolescents.

6. Diet and physical activity affect health both collectively and individually. Physical activity is the main means of improving a person's physical and mental health.

Opportunity: there is a unique opportunity to formulate and implement an effective strategy to drastically reduce mortality and morbidity through increased physical activity.

Purpose and objectives: the overall goal and objectives are to improve the health of the population. The global strategy sets out four main objectives:

1. Reducing the risk factors for chronic noncommunicable diseases as a result of unhealthy diets and insufficient physical activity.

2. Increasing general awareness and understanding of the role of diet and physical activity as determinants of public health and the positive potential of preventive interventions.

3. Encourage the development, strengthening and implementation of global, regional, national and community-based policies and action plans to improve diets and increase physical activity.

4. Collect scientific data and monitor major impacts on diet and physical activity, and support research in a wide range of relevant areas.

Framework for action:

1. Data show that people can remain healthy beyond the age of seventy with an optimal diet, regular physical activity, and abstinence from tobacco.

2. the Individual is encouraged to maintain an adequate level of physical activity throughout their life. Physical activity is a key determinant of energy expenditure, which is essential for energy balance and weight control.

Physical therapy (physical therapy)

Physical therapy is a method that uses physical culture tools for curative and preventive purposes for faster and more complete recovery of health and prevention of the development of diseases. Usually physical therapy is used in combination with other means of treatment. The active factor of physical therapy is specially organized types of exercises.

There are the following main *types of exercises in physical therapy*:

1. *Gymnastic exercises* are performed from a certain starting position, with a certain speed, amplitude, repeatability. According to the effect on muscle groups, gymnastic exercises are divided into exercises for the muscles of the neck, arms, trunk, abdominal wall, pelvic floor, etc. According to the methodological orientation, gymnastic exercises can be aimed at endurance, coordination, stretching, etc.

2. *Static exercises* are performed by straining certain muscles, holding dumbbells, balls, weights, their own weight, etc. Static exercises promote the development of muscle strength and endurance, prevent the development of their atrophy after injuries, during immobilization.

3. *stretching Exercises* are used in the form of various movements in the joints with subsequent fixation of the joint in the extreme position.

It is used to relieve fatigue, with contractures, increased muscle tone.

4. *relaxation Exercises* are used to reduce muscle tone (for example, with injuries).

5. *Ideomotor exercises* are performed mentally, they give instructions to perform movement of the immobilized limb (cast, immobilization).

6. *Passive exercises* are performed by a physical therapy doctor without the effort of an individual. They are used to stimulate the recovery of muscle activity.

7. *Breathing exercises* promote arousal and enhance the function of breathing. They help to strengthen the chest, strengthen the respiratory muscles, eliminate congestion in the lungs.

8. *Corrective exercises* contribute to the correction of posture, figure.

9. *Hydroxynesotherapy*-exercises in water. Warm water can make it easier to perform physical exercises with low mobility of the joints.

Professional sports and health

Currently, all over the world, increased attention is paid to the health of athletes and the impact of professional factors on it. The influence of professional sports on the cardiovascular, respiratory and musculoskeletal systems is widely known.

There are many factors **that negatively** affect the condition of the skin during sports: infectious agents, mechanical damage, as well as psycho-emotional factors, which are especially effective during competitions. An integral part of professional

sports is the frequent change of geographical and climatic zones, which also has a negative effect on the human body.

Depending on their specialization, athletes train in various, sometimes extreme conditions. A special feature of water sports is the daily prolonged stay of the athlete in the water, skin contact with chemical agents that are added to the water for cleaning and disinfection.

The applied chemicals can destroy the lipid barrier of the skin, thereby facilitating the penetration of chemical compounds through the skin and cause long-term exacerbations of the skin pathological process, increased itching and other manifestations of dermatosis, the development of skin dysbiosis.

Swimmers during overcoming the distance in open reservoirs swallow, on average, 10-15 milliliters of water, which can lead to infection.

Sports facilities include public changing rooms, showers and saunas, exercise equipment and sports equipment. This contributes to the direct or indirect transmission of pathogens of bacterial, fungal and viral diseases. The development of dermatoses can be associated with infection with fungal microflora, as well as with changes in the levels of normal bacterial microflora.

To achieve high results, professional athletes perform excessive physical activities that go beyond the limits of the body's adaptation, leading to the development of chronic physical stress, overload. The growing competition in high-performance sports provokes the use of prohibited drugs (doping).

DOPES

Doping is a group of substances used to artificially increase the physical performance and endurance of athletes or sports animals. The first doping control program was developed by UNESCO in 1952.

According to international standards and regulations, up to . Doping control of athletes can be carried out on time and after the competition. The result is considered positive if prohibited substances or their metabolites are found in the test biological fluid (blood, urine). In some cases, athletes are forced for medical reasons to take drugs that are prohibited or their analogues. In such a situation, the team doctor must record the medical indications and inform the regulatory authorities.

Physical education classes are an integral part of a healthy lifestyle.

Control question

- 1. List the main positive aspects of the impact of physical culture on health.*
- 2. What is the meaning of water procedures after exercises and sports?*
- 3. What are the basic principles of exercise prescribing that You know?*
- 4. How does physical education affect your body weight?*
- 5. What are the main provisions of the who global vision for physical education?*
- 6. How does playing professional sports affect your health?*
- 7. What is called doping?*

TOPIC 8.

STRESS, ITS CAUSES, IMPACT ON THE BODY, WAYS TO RELIEVE STRESS

Mental health (spiritual, sometimes **mental** health) with a public definition According to the world health organization, it is a state of well-being in which a person can realize their own potential, cope with the normal stresses of life, work productively and fruitfully, and contribute to the life of their society.

Stress, its causes, and its impact on the body.

Stress (eng. «*stress*» - stress) – a condition of the body that occurs as a result of intense or prolonged effects, regardless of their qualitative nature, and is characterized by the stress of non-specific adaptive mechanisms. The concept of "stress" was introduced in 1936 by a Canadian pathologist Selye (N. Selye). Stress can occur under the influence of cold, heat, physical exertion, emotional stress, pain, and other stimuli. Such concepts as "cold stress", "gravitational stress", "heat stress", indicate only the nature of the influencing factor.

According to the doctrine Selye, any influencing factor causes both specific reactions due to the qualitative characteristics of this factor, and non-specific, or stressful, reactions associated with the emergence of a state of tension.

A set of the same type of stress reactions can be manifested at the level of the whole organism (General adaptation syndrome) and within the tissue damaged by the influencing factor (local adaptation syndrome).

Stress reactions are aimed at increasing the body's resistance to any impact and are of a protective and adaptive nature. In their implementation, i.e. in the development of a General adaptive syndrome, the main importance is the activation of the hypothalamus-pituitary-adrenal cortex and the excitation of the sympathetic nervous system. Under the influence of stress-causing factors, the hypothalamus's neural secretory cells produce corticoliberin, which stimulates the secretion of pituitary adrenocorticotrophic hormone, which causes the secretion of corticosteroids.

The main manifestations of the General ***adaptive syndrome*** are caused by hypersecretion of these hormones, as well as hormones – mediators of the sympathoadrenal system, which affect the production of glucose and fatty acids, protein metabolism, the immune system, the activity of the heart and blood vessels, ion metabolism, etc. Some hormones contribute to the creation of an inflammatory barrier to the spread of a pathogenic factor, others suppress inflammation, limiting the pathogenic consequences of the inflammatory focus itself. Balancing the effects of hormones of both groups provides the best resistance to the influencing factor.

The General adaptive syndrome, which is non-specific in origin, is quite specific in its manifestations and development mechanism.

It begins ***with the anxiety stage***, during which, in response to the initial shock (in terminology Selye) mobilizes the General protective forces of the body (***antishock***), which is mainly associated with an increased influx of energy

substrates (glucose and fatty acids) to the tissues. As a result, the so-called ***catabolic phase*** of stress is formed.

The second stage of the General adaptation syndrome is the stage ***of resistance***, during which the body acquires resistance not only to the influence, but also usually to other factors (***cross-sensitization***). With very intense or prolonged exposure to the body, as well as with the initial weakness of protective mechanisms, the final stage of the General adaptive syndrome develops – the stage of exhaustion, which ends in the absence of therapeutic measures ***with the death of the body***.

Local adaptation syndrome has the same stages as the General one, but manifests itself mainly in the form ***of inflammation***. The severity of local adaptation syndrome largely depends on the overall adaptation syndrome.

General and local adaptation syndromes are of great clinical significance.

Repeated stressful effects, on the one hand, have a ***training effect***, on the other – they can ***Deplete the body's defenses***, so that even weak stimuli cause the development of severe diseases. If stressful reactions are inadequate, so-called ***adaptation diseases may appear***, when the adaptive response of the body acts as a pathogenic factor (for example, inflammatory changes in the joints, eye tissues, hypertension, neuropsychiatric disorders). Excess of steroid hormones under frequent and intense stress can contribute to the appearance of gastrointestinal lesions (steroid ulcers). Under different conditions, the same stressful reactions can have beneficial effects.

Factors that influence the final manifestations of both General and local adaptation syndrome are called ***conditioning*** (conditioning).

EMOTIONAL stress is a state of tension in the physiological functions of the body caused by prolonged exposure to an emotionally significant stimulus for an individual.

The main ***cause*** of emotional stress is the so-called conflict situations, in which a person or animal for one reason or another for a long time can not satisfy the leading vital social or biological need. This leads to the formation of continuous emotional arousal of a negative nature.

The danger of a prolonged negative emotional state lies in the fact that the complex of excitations formed in the Central nervous system neurohumorally begins to exert continuous downward influences on somatovisceral functions. If in short-term emotional reactions, altered physiological functions quickly return to their original level due to self-regulatory mechanisms, then under stress, prolonged and increasing overloads lead to irreversible changes in certain links of self-regulation of a particular function.

Failure of a particular function and the development of a corresponding disease are caused ***by a genetic predisposition*** and selective involvement of them in emotional arousal.

Clinical observations and experimental data show that the development of emotional stress in a conflict situation in different individuals can go different ways. In cases where there are genetic or acquired resistance mechanisms, stress

does not lead to either cerebral, somatic, or visceral disorders. In other cases, there may be either disorders mainly in the activity of the Central nervous system in the form of neuroses, or visceral disorders in the form of *ischemic heart disease, arterial hypertension, gastrointestinal lesions*, etc. In certain cases, there may be a combined violation of cerebral and visceral functions.

A type of emotional stress is **EXAM stress**.

The REASONS for it are:

- intense mental activity;
- stress on the same muscles and organs due to prolonged sitting;
- violation of the regime of sleep and rest;
- negative experiences

The symptoms of exam stress can be divided into four groups:

1. PHYSIOLOGICAL SYMPTOMS

- increased skin rash
- headache
- nausea
- "bear's illness" (diarrhea)
- muscle tension
- deep and rapid breathing
- rapid pulse
- changes in blood pressure

2. EMOTIONAL SYMPTOMS:

- feeling of General malaise
- perplexity
- panic
- fear
- uncertainty
- alarm
- depression
- oppression
- irritability

3. COGNITIVE (INTELLECTUAL) SYMPTOMS:

- excessive self-criticism, comparing one's own training with others in an unfavorable light
- unpleasant memories of failing exams in the past (your own or someone else's)
- imagining the negative consequences of failing an exam (expulsion from a University, loss of a scholarship, etc.)
- nightmarish dreams
- memory impairment
- reduced ability to concentrate, absent-mindedness

4. BEHAVIORAL SYMPTOMS:

- the desire to do any other business, just not to prepare for the exam
- avoiding any reminders of exams
- reduced learning efficiency during the exam period
- engaging other people in disturbing conversations about upcoming exams
- increased consumption of caffeine and alcohol
- poor sleep poor appetite

Stress resistance is the ability to overcome difficulties, suppress your emotions, understand human moods, showing restraint and tact.

Stress tolerance is defined by a set of personal qualities that allow a person to bear significant intellectual, volitional and emotional loads caused by the peculiarities of professional activity, without any special harmful consequences for the activity, others and their health.

Stress protection products

- Dynamic installations
- The ability to overestimate what you have failed to achieve
- Objectification of stress
- A relaxation skill
- Discrete communication

Anti-stress relaxation (recommended by the world health organization)

- Lie down (in extreme cases - sit down) comfortably in a quiet, poorly lit room; clothing should not restrict your movements.
- Close your eyes and breathe slowly and deeply. Take a deep breath and hold it for about 10 seconds. Exhale slowly, watch for relaxation, and mentally tell yourself: "Inhale and exhale like the tide and ebb." Repeat this procedure 5-6 times. Then rest for about 20 seconds.
- Use your willpower to contract individual muscles or groups of them. Hold the contraction for up to 10 seconds, then relax your muscles. In this way, walk all over your body. Repeat this procedure three times, relax, let go of everything, do not think about anything.
- Try to visualize as clearly as possible the feeling of relaxation that runs from your toes, through your calves, thighs, and the trunk of your head. Repeat to yourself: "I calm down, I feel good, nothing bothers me."

Control questions for self-training

1. Define the term "mental health".
2. What is called stress?
3. What types of stress do you know about?

4. *What is the impact of exam stress on the individual's body?*
5. *Remedies for emotional (mental) stress?*
6. *How do you try to avoid stressful situations?*
7. *Describe the anti-stress relaxation recommended by who.*

TOPIC 9.

ADDICTIVE DISORDERS. NON-CHEMICAL ADDICTIONS: PATHOLOGICAL GAMBLING, INTERNET ADDICTION.

Addiction (dependence) - a compulsive need for a certain activity felt by a person. Addiction is derived from the English word add, which means to add, attach, add; addiction - a tendency, addiction, addict - addict.

Classification of addictive behavior. There are several classifications of dependent behavior, most of them based on the type of addictive agent (object, activity, attitude), which is used to change the mood and escape from reality. All types of addictions are divided into two large groups: chemical and non-chemical, there is also an intermediate group that combines the properties of the first and second.

Classification of addictions (TS. P. Korolenko and N. V. Dmitrieva):

- *Non-chemical addictions (behavioral, nonsubstantial):* gambling (passion for gambling), Internet addiction, love addiction, sexual addiction, relationship addiction (codependency), slave addiction, shopping (addiction to spending money), urgent addiction, etc.
- *Chemical addictions (substantial, physical):* alcoholism, drug addiction, and substance abuse.
- *Intermediate group:* addictive overeating (bulimia), addictive fasting (anorexia), orthorexia.

Pathological gambling.

According to the ICD-11 classification, pathological gambling addiction consists of frequent repeated episodes of gambling, which dominates the subject's life and leads to a decrease in social, professional, material and family values, and does not pay due attention to responsibilities in this area.

The most characteristic signs for gambling include:

1. Constant involvement, increasing the time spent in the game situation.
2. Change in the range of interests, displacement of previous game motivations, constant thoughts about the game, the predominance and imagination of situations associated with game combinations.
3. "Loss of control", which is expressed in the inability to stop playing both after a large win and after constant losses.
4. States of psychological discomfort, irritation, and anxiety that develop in relatively short periods of time after the next participation in the game, with a difficult-to-overcome desire to start playing again. Such States resemble abstinence

States in a number of ways; they are accompanied by headaches, sleep disorders, anxiety, decreased mood, and impaired concentration.

5. it is Characterized by a gradual increase in the frequency of participation in the game, the desire for an increasingly high risk.

6. Periodically occurring States of tension, accompanied by a gaming "drive", overcoming all the desire to find an opportunity to participate in gambling.

7. Rapidly increasing decline in the ability to resist temptation. This is expressed in the fact that, having decided once and for all to "tie up", at the slightest provocation (meeting with old friends, talking about the game, the presence of a nearby gambling establishment, etc.), gambling resumes.

The next component of the psychophysical dependence syndrome is the physical dependence syndrome. Physical attraction replaces obsessive (i.e., compulsive thoughts) and manifests itself as an irresistible desire for the process of play, and in its degree of expression it reaches the level of vital drives and even suppresses them, i.e. the need for food, sleep, and normative sexuality is blocked. At the same time, the struggle of motives disappears, there is a complete absorption of the patient's consciousness with the game situation.

Internet addiction is a pathological, irresistible urge to use Internet resources.

The environment that supports the existence of the Internet is called cyberspace.

The diagnostic criteria for this disorder generally meet the criteria for non-chemical addictions of the American psychiatric classification DSM-IV:

A. computer Use causes distress;

C. computer Use is harmful to one's physical, psychological, interpersonal, family, economic or social status.

Orzack M. He identified ***psychological symptoms*** that are characteristic of Internet addiction:

- feeling good or euphoric at the computer;
- inability to stop;
- increasing the time spent at the computer;
- neglect of family, friends;
- feeling of emptiness, depression, irritation NOT at the computer;
- lying to your employers or family members about your activities;
- problems with work or study.

Physical symptoms of Internet addiction:

- синдром carpal tunnel syndrome (tunnel lesion of the nerves trunks hands associated with prolonged muscle tension and fixation of the wrist);
- dry eyes;
- migraine-type headaches;
- backache;
- irregular meals;
- neglect of personal hygiene;
- sleep disorder.

The following ***forms of communication*** are distinguished on the Internet:

- teleconference, chat (meaning IRC-Internet Relay Chat)
- “multi-user dimension’ (MUDs)
- correspondence using e - mail (e-mail).

Like other chemical and non-chemical addictions, different forms of Internet addiction can pass into one another and co-exist in different combinations. Another important aspect related to Internet addiction should be highlighted. These are serious dangers that children and teenagers can face while online:

- the operation of the trust to children: they can tempt on to.-
the prohibition of indecent acts;

- access to pornography;
- content sites with instructions on how to make a bomb or
narcotic substance;

- engaging in violent games increases the aggressiveness of children.

Control questions for self-training:

1. *What is addiction?*
2. *Classification of addictive behavior?*
3. *What is pathological gambling?*
4. *List the stages of gambling.*
5. *What are the criteria for Internet addiction?*
6. *List the symptoms of Internet addiction.*
7. *What are the dangers that children and teenagers can face while online ?*

TOPIC 10.

INTERMEDIATE ADDICTIONS: FOOD ADDICTIONS (BULIMIA NERVOSA, ANOREXIA NERVOSA). ORTHOREXIA.

Food addictions.

An intermediate link between non-chemical and chemical addictions are addictions to food, which have three forms – addictive overeating (bulimia nervosa) , nervous starvation (anorexia) and orthorexia.

Bulimia nervosa (addictive overeating) is characterized by repeated bouts of overeating, inability to go without food even for a short time, and excessive preoccupation with controlling body weight.

That is, there is an ambivalent attitude to eating: the desire to eat a large amount of food is combined with a negative, self-deprecating attitude to yourself and your "weakness". Addiction to food occurs when food is used as an addictive agent, using which a person moves away from the subjective reality that does not suit him. At the moment of irritation, dissatisfaction, failure and boredom, there is a desire to "eat" the trouble, using the process of eating for this purpose. At the same time, there may be a tendency to delay the process of eating in time, through slow food consumption, or by using a large amount of food. Such a departure from

reality can be a fairly effective way to control your mood, thus provoking the rapid formation of addiction.

Anorexia nervosa (addictive fasting) is a disorder characterized by intentional weight loss caused and maintained by the individual themselves.

The mechanism of addiction to fasting can be explained by two reasons. The medical option is due to the use of unloading diet therapy, which was used in patients with very different disorders. The phase of entering the hunger zone is characterized by the difficulty associated with the need to cope with appetite. After some time, the condition changes, new forces appear, appetite disappears, mood increases, motor activity increases, hunger is easily tolerated, neurotic disorders either lose their relevance or disappear. This condition is maintained for a certain time and gradually the person is removed from it. Some patients tend to continue this condition, because it suits them, because they subjectively like what is happening. Repeated fasting is rarely repeated in the hospital, it is carried out independently. At the level of euphoria achieved as a result of fasting, there is a loss of control and the person continues to starve even when fasting becomes life-threatening. He has the hyperactivity and the sensation of weightlessness so much criticism to the assessment of his condition.

In addition to the medical option of fasting, there is also a non-medical option. This option is beginning to be closely studied in connection with the increasing frequency of this type of fasting in countries with a high standard of living. Fasting is usually registered in adolescent girls who are brought up in fairly well-off and outwardly prosperous families. Fasting begins with limiting the amount of food taken, often a special scheme is invented. One of the psychological mechanisms that provoke starvation is the desire to change yourself physically, to look "better", in accordance with the image advertised in the media. It advertises a specific image of the female figure with an emphasis on emphasized thinness. Girls are indirectly (with a predominant impact on the sphere of the unconscious) instilled a sense of hatred for their "notbad" physical body, the need to be independent of family pressure and be able to overcome "low physiological instincts", limiting themselves as much as possible in food.

Diagnostic criteria for anorexia nervosa are:

1. Reducing by 15% and maintaining at a reduced level of body weight or achieving a body mass index of 17.5 kg/m^2 (the index is determined by the ratio of body weight in kilograms to the square of height in meters);
2. Distorting the image of your body in the form of fear of obesity;
3. Intentionally avoiding foods that can cause weight gain.

Another mechanism that "triggers" starvation and is of great importance is the independent setting of the task of overcoming yourself and the emergence of a sense of self-satisfaction and pride from its implementation.

Addictive fasting can cause symptoms of loss of control. Starving people lose criticism of their real state, they do not see that their weight loss is becoming catastrophic, that they look terrible, and what they consider "slimness" is already cachexia (exhaustion). The loss of control leads to a complete blockage of the

ability to objectively assess what is happening. The process of fasting is accompanied by mental changes that lead to a change in the perception of the reality of yourself and the surrounding world.

A psychotherapist dealing with the correction of addictive fasting and overeating cannot expect to achieve success without understanding the peculiarities of family dynamics, clarifying the psychosocial factors that provoke the development of the process. Changing interpersonal processes in the family, eliminating frozen stereotypical patterns in the communication of its members is a necessary part of correction, along with stimulating the personal development of the addict. Correction of addiction to food proceeds slowly. The addict needs to be taught to be confident in his own abilities and abilities, he must gradually overcome the complex of inferiority and self-distrust. Emotional support of relatives, friends and acquaintances, their sympathetic, warm attitude has a positive meaning and should be used as an important element in the correction of the addictive process.

Orthorexia.

In 1997, Dr. Stephen Bratman first used the term "orthorexia" ("Ortho" – correct, Greek). *Orthorexia is a pathological fixation on proper nutrition, and it is classified as a mental illness.*

People with orthorexia, who are obsessed with healthy eating, worry mainly about the quality of their food, rather than about the quantity, constantly Polish their diet depending on their personal idea of what foods are really "clean". Any products containing pesticides, herbicides, artificial additives are often discarded, while the diet regime changes from person to person. Many orthorexics, for example, eat only raw fruits and vegetables, or are vegetarians, fruitarians, or, for example, eat only yellow foods. As a result, psychopathic personality changes occur with the formation of super-valuable ideas up to delusional formation. And as a consequence, this behavior leads to exhaustion of the body and violation of social adaptation.

Who has expanded the list of mental illnesses that require immediate medical intervention. It adds vegetarianism and rawfood, which are classified as mental disorders in group F63. 8 – "other disorders of habits and drives". Who noted that a person needs a full-fledged diet (man is omnivorous), i.e. to support normal life, he needs a balanced diet consisting of both plant and animal food. From our point of view, it would be appropriate to include separate meals in this group.

Control questions for self-training:

- 1. What types of addictions are considered intermediate?*
- 2. What is called bulimia nervosa?*
- 3. Diagnostic signs нервной of anorexia nervosa?*
- 4. What types of anorexia nervosa are you familiar with?*
- 5. What types of orthorexia do you know?*

TOPIC 11.

CHEMICAL ADDICTIONS. ALCOHOL AND RELATED PROBLEMS

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.

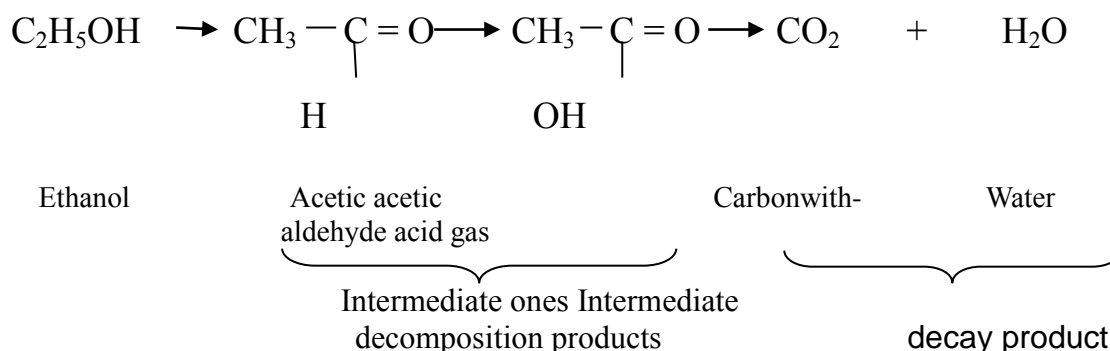
Individuals with a genetic low activity of the enzyme quickly become intoxicated. On the contrary, with increased activity of the enzyme, a person does

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 acetaldehyde dehydrogenase 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 P450-2E₁ 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 (алкогольдегидрогеназы) 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.

Control question:

1. *How does alcohol affect your health?*
2. *How alcohol affects pregnancy*
3. *How does ethanol metabolism occur?*
4. *What are the main principles of treatment of alcoholism?*
5. *Your personal attitude to alcohol?*
6. *Can drinking alcohol cause death?*
7. *What are the features of the action of the enzyme alcohol dehydrogenase on people of different nationalities?*

TOPIC 13.

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, in addition 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 non-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 risk 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 b₁ (wholemeal bread, cereals), vitamin b₁₂ (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 propyleneglycol, 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.

Control 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 of treatment for tobacco addiction?*
4. *What medications are used to relieve withdrawal symptoms when quitting tobacco?*
5. *Does WHO recommend e-cigarettes as an alternative to Smoking cessation?*
6. *What substances are present in hookah smoke?*
7. *List the toxic and carcinogenic substances contained in electronic cigarettes?*

TOPIC 13.

NARCOTIC SUBSTANCES AND THEIR IMPACT ON HEALTH. DRUG ADDICTION AND ITS TYPES

Under психоактивными психоactive substance (surfactant) is understood any chemical substance that can change the mood, physical condition, self – perception and perception of the environment, behavior or other, desirable from the point of view of the consumer, psychophysical effects, and with systematic use-mental and physical dependence.

Characteristics of the main narcotic drugs.

1. Opiates-natural alkaloids of the opium poppy *Papaver somniferum*, which are found in the juice and other parts of this plant. The opium poppy contains several dozen alkaloids of various chemical structures.

Their effect on the body is mediated by interaction with opiate receptors

of the brain and spinal cord, as well as the intestines and some other organs. The term "opiates" defines precisely those alkaloids of the opium poppy that belong to the group of narcotic analgesics and have a noticeable addictive potential.

1.1 *Opioids*– are substances that act on the body like opiates ("like opium"). The effect of opioids on the body is also mediated by interaction with opiate receptors. However, unlike opiates, there are no opioids in the opium poppy. Opioids can be obtained from opiates as semi-synthetic products (Ethylmorphine, heroin, etc.). They can also be created from substances of a non-biological nature as a result of complete chemical synthesis (promedol, methadone, tramadol, etc.).

1.2. *Morphine*–is extracted from opium and enters the illegal market in the form of a drug of various degrees of purity and content of the active component.

Various types of morphine are known: raw morphine, purified morphine, and medical morphine.

1.3. *Heroin*–diacetylmorphine, the most dangerous drug classified abroad as "heavy". It is produced in clandestine laboratories from morphine (or any morphine-containing raw material).

1.4. *codeine* Is an opiate alkaloid obtained by a semi-synthetic route, which is part of a number of antitussive and analgesic medicines.

The ways of using opioids are quite diverse. Opium is usually smoked, morphine and heroin are most often used as a solution for subcutaneous and intravenous injections, and the powdered form of heroin is smoked and inhaled (inhaled through the nose). Intravenous administration accounts for about 80% of total heroin use, while intranasal use accounts for about 15%. Codeine is usually taken orally.

1.5. *Fentanyl (FNT)* – opioid, its biological action is similar to that of opiates. FNT is a synthetic narcotic analgesic of high efficacy (100 times stronger than morphine), introduced into clinical medicine as an intravenous anesthetic for pre - and post - operative medicine..

1.6. *Methadone* is a synthetic opioid. Different from morphine in chemical structure. It has a similar effect on the human body in many ways. The study of methadone began in 1946, when it was found to be a narcotic analgesic. For some time, unlike morphine, methadone is effective when administered orally.

1.7. *Tramadol, tramal (TRM)* according to the currently accepted classification, it is not a drug and is classified as a powerful agent. TRM is a synthetic opioid with agonist-antagonist properties, an analgesic of moderate Central action. Like the codeine. It is widely and effectively used for analgesia in therapy and surgery, in particular for coronary, oncological and orthopedic pain. At the early stages of the study of TRM, when the opioid mechanism of analgesic action was established, it was referred to narcotic analgesics. However, further studies and clinical experience have shown a low level of opiate-type side effects.

2. Cannabinoids, cannabiols are obtained from the ubiquitous wild-growing cannabis (*Cannabissativa*–*cannabis*).

Due to its psychoactive properties, it has been used for a long time for

treatment, as well as for achieving a special ecstatic state as a euphoric and hallucinogenic agent. The main active substance is tetrahydrocannabinol (THC). The finished product is marijuana, hashish, and hash oil.

2.1. *Marijuana* – dried leaves, plants, are classified as "light" drugs abroad, as opposed to "heavy" (heroin). The THC content in marijuana reaches up to 13-15%. It should be borne in mind that *marijuana is very conditionally a light drug* – more than 90% of people who used it later switched to "heavy" narcotic substances.

Marijuana has a stimulating and sedative effect on the body, supplemented at higher doses with hallucinogenic effects, affects thinking abilities, understanding, abstract thinking, learning, and short-term memory.

2.2. *Hashish* – a green, dark brown or black resin released by hemp during a certain growing season. The main surfactant content is usually about 2%, but it can also reach 9-10%.

2.3. *Hashish oil* – a concentrated dark liquid and viscous in consistency extract of plant material or cannabis resin with a THC content of 10 to 30-60%. It is used when Smoking (smoke inhalation) with the use of marijuana cigarettes.

Hashish oil is added to both conventional tobacco cigarettes and marijuana cigarettes, or smoked using small glass tubes. Oral consumption (chewing, brewing, or as an additive to food) is also known.

3. Cocaine is an alkaloid extracted from the leaves of the Coca shrub (*Erythroxylum coca*) containing 1% cocaine.

This powerful CNS stimulant is able to change consciousness, relieve fatigue and stimulate the work of various body systems. Cocaine is included in the list of Conventions II OON on drugs.

"Street" forms of cocaine often contain impurities of other substances, such as various sugars, as well as cheaper drugs and drugs: stimulants (amphetamine, caffeine), local anesthetics (lidocaine, procaine), etc. The content of cocaine may be less than 10%. Cocaine acts directly on the brain, especially on the limbic system, which contains the centers responsible for the state of instinctive pleasure. Cocaine produces an effect of euphoria, blocking the reabsorption of dopamine, and repeated consumption of cocaine can exhaust the supply of dopamine, which causes the "withdrawal" felt towards the end of the drug's action. This also explains the development of a physical addiction to cocaine.

Cocaine (cocaine hydrochloride) is used intranasally (inhaling or inhaling through the nose), by intravenous and intramuscular injection, Smoking (rarely), oral sublingual, vaginal, rectal (rarely). For Smoking, Coca paste is more often used (mixed with tobacco or marijuana), as well as "crack" (cocaine-base) is smoked with the use of special pipes, homemade primitive devices or cigarettes with the addition of tobacco or marijuana or "Speedball" (a mixture of cocaine and heroin). With Smoking and intravenous administration, cocaine is absorbed quickly. The peak concentration of it in plasma is quickly reached, but also rapidly decreases. At the same time, intranasal and oral administration gives similar concentration profiles in plasma: the maximum is achieved in a time of about 30-60 minutes. With intranasal administration, the action occurs faster, and its

duration reaches 60-90 minutes. The oral method of administration is characterized by a slow development of effects and significantly weaker intensity. Cocaine is a lipophilic compound that easily crosses the blood-brain barrier (BBB) and placental barrier.

4. Other stimulants, including caffeine , are substances that have properties to activate mental activity, eliminate physical and mental fatigue. The most famous black market stimulants are amphetamine and methamphetamine.

4.1. Amphetamine (AMP) it has long been widely used both in therapy and for non-medical purposes. It was synthesized in 1887. As an analog of ephedrine-a plant alkaloid isolated from the herb *Ephedra vulgaris*, and immediately became known as an inhaled drug for the expansion of the bronchi, in particular, in the treatment of bronchial asthma.

The psychoactive properties of AMP became known only by 1927, and since then began its use as a stimulant of the Central nervous system, to suppress appetite, treat hyperkinesia in children and narcolepsy.

However, as a result of almost 30 years of observation, conclusions were drawn about the formation of dependence on AMP and the severe consequences of prolonged and regular use of it (a high risk of brain hemorrhages, increased blood PRESSURE, cardiac arrhythmias, paranoid psychoses). When the ability of an AMP group to produce an immediate and powerful euphoric effect after intravenous administration was discovered, they were classified as major classes of drugs.

4.2. Methamphetamine (MAF) has been used since 1919. As an analeptic in alcohol, barbituric or narcotic intoxication (to overcome the state of stupor), during surgical operations to maintain blood PRESSURE under anesthesia. AMP tablets are taken orally. Powdered AMF and MAF are inhaled through the nose or administered intravenously as a solution..

4.3. Methylenedioxy derivatives of amphetamine-MDMA (ECSTASY) – between the similar structure of the stimulant amphetamine and hallucinogens of the mescaline group-methoxyamphetamine derivatives . MDMA is widely distributed in many countries, including Russia, because of its ability to cause mild euphoria. Increased sociability and sociability, which makes MDMA attractive to young people (at parties and discos).

5. Hallucinogens (HCH) - substances that cause disturbances in the perception of the real world, especially light signals, smell, taste, as well as distortion in the assessment of space (direction, distance) and time. Under the influence of HCH, color and sound can be visualized; according to subjective feedback, you can "hear" color and "see" sounds. High doses cause visual hallucinations and visions.

A common feature of scgs is their ability to change mood and thinking patterns. They cause a state of arousal in the Central nervous system that leads to a shift in consciousness, usually euphoria, but sometimes severe depression or aggression.

The most dangerous consequence of using HCH is a violation of the ability *to reason logically*. Which leads to inappropriate decisions and accidents. An acute

condition with anxiety, agitation and insomnia usually lasts until the action of the drug ceases. Sometimes depression and "depersonalization" are so great that they lead to suicide. For a long time after withdrawal from the body, "flashbacks" can be felt—flashbacks—small repetitions of psychedelic effects, such as the intensification of color perception, the observation of the movement of fixed objects, confusion in the identification of objects.

The most well-known HCH is lysergic acid diethylamide (LSD), psilocybin and psilocin mushrooms, PCP (PCP), methoxypropane AMF (group of mescaline).

HCH is divided into serotonergic hallucinogens: LSD; mescaline; psilocybin/psilocin (their effects are explained by the influence on serotonin metabolism in the brain), and dissociative anesthetics – phencyclidine (PCR) and its analogues, including the anesthetic ketamine used in medicine кетамин, which act primarily on glutaminergic receptors.

5.1 *psilocin and psilocybin* are orally active hallucinogens extracted by drug addicts from certain types of mushrooms, and their use is widespread in the Northern regions of the European part of the Russian Federation. Psilocybin and its defosforelated analog psilocin were first isolated from *Psilocybe* and *Stropharia* fungi growing in Mexico, Cambodia, and Thailand. Psilocybin is also synthesized in clandestine laboratories.

5.2. *Phencyclidine* and related compounds. Which according to the chemical structure are derived cyclohexyl-piperidine. This group includes a medical drug-anesthetic – "ketamine", which also has hallucinogenic properties.

PCP together with ketamine constitute a group of dissociative anesthetic hallucinogens, the effect of which on the human body is determined by interaction with glutaminergic receptors.

PCP was synthesized as a drug for intravenous anesthesia in the second half of the 50s in the United States and under the name "Sernil" introduced into medical practice. Unlike opiates it does not give the oppression of the cardiovascular activity or breathing. However, in the course of clinical use, toxic side effects were identified, including postoperative hallucinations, agitation, mental disorders and depressive States, and despite its good therapeutic properties, the drug was excluded from clinical practice.

5.3 *the Group of mescaline* (comparative activity: mescaline – 1, LSD – 3000. As a rule, hallucinogens are taken orally, but PCP and dimethyltryptamine are usually smoked.

The primary source of these illegal drugs is clandestine laboratories. Hallucinogens cause a strong psychological dependence, in addition, their intensive use leads to gradual brain damage. Even relatively safe compounds from the point of view of toxicology cause great problems for the individual and society when they are used due to their antisocial and suicidal manifestations. The most common hallucinogenic drugs are currently LSD and PCP, to which preparations made from hallucinogenic mushrooms are added in the Northern regions of the Russian Federation.

5.4. *LSD* is an extremely powerful hallucinogen that was particularly popular in the

1960s and is gaining popularity again now. It is obtained from lysergic acid-a substance extracted from ergot (*Ergotfungus*) growing on rye. LSD was first synthesized in 1938, and for many years, because of its extremely high psychogenicity, it was used in the study of the mechanism of mental disorders.

The most commonly used carriers of this substance are: sugar cubes, stamps, pieces of filter paper, pharmacologically inert powders, which are then filled with empty gelatin capsules. As another common form of LSD, there are so-called pyramids ("windowpanes" or "pyramids"), for which LSD is introduced into a gelatin matrix and the solidified gelatin is cut into small pieces.

In the 1970s, tablet forms of LSD of various sizes, shapes, and colors were the most common. One of the types currently prevailing on the illegal market, called "Micro Dotmicrodot", consists of round tablets, approximately 1.6 mm in diameter, with a uniform dosage of 50-100 micrograms of LSD per tablet.

Currently, the predominant types of metered-dose forms of LSD are paper forms (stamps), small tablets like "MicroDot", and gelatin forms. The content of the active component in them is usually 50-100 micrograms of LSD. The onset of LSD's hallucinogenic effects is 30-90 minutes after ingestion, lasting from 2 to 12 hours. During this time, the ability to reason may be impaired, visual perception changes, and hallucinations occur.

General characteristics of analogous drugs and their components: Smoking mixtures "Spice", entheogens

The term "analogous drugs" is used to refer to substances that are the subject of abuse. Which were designed to circumvent existing control measures, including those provided for under the international drug control conventions. Often these substances are manufactured by slightly changing the molecular structure of controlled substances, resulting in a new substance with a similar pharmacological effect. They are easy to make, as instructions for their manufacture and a description of their pharmacological properties can often be found on the Internet.

In the past few years, a new class of substances that are subject to abuse and require the attention of drug - trafficking authorities has emerged-synthetic agonists of cannabinoid receptors. These substances are added to herbal mixtures that exist on the market under the brand name "Spice". Spiceot is a brand of herbal Smoking mixtures that have a psychoactive effect similar to that of marijuana, i.e. a type of herbal mixture that includes synthetic substances, entheogens (plants that include substances with psychotropic effects) and ordinary herbs. They can also be called Smoking mixes, incense, aromamix, designer drugs, "bath salts", etc.

Продажа смесей Spice mixes have been sold in Europe since 2006. (according to some sources-from 2002-2004) under the guise of incense mainly through online stores. In 2008, it was found that the active component of the mixtures are not substances of plant origin, but synthetic analogues of tetrahydrocannabinol – the main active substance of marijuana.

Entheogen (from the Greek "becoming" divine from within) – a class of plants used to achieve a state of altered consciousness. Entheogens were used by

ancient shamans to enter "mystical States" in which they "communicated with spirits and deities." In the modern world, this term combines a number of legal and illegal psychoactive substances of various types of action.

A simple chemical classification of entheogens does not exist, since psychoactive substances are a combination of various structural types of alkaloids, terpenoids, amino acids, and even coumarin.

Natural cannabinoids-tetrahydrocannabinoids are contained in the leaves of hemp and are the main active psychotropic substance of this herb. Chemical component of marijuana,

Δtetrahydrocannabinol mimics in the Central nervous system a chemical called anandamide. Unlike transmitters (chemical transmitters of impulses between nerve cells), which directly affect brain cells, anandamide is a neuromodulator. It combines the activity of several transmitters at once. If the brain is full of tetrahydrocannabinol, then exposure to anandamide temporarily "expands" (and in reality just distorts) the person's perception.

What makes the situation worse is that many transmitters, thanks to which thinking is carried out and a person feels good, are not ready to work at this moment. This happens because there are fewer transmitters being produced in the brain at this time than necessary. Thus, with a decrease in serotonin, GABA, dopamine and norepinephrine, there are stress and depressive States, an adequate perception of reality decreases with a quantitative disorder of short-term memory.

Tetrahydrocannabinol also lowers the level of acetylcholine in the brain, which is directly related to the processes of memory and concentration of attention.

Synthetic analogues of these substances, developed in the United States by Professor John Hoffman (eng. John W. Huffman-abbreviation JWH in the name of cannabinoids – initials of this scientist. Synthetic cannabinoid JWH-018, exact chemical name 1-Pentyl-3 - (1-Naphthoyl) -Indole affects the brain's receptors and is stronger than hallucinogenic cannabinoids of plant origin from hemp.

The chemical substance JWH-018 is one of many in a series of JWH compounds developed by chemist Hoffman at the Clemson University science laboratory in Clemson, USA.

The primary task of the scientist was to synthesize analogs of THC(THC), the active component of marijuana. The JWH-018 received US patents.

Other scientists who have studied the effect of a new psychotropic drug on the brain's receptors have confirmed an approximately 5-fold superiority in strength of the hallucinogenic effect of the synthetic cannabinoid JWH-018 over conventional tetrahydrocannabinol.

When used, *the dependence on it developed 2 times faster*. The effective dosage of JWH-018 for Smoking is from 0.5 to 3 mg, for oral administration - from 3 to 10 mg. The psychoactive effect of Smoking occurs much faster than when Smoking marijuana. This is due to the fact that the substance is not metabolized when it enters the body.

ЭНТЕОГЕНАМThe following plants can be attributed to entheogens: cat (khat, Khata) (Cathaedulis), whose active substances-cation and catin-are included,

respectively, in Lists I and III Convention on narcotic and psychotropic substances of 1971

Currently, cat is found in the composition of a number of biologically active food additives. «Ayahuasca" is a drug made from plants native to the Amazon river basin in South America, mainly from forest Liana (*Banisteriopsis caapi*) and another tryptamine-rich plant (*Psychotria viridis*), which contain a number of psychoactive alkaloids, including DMT. Peyote cactus (*Lophophora williamsii*) and some other cacti contain mescaline; hallucinogenic mushrooms containing psilocybin and psilocin. Ephedra contains ephedrine, which is part of a range of medicines and biologically active additives to food. "Kratom" is a plant native to Southeast Asia that contains mitragynine; tabernanthe iboga, containing the hallucinogen Ibogaine and grows in the Western part of Central Africa. Varieties of *Datura* containing hyoscyamine (atropine) and scopolamine.

These compounds or their analogues are part of a number of medicines and dietary supplements. *Salviadinorum* is a plant native to Mexico that contains the hallucinogen salvinorin - A. Kola Nut (*Cola*) – on its basis, "Coca-Cola" was previously made, but now synthetic analogues are used in the production of the drink. Garankuwa, blue Lotus, the Hawaiian rose.

Examples of psychotropic effects: sage leaf predictors (contains the substance salvinorin, which is the strongest hallucinogen, users experience oneiroid hallucinations: "fly to other planets and get to other worlds"). Seeds of the Hawaiian rose (LSD-like effects: impaired perception, thinking, orientation in space, persistent depressive effect); leaves and flowers of the blue Lotus (contain apomorphine, which is very close to ecstasy in its psychotropic effect). In the most popular Smoking mixes of aromatic Smoking mixes SpiceDiamond, Chilin, Zohai and Yucatan Fire revealed a high concentration of synthetic cannabinoid JWH-018.

Data Smoking blends are produced on the territory of Northern Ireland company The Psyche Deli are marketed as legal Smoking blends of vegetable origin, giving a positive result on drug tests – which has gained tremendous popularity in many countries, despite the fact that the ultimate consumer product of the type of spice sold at prices higher than marijuana, bringing the business stable and growing profit.

The use of Smoking mixtures spice can lead to the following complications: uncontrolled penetration of Smoking mixtures of toxic substances with smoke can cause severe intoxication of the body – nausea and vomiting, rapid heartbeat and high blood pressure, spasms and convulsions, fainting and coma.

Local reactions of the body to spices occur due to the direct negative effect of smoke on the mucous membranes of the body. Almost all adherents of Smoking spice mixtures suffer from a constant cough, increased lacrimation, have a hoarse voice both during Smoking and in between. Constant exposure to smoke mixtures on the mucous membranes causes the development of chronic inflammation of the respiratory tract. Chronic laryngitis, pharyngitis, and pneumonia often develop. Smoking spice mixtures can provoke the development of cancer of the mouth, larynx, pharynx and lungs.

The influence of smoke ingredients on the Central nervous system causes addiction to the use of spice. Reactions of lovers of Smoking spice mixtures from the Central nervous system are diverse – it can be a state of euphoria, an unargued tantrum or burst of laughter, disorders of coordination and orientation, visual and auditory hallucinations, an absolute loss of the ability to control themselves and their behavior.

These mental disorders can cause conditions when the behavior of the drug user becomes dangerous for him or for others. A large number of cases are known when people who got high "went for a walk" from the last floor of a high-rise building or swam in icy water, committed road accidents in a state of intoxication.

Regular Smoking of spice mixes leads to irreversible destructive processes in the structure of the Central nervous system. The attention and memory of a drug addict deteriorates, the bioactivity of the brain decreases, and the number of depressive reactions increases, up to the development of active suicidal behavior. Spice smokers have a high risk of becoming disabled due to severe organic lesions of the Central nervous system.

The Institute of nutrition of the Russian Academy of medical Sciences conducted studies of Smoking mixtures. It is already proven that the JWH-018 contained in them and other substances, such as blue Lotus, sage of fortune tellers and Hawaiian rose, lead to acute disintegrative and depressive psychoses. Drug and toxicology centers constantly receive patients with signs of spice poisoning. Some patients are then admitted to psychiatric hospitals. After all spice sometimes embodies the mad dream of an addict: it "does not let go" ("it seems that the poison is removed from the body, and a lot of time has passed, and the "crazy person" does not want to return to its place").

In cases where there are no visible consequences after Smoking, the "magic mixture" causes infertility or offspring appear with multiple birth defects. This effect is not well known, but it is already clear that, like any other drug (and, most likely, much stronger), JWH-018 *increases genetic mutations. Russian scientists involved in the research of new drugs already prefer to call spice a genetic weapon.*

Catamnestic monitoring of drug users has shown that the use of GOAspirit (Goa Spirit) leads to a large number of *deaths and severe brain damage.*

Control question:

- 1. What are called psychoactive substances?*
- 2. Give a description of the main psychoactive substances.*
- 3. What is it "Spices" and how do they affect your health?*
- 4. What are called entheogens?*
- 5. Is there a hereditary predisposition to drug use?*
- 6. Does the "ease" of narcotic drugs affect the time of dependence on them?*
- 7. What comorbidities are inextricably linked to drug use?*

TOPIC 14.

TOXIC SUBSTANCES AND THEIR IMPACT ON THE HUMAN BODY. SUBSTANCE ABUSE AND ITS TYPES.

Toxic substances are a term used to refer to drugs, chemicals, or any toxic or harmful substances to the body. The word "toxic" comes from the Greek word "toxicon", which was originally the name of the poison in which arrowheads were dipped.

Toxic substances are substances that disrupt the normal chemical balance or interfere with chemical processes occurring in the body. Some of them can have a detrimental effect, disrupting or interrupting vital functions of the body, causing its disease and even death.

Intoxication—translated from Latin. «*in*» – inside and " *toxikon*» – *poison*, as "the poison inside." This is a violation of the body's function caused by toxic substances that have entered the body from outside (exogenous intoxication) or formed in it (endogenous intoxication). Exogenous intoxication is often identified with the term "poisoning". Endogenous intoxication is designated by the term "autointoxication".

Detoxification is the process of removing poison or eliminating the effects of poisoning from somewhere (for example, from the human body).

Who is the detoxification program intended for?

First of all, for those who used drugs, medical preparations, for those who were exposed to radiation, for those who were associated with "harmful" production, for residents of large cities and environmentally unfavorable zones. In fact, this program is necessary for each of us, because frankly, modern society is saturated with toxic substances.

The number of chemical compounds currently used in the national economy and everyday life is so large, and the nature of their biological action is so diverse that it is necessary to apply several types of classifications of poisons. They are divided into two groups: *General*, based on a General assessment principle suitable for all chemicals without exception, and *special*, reflecting the relationship between individual physical and chemical or other characteristics of substances and their toxicity manifestations.

The most widely used *chemical* classification, which provides for the division of all chemical substances into organic, inorganic and Organoelement. Based on the accepted chemical nomenclature, the class and group of these substances are determined.

Большое значение для профилактики отравлений имеет *Practical* classification of toxic substances is of great importance for the prevention of poisoning. According to *the purpose of application*, there are:

- 1) industrial poisons used in the production environment. For example, organic solvents (dichloroethane), fuels (methane, propane, butane), dyes (aniline), refrigerants (freon);
- 2) pesticides used to control weeds and pests of agricultural crops: organochlorine pesticides, for example-hexachlorane,

polychloropinene; organophosphorus insecticides- carbofos, chlorofors, phosphamide, trichlorometaphos-3, methylmercaptophos, etc.; organomercury substances-granozan; carbamic acid derivatives- Sevin, etc.

Depending on the purpose of pesticides are distinguished: insecticides-destroying insects; acaricides-destroying ticks; zoocides – destroying rodents; fungicides – destroying fungal microorganisms; bactericides – destroying bacteria; herbicides – ruinously acting on plants, which include defoliants (for removing plant leaves) and desiccants (for drying them; repellents – repelling insects, etc.;

- 3) medicinal products that have their own pharmacological classification;
- 4) household chemicals (acetic acid), sanitary products, personal hygiene and cosmetics; care products for clothing, furniture, cars, etc.;
- 5) biological plant and animal poisons that are used in everyday life: food additives
- 6) they are found in various plants and fungi (Aconite, Hemlock, etc.) of animals and insects (snakes, bees, Scorpions, etc.) and cause poisoning when ingested by humans.
- 7) chemical warfare agents that are used as toxic weapons for mass destruction of people (sarin, mustard gas, phosgene, etc.).

Для врачей важное значение имеет *Toxicological classification of substances is important for doctors.*

Toxicological classification of THV.

Toxic chemicals (TCS) are divided into 6 groups, depending on the characteristics of their action on the human and animal body:

- 1) THV of neurotoxic action (FOV, hydrazine, BZ, etc.);
- 2) THV of cytotoxic action (mustard gas, lewisite, dioxin, etc.);
- 3) DHW temperature pulmonologicheskoe action (phosgene, diphosgene, oxides of nitrogen etc.);
- 4) THV of common venomous action (prussic acid, aniline, монооксидcarbon monoxide, etc.);
- 5) THV of irritating action (adamsit, si-es, si-ar, etc.);
- 6) Toxic industrial liquids (YTG) (dichloroethane, tetraethyl lead, etc.).

THV can affect the body in a **drop-liquid, aerosol** and **vaporous** state. The main ways of affecting the body in accidents are the drop-liquid form (spills of the substance) and the vaporous state (mainly due to the formation of a secondary cloud, that is, the evaporation of the substance from the spill site). The main method of using chemical weapons is to create stable aerosols.

The damaging effect of THV depends on the chemical properties that determine the possibility of its penetration, distribution and transformation in the body, the mechanism of toxic action. This allows us to justify the methods of antidote therapy, the choice of effective means of neutralization in the external environment (degassing).

THV can cause damage to people, penetrating the body through the

respiratory organs (**inhalation**), skin (**percutaneous**), mucous membranes, gastrointestinal tract (**alimentary**).

TOXICOMANIAS

Substance abuse (gr. *toxikop*"poison, - serving to lubricate arrows, i.e. poisonous + "*mania*"- insanity, insanity – - diseases characterized by pathological addiction to substances **not considered as drugs**. Medico-biological differences between drug addiction and substance abuse do not exist.

Addiction to alcohol **is not considered** a substance abuse problem.

Substance abuse is most common among children, adolescents, and young men and women, mostly those with low financial status.

The most common substances that are caused by substance abuse.

Common: **1) abuse of sleeping PILLS By MEANS** of barbituric acid derivatives (barbituratism), many of the sleeping pills (ethaminal sodium, medinal) are classified as narcotic drugs.

Intoxication occurs after taking a double or triple dose of the drug. It is expressed in carefree gaiety with a good-natured sympathy for others, the desire to move, talk, lack of coordination of movements, slurred pronunciation of words. Then comes a deep sleep, after which there is marked lethargy, slowness, impaired thinking, nausea.

Addiction is accompanied by an increase in the frequency of taking drugs, including during the day, an increase in daily doses; there is an attraction to intoxication. Gradually, the euphoric effect decreases, and intoxication is characterized by irritability and anger.

Stopping taking medications leads to the appearance of anxiety, feelings of dissatisfaction, anger, insomnia. There are twitchings of the body's muscles, abdominal pain and large joints. Psychoses and convulsive seizures are often noted.

Death can occur as a result of brain edema.

With chronic intoxication, the skin color becomes sallow, the face becomes masked, peripheral edema appears, wounds do not heal for a long time, and various diseases of internal organs often develop. Changes in the psyche are expressed in the Erasure of individual properties, moral and ethical degradation of the individual, the appearance of depressive States, weakening of attention and memory, slowing down of mental processes, dementia can develop.

Treatment is carried **out only in a hospital** (narcological or psychiatric). Doses of sleeping pills are reduced gradually; prescribe remedies that eliminate insomnia and mood disorders; perform restorative treatment with vitamins, piracetam, and insulin in small doses. Psychotherapy is aimed at changing attitudes to the use of sleeping pills. The task of maintenance therapy, which is carried out in a drug treatment center, is to eliminate mood fluctuations and the resulting attraction to sleeping pills.

Barbiturates often die from an overdose of sleeping pills, as a result of

suicide and from concomitant diseases.

2) TRANQUILIZERS (more often seduxen and meprobamate) when used cause pleasant physical sensations, high spirits with restlessness; the gait becomes uncertain, the words are pronounced indistinctly.

With prolonged abuse, the initial effect decreases, patients are forced to increase the daily dose.

Stopping the use of tranquilizers leads to irritability, malice, headaches, leg cramps, insomnia, trembling of the hands, as well as impaired coordination of movements and balance.

Chronic abuse causes a weakening of memory, slowing down of mental processes, narrowing of interests, a decline in performance, and sometimes convulsive seizures occur. Often there is a simultaneous abuse of tranquilizers and alcoholic beverages. At the same time, the intoxication is more profound, the changes of the psyche come faster.

Treatment is carried out in a narcological or psychiatric hospital; usually begins with a gradual decrease in daily doses of tranquilizers; sleep and mood disorders are eliminated with the help of neuroleptics. For General restorative treatment, vitamins, piracetam, as well as insulin in small doses are used. When conducting **в наркологическом диспансере** maintenance therapy in a drug treatment center, neuroleptics and antidepressants are used; reflexotherapy is recommended. Those who abuse alcohol are also given anti-alcohol therapy.

Toxicomania, caused **by 3) CYCLODOL**, is less common than the above. With an overdose of this drug, unpleasant sensations in the body, nausea, vomiting are noted. In the future, nausea disappears, unpleasant sensations in the body become pleasant, there is an elated mood with a sense of contentment, impaired attention and fine coordination of movements, answers become inaccurate, statements are inconsistent; patients have dilated pupils. Then, against the background of a darkening of consciousness, visual hallucinations appear.

With prolonged abuse, the euphoric effect falls, to achieve it, the dose of cyclodol has to be increased several times.

When stopping taking the drug, irritability, malice, motor restlessness, pain in various parts of the body appear.

Chronic intoxication with Cyclodol is characterized by mood disorders, decreased mental and physical performance, loss of interests, and moral and ethical degradation of the individual.

Treatment is carried out in a narcological or **psychiatric hospital**; to eliminate mood and sleep disorders, neuroleptics are used; then General restorative treatment is performed, with the help of psychotherapy, they try to change the patient's attitude to taking cyclodol.

Substance abusers using **4) VOLATILE SUBSTANCES** (gasoline, acetone, toluene, perchloroethylene, stain removers, etc.) tend to achieve euphoria or hallucinations. These drugs in small doses when inhaled, applied to the scalp or

administered internally cause euphoria, staggering gait, drooling and reddening of the face, in large doses-visual and tactile hallucinations, impaired perception of one's own body and orientation in a specific situation, as well as improper behavior.

Chronic abuse leads to pathological addiction: marked lethargy, decreased interests and intelligence. Especially dangerous is the abuse of volatile substances in childhood and adolescence.

Treatment is carried out in a narcological or psychiatric hospital; with the help of psychotropic drugs and physiotherapy. Using psychotherapy, they seek to change attitudes to the abuse of volatile substances.

Control question:

- 1. Give a definition of toxic substances?*
- 2. What are the main groups of toxic substances that you know about?*
- 1. Tell us about the impact of toxic substances on the human body.*
- 2. Can we encounter toxic substances in our daily lives?*
- 3. What is the danger of toxic substances?*
- 4. What is called substance abuse?*
- 5. What is the difference between substance abuse and drug addiction?*
- 6. What are the most common groups of substances used by substance abusers?*

TOPIC 15.

PREVENTION OF SEASONAL INFLUENZA EPIDEMICS. INCREASING THE BODY'S DEFENSES

Respiratory tract infections in the structure of infectious (parasitic) pathology occupy the first place. Respiratory tract infections are dominated by influenza and other respiratory viral infections (ARVI), the proportion of which exceeds 80 %. These infections are of the greatest socio-economic significance, as more than 50% of the working-age population suffers from them during seasonal rises in morbidity. The high incidence of ARVI is associated with the exceptional ease of virus spread among susceptible populations and in organized groups of people (preschool institutions, students, in transport, within the family).

The greatest risk of complications during the seasonal incidence of influenza and ARVI is observed among the following vulnerable populations:

- children
- elderly people
- patients with various types of immunodeficiency, bronchopulmonary diseases, kidney diseases, diabetes mellitus, cancer, hemophilia
- pregnant woman.

Respiratory tract infections are classified as anthroponoses. Source infection is a sick person, carrier. Many respiratory tract infections are contagious at the end of the incubation period. The danger of patients as a source of infection

in the prodromal period is great, much greater than in the period of illness. The ease and speed of spread of the causative agent of these infections leads to a high level of morbidity in a susceptible community. The most affected age groups are children. Seasonal unevenness of incidence of these infections is largely determined by different opportunities for communication between people during different seasons of the year.

In pregnant women, influenza and ARVI are the most dangerous diseases, since viruses can pass through the placental barrier, which can lead to невынашиванию miscarriage, abnormalities or fetal delays in development.

Preventive and anti-epidemic measures in these infections are aimed at both the source of the pathogen, the mechanism of transmission, and the susceptible population. The greatest epidemiological effectiveness is achieved with a set of measures in relation to susceptible populations, namely, when conducting immunoprophylaxis.

Prevention and enhancement of the body's defenses

To date, a set of preventive measures to combat influenza and other acute respiratory infections has been developed and implemented annually. Prevention of influenza and ARVI is carried out in the following areas:

specific prevention (vaccination);

non-specific prophylaxis (interferon preparations, interferon inducers);

emergency prevention (intracranial, with the use of antiviral chemotherapy drugs, interferons and fast-acting inducers of endogenous interferon, which have an immediate effect)

individual prevention (increase of protective forces of an organism)

Vaccination

Vaccination repeatedly reduces the incidence of influenza, its effectiveness is not in doubt. Among those who are ill, unvaccinated people predominate, and in those who are vaccinated, the infection proceeds easily, and the incidence of complications decreases.

There is a system of international monitoring of the variability of the virus, which allows you to annually determine which strains are relevant and should be included in the vaccine intended for immunoprophylaxis in the new season.

The vast majority of people who are vaccinated remain highly immunized for 1 year.

For influenza immunization, three-component cleaved inactivated vaccines containing purified hemagglutinins and neuraminidases of influenza viruses of subtypes A (H1N1), a(H3N2) and type B. to increase the immunogenicity of vaccines иммуномодулятор, an immunomodulator (polyoxidonium) is added.

Vaccination is carried out in the autumn period (from the end of August to October inclusive). The national vaccination calendar provides for annual flu vaccination from the age of 6 months.

Non-specific prevention.

The means of non-specific prevention of influenza include immunobiological drugs (IRS₁₉, ribomunil), interferon preparations and interferon inducers, antiviral drugs. Seasonal prevention with the use of immunocorrecting drugs is carried out in the pre-epidemic period by courses.

Apply methods and means that prevent infection: plant adaptogens, complex vitamin preparations, homeopathic remedies, as well as hardening.

Of the vitamins in recent years, special attention is paid to vitamin D. It has been proven that it affects various links of the immune system. People who are often ill have a vitamin D deficiency, and its preventive use can reduce the frequency and severity of episodes of the disease.

Interferon preparations.

The interferon system is the body's natural defense system. Its main role is to inhibit viral replication. Thus, the interferon system resists viral infections.

There are several reasons for reducing interferon biosynthesis:

- genetic (II blood group II, down syndrome)
- stress
- lack of vitamins and / or trace elements.

The administration of interferon drugs plays the role of substitution therapy, which can be used both for the prevention and treatment of seasonal strains of the virus that caused the epidemic, which distinguishes interferon drugs from vaccines that are effective only against specific strains.

Since interferons are destroyed in the gastrointestinal tract, the main route of their administration is intranasal.

Emergency prevention of influenza is carried out during an epidemic rise in morbidity or in an epidemic focus (intra-focal prevention) with the use of antiviral chemotherapy drugs, interferons and fast-acting inducers of endogenous interferon, which have an immediate effect.

Individual prevention (increase of protective forces of an organism)

Measures of personal and public hygiene. Pathogens remain active for hours and days in dusty, humid, warm and still air. The more intense the air exchange, the lower the concentration of viruses in the air, the less likely it is to become infected. Therefore, it is necessary to maintain optimal parameters of temperature, cleanliness and humidity in residential and public premises, by frequent wet cleaning, using disinfecting solutions for general contact use, regular ventilation of premises, monitoring of air conditioning systems (timely cleaning of air filters)

Basic methods of individual prevention:

The maintenance of the general immune status:

- Proper balanced nutrition.
- Regular sports activities, tempering;

- Compliance with the daily routine (especially important is a full sleep).
- Vaccination (specific and non-specific).
- Prevention of stress and hypothermia.
- Vitamin therapy, immunomodulators, adaptogens.
- To avoid drying of mucous membranes, the use of sprays to rinse the nasopharynx.
- Use of personal protective equipment in public places, if necessary at home, if one of the family members is ill.

Gauze, cotton-gauze, and modern disposable masks made of non-woven materials are one of the most common ways to prevent ORI, cotton-gauze masks are recommended to be intensively ironed and changed at least 3-4 hours later, and modern disposable masks are changed every hour, and not used twice!

- Personal hygiene. Hand washing is frequent and thorough. Regular treatment with disinfectants.

The main symptoms of ARVI are a runny nose, cough, sore throat, headache, General weakness, and an increase in body temperature. There may also be pain in the muscles, eyeballs, and loose stools. All ARVI are dangerous complications, a person who carries ARVI "on his feet" can die from serious complications of ARI and flu, such as bronchopneumonia, pulmonary edema, heart failure. Therefore, with these symptoms of the disease, it is necessary to stay at home, in order to avoid complications. It is better to rest and be cured for three days than to get complications and lose a month.

Control questions for self-training:

1. Name the most vulnerable populations for acute respiratory viral infections.
2. What types of prevention are carried out for SARS?
3. What measures does specific prevention of SARS include?
4. what measures does non-specific prevention of SARS include?
5. what measures include emergency prevention of acute respiratory viral infections.
6. What activities includes individual prevention of SARS
7. List the main methods of individual prevention of SARS.

CHAPTER 16. SEXUALLY TRANSMITTED INFECTIONS AND THEIR IMPACT ON THE HUMAN BODY. RISK FACTORS AND WAYS TO PREVENT SEXUALLY TRANSMITTED INFECTIONS

According to who estimates, about 25 million new cases of sexually transmitted infections (STIs) are registered annually in the world. The perception of these infections has changed significantly in recent years, as the incidence of these infections remains quite high, and in some nosological forms there is an increase in this indicator, especially among people of reproductive age. Complications arising after STIs, such as tubal infertility, stillbirth, miscarriage,

abortion, congenital infections, chronic recurrent genital symptoms, and malignant tumors of the genital tract, determine the socio-economic significance of this pathology. In this regard, it is necessary to realize the full importance of preventing STIs for the health of the nation as a whole.

An increase in the number of STI patients in modern conditions is due to various causes (risk factors):

- ✓ early onset of sexual activity;
- ✓ large number of sexual partners;
- ✓ the liberalization of sexual relations;
- ✓ refusal to use barrier methods of contraception;
- ✓ uncontrolled use of antibacterial drugs and self-medication leading to erased course of STIs;
- ✓ ineffective sex education system;
- ✓ and other social factors (prostitution, drug addiction, alcoholization of the population, etc.).

At the same time, the absolute number of asymptomatic cases of STIs is not exactly known, and therefore the problem is underestimated. Consequently, such undetected and unrecorded cases of diseases serve as a natural reservoir for the preservation and transmission of pathogens to sexual partners and newborn children.

A particularly high incidence rate was observed in the age group of 15-30 years. All diseases from the group of these infections are transmitted primarily by sexual means, i.e. *the possibility of Contracting STIs is real with unprotected sexual contacts.*

STIs, возбудителями which are caused by more than 30 different bacteria, viruses and parasites, are spread primarily through sexual contact, including vaginal, anal and oral sex.

Some STIs can be transmitted through skin-to-skin sexual contact. STIs can also be spread by blood transfusions and tissue transplants. Many STIs, including chlamydia, gonorrhea, hepatitis B, HIV, HPV, HSV-2 and syphilis, can also be transmitted from mother to child during pregnancy and childbirth.

Registration of STIs, treatment of patients and identification of sexual partners are regulated by law.

Features of clinical symptoms of STIs.

When infected with an STI, clinical symptoms do not always appear and not immediately. Each infection from this group has its own duration of "hidden period" (incubation), during which there are no clinical symptoms, and the infected person continues to be sexually active, i.e. leads a habitual lifestyle and serves as a source of infection for their sexual partner. Even if the disease is present, the clinical signs may not be very clear or disappear quickly.

These infections are characterized by polymorphism of clinical symptoms with a combination of a complex of syndromes.

Most often, STIs can appear:

- itching and pain in the urethra;
- symptoms and signs of urethritis, accompanied by discharge from the urethra and burning when urinating;
- white, slimy, green, foamy, with or without odor, discharge from the urethra);
- frequent urge to urinate;
- sharp orhoepididimit;
- balanitis;
- phimosis;
- dysuria;
- lower abdominal pain;
- pain in the groin area;
- changing the nature of vaginal discharge;
- fervescence;
- possible violations of the menstrual cycle;
- petechial, pustular , or a polymorphous rash;

STIs can have serious consequences beyond the direct impact of the infection itself:

- Some STIs can increase the risk of acquiring HIV by three or more times.
- Mother-to-child transmission of STIs can lead to stillbirth, neonatal death, low birth weight, prematurity, sepsis, pneumonia, neonatal conjunctivitis, and birth defects. Syphilis during pregnancy causes approximately 305,000 fetal and neonatal deaths each year, and 215,000 babies are born with an increased risk of death due to prematurity, low birth weight, or congenital disease.
- HPV infection causes 530,000 cases of cervical cancer and 275,000 deaths from cervical cancer each year.
- STIs such as gonorrhea and chlamydia are the main causes of pelvic inflammatory disease, adverse pregnancy outcomes and infertility, both female and male.

Indications for STI screening:

1. behaviors that are Risky with regard to STI infection, in particular: unprotected sexual contact with a sexual partner who may have other sexual partners; especially with someone who has recently been diagnosed with an STI or who has reported having suspicious symptoms.
2. Engaging in commercial sex (prostitution).
3. Suspected sexual assault.
4. The presence of clinical symptoms (signs) indicating the likelihood of infection with STIs.

5. Planned instrumental manipulations in the area of the cervix in women, in particular with artificial abortion, the introduction of intrauterine contraceptives or a planned in vitro fertilization procedure vitro.

The clinical diagnosis must be confirmed by one or another method of laboratory diagnostics for the following reasons:

- asymptomatic forms of STIs are quite widespread, and they can only be excluded or confirmed by using appropriate laboratory diagnostic methods;
- making a diagnosis of HIV infection requires subsequent mandatory laboratory confirmation, as it has very serious consequences for patients, their sexual partners and / or children;
- to select the most rational etiotropic therapy, especially in cases where it is possible to determine the drug resistance of microorganisms;
- in order to make a decision on the need for additional testing (the so-called cure test);
- to increase the accuracy of registration of STIs and submission of an emergency notification to territorial centers of the CPS.

STI prevention.

To reduce the incidence of viral STIs, it is recommended to use vaccines (for example, vaccines against hepatitis B, HPV), but only primary prevention, aimed at improving the health literacy of the population, the formation of adherence to a healthy lifestyle, really restrains the spread of STIs.

The main efforts in the organization and conduct of primary prevention of STIs are aimed at sex education of young people. Building intimate relationships on the principle of mutual trust and respect, it should be remembered: if a person has more than one sexual partner, then he falls into the risk group of infection with STIs. The more sexual partners you have, the more likely you are to become infected with an STI. If one of the sexual partners leads an orderly sexual life, and the other does not, then the likelihood of Contracting an STI is high for both partners. Therefore, *the first place in prevention comes to the culture of sexual behavior, the use of condoms during each sexual act.*

Latex male or polyurethane female condoms not only protect against unwanted pregnancy, but also serve as a reliable barrier to prevent STIs!

In connection with all of the above, the STI prevention system includes the following areas:

- early, complete and active detection of STI patients;
- prevention of perinatal transmission of STIs;
- reducing the number of sexual partners;
- increasing the frequency of condom use with increasing availability and promotion;

- prevention of infection with blood transfusions and its preparations (hepatitis B, C, HIV infection);
- development of specific prevention tools; organization and conduct of laboratory (serological, microbiological, virological, immunological) examinations of certain population groups with risk factors for STIs;
- availability of anonymous STI screening;
- informing and educating the population about the leading ways and factors of STI transmission, possible complications and consequences after STI transmission.

Prevention of HIV infection in medical personnel. To prevent occupational HIV infection of health care workers the following regulatory rules must be observed:

- when performing any manipulations of a medical nature, an employee of a medical facility must be dressed in a dressing gown, a cap, a disposable mask (and, if necessary, glasses or protective shields), replacement shoes, in which it is forbidden to leave the Department, laboratories, manipulation rooms, etc.;
- all manipulations in which contamination of the hands with blood, blood serum or other biological fluids can occur, should be carried out in double rubber medical gloves. Rubber gloves that have been removed once are not reused due to the possibility of contamination of the hands. During operation, the gloves are treated with 70% alcohol or any other disinfectants that have a virucidal effect;
- employees of all medical specialties should take precautionary measures when performing manipulations with cutting and pricking tools (needles, scalpels, burs, separation discs and stones for preparing teeth, etc.);
- if the skin is damaged, immediately treat the gloves with a disinfectant solution and remove them, squeeze out the blood from the wound; then, under running water, thoroughly wash your hands with soap, treat them with 70% alcohol and lubricate the wound with a 5% solution of iodine. When hands are contaminated with blood should be immediately treated them for at least 30 seconds. swab moistened with skin antiseptic, approved for use (70% alcohol, 5% solution of chloramine, yodonat, sterillium, attenders, octenisept, chlorhexidine , etc.), wash them twice with warm running water with soap and wipe dry with individual towel (cloth);
- if blood or other biological fluids get into the eyes, they should immediately be washed with water or 1% boric acid solution; the nasal mucosa-treated with 3% protargol solution; the mouth mucosa-rinsed with 70% alcohol solution or 0.005% potassium permanganate acid solution or 1 % boric acid solution;
- in the presence of wounds on the hands, exudative skin lesions or wet dermatitis, the health worker is suspended from caring for patients and contact with objects for caring for them for the duration of the disease. If

necessary, all damaged areas should be covered with finger pads, band-AIDS, etc.;

- surfaces of working tables at the end of the working day (and in case of blood contamination — immediately) are treated with disinfectants that have virucidal properties. If the surface is contaminated with blood or serum, the procedure is performed twice: immediately and with an interval of 15 minutes;
- when infected material gets on the floor, walls, furniture, equipment, contaminated places are filled with a disinfectant solution, then wiped with rags soaked in a disinfectant solution. The used rags are dumped into a container with a disinfecting solution or into a tank for subsequent autoclaving;
- eating, Smoking and using cosmetics are permitted only in isolated areas designated for this purpose. All workplaces (for example, in a dental office) must be provided with a disinfectant solution and a first-aid kit. To avoid infection of the healthcare worker and prevent infection of patients during dental procedures, it is necessary to observe:
 - thoroughly wash your hands after examining every patient or procedure where you have had to deal with infected material;
 - after high-risk procedures (parenteral procedures and those involving contact with severely ulcerated mucous membranes and skin), wash your hands thoroughly with surgical cleaning solutions. In its absence-washing hands with soap and water, drying and processing with 70 % ethanol;
 - after moderate-to-low-risk procedures (contact with intact mucous membranes and skin), ordinary soap and water are sufficient;
 - before working, it is necessary to wear protective glasses or plastic shields, a protective face mask;
- disposable gloves are required;
 - doctors with exudative skin lesions should not perform invasive procedures;
 - if a patient is suspected of having HIV infection, the dentist should wear a surgical gown and a cap that covers the hair;
 - when performing x-rays in the mouth, the same precautions should be taken;
 - special precautions are taken when handling sharp instruments (scalpel, disposable needles, burs, disks, endodontic tools);
- to use disposable instruments only once;
 - mouthwash by the patient before the procedure significantly reduces the number of microorganisms in aerosols dispersed during procedures; rinsing with just one water reduces the number of microorganisms in aerosols by 75%, and the use of special mouthwashes — by 98%;
 - a healthcare professional should treat blood and other body fluids as potentially infectious material.

Control questions for self-training:

- 1. List the factors contributing to the increase in the number of STIs.*
- 2. List the clinical symptoms of an STI.*
- 3. Name the indications for an STI examination.*
- 4. List the STD prevention measures.*
- 5. What are the measures implemented to prevent HIV infection of medical workers?*

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