

**MINISTRY OF HIGHER AND SECONDARY SPECIAL EDUCATION OF THE  
REPUBLIC OF UZBEKISTAN  
BUKHARA MEDICAL INSTITUTE NAMED AFTER ABU ALI IBN SINO**

**DEPARTMENT OF PEDIATRIC DENTISTRY**



Educational-methodical complex for 3 year students  
on subject

**“PREVENTION OF DENTAL DISEASES”**

Field of expertise: 500000 “Health and social welfare”

Field of education: 510000 "Health"

Field of education: 5510400 - "Dentistry"

**Bukhara - 2021**

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**"APPROVED"**

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**" \_\_\_\_\_ " was \_\_\_\_\_ 2021**

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The educational-methodical complex is developed on the basis of the curriculum of the subject “Prevention of dental diseases” registered by the Ministry of Higher and Secondary Special Education

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The training complex was discussed and approved at the Central Methodological Council of the Bukhara State Medical Institute.

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## Lecture number 1

### 1.1. Technological model of the formation

Lesson time 2 hours	Number of students
Type of activity	Introduction of practice news
Plan	<ol style="list-style-type: none"> <li>1. Give a concept about caries.</li> <li>2. Give an understanding of periodontal disease</li> <li>3. Give an understanding of comprehensive dental disease prevention</li> </ol>
The objective of the training session	The basics of caries and periodontal disease prevention, information, development and planning of measures for the prevention of teeth and the provision of comprehensive preventive measures for dental diseases.
Teaching methods	Conversation, visual aids on practice
Type of activity	general – collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

### 1.2. Technological map of the lecture.

Stages and time of work	Training	Student
Preparatory stage (5 minutes)	<ol style="list-style-type: none"> <li>1. Preparation of content on the topic.</li> <li>2. Preparation of presentation slides for introductory lectures.</li> <li>3. Development of a list of literature used in the study of the subject.               <ol style="list-style-type: none"> <li>1. Kolesov A.A. "Pediatric Dentistry" 1991 Moscow.</li> <li>2. Pakhomov T.I. "Primary Prevention of Dentistry in Dentistry" 1982, Moscow.</li> <li>3. Vinogradova T.F. "Dentistry of childhood" 1987 g . Moscow.</li> <li>4. Evdokimova A.K. Vinogradova T.F. "Guidelines for Pediatric Dentistry" Copper fi ina Moscow</li> <li>5. Kuzmina EM "Prevention stomatologic their disease," Moscow, 1997</li> <li>6. Kuryakina N.V. "Therapeutic dentistry of children" N. Novgorod, 2004</li> </ol> </li> </ol>	Record while listening

	<p>7. M.I. Groshikov "Prevention and treatment of dental caris" Moscow, 1980</p> <p>8. T . F . Vingradova . " Clinical examination of children at the dentist " Moscow , " Me cine " 1988 city of</p> <p>9. Khalilov I.Kh., Yuldoshkhova nova O.S., Rakhmonov H.S. "Children's therapeutic dentistry and prevention of dental diseases" 2006 Yangiyul.</p>	
<p>1. Introduction (15 minutes )</p>	<p><b><i>1. The purpose and objectives of the subject are explained:</i></b></p> <p><b><u>Objective:</u></b> to introduce early detection of caries diseases in children and early detection of methods of treatment, diagnosis and treatment of these diseases</p> <p><b><u>Tasks:</u></b></p> <ul style="list-style-type: none"> <li>• Familiarize yourself with the features of caries treatment in children and their treatment. the formation of consciousness and knowledge;</li> <li>• Development of practical skills for examining patients;</li> <li>• Development of skills to identify syndromes of major dental diseases;</li> <li>• The formation of knowledge about the treatment of diseases, prevention, control plan.</li> </ul>	<p>Students listen and answer questions</p>
<p>2. The main stage (50 minutes )</p>	<p>1. Slide show and explanation of the topic</p> <p>2. Use of exhibition posters</p>	<p>Record while listening</p>
<p>3. The last stage ( 10 minutes)</p>	<p>1. Make final conclusions</p>	<p>Record while listening</p>

**Topic : Fundamentals of caries and periodontal disease prevention. Methods of general prevention of periodontal and caries diseases.**

Prevention of any disease, including dental, at the present stage should be carried out primarily from an environmental position. Living conditions on the planet are changing radically and have a strong impact on human health.

From the point of view of medicine, the influence of environmental factors on the body can have various consequences: from health promotion to serious illness and death.

The body's ability to adequately respond to environmental influences depends to a certain extent on its reserve capabilities or on the so-called health reserve.

So, in a healthy body, only 20-25% of the respiratory surfaces of the lungs, 20% of the heart muscle power, 20-25% of the glomerular apparatus of the kidneys are used. A similar reserve of health is possessed by the dentition of the body. Under normal conditions, it is used only for chewing muscle activity. Calcium is reserved in the hard tissues of the tooth.

It has long been believed that the mirror of health is the language and condition of the entire oral cavity. A child with a good health reserve has a pale pink mucous membrane in his mouth, his tongue is clean, with well-defined papillae (filiform, mushroom-shaped), and his teeth are intact.

In “practically” healthy children, the doctor will see small deviations in the indicators characterizing the health of the child, in particular, the state of the tissues and organs of the oral cavity: individual carious teeth (compensated form of caries), “geographical tongue”, slight paleness.

Such “practical” health is characterized on the one hand by the absence of expressed diseases, and on the other hand, by the absence of a health reserve.

Factors affecting human health are divided into different levels:

1. Population
2. Group or organismic
3. Individual, or molecular.

**Population level.** At the present level, the process of adaptation of the dentition is expressed in the more frequently encountered adentia mainly on the upper jaw (lateral incisors, second premolar). At the same time, there are symptoms of a close tooth position and insufficient development of the lower jaw.

**Group method.** Studies have revealed the nature of the carious process in frequently ill children and offer effective methods of treatment.

**An individual or molecular level of** research allows you to study the structural features and mineralization of tooth enamel. In dentistry, a whole series of studies has been devoted to this problem and an epidemiological assessment of data on caries on a global scale (according to WHO) in children aged 12 years has been carried out and zones of various intensities of caries have been identified:

- very low - 0 - 1.1;
- low - 1.2 - 2.6;
- moderate - 2.7 - 4.4;
- high - 4.5 - 6.5;
- very high - 6.6 or more.

The caries prevention program at the population level in each zone is based on the indicators of caries intensity, and individual prevention is based on the individual characteristics of children:

- various intensity of caries ( I , II . III degree);
- individual reactivity of the body;
- individual indicators of caries resistance of hard tooth tissues.

Thus, the study of the levels of health and morbidity of the population helps to identify the cause-effect relationships of human adaptation to the real conditions of existence and is a necessary basis for developing a program for maintaining human health and organizing the principles of prevention of common diseases and major dental diseases in children.

**Prevention** is a system of state, social, hygienic medical measures aimed at ensuring a high level of health and disease prevention (BME 1984).

Prevention is defined as a comprehensive program of public health of the people and, above all, children. Providing this program is the task of a wide circle of specialists, not only doctors, but also organizers, teachers, sociologists, philosophers, etc.

According to the classification (Schenin, Tsaregordtsev 1983), preventive activity is divided into:

- struggle for health;
- maintaining an initial level of health;

- health promotion through its correction:
- health management:
- disease control:
- prevention of complications, transition to chronic, exacerbations of the disease.

The prevention of dental caries, or its prevention, is one of the urgent problems of modern dentistry. The reason for this is, on the one hand, the widespread prevalence of caries, on the other hand, its close relationship with the general condition of the body.

One of the easiest, most convenient and most reliable methods of caries prevention is oral hygiene. According to the German scientist Schodeln, the German surgeon Shogan Eisenberg was the first to mention the preventive value of oral hygiene. (1667-1729).

**Prevention** is a set of measures aimed at ensuring human health and preventing disease.

According to WHO, preventive measures are classified into primary and secondary prevention. Thus, in the prevention system, 2 links, or 2 stages of a single preventive process, are distinguished.

Primary prevention is a combination of social, hygienic, medical, educational measures aimed at eliminating the source and conditions of the disease.

And also - against factors that negatively affect the state of the human body. The main task of primary prevention is to increase the body's resistance to the effects of adverse environmental factors: industrial and domestic environment. This is done through the application of all possible ways and means to improve public health. No healthy child should be included in the group of patients, that is, prevention is carried out in the group of healthy children.

When compiling a program of tasks for the primary prevention of dental caries, the dentist must solve the following issues:

- 1) Creating conditions for the complete formation of hard tooth tissues and their primary mineralization.
- 2) Ensuring the physiological process of development of hard tissues of the tooth, if possible - acceleration of this process.
- 3) Prevention of processes in the oral cavity, leading to the appearance of a cariogenic situation in the oral cavity.

A healthy child - among children with dental pathology, speaks about the untimely application of preventive measures.

**Secondary prevention** is the earlier detection and prevention of re-illness; prevention of further progression of the disease and its possible complications.

The use of secondary prevention measures cannot be limited only to the age of the child. It is also necessary to take into account the state of the pathological process. Secondary prophylaxis can be combined effectively if the pathological process of stabilization decreases the severity of its course. Secondary prevention is part of a rehabilitation program.

In the prevention of children at the present stage, dental care cannot be carried out without planning and management.

Prevention measures can be divided into national, group and personal.

National prevention measures include, for example, fluoridation of drinking water in areas with a small amount of fluorine in water, oral hygiene products, the introduction of preventive disciplines for schoolchildren, as well as teaching children the rules of hygiene, and improving the sanitary and medical knowledge of the younger generation.

In addition, there are a number of other measures: protecting the health of mothers and children, improving working and living conditions of the population, creating various children's organizations (for children with pathology of the maxillofacial system).

The following measures can be taken to improve children's health:

1. To teach children of different ages the rules of dental hygiene (in a manger and schools).
2. Conduct physical education classes among preschool children.
3. For the formation of the correct posture and position of the head, it is necessary to conduct classes in breathing exercises.
4. Addition of anticaries endogenous substances (vitafluor, calcium, etc.) to food.

Personal prophylaxis does not differ by means, perhaps these means and measures are subject to personal choice in accordance with the nature of the factor causing the disease or with the level of health.

When conducting secondary prevention, the choice of methods and means and the duration of the preventive measures are related to the speed of the pathological process.

The formation of milk teeth, developing and mineralized in the prenatal period, cannot but be affected by errors in nutrition during pregnancy. That is why the rational nutrition of pregnant women should be considered as one of the means of formation of deciduous teeth resistant to caries.

When assessing the importance of nutrition in the prevention of dental caries, one should keep in mind not only the nutritional and biological value of food ingredients, but also the consistency of food.

To prevent caries, it is necessary to maintain a rational lifestyle and a physiologically sound diet, i.e. a diet in which an adult has constant weight, while a growing person has the correct growth, development and functioning of the body as a whole and its individual organs and systems.

Violation of a rational diet can lead to a violation of the normal functions of the body and thus the incidence of dental caries.

In particular, the incidence of caries may be due to chronic deficiencies in the diet of proteins, mineral salts, certain vitamins, and trace elements. Equally, excessive carbohydrate intake contributes to dental caries.

Maternal health affects the development of the child's teeth throughout pregnancy, especially from 6-7 weeks, when the process of laying down milk teeth begins. Studies of the beginnings of teeth have shown that in the pathological course of pregnancy, the mineralization of the enamel of the fetal teeth usually slows down, and often stops at the initial stage of calcification.

In the postnatal period, the mineralization of such teeth, although it improves, however, does not reach the normal level of calcification of temporary teeth. And although the reasons for the development of dental caries have not been fully established, significant success has been achieved in the development of this problem. First of all, it was found that in the tooth enamel, built of apatite-like substance, and a small amount of organic substances, intensive ionic substitutions of their mineral components are carried out at the level of the unit cells of the crystals. Disturbances in the dynamic balance in the mechanism of mineral metabolism in enamel lead to the formation of dental caries.

Caries-resistant areas of the teeth are characterized by a high degree of mineralization, they show an increased content of calcium. On the contrary, the enamel in the fissure area, the neck of the tooth is hypomineralized, more often subjected to demineralization - the process most characteristic of early caries.

In this regard, the data of V.K. Leontiev, (1978) on the ability of enamel to resist dissolution are interesting. The author conducted experiments to study the level of layer-by-layer solubility of enamel and to determine the Ca / P coefficient in decalcinate. It turned out that decalcinate in its composition does not correspond to enamel. When the acid acts on hydroxyapatite H, ions displace excess Ca ions from the hydroxyapatite crystal lattice. The ability of hydroxyapatite to resist the action of acid will depend on the increase in Ca / P compared to the minimum (1.3). The higher the Ca / P ratio in the enamel, the greater its resistance to acid destruction, and the resistance mechanism consists in binding the hydroxyapatite H ions to the crystal lattice by replacing Ca ions.

No less important in the formation of resistance of dental tissues is nutrition in the first year of a child's life, when the laying and development of permanent teeth is in progress. An ideal nutritional product for a newborn is mother's milk.

The disadvantages of artificial feeding of children should be minimized by additional introduction of fruit juices, mashed vegetables and other products into the child's body.

Based on modern knowledge, it can be argued that the local effect exerted by the nature of nutrition after teething is very important.

Modern man includes in his diet a lot of carbohydrates, which can be divided into two large groups. The first of them includes easily fermentable carbohydrates - sugars and starch, which have undergone cooking, as a result of which oral bacteria can absorb them, and the second - sugar substitutes. Sucrose has the most pronounced cariogenic properties, the combination of glucose and fructose is almost the same, while using only fructose or lactose is less cariogenic. With an increase in the frequency of intake of easily fermentable carbohydrates, the equilibrium between de and remineralization shifts in an unfavorable direction and a progression of the carious process is observed.

Bacteria use this type of carbohydrate to nourish and build a plaque matrix, and the end product of this process is organic acids, which cause enamel demineralization. The frequency of sugar intake is more important than its total amount, but at the same time, these indicators are closely correlated with each other. Naturally, it is impossible to completely exclude sugar from the diet without offering any alternatives.

The best results were obtained using xylitol, a natural sweetener found in plants, fruits (strawberries), vegetables (onions and carrots). It is as sweet as natural sugar, but cannot be used by plaque bacteria.

One of the ways to increase self-cleaning of the oral cavity is to eat solid foods (raw vegetables, hard fruits). A good training of the dento-maxillary system occurs with the use of solid, dry food, requiring abundant salivation and prolonged chewing.

Thus, reducing the adverse effects of nutrition on oral tissue is essential to prevent dental caries.

A leading component of dental caries prevention is oral hygiene. Systematic brushing, removal of soft plaque promotes the physiological process of maturation of tooth enamel. The biologically active components of hygiene products (toothpastes, elixirs) enrich the tooth and periodontal tissues with salts of phosphates, calcium, trace elements, vitamins, increasing their resistance to harmful influences.

### The main indices used in dental practice

1. The prevalence of caries is an indicator determined by the ratio of the number of children with caries to the total number examined

$$\text{Caries Prevalence} = \frac{\text{Number of Children Having Caries}}{\text{The number of children examined}}$$

When determining this indicator, the number of children with caries includes children who need and do not need treatment for caries.

2. Neediness - an indicator indicating the percentage of children in need of dental care, of the total number examined.

$$\text{The need for caries treatment} = \frac{\text{Number of children unsealed}}{\text{The number of children examined}} * 100\%$$

The indices of the need for caries treatment are usually less than or equal to the prevalence rate of caries, provided that there are no sanitized children in the group of children examined.

3. The increase in the intensity of caries is defined as the average number of teeth in which new carious cavities appeared for a certain period (for 1 year) per child with caries.

4. The PMA index is a condition in children (papillary-marginoalveolar index).  
The sum of the PMA in all teeth

$$\text{PMA} = \frac{\text{The sum of the PMA in all teeth}}{3 \times \text{number of teeth}} * 100\%$$

Inspection of the gums is carried out first from the vestibular, and then from the oral surface.

Inflammation of the gingival papilla (P) - 1

Inflammation of the gingival margin (M) - 2

Inflammation of the mucous membrane of the alveolar bone. Process (A) - 3

When summing the gum estimates for each tooth, an RMA index is obtained. Moreover, the number of examined teeth in patients from 6-11 years old is 24

From 12-14 is 28, And from 15 is 30

For a clearer identification of the border of inflammation, a Schiller-Pisarev test is used (gum staining with a solution of iodine and potassium iodide).

#### **Prevention of periodontal disease in children.**

A feature of periodontal disease is that most children, with them, not impose complaints and almost never in connection with this pathology are not treated for emergency help to the dentist. Dental care for children with diseases periodontal is primarily an individual character with hand doctor.

At the same time, the prevalence of diseases periodontal though and relatively small in the children's age, but the amount of work for their treatment is quite significant and is only possible when there is a large reserve of time in the process of sanitation works.

Given that periodontal diseases in childhood, as a rule, do not create urgent situations, it can be considered more appropriate to use the bulk of the work to prevent them.

Program preventing diseases periodontal like and any other diseases based on their epidemiology in different age periods. As follows from the data of literature and our experience, manifestations of symptoms of the pathology of periodontal in mainly refers to school age. However, factors of risk, creating conditions for the development of the disease periodontal exert their effects in different terms, in the number and in the first years of life of the child.

The conditions for the development of periodontal pathology are as follows:

- 1) the close arrangement of teeth in the jaw;
- 2) their non-physiological load (excessive, insufficient or uneven);
- 3) anomalies of the functions and attachment of soft tissues;
- 4) hormonal effects in the pre - and puberty ;
- 5) diseases of the body (diabetes, x-histiocytosis, etc.) and reduced immunological reactivity.
- 6) The microorganisms of dental plaque.

However, the influence of these factors is carried out not only at different age periods, but also relatively differentially as applied to various components of periodontal tissues.

Factors contributing to the development of gingivitis, are in the first place hormonal effect in pre - and pubertal periods, so peak proliferation diseases periodontal falls exactly at this age.

However, the maximum manifestations of gingival inflammation with components of proliferation or desquamation (depending on the predominance of certain hormones), as a rule, are concentrated in the area of closely located or non-physiologically contacting, or carious teeth.

Supports and compounded signs of inflammation in the gums of the expense of poor hygienic care of teeth, increasingly complex in this period

( deepening of the gingival grooves due to gingival hypertrophy , increased vulnerability of the oral mucosa).

Considering all said above, the greatest attention to the prevention of pathological periodontal along with hygienic care of the teeth should be given to issues of primary most radical prevention, ie,

ensuring the healthy development of periodontal morphological structures from the first stages of its formation.

The program - maximum prevention of periodontal disease should include the following critical steps - prevention at the age of: 1 year of life ( stage I ); 4 years of life ( stage II ) ; 6-7 years of life ( stage III ); 11 years of life ( stage IV ).

The first year of life the child is far from the time of manifestation of the pathology of periodontal is, those not less, one of the most important. During this period, the prevention of periodontal disease, the oral cavity is the least differentiated in relation to individual diseases. In the first place it concerns dentoalveolar anomalies and diseases periodontal prevention of which is in the essentially unbreakable.

At the age of 4 years - this is the presence of three between the temporary teeth, the physiological ratio of the jaws, the contacts between all the teeth are antagonists, and in the case of a carious lesion - filling them so that the anatomical shapes of the crowns and occlusal contacts are restored . The fullness of the occlusal surfaces is determined by the method of occlusiography. In the case of a premature removal of the temporary teeth tooth rows must be repaired by the prosthesis.

At the age of 6-7 years of life , new risk factors may appear in the development of periodontal pathology in comparison with the previous period. Namely , parafunctions and bad habits that are actively developing in younger schoolchildren, as well as laying the tongue between the teeth when pronouncing the sounds “t”, “e”, this incorrect articulation, formed against the background of the absence of front teeth due to their change, is often fixed and leads to the absence of dense contact between front teeth even when no abnormality occlusion. If a child of 6-7 years of age develops a symptom of a close tooth position , it should be eliminated in a timely manner . Particular attention should be paid to oral hygiene.

However, in the puberty , when a symptom of gingival hypertrophy appears , causing a deepening of the gingival grooves, a special method of brushing your teeth is required . Her feature - the beams slowly introduced into interproximal spaces and gingival sulcus at an angle of 45 degrees to the axis of the tooth and are made vibrating motion.

Along with this important method of preventing disease periodontal have children remain by contributing to the strengthening of health and ensure healthy reactance and resistance of the organism.

Thus , the following measures should be considered as measures to prevent periodontal diseases :

- prevention and timely treatment of anomalies of bite;
- regular (during critical periods) determination of the masticatory load by the occlusiography method and its timely correction;
- diagnosis and elimination of anomalies in the attachment of the frenum of the upper and lower lips, tongue, vestibule of the oral cavity;
- hygienic care.

The above methods for the prevention of periodontal disease in children make up the maximum program. However, it can not be implemented immediately.

Prevention of dental diseases - a warning occurrence and development of diseases oral cavity.

This direction should be a priority in modern dentistry.

The experience of many countries shows that a simple quantitative increase in staff, financing and material support of the dental service is not enough to change the prevalence and intensity of dental caries and periodontal diseases . World dental practice has convincingly proved that the introduction of prevention programs leads to a sharp decrease in the intensity of dental caries and periodontal diseases , a significant reduction in cases of tooth loss at a young age and an increase in the number of children and adolescents with intact teeth. The essential argument is and the fact that the cost of preventive measures to 20 times lower than the cost of treatment of dental diseases. At the present

time it does not have sense to continue the allocation of considerable material resources in the treatment of those conditions which can be alerted by simple and inexpensive means.

## Lecture number 2

### 1.1. Technological model of the formation

Lesson time 2 hours	Number of students
Type of activity	Introduction of practice news
Plan	Give a complete correct answer to questions about the development of primary and permanent teeth, as well as the resorption of the roots of primary teeth
The objective of the training session	To study the development of milk and permanent teeth, the formation and timing of resorption of the roots.
Teaching methods	Conversation, visual aids on practice
Type of activity	general – collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

### 1.2. Technological map of the lecture.

Stages and time of work	Training	Student
Preparatory stage (5 minutes)	<ol style="list-style-type: none"> <li>1. Preparation of content on the topic.</li> <li>2. Preparation of presentation slides for introductory lectures.</li> <li>3. Development of a list of literature used in the study of the subject.               <ol style="list-style-type: none"> <li>1. Kolesov A.A. "Pediatric Dentistry" 1991 Moscow.</li> <li>2. Pakhomov T.I. "Primary prevention in dentistry" 1982, Moscow.</li> <li>3. Vinogradova T.F. "Dentistry for children" 1987 Moscow.</li> <li>4. Evdokimova A.K. Vinogradova T.F. "Guide to Pediatric Dentistry" Medicine Moscow</li> <li>5. Kuzmina EM "Prevention of dental diseases" Moscow, 1997</li> <li>6. Kuryakina N.V. "Therapeutic dentistry of children" N. Novgorod, 2004</li> <li>7. M.I. Groshikov "Prevention and treatment of dental caris" Moscow, 1980</li> </ol> </li> </ol>	Record while listening

	8. T.F. Vingradova. "Clinical examination of children at the dentist" Moscow, " Me ditsina" 1988. 9. Khalilov I.Kh., Yuldoshkhonova O.S., Rakhmonov H.S. "Children's therapeutic dentistry and prevention of dental diseases" 2006 Yangiyul.	
1. Introduction (15 minutes)	<b><i>1. The purpose and objectives of the subject are explained:</i></b> <b><u>Purpose:</u></b> to give students a concept about the effect of dental products on the oral cavity and the effect of oral hygiene <b><u>Tasks:</u></b> • Familiarize yourself with the features of caries treatment in children and their treatment. the formation of consciousness and knowledge; • Development of practical skills for examining patients; • Development of skills to identify syndromes of major dental diseases; • The formation of knowledge about the treatment of diseases, prevention, control plan.	Students listen and answer questions
2. The main stage (50 minutes)	1. Slide show and explanation of the topic 2. Use of exhibition posters	Record while listening
3. The last stage (10 minutes)	1. Make final conclusions	Record while listening

### **Subject: Oral hygiene, tools hygiene . M Methods for oral hygiene**

Primary prevention of dental diseases includes a set of interrelated activities, the nature of which depends on the person's age, climatic and geographical features of the area where he lives, social conditions, etc.

Currently, it is customary to distinguish between individual and professional hygiene.

Under the individual oral hygiene is understood the careful and regular removal by each person of deposits from the surface of the teeth and gums with the help of special tools. Professional oral hygiene is carried out by appropriate specialists with the help of tools, devices, devices and medicines intended for these purposes. Professional oral hygiene not only ensures the removal of soft and mineralized deposits from all surfaces of the teeth, but also monitors the quality of individual hygiene, diagnoses the early stages of dental caries (focal demineralization) and periodontal diseases (gingivitis, tumors, etc.). The regularity of many factors, including the anatomical and physiological characteristics of the masticatory apparatus, the age of the person, the resistance of the tissues of the teeth and periodontium, etc.

For the implementation of both individual and professional oral hygiene, special means are needed. Personal oral hygiene products include: toothbrush, floss, toothpicks, interdental stimulants and oral irrigators, toothpastes.

**Toothbrush** is the main tool for removing deposits from the surface of teeth and gums. For the first time, a toothbrush is mentioned in the Great East Encyclopedia in 1400, and in a European liter only in 1675.

Currently, there are many models of toothbrushes. Nevertheless, each toothbrush consists of a handle and a working part-head with bristle bushes planted in it. The available types of toothbrushes differ in the shape and size of the heads, the location and density, length and quality of the bristles (natural bristles or synthetic fibers), the size and shape of the handles. There are 5 degrees of hardness for toothbrushes: very hard, hard, medium hard, very soft. An exception is children's toothbrushes that make soft and very soft bristles.

Very hard and stiff brushes, if used improperly, can injure the gums and hard tissues of the tooth (erasing enamel and dentin). Pre-treating them with warm water makes the brushes softer. Medium hard and soft brushes are most effective, since the bristles of these brushes are more flexible, clean the gingival sulcus and penetrate better into the interdental spaces. Very soft brushes are recommended to be used during the treatment of periodontal diseases (after curettage and other surgical procedures), when the condition of the gums does not allow for vigorous brushing. Using a very soft toothbrush in combination with careless brushing can cause pigmented spots on the teeth. Therefore, in the normal condition of the periodontium and teeth, it is recommended to use brushes of medium hardness and soft.

In electric toothbrushes, automatic head movements (vibrating or rotating) are carried out by a motor located in its handle. The frequency of movements of the electric toothbrush is quite high, approximately 50 movements in 1 s. The toothbrush is easily contaminated, so it must be kept absolutely clean. After brushing your teeth, rinse the brush under running water. And thoroughly clean from the remnants of food, toothpaste, plaque. It must be stored so that it can dry well, for example, in a glass with the head up. This significantly reduces the number of microorganisms in the brush, and the bristles retain their hardness and shape.

Never place a toothbrush immediately after use in a closed case. The service life of the bristles varies from 1 month to 4 years.

**DENTAL THREADS FLOSSES.** The main purpose of the use of threads is the thorough removal of plaque from hard-to-reach proximal surfaces, as well as the removal of food debris stuck between the teeth. Apply waxed and non-waxed thread, round and flat, regardless of this, with proper use of the thread, the cleaning efficiency is the same. The following method of applying the thread is recommended.

A thread 35-40 cm long is wound around the first phalanx of the middle fingers of each hand. The thread is passed under the right thumb and left index finger and then pulled at the base of the gingival groove behind the distal surface of the last tooth on the right side of the upper jaw. With the help of several movements of the thread (6-7 times) back - forward and up-down, remove all soft deposits from the distal surface of this tooth. Then clean its mesial surface. To do this, carefully, so as not to damage the gingival papilla, they move forward backward through the contact point and, with a few movements of the thread, firmly pressed to the tooth along its surface, remove plaque. Then the thread is advanced through the interdental papilla to the base of the adjacent gingival groove of the next tooth and the lateral surface of the other tooth is cleaned. The procedure is repeated until the lateral surfaces of all teeth are cleaned. The thread should not be promoted with high gain, since this is associated with a risk of gum damage. In addition, the floss should always be in contact with the surface of the tooth so that it does not cause injury to the gum tissue. For many people, flossing is a relatively difficult procedure. To facilitate the use of dental floss, there is a special holder. Thus, after appropriate preliminary instructions and practical demonstrations, dental floss should be highly

recommended to the patient as an excellent tool for cleaning the lateral surfaces of teeth and interdental spaces.

Floss impregnated with a 2% sodium fluoride solution is used simultaneously to treat the lateral surfaces of teeth in order to prevent caries.

**DENTISTS.** Another additional and well-proven adjuvant for oral hygiene is toothpicks. Toothpicks are wooden and plastic, and in the form of processing triangular, flat and round. They are used not only to remove food debris from the interdental spaces, but mainly to remove plaque from the lateral surfaces of the teeth. Features are effective in their application if there are appropriate spaces between the teeth. If the teeth are tight and the interdental space is filled with the gingival papilla, the possibility of using toothpicks is limited by the gingival groove. In these cases, the toothpicks are placed at approximately an angle of 45 ° to the tooth, with its end located in the gingival groove, and the side pressed against the surface of the tooth. Then the tip of the toothpick is moved along the tooth, following from the base of the groove to the contact point of the teeth. This procedure is repeated on the side of the adjacent tooth. However, toothpicks are often inserted perpendicular to the long axis of the tooth and gingival papilla, normally tightly filling the interdental spaces, injured and acquires flat cup-shaped contours. This in turn leads to the formation of a space, a gap between the teeth, which did not exist before. A recommendation for the use of toothpicks should be accompanied by appropriate patient instruction and practical demonstrations.

**SPECIAL DENTAL BRUSHES .** Some people have an atypical dentition and oral hygiene with an ordinary toothbrush is not possible. This is observed in the presence of anomalies in the location of the teeth in persons using fixed bridges or having various kinds of teeth and tires. In these cases, the use of a toothbrush designed to remove plaque in the interdental space is indicated. The working part of the brush consists of one tuft of bristles, usually trimmed in the shape of a cone. In addition, there are toothbrushes that look like dishwashers. With these brushes, wide interdental spaces, as well as spaces under fixed bridges, are well cleaned.

**INTERZONE STIMULANTS** - rubber and plastic cones, which are located on the ends of the handles of some toothbrushes. Preference should be given to rubber tips. The tool is mainly used to massage the gums. With light pressure on the gingival papilla, circular movements are made in the interdental space. Rubber stimulants at the same time are good additional means of cleaning interdental spaces. There are many methods for removing dental plaque, but most people are not sufficiently familiar with rational brushing methods. Special clinical observations found that most people brush their teeth with horizontal, reciprocating movements. In this case, plaque is removed only from the vestibular surface of the teeth. This method of brushing teeth leads to the fact that soft plaque is transferred from the surface of the teeth into the interdental spaces. In addition, there is a risk of wedge-shaped defects, especially on protruding teeth (incisors, fangs, premolars), the gingival papillae can be damaged, and the lingual and palatine surfaces of the teeth are practically not cleaned. Given the individual characteristics of the oral cavity, it is advisable to recommend a combination of individual techniques that fit into the so-called "standard method" of brushing, which combines horizontal, vertical and circular movements. The accuracy and thoroughness of the toothbrushing procedure are decisive factors in the effectiveness of oral hygiene.

The teeth of both jaws are cleaned as follows

1. Visually, each jaw is divided into 6 segments:
  - 2 frontal (incisors, fangs).
  - premolars (right and left).
  - molars (right and left).
2. Toothbrushing begins on the vestibular side of the molars on the right or left on the upper jaw and continues to the opposite side. Then clean the chewing surface of the teeth and complete the cleaning of the palatal surface of the teeth.
3. In the same sequence, brush the teeth of the lower jaw.

4. All tooth surfaces of each jaw segment must be cleaned with at least 10 paired brush movements. Only 400-500 paired movements. The average cleaning time should be 3.5-4 minutes.
5. Carry out cleaning twice a day: in the morning after eating and in the evening before going to bed.
6. The bristles of the brush should be pointed at an acute angle to the surface of the teeth. To start brushing your teeth more rationally with sweeping movements that allow you to perfectly clean the vestibular and palatine (lingual) surfaces of the teeth. Chewing surfaces are cleaned by reciprocating horizontal movements. Finish cleaning in a circular motion.

**History of individual brushing .**

**Charter Method.** (1922 year.). - the toothbrush is set at an angle of 45 ° to the gingival margin. The movements are circular, shaking and vibrating so that the bristles penetrate into the interdental spaces.

Recommended for gum massage. The method is used to prevent relapse after a course of treatment of inflammatory periodontal diseases:

- gingivitis
- periodontitis.

**Stillman's method** (1933). The toothbrush is set at an angle of 45 ° to the axis of the tooth and is pressed as much as possible on the gingival margin to the visible gingival anemia. Next, a slight movement is carried out until the blood flow in the gums of this area is restored.

The lingual surfaces of the teeth are cleaned by placing the brush parallel to the axis of the tooth. Chewing surfaces are cleaned with movements directed perpendicular to the occlusal plane.

**Smith-Bell Method** . (1948.). Toothbrush set perpendicular to the chewing surface. The movements of the toothbrush repeat the way of food during chewing: by pressing and rotating, the head of the toothbrush moves towards the gum, glides along it and moves to the next tooth.

**The Leonardo Method** . (1949). The toothbrush is set perpendicular to the surface of the teeth. Vertical movements are carried out in the direction from the gum to the crown of the tooth: on the upper jaw - from top to bottom; on the lower jaw - from the bottom up.

The vestibular surface of the teeth is cleaned with closed jaws from top to bottom and from bottom to top. Chewing surfaces are cleaned back-and-forth (“forward - backward”).

**The Bass Method** (1954). The head of the toothbrush should be at an angle of 45 ° to the axis of the tooth. The vestibular surfaces of the teeth are cleaned with vibrating movements "forward - backward" without moving the ends of the bristles. Internal surfaces are cleaned in the same way. Chewing surfaces are cleaned with the movements of the toothbrush "forward - backward".

**The Reite Method** (1970). The brush is placed parallel to the axis of the tooth at the beginning and at an angle of 90 ° to the axis of the tooth at the end of the movement - “rolling” movements from the gum to the crown.

The chewing surfaces of the teeth are cleaned with forward-backward movements.

**Phones Method** . Toothbrush bristles are set perpendicular to the vestibular surface of the tooth. The dentitions are closed; toothbrush movements are circular.

Lingual (palatal) surfaces of the teeth are cleaned alternately in circular motions. Circular (spiral) movements allow an ideal massage of the gums, which makes it possible to recommend this method of brushing teeth for periodontal diseases for the purpose of treatment and prevention.

The chewing surfaces of the teeth are cleaned in a circular motion.

Already at 2 years old, the child should brush his teeth with a toothbrush without toothpaste independently and with toothpaste with the help of his parents. When performing the ritual of oral hygiene, elements of visibility, games and surprise moments should be present. Teeth are cleaned once a day, for 2 minutes. If the child begins to be capricious and the desire to care for his teeth disappears, then it is better to postpone the procedure. Children should have a desire and desire for oral hygiene.

At 6-7 years old, the child should know the rules for brushing your teeth.

**Rules for brushing your teeth :**

1. With clean hands, a toothbrush is taken and washed with clean running water.
2. Toothpaste is applied to the bristles of the toothbrush
3. The oral cavity is rinsed with warm, boiled water.
4. Proceed to the standard method of brushing, which combines horizontal, vertical and circular movements.
5. Brushing time - 3-4 minutes, which is 350,450 paired movements of the toothbrush on the surface of the teeth.
6. During toothbrushing and at the end of the oral cavity, rinse with warm boiled water with a fluorine-containing elixir.
7. The toothbrush is washed with warm running water, the bristles are washed with any toilet soap; the brush is installed in the glass head up.
8. You need to brush your teeth 2 times a day: in the morning after breakfast and in the evening before bedtime.
9. The life of the toothbrush is a maximum of 1 month.
10. Toothpaste is used only medical - prophylactic.

**Professional toothbrushing.**

It is carried out during the 5-7th visit to the dentist with an interval of 1-2-3 days. Then, the intervals between visits are increased to 15-30 days, depending on the hygienic condition of the oral cavity, the individual need of the patient in its rehabilitation.

I visit: the doctor examines the oral cavity, records the condition of the teeth and gums, explains to the patient the relationship between plaque, on his teeth in front of the mirror with tools (excavator, ironer, probe.) And plaque indicators (fuchsin, erythrosine, methylene blue) ; gives recommendations on the correct choice of a toothbrush, toothpaste, as well as on dental care. Even a dentist removes dental deposits and polishes teeth and fillings using abrasive pastes.

II visit: the patient comes to the doctor with a new toothbrush and recommended toothpaste. The doctor demonstrates brushing the teeth in the patient's mouth, while emphasizing the correct position and movement of the toothbrush. If necessary, thoroughly removes residues of dental plaque, polishing teeth and fillings. The patient brushes his teeth independently in the presence of a doctor, after which the patient determines the quality of brushing and demonstrates with the help of a coloring substance the remaining plaque in hard-to-reach areas of the dentition. If necessary, makes comments regarding brushing, provides training on the proper use of auxiliaries, in particular flosses, toothpicks, irrigators.

III visit: the patient demonstrates the ability to brush teeth and interdental spaces. The doctor monitors the quality of cleaning using plaque indicators, recommendations are given. If necessary, professional brushing is carried out.

IV - V visits: the level of oral hygiene is monitored, compliance with the rules of brushing your teeth, adjustments are made. Polishing is carried out using a special brush, which is fixed in a straight and angled tip, at a speed of 5.000-10.000 rpm using any abrasive paste. The paste is applied to the surface of the teeth, and within 5 minutes, all surfaces of the teeth are cleaned by horizontal, vertical and circular movements. The proximal surfaces of the teeth are thoroughly cleaned with strips with a fine filling. The smoothness of the teeth is checked using a dental probe, cotton rolls and a flagellum, which should slide on the surface of the teeth. The quality of brushing is checked and confirmed by the patient, who with the help of his tongue can determine all the roughness and roughness on the surface of the teeth.

**Using Ultrasound to remove tartar.**

In recent years, in dental practice, ultrasound machines for removing dental deposits have become widely used. Abroad, they are known under the general name "Cavitron", in our country - "Ultrastom". The basic rule of using ultrasound machines to remove dental plaque is the complete absence of pressure on the tooth during the manipulation. The working part of all tools must be located at an acute angle to the surface of the tooth. Otherwise, damage to the tooth enamel is possible. Particularly dangerous inept manipulations in the root zone of the tooth, where the thinned enamel can easily crack together with tartar. Caution is advised to use ultrasound equipment in patients suffering from diseases of the cardiovascular system. A prerequisite for the use of ultrasound devices is a constant supply of a stream of water to the surgical field. As a result of ultrasonic vibrations, the number of which reaches 25,000 per second, the instruments heat up, and a constant influx of water cools the instruments and tissues and ensures that the working area is cleaned of blood and stones. The basic rules for the use of ultrasonic devices for removing dental plaque:

- do not set the tip of the tool perpendicular to the axis of the tooth;
- do not exert any pressure on the tooth surface with a tool
- Do not use the device without water irrigation.

When used correctly with an ultrasound device, patients do not feel pain, they do not have the negative emotions that arise when they remove the tartar mechanically. However, the combined use of methods is not excluded.

The procedure should be completed by polishing the teeth.

### Lecture number 3

#### 1.1. Technological model of the formation

Lesson time 2 hours	Number of students
Type of activity	Introduction of practice news
Plan	<ol style="list-style-type: none"> <li>1. Sanitary education</li> <li>2. Types of its implementation</li> <li>3. Preventive use</li> </ol>
The objective of the training session	Dentistry Health Education. the role of prevention in the prevention of diseases, the development and planning of measures for the prevention of teeth, as well as the provision of comprehensive measures for the prevention of dental diseases.
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

#### 1.2. Technological map of the lecture.

Stages and time of work	Training	Student
Preparatory stage (5 minutes)	<ol style="list-style-type: none"> <li>1. Preparation of content on the topic.</li> <li>2. Preparation of presentation slides for introductory lectures.</li> <li>3. Development of a list of literature used in the study of the subject.               <ol style="list-style-type: none"> <li>1. Kolesov A.A. "Pediatric Dentistry" 1991 Moscow.</li> <li>2. Pakhomov T.I. "Primary prevention in dentistry" 1982, Moscow.</li> <li>3. Vinogradova T.F. "Dentistry for children" 1987 Moscow.</li> <li>4. Evdokimova A.K. Vinogradova T.F. "Guide to Pediatric Dentistry" Medicine Moscow</li> <li>5. Kuzmina EM "Prevention of dental diseases" Moscow, 1997</li> <li>6. Kuryakina N.V. "Therapeutic dentistry of children" N. Novgorod, 2004</li> <li>7. M.I. Groshikov "Prevention and treatment of dental caris" Moscow, 1980</li> </ol> </li> </ol>	Record while listening

	<p>8. T.F. Vingradova. "Clinical examination of children at the dentist" Moscow, " Me ditsina" 1988.</p> <p>9. Khalilov I.Kh., Yuldoshkhonova O.S., Rakhmonov H.S. "Children's therapeutic dentistry and prevention of dental diseases" 2006 Yangiyul.</p>	
<p>1. Introduction (15 minutes)</p>	<p><b><i>1. The purpose and objectives of the subject are explained:</i></b></p> <p><b><u>Purpose:</u></b> to teach students how to apply preventive measures as an integrated system in all places, to determine their effectiveness and to carry out sanitary measures</p> <p><b><u>Tasks:</u></b></p> <ul style="list-style-type: none"> <li>• Familiarize yourself with the features of caries treatment in children and their treatment. the formation of consciousness and knowledge;</li> <li>• Development of practical skills for examining patients;</li> <li>• Development of skills to identify syndromes of major dental diseases;</li> <li>• The formation of knowledge about the treatment of diseases, prevention, control plan.</li> </ul>	<p>Students listen and answer questions</p>
<p>2. The main stage (50 minutes)</p>	<p>1. Slide show and explanation of the topic</p> <p>2. Use of exhibition posters</p>	<p>Record while listening</p>
<p>3. The last stage (10 minutes)</p>	<p>1. Make final conclusions</p>	<p>Record while listening</p>

**Subject : Methods of general prevention of periodontal and caries diseases. The role of sanitation education in dental prevention.**

The best that can be offered, taking care of people's health, is **health education** - “**the formation of a healthy lifestyle, hygienic education**”, which consists in providing the population with any cognitive opportunities for self-esteem and development of behavior that excludes risk factors and maintains an acceptable level of health.

An extensive multistage system has been created in the world , led by the World Association of Health Education. Its members are the National Centers for Medical Problems of Health Formation, established in many countries. In every big city there are medical prevention centers. The work carried out by them is an important part of the activities of public and private health care institutions.

According to the World Health Organization, among the causes of human diseases, 20% are hereditary factors, 25% are environmental conditions, and 55% are lifestyle-related circumstances.

*A way of life is a system of conscious and unconscious actions of a person committed on the basis of his value orientation. Thus, the degree of risk of most diseases beyond. depends on many decisions of a person: on his personal choice from many ways to satisfy material and spiritual needs in work, in everyday life, on vacation.*

In dentistry, a number of lifestyle components have been identified, which, according to WHO, are most important for maintaining oral health. A competent and thorough oral care, a reasonable diet and diet, an initiative in consulting a doctor, active participation in the preventive measures offered by him are signs of a healthy lifestyle, in which the dentist, in collaboration with other specialists, takes an active part.

### **Lifestyle & Dental Health**

Lifestyle component as a risk factor	Diseases of the oral cavity associated with a risk factor	Relevance risk factor
Habit not to clean or brush your teeth badly	Caries Gingivitis	+ ++
	Tooth color disorders	++
	Soft tissue pathology	+
The habit of not caring for dentures	Soft tissue pathology Oncology	+++ ++
The habit of brushing your teeth too hard with a stiff brush, powder horizontal movements	Non-carious lesions	++
Indifferent or negative to fluoride supplements	Caries	+++
Abundant consumption of sweet and starchy foods	Caries gingivitis	++ +
The habit of frequent sweets	Caries gingivitis	+++ ++
Frequent consumption of acidic foods	Non-carious lesions	++ +
Drinking Strong Alcohol	Soft tissue pathology Oncology	++ +
Smoking	Tooth color disorder. Soft tissue pathology. Oncology.	+++++

A rare visit to the doctor

Complicated caries Severe  
pathology of soft tissues and  
periodontium Late stages of  
oncology

+++ +++  
+

Sanitary-educational activities, including communication with patients at the reception **and** proactive targeted treatment to various groups of the population, have become the professional responsibility of every doctor.

Experience shows that providing knowledge about the rules of healthy behavior is a necessary, but **not** always sufficient condition for a person's behavior to really change.

Lifestyle, actions or inaction - the product of complex psychological processes, the correction of which is not easy and requires special knowledge from the teacher. The dentist has a choice: to transfer sanitary education to the hands of teachers and psychologists, retaining the role of a source of dental information, or to acquire the necessary psychological knowledge in order to efficiently and effectively carry out their duties. The second solution seems to be rational, since today for successful dental practice in any form, both the clinical knowledge and skills of the doctor, as well as the mastery of the psychological impact on the patient, are equally necessary.

***The mechanisms of the formation of human behavior.*** Human behavior has two main components: incentive and regulatory.

The incentive function provides the beginning of the action and its direction, while the regulatory function determines the behavior in each specific situation. The tasks and problems of sanitary education are closely related to the correction of the incentive side of human behavior, with its motivation - a set of psychological factors that determine the choice of behavior, beginning, orientation and activity.

**Motivation** is the answer to questions about why, why, for what a person acts one way or another (never brushes his teeth or vice versa, pays special attention to hygiene, acquiring expensive brushes and pastes, constantly chewing on lollipops or dieting, etc. ).

It should be remembered that an adult comes to the dentist with an already formed motivation, which is quite resistant to external influences, including health education. Thus, motivation is the product of a complex interaction of internal and external factors.

Intrinsic motivation is fundamental for making decisions and performing actions: most adults have ready-made explanations and justifications for any of their actions. Intrinsic motivation is based on the needs of the individual.

**Need** is a perceived shortage of material or spiritual values, i.e. of what a person believes in, for the sake of gaining and achieving what he is ready to spend his energy on. Need activates the body, directs human activity to search, action and maintains a state of excitement until the need is completely satisfied.

Material (organic) values and needs correspond to the basic instincts of living organisms and are physiological.

Spiritual (secondary, psychogenic) values and needs are considered as instinctuals, since they are formed in the process of education on the basis of basic instincts. About 60-80% of the needs that determine the command exist at the subconscious level and are not comprehended, so the true causes of actions are far from always the same as they seem to the person himself.

### **The level of subjective dental needs of the population.**

Dental Needs Level
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Sign	low		Tall	
	1st	2nd	3rd	4th
		tooth extraction for pain	tooth extraction and prosthetics	removal, prosthetics, restoration
Social economic for laying down	Unsatisfactory		Satisfactory	
Education	Initial, incomplete		Good	
Place of residence	Village		Town	
Floor	Male		Female	
Age	Up to 30 years, 40-50 years, after 60 years		30-40, 50-60 years	
Severity dentists pathology	Low		High	

***habit.***

At the beginning of the work on modifying the patient's behavior, the doctor must determine which step of the ladder he is on, since on this path to the top you can not go down and jump over the steps up. A person can go from step to step for several years. Changes in intrinsic motivation can be achieved through external influences (communication, including sanitary education and training) or through independent work on changing one's values and habits (self-motivation). Consider the principles of communication, education and training of adults and children, the most important for the organizer of health education.

*Communication* is a way of people interacting, accompanied by the exchange of information. The result of communication between people is their mutual influence on each other. In accordance with the purpose and content of communication, there are its types:

- material communication, the purpose of which is the exchange of objects and products of activity;
- cognitive communication for the transfer of knowledge (training);
- air-conditioned communication - inspiration of confidence and optimism (friendly handshake, etc.);
- motivational communication - the exchange of needs, goals, interests, changing the properties and qualities of the individual (education);
- activity communication - the exchange of actions, operations, skills, (for example, in the learning process).

Imprinting - the launch of innate instincts (the newborn is applied to the chest to awaken the sucking reflex).

The conditioned reflex learning is the formation of new forms of behavior as conditioned reactions to stimuli that did not cause such reactions before. It is necessary that before the start of training in human behavior, all elements of the conditioned reaction are noted, and the stimuli are adequate to the possibilities of his perception. The incentives used for training may initially not be related to human needs, but gradually this relationship arises due to repeated repetitions (teaching a child who can brush his teeth to brush after breakfast gradually leads to him getting up due to table, immediately goes to

the bathroom and feels uncomfortable if the usual ritual is broken, and the teeth do not become smooth and white). Operant learning - the acquisition of knowledge, skills through trial and error. In response to the action of the stimulus, unconditioned and conditioned reflex reactions are activated; a person responds to the stimulus of each of them, evaluates the results, chooses the best and the appropriate reaction method is fixed in the experiment (the child, having first taken up a toothbrush in his hands, comes up with options for cleaning movements and chooses those that do not cause discomfort). Vicarious learning - a person observes the actions of others, comprehends them and, imitating, acquires new knowledge, skills and abilities (a classic example would be learning how to brush your teeth when the patient repeats the brush movements on the model or in the oral cavity that the doctor shows on the models ) Verbal learning - gaining new experience through language forms of information transfer both with the help of parents, teachers, a doctor (for example, in a conversation about oral hygiene products), and independently (by reading the relevant literature).

Imprinting, conditioned reflex and operant learning are the most primitive. In these ways, a child acquires new knowledge and skills from birth to 4-5 years. At the same time, the functions of the maxillofacial region, eating habits, elementary hygiene skills are formed. Later, higher, conscious types of learning — vicarious and verbal — become the basis of health education projects. Self-conscious study becomes possible after 7-8 years.

Learning and training are carried out using several mechanisms: imitation in the process of acquiring skills; formation of associations, i.e. establishing relationships between individual knowledge and parts of experience.

The choice of the method of health education is determined by various factors: material, personnel, organizational . Depending on who is the addressee of health education, individual, group and population projects are distinguished.

Individual health education is designed for one or more patients;

group forms of health education are designed for people united by any common factors important for dental health, age, educational level, professional conditions, etc .;

community health education projects are addressed to large groups of people, usually united by their place of residence, as well as by more or less uniform socio-economic conditions. It is important to highlight a special type of individual and group health education — targeted, addressed to administrators, pediatricians, heads of children's institutions and other persons, on whom the organization of primary prevention for the population largely depends.

***Features of sanitary education and training of children.*** The formation of a person's lifestyle begins at an early age: that which is sown in infancy, emerges in childhood and reaps all his life. Accuracy and discipline should be the rule of organizing a child's life in the first year. At this time, children easily learn simple psycho-hygienic skills. Infants are capable of conditioned reflex training, therefore hygienic and other educational procedures should be carried out by the same person at the same time of day. It is important that he has a good build, gentle intonations and soft gestures. Speech at this age has no educational significance, but it is necessary for communication. Starting from the age of six months, children discover the ability to operant and vicarious learning: imitating the actions of adults, they acquire basic hygienic and other skills through repeated exercises and independent repetitions. External factors for the formation of a child's behavior are emotionally expressive assessments of relatives: gestures, facial expressions, pantomime, as well as organic and physiological stimuli.

In a **year and a half**, a child enters a sensitive period of speech formation, which allows using not only visual-effective methods in teaching (“do the same as I”), but also visual-figurative (“do what I say”) . The mental sphere develops due to the increased curiosity of the child, observation, which manifests itself in classes with adults, in games with peers . Children at this age adequately respond to organic and material stimuli, to emotionally expressive and direct speech assessments, and, as a rule, evaluate themselves as adults evaluate them.

**From the age of two**, the formation of self-esteem begins. Any task offered to the child should be focused on the formation of a high level of claims, the need for success. For this, the level of difficulty of the assignment should correspond to the child's abilities. Too complicated tasks are not performed, and gradually a fear of failure arises, and too light assignments do not have serious developmental significance. The child should be encouraged more often for success and less responsive to his failures, which is especially important in situations of competition with other children. Young children are more responsive to emotional assessments. Later they begin to focus on rational standards. The desire for approval and success, brought up in early childhood, is the basis for the formation of perseverance, determination, hard work, self-confidence, a sense of duty and responsibility. A two-year-old child is able to experience elementary moral feelings - warmth, responsiveness, envy, anger, enmity, which serve as a tool for further education.

Starting from the age of three, children are encouraged to make independent decisions and actions, which allows them to expand their experience step by step. The main form of training and education is the game. The role of the educational and didactic game in preschool age is huge: in the process of the game there is a direct interest in objects and phenomena, it encourages the independent search for new knowledge, skills, involves in the competition and gives an opportunity to prove oneself, to receive encouragement for the successes achieved, to stimulate further teaching a child. An important component of learning is memorization.

**Up to 3-4 years**, the child is only capable of involuntary memorization (everything is memorized by itself, accidentally), later he tries to memorize on assignment and repeats what he does not want to forget. Repetition should be encouraged (initially aloud, later to oneself), as this helps to transfer information from short-term memory to long-term. Memorization develops from involuntary to arbitrary, from mechanical to logical, from direct to indirect (through other objects or images of objects), from the use of ready-made means for remembering to inventing your own. The storage of information is possible only if the child has a consumer or cognitive need for it, i.e. there is a mnemonic goal: fixed in memory will be what is necessary to achieve success in this game. When teaching a child complex, multi-stage actions, one should take into account what his ability to plan internal actions is. A 2-3 year old child cannot imagine the situation and change it mentally: the statement of the problem and its solution are carried out only by manipulating objects. Later, the task is formed thanks to speech, but the child performs it with the help of objects by trial and error, commenting on his actions with words. **By 4-5 years**, he can perceive the task and perform it in a visual-figurative plan (according to drawings, models, schemes) by manipulating not with objects, but with their images, representations. The top of planning skills is reached by the end of the preschool period, when the child draws up an internal mental plan of action and successfully implements it. Encouraging the formation of the child's need for success, any task is formed so that the first steps of its solution are more attractive from a psychological point of view (have guaranteed success), and the next steps are less attractive (require more significant efforts), but necessary to achieve the goal. An important incentive for further activities of a child of this age is honest assessment.

At preschool age, the education of psi of hygienic qualities continues - neatness and cleanliness. The physical capabilities of self-care are acquired and gradually improved, but it is impossible to raise the need for systematic self-care without an example, constant monitoring and family assistance. Parents should not only call for the right behavior ("do as I say, but not as I do!"), but also become a role model. The main way to develop the motivational sphere remains the game. For upbringing, one should use such an age-specific psychological feature of children as curiosity, to thoroughly, easily and honestly answer all their questions.

In **elementary school**, didactic games are gradually replaced by group tasks corresponding to the plot but role-playing games that allow you to think, assert yourself, choose an alternative, and weigh the chances of success. Gradually they give way to non-game training and work. Initiative and creativity should be encouraged in every way. Learning activities are motivated not only by pleasure, but also by

achieving the goal. Effective incentives are organic, material, and especially moral and socio-psychological rewards (approval, praise, an example for others). The first place in importance is the assessment of knowledge, skills, discipline and the implementation of rules of conduct. At the same time, estimates made by a person whom he respects are important for the child. The source of information used for upbringing and learning is television, radio, and print, which helps a child to realize the whole diversity of the world, get rid of self-centeredness, and learn to recognize another person's point of view that is different from his own.

**Younger students** often do not remember new information well, because they cannot always comprehend it. Any task should be explained, its meaning and significance explained, and an example of a solution should be shown. Strong memorization is achieved by using visual-figurative and verbal-conceptual operations, involving the child in the comprehension and cognitive processing of information. To do this, it is useful to encourage the child to independently summarize the work out loud ("what did you learn from our conversation?"). You should make the most of the important psychological advantage of younger students - their high learning ability. With age, the level of mental development of a person increases, and the ability to learn decreases.

Children **10-12 years of age** begin to understand that the lack of ability can be compensated for by perseverance. They want to be praised for their abilities, so high marks for completing elementary tasks have no stimulating power and can be perceived as an insult. For the successful upbringing of the needs of children of this age, their efforts should be encouraged, the child's personality should not be compared with high standards, but with his previous state (note the dynamics), avoid direct radical interventions in his activity, but corrected with reasoned advice.

In **middle and senior classes**, internal speech becomes the basis of thinking and regulation of other cognitive processes, there is a transition from visual-effective and visual-figurative thinking and learning to verbal-abstract and abstract. When teaching a teenager, it is more useful not to force him to memorize ready-made theses, but to lead to independent "discoveries", providing an actual and logical basis for the process ("problem" learning). At this age, all education, including health education, should contribute to the development of practical intelligence: entrepreneurship (the ability to find several options for solving a complex problem and constant readiness to find a rational way out of this situation); prudence (the ability to look far ahead, see the consequences of certain decisions); profitability (the ability to choose a method of solving a problem that requires the least costs and expenses in order to achieve the optimal result); efficiency in solving problems (the ability to make decisions in the shortest possible time).

The upbringing of adolescents, boys and girls is hindered in most cases by the fact that peers have the greatest influence on them. Adolescents prefer group communication, where they can openly discuss issues that usually do not deserve the attention of adults. They try themselves in various social roles (organizer - performer), learn the hierarchy of needs. For adolescents, the most important are the social and psychological stimuli emanating from peers. Assessments not of knowledge, skills and external forms of behavior, but of personal qualities become more important. Only at the time of graduation, the significance of the ratings of adults (parents and teachers) is increasing, but these ratings are refracted through the prism of self-esteem of the teenager. This becomes more significant for him than the reaction of others. In the process of health education, one should use the fact that adolescents from **12-13 years old** have a strong desire for self-education (they think about their abilities, make conscious, focused efforts to improve them). Young men are actively involved in sports in order to develop courage, increase endurance, self-control, self-confidence (physical and volitional self-education). For most adolescents, moral self-improvement becomes important for the sake of moral development and the formation of such qualities as decency, kindness, generosity, loyalty to friendship, dedication, willingness to help. Adolescents really need the help of adults, although they are not always aware of this. Adults can help them overcome the main conflict, which is seen in the incompatibility of the romanticism of the young with the pragmatism of parents and

teachers. An acceptable form of such cooperation between adults and adolescents is the joint implementation of complex significant tasks. Younger teens are happy to play the role of assistants, while assimilating the system of rights and obligations, while older ones claim equal cooperation. Adolescents reject adult arbitrariness, direct pressure, and insistent demands. They accept equal, interested, benevolent, respectful and reasonable guardianship. The media can provide assistance in managing the motivation of adolescents (from 12 to 13 years old, children become interested in “adult” newspapers and magazines, which, with the right choice, can form a social position, culture, and help to climb the ladder of needs). Any health education project should be developed taking into account the basic principles of psychology and pedagogy.

**Stages of preparation and implementation of dental sanitary-educational projects:**

determination of the addressee (patient, group, population);  
project content; elucidation of relevant risk factors for the development of dental diseases at the addressee; elucidation of the psychological, material and economic status of the patient (group, population) to assess the level of needs and potential opportunities to ensure a particular level of health;  
analysis of organizational and material capabilities for working with the addressee;  
selection of appropriate available methods;  
the formation of the specific content of the project in accordance with sanitary tasks and psychological requirements;  
project implementation;  
analysis of the effectiveness of the project;  
project correction.

## Lecture number 4

### 1.1. Technological model of the formation

Lesson time 2 hours	Number of students
Type of activity	Introduction of practice news
Plan	<ol style="list-style-type: none"> <li>1. Give a concept about caries.</li> <li>2. Give an understanding of periodontal disease</li> <li>3. Give an understanding of comprehensive dental disease prevention</li> </ol>
The objective of the training session	The basics of caries and periodontal disease prevention, information, development and planning of measures for the prevention of teeth and the provision of comprehensive preventive measures for dental diseases.
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

### 1.2. Technological map of the lecture.

Stages and time of work	Training	Student
Preparatory stage (5 minutes)	<ol style="list-style-type: none"> <li>1. Preparation of content on the topic.</li> <li>2. Preparation of presentation slides for introductory lectures.</li> <li>3. Development of a list of literature used in the study of the subject.               <ol style="list-style-type: none"> <li>1. Kolesov A.A. "Pediatric Dentistry" 1991 Moscow.</li> <li>2. Pakhomov T.I. "Primary prevention in dentistry" 1982, Moscow.</li> <li>3. Vinogradova T.F. "Dentistry for children" 1987 Moscow.</li> <li>4. Evdokimova A.K. Vinogradova T.F. "Guide to Pediatric Dentistry" Medicine Moscow</li> <li>5. Kuzmina EM "Prevention of dental diseases" Moscow, 1997</li> <li>6. Kuryakina N.V. "Therapeutic dentistry of children" N. Novgorod, 2004</li> </ol> </li> </ol>	Record while listening

	<p>7. M.I. Groshikov "Prevention and treatment of dental caris" Moscow, 1980</p> <p>8. T .F. Vingradova. "Clinical examination of children at the dentist" Moscow, " Me ditsina" 1988.</p> <p>9. Khalilov I.Kh., Yuldoshkhonova O.S., Rakhmonov H.S. "Children's therapeutic dentistry and prevention of dental diseases" 2006 Yangiyul.</p>	
<p>1. Introduction (15 minutes)</p>	<p><b><i>1. The purpose and objectives of the subject are explained:</i></b></p> <p><b><u>Objective:</u></b> to introduce early detection of caries diseases in children and early detection of methods of treatment, diagnosis and treatment of these diseases</p> <p><b><u>Tasks:</u></b></p> <ul style="list-style-type: none"> <li>• Familiarize yourself with the features of caries treatment in children and their treatment. the formation of consciousness and knowledge;</li> <li>• Development of practical skills for examining patients;</li> <li>• Development of skills to identify syndromes of major dental diseases;</li> <li>•                      • The formation of knowledge about the treatment of diseases, prevention, control plan.</li> </ul>	<p>Students listen and answer questions</p>
<p>2. The main stage (50 minutes)</p>	<p>1. Slide show and explanation of the topic</p> <p>2. Use of exhibition posters</p>	<p>Record while listening</p>
<p>3. The last stage (10 minutes)</p>	<p>1. Make final conclusions</p>	<p>Record while listening</p>

**Topic : Rules for the protective-barrier complex of the oral cavity. Oral saliva**

The mucous membrane of the oral cavity is a "shock" organ, the site of antigen-antibody reactions that can cause primary and secondary damage to the mucosa. In the system of “external barriers”, the oral mucosa is the first line of defense of the body against various pathogenic environmental factors.

The stability of anatomical formations and the oral mucosa to damaging factors of microbial origin depends on the state of the defense systems. According to the concept of local immunity, mucous membranes as integument facing the external environment protect the internal environment of the body and maintain the constancy of the internal environment through the close interaction of

an evolutionarily developed complex of non-specific and specific defense mechanisms. The insufficiency or perverse nature of the protective reactions, combined with the prolonged persistence of microbial associations in the oral cavity that cause damage to its tissues, can lead to the development of many pathological processes: caries, gingivitis, stomatitis, periodontopathy and other diseases.

The effectiveness of local protection against infectious agents is ensured by specific and nonspecific mechanisms (it should be remembered that the definition of “nonspecific” is sufficient in immunology), the latter being more important in the oral cavity than in many other organs. Initially, local immunity was understood as a complex of cellular and secretory nonspecific and specific reactions, including the barrier functions of mucous membrane cells, phagocytic activity of neutrophils and macrophages, T-cell immunity, antibodies, antimicrobial proteins of external secrets, and enzyme inhibitors. Local immunity was not identified with secretory immunity, but the B-cell response of the lymphoid tissue of the mucous membranes involving the glandular epithelium supplying the secretory component was considered as its central link. Later, the concept of local immunity expanded and now includes the response of all the cells of the lymphoid row inhabiting the mucous membranes, in cooperation with macrophages, neutrophilic and eosinophilic granulocytes, mast cells and other cells of connective tissue and epithelium.

## Lecture number 5

### 1.1. Technological model of the formation

Lesson time 2 hours	Number of students
Type of activity	Introduction of practice news
Plan	<p>4. Give a concept about caries.</p> <p>5. Give an understanding of periodontal disease</p> <p>6. Give an understanding of comprehensive dental disease prevention</p>
The objective of the training session	The basics of caries and periodontal disease prevention, information, development and planning of measures for the prevention of teeth and the provision of comprehensive preventive measures for dental diseases.
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

### 1.2. Technological map of the lecture.

Stages and time of work	Training	Student
Preparatory stage (5 minutes)	<ol style="list-style-type: none"> <li>1. Preparation of content on the topic.</li> <li>2. Preparation of presentation slides for introductory lectures.</li> <li>3. Development of a list of literature used in the study of the subject.               <ol style="list-style-type: none"> <li>1. Kolesov A.A. "Pediatric Dentistry" 1991 Moscow.</li> <li>2. Pakhomov T.I. "Primary prevention in dentistry" 1982, Moscow.</li> <li>3. Vinogradova T.F. "Dentistry for children" 1987 Moscow.</li> <li>4. Evdokimova A.K. Vinogradova T.F. "Guide to Pediatric Dentistry" Medicine Moscow</li> <li>5. Kuzmina EM "Prevention of dental diseases" Moscow, 1997</li> <li>6. Kuryakina N.V. "Therapeutic dentistry of children" N. Novgorod, 2004</li> <li>7. M.I. Groshikov "Prevention and treatment of dental caris" Moscow, 1980</li> <li>8. T. F. Vinogradova. "Clinical examination of children at the dentist" Moscow, " Me ditsina" 1988.</li> <li>9. Khalilov I.Kh., Yuldoshkhonova O.S., Rakhmonov H.S. "Children's therapeutic dentistry and prevention of dental diseases" 2006 Yangiyul.</li> </ol> </li> </ol>	Record while listening
1. Introduction (15 minutes)	<p><b><i>1. The purpose and objectives of the subject are explained:</i></b></p> <p><b><u>Objective:</u></b> to introduce early detection of caries diseases in children and early detection of methods of treatment, diagnosis and treatment of these diseases</p> <p><b><u>Tasks:</u></b></p> <ul style="list-style-type: none"> <li>• Familiarize yourself with the features of caries treatment in children and their treatment. the formation of consciousness and knowledge;</li> </ul>	Students listen and answer questions



Fluorine makes up 0.065% of the elements of the earth's crust and is an important component of the general biogeochemical cycle in which life proceeds.

Fluorides enter the human body with water, but there are other sources: foods, drugs, pesticides. Some people inhale fluoride compounds in the air in a number of industries. Today, a significant part of fluorides entering the human body is the result of human activity. Potential sources of fluorine emissions are the production of phosphoric acid and superphosphate, aluminum, glass, sulfuric acid, plastics and hydrocarbons. A large amount of solid products containing fluorine compounds are emitted into the environment by industrial enterprises.

When studying the fluoride metabolism in the human body, it turned out that these compounds have an affinity for the minerals from which bones and teeth are built. The accumulation of such compounds occurs in those areas of skeletal tissue that are in contact with circulating fluids (for example, dentin, adjacent to the pulp, surface enamel).

The amount of fluoride contained in blood plasma and deposited in tissues directly depends on its intake in the body from various sources, primarily from drinking water.

The process of fluoride accumulation in tooth tissues most intensively occurs during the formation of enamel and in the first years after teething, when it is mineralized.

Temporary teeth are characterized by a lower concentration of fluoride than permanent ones.

With age, the concentration of fluoride in permanent teeth decreases, which is probably due to the gradual loss of enamel as a result of erosion.

If we consider the distribution of fluoride in tooth enamel, the following picture will be presented.

The fluoride content is higher in the surface layers of enamel and decreases to deeper layers, and no fluoride is detected in the organic matrix of enamel and dentin.

In the area of the cutting edge, chewing surface of the tooth, the concentration of fluoride is much higher than in the neck. This phenomenon is probably due to the fact that the cutting edge is formed first, develops and mineralizes for a longer time, as a result of which it adsorbs more fluoride.

However, this statement is true only for recently erupted teeth, since with age it is in the neck region that the concentration of fluoride becomes higher, which can be explained by erasing the enamel in the region of the cutting edge.

In saliva, the concentration of fluoride is 1 mol / L, or 0.019 ppm, which corresponds to approximately 1/50 of the optimal value of fluoride in drinking water (1 ppm).

The concentration of fluoride in plaque ranges from 4 to 50-60 ppm. Moreover, most of it is connected, and only a small amount is in ionic form. The liquid phase of plaque may contain 10 times more fluoride than saliva.

Our ideas about the mechanism of action of fluorides change depending on the receipt of new scientific data.

## Lecture number 6

### 1.1. Technological model of the formation

Lesson time 2 hours	Number of students
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Type of activity	Introduction of practice news
Plan	<ol style="list-style-type: none"> <li>1. Give a concept about caries.</li> <li>2. Give an understanding of periodontal disease</li> <li>3. Give an understanding of comprehensive dental disease prevention</li> </ol>
The objective of the training session	The basics of caries and periodontal disease prevention, information, development and planning of measures for the prevention of teeth and the provision of comprehensive preventive measures for dental diseases.
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

### 1.2. Technological map of the lecture.

Stages and time of work	Training	Student
Preparatory stage (5 minutes)	<ol style="list-style-type: none"> <li>1. Preparation of content on the topic.</li> <li>2. Preparation of presentation slides for introductory lectures.</li> <li>3. Development of a list of literature used in the study of the subject.               <ol style="list-style-type: none"> <li>1. Kolesov A.A. "Pediatric Dentistry" 1991 Moscow.</li> <li>2. Pakhomov T.I. "Primary prevention in dentistry" 1982, Moscow.</li> <li>3. Vinogradova T.F. "Dentistry for children" 1987 Moscow.</li> <li>4. Evdokimova A.K. Vinogradova T.F. "Guide to Pediatric Dentistry" Medicine Moscow</li> <li>5. Kuzmina EM "Prevention of dental diseases" Moscow, 1997</li> <li>6. Kuryakina N.V. "Therapeutic dentistry of children" N. Novgorod, 2004</li> <li>7. M.I. Groshikov "Prevention and treatment of dental caris" Moscow, 1980</li> <li>8. T.F. Vingradova. "Clinical examination of children at the dentist" Moscow, " Me ditsina" 1988.</li> </ol> </li> </ol>	Record while listening

	9. Khalilov I.Kh., Yuldoshkhonova O.S., Rakhmonov H.S. "Children's therapeutic dentistry and prevention of dental diseases" 2006 Yangiyul.	
1. Introduction (15 minutes)	<p><b><i>1. The purpose and objectives of the subject are explained:</i></b></p> <p><b><u>Objective:</u></b> to introduce early detection of caries diseases in children and early detection of methods of treatment, diagnosis and treatment of these diseases</p> <p><b><u>Tasks:</u></b></p> <ul style="list-style-type: none"> <li>• Familiarize yourself with the features of caries treatment in children and their treatment. the formation of consciousness and knowledge;</li> <li>• Development of practical skills for examining patients;</li> <li>• Development of skills to identify syndromes of major dental diseases;</li> <li>• The formation of knowledge about the treatment of diseases, prevention, control plan.</li> </ul>	Students listen and answer questions
2. The main stage (50 minutes)	<ol style="list-style-type: none"> <li>1. Slide show and explanation of the topic</li> <li>2. Use of exhibition posters</li> </ol>	Record while listening
3. The last stage (10 minutes)	<ol style="list-style-type: none"> <li>1. Make final conclusions</li> </ol>	Record while listening

**Subject : General and local (exogen, endogen) methods for treating caries in the stain and superficial caries stages .**

Pathological anatomy of caries in the spot stage (macula carios)

To assess the morphological changes in tooth tissue during caries, there are a large number of different methods.

The most sensitive method for studying caries in the spot stage is polarization microscopy, in which a 50-60 micron thick tooth section is examined. A lesion is detected in the form of a triangle, the base of which is facing the outer surface of the enamel. The nature of the changes in the lesion depends on the size of the spot. If the lesion area is not more than 1 mm, 2 zones are revealed on the thin sections: transparent and dark.

With an increase in the size of the carious spot, 3 zones are determined: the lesion body, light and transparent. In the outer layer of enamel, enamel-dentin compound and dentin, no changes are detected. The greatest changes are determined in the subsurface layer. With increasing size of the carious spot, the degree of enamel demineralization increases . It is proved that the surface layer of

enamel does not undergo changes due to the presence of a pellicle, a constant process of remineralization in the oral cavity, and also the structural features of the outer layer of tooth enamel. S.P. Onishchenko A968) and V.P. Zenovsky A976) identified 5 layers in a white carious spot:

- 1) superficial, characterized by the greatest stability, the number of hydroxyl groups in the hydroxyapatite crystal increases, the fluorine content decreases, the volume of microspaces is 1.75-3% at a rate of 1%. In this zone there are sites of demineralization and remineralization;
- 2) subsurface; in this zone there is a decrease in calcium content compared with the norm, the volume of microspaces increases to 14%. Enamel permeability sharply increases;
- 3) central, this is the zone of maximum changes, the calcium content is even more reduced, the volume of microspaces is 20-25%. The zone is characterized by a high level of permeability;
- 4) intermediate, in this zone the volume of microspaces is 15-17%;
- 5) the inner layer or zone of shiny enamel, this is the zone of relative prosperity, the volume of microspaces is 0.75-1.5%.

In all zones, hydroxyapatite crystals undergo certain changes;

- violation of the orientation of the crystals in the structure of hydroxyapatites;
- change in the shape of crystals and their sizes;
- weakening of intercrystalline bonds;
- the appearance of crystals atypical for normal enamel;
- a decrease in the microhardness of enamel in the area of the white and pigmented spots, and the microhardness of the outer layer changes less than the microhardness of the subsurface layer;
- an increase in interprismatic spaces and their filling with amorphous matter.

It should be noted that changes in the pulp, in particular, in the structure and condition of odontoblasts, in vessels and nerve fibers during caries in the spot stage were not detected. So, the focus of demineralization during initial caries has three main features:

- 1) a sharp increase in the permeability of tooth tissue for high molecular weight substances, dyes, isotopes;
- 2) hypercalcification of the surface layer of tooth enamel due to the mineralizing effect of saliva, constantly washing the surface of the teeth, and more diffuse processes occurring on the surface of the enamel;
- 3) the presence of the integrity of the organic enamel matrix, which is a prerequisite for remineralization.

L. Meri A960) identified four types of carious lesions, taking into account the degree of demineralization:

- 1) progressive (with a predominance of demineralization and reconstruction processes);
- 2) intermittent (at the same time - processes of hyper- and demineralization);
- 3) regressive (with a predominance of demineralization processes);
- 4) stopped (with a predominance of the process of remineralization).

In the studies of Kostian A962) and A.V. Granin A966) and Meri, it was noted that the 1st and 3rd types of carious lesions are characteristic of caries in the stage of a white spot, and the 2nd and 4th - for pigmented carious lesions.

Mannenbergl A964) found that with initial caries, a white spot appears in cases where subsurface demineralization reaches a depth of not more than 300 microns.

G.M. Pakhomov highlighted 5 groups of carious spots in color:

- white
- gray
- light brown
- brown
- black

3 groups of carious spots are distinguished depending on the safety of enamel perikimat :

- 1) subsurface spots - on the surface of which pericimat is preserved;
- 2) superficial - on the surface of which there is no pericimat;
- 3) mixed - on the surface of which the pericimat is interrupted.

**Stage Spot (macula cariosa)**

Focal demineralization of enamel, depending on the nature of the flow, is divided into slow and fast flowing. A differential diagnosis between these forms can be made on the basis of an anamnesis, clinical picture (color, size, form of lesion), data on staining of teeth with a solution of methylene blue.

The clinical picture indicates that the demineralization of tooth enamel goes through at least three stages. The early stage is a white spot 1-3 mm in size. In the 2nd, developed stage, there are distinctive signs of slow and rapid demineralization of enamel.

Slow-flowing demineralization is characterized by uniformity of enamel surface changes: one of the stages of the development of focal enamel demineralization predominates on several teeth, which suggests the possibility of the occurrence of demineralization foci simultaneously.

The rapid demineralization of enamel in the 2nd stage is characterized by the activity of the process. The foci of demineralization lose clear boundaries, their edges become blurry. The surface of the enamel is rough, matte. The probe easily gets stuck in the demineralization site. Enamel loses density, easily scraped off by an excavator. The intensity of staining an average of 60 points. The increase in staining is associated with an increase in the porosity of enamel.

Quick demineralization goes into the 3rd stage - the stage of the defect. At this stage, characteristic signs for both forms of damage are also noted. Summarizing the above, G. N. Pakhomov et al. offer the following classification of dental lesions with focal demineralization.

**Superficial caries (caries superficialis)** . It is characterized by softening of the affected enamel, which with a little effort is removed by an excavator. Most children have no complaints at this stage. Some of them indicate pain from sweet, sour, and children 1-3 years old refuse sour fruits.

On examination, an enamel defect is found, usually round in shape. In the chronic course of the process, its edges are gentle, and in acute, sheer. Exposure to cold and chemical irritants is often painful.

## Lecture number 7.

### 1.1. Technological model of the formation

Lesson time 2 hours	Number of students
Type of activity	Introduction of practice news
Plan	<ol style="list-style-type: none"> <li>4. Give a concept about caries.</li> <li>5. Give an understanding of periodontal disease</li> <li>6. Give an understanding of comprehensive dental disease prevention</li> </ol>
The objective of the training session	The basics of caries and periodontal disease prevention, information, development and planning of measures for the prevention of teeth and the provision of comprehensive preventive measures for dental diseases.
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

### 1.2. Technological map of the lecture.

Stages and time of work	Training	Student
Preparatory stage (5 minutes)	<ol style="list-style-type: none"> <li>1. Preparation of content on the topic.</li> <li>2. Preparation of presentation slides for introductory lectures.</li> <li>3. Development of a list of literature used in the study of the subject.               <ol style="list-style-type: none"> <li>1. Kolesov A.A. "Pediatric Dentistry" 1991 Moscow.</li> <li>2. Pakhomov T.I. "Primary prevention in dentistry" 1982, Moscow.</li> <li>3. Vinogradova T.F. "Dentistry for children" 1987 Moscow.</li> <li>4. Evdokimova A.K. Vinogradova T.F. "Guide to Pediatric Dentistry" Medicine Moscow</li> <li>5. Kuzmina EM "Prevention of dental diseases" Moscow, 1997</li> <li>6. Kuryakina N.V. "Therapeutic dentistry of children" N. Novgorod, 2004</li> </ol> </li> </ol>	Record while listening

	<p>7. M.I. Groshikov "Prevention and treatment of dental caris" Moscow, 1980</p> <p>8. T .F. Vingradova. "Clinical examination of children at the dentist" Moscow, " Me ditsina" 1988.</p> <p>9. Khalilov I.Kh., Yuldoshkhonova O.S., Rakhmonov H.S. "Children's therapeutic dentistry and prevention of dental diseases" 2006 Yangiyul.</p>	
<p>1. Introduction (15 minutes)</p>	<p><b><i>1. The purpose and objectives of the subject are explained:</i></b></p> <p><b><u>Objective:</u></b> to introduce early detection of caries diseases in children and early detection of methods of treatment, diagnosis and treatment of these diseases</p> <p><b><u>Tasks:</u></b></p> <ul style="list-style-type: none"> <li>• Familiarize yourself with the features of caries treatment in children and their treatment. the formation of consciousness and knowledge;</li> <li>• Development of practical skills for examining patients;</li> <li>• Development of skills to identify syndromes of major dental diseases;</li> <li>•                      • The formation of knowledge about the treatment of diseases, prevention, control plan.</li> </ul>	<p>Students listen and answer questions</p>
<p>2. The main stage (50 minutes)</p>	<p>1. Slide show and explanation of the topic</p> <p>2. Use of exhibition posters</p>	<p>Record while listening</p>
<p>3. The last stage (10 minutes)</p>	<p>1. Make final conclusions</p>	<p>Record while listening</p>

**Subject : Psychological preparation for the prevention of pain in childhood**

When a child visits a dentist, the greatest fear is a drill. Dental interventions are more than others associated with pain and other unpleasant sensations. Therefore, the problem of premedication is especially relevant in pediatric dental practice. Psychological and pharmacotherapeutic effects on restless children with an increased emotional reaction relieve excessive stress.

In the broad sense of the word, premedication is understood as the introduction of any drug within the framework of dental treatment. It would be wrong to assume that the sole purpose of drug preparation is to alleviate the fear of treatment. This task, although important, is by no means the only one. The field of premedication is much wider. In some cases, it is used to lower the state of tension and fear,

in other cases, to lower the threshold of susceptibility to pain, and then also to ensure the undisturbed course of treatment, which suppresses the vomiting reflex or decreases salivation (premedication). Ensuring a smooth postoperative course, the possibility of a quiet sleep, eating, etc., should be considered the same important task of premedication.

(post-medication). Premedication in the predominant number of cases is aimed at covering several disturbing influences simultaneously.

In the fight against fear, premedication, on the contrary, always plays only an auxiliary role, and the main means here and in the future are psychoprophylaxis and psychotherapy. Even the best medical preparation cannot compensate for the lack of psychological knowledge and sparing treatment of the child.

Medical preparation in pediatric dentistry is based on two main indications: firstly, it is used to ensure a calm course of treatment with long and serious interventions, and secondly, to improve the conditions for treating children who do not cooperate with a doctor. For sedation, small tranquilizers are prescribed - sibazon and mebicar in an age dosage for 30-40 minutes. before starting treatment. For young children, it is preferable to use sibazon, and to achieve a stronger tranquilizing effect, a combination of sibazon with mebicar.

Premedication is carried out taking into account the type and severity of the psychoemotional reaction. In a clinic, the use of a tranquilizer of 0.05 seduxen, 0.3 g of trioxazine, diazepam 0.3 g, of a non-narcotic analgesic — analgin, is effective; antispasmodic - baralgin in combination with 0.02 g relanium (in solution) - for 15 minutes before starting treatment; anticholinergic atropine (v / m); corvalol, valocardin C 0 drops); Valerian drops, motherwort D 0 drops).

It can be used in 20-25 minutes. before medical manipulations, 1% diphenhydramine, suprastin, tavegil, pipolfen (in solution).

The use of these funds eliminates the emotional and vegetative components of pain (reducing anxiety, fear, anxiety, eliminating psycho-vegetative complications manifested by tachycardia, hypertension, hyperglycemia, an asthmatic attack, fainting or collapse), as well as reducing the frequency of general complications that more associated with the patient's psycho-emotional stress, significantly improve the effect of pain relief and potentiate local anesthesia.

For anesthesia of the pulp, various methods of anesthesia are used: infiltration, conduction, application, intraligamentary, reflexo-analgesia, electrical pain relief, as well as anesthesia: mask, intubation, intravenous.

What to do to keep the child's teeth healthy?

**Firstly** , it is necessary to examine the oral cavity by a pediatric dentist who will check the baby's oral cavity, identify the initial processes of tooth decay, carry out preventive and necessary medical procedures, give advice, and teach you how to properly care for your teeth. You should go to the dentist at least 2 times a year!

**Secondly**, follow the recommendations written in the memo below and then your child's teeth will remain healthy for a long time.

To have healthy teeth, you must:

1. Thoroughly clean them 2 times a day: in the morning after breakfast, in the evening after dinner - before bedtime.

Very often, parents ask the question: at what age do you need to start caring for your teeth? The answer is simple - from the moment the first tooth appears in the child, i.e. from about **6 months** . For this purpose it is necessary to use sterile gauze napkins moistened with water or special disposable napkins for brushing your teeth, which can be purchased at a pharmacy (for example, Spiffes). The napkin should be wound on the index finger and gently wipe the teeth, as well as the gums, palate and tongue from all sides. In addition, you can use a special silicone fingertip, which is also worn on the index finger and moistened with water.

When the child gets used to carrying out any manipulations in the oral cavity ( **from a year** ), it is necessary to purchase a toothbrush. It should be selected by age. The working part of the toothbrush should not be large, but small so that it can reach the farthest teeth. A toothbrush should be changed at least 1 time in 3 months, or more often, depending on its quality. We recommend using toothpaste from year on, you should also choose it by age, you need to apply the paste on the toothbrush with a small pea. Toothpaste should be bought at a pharmacy of well-known companies (ROCS, Elmex, Colgate, Blend-a-med, Lacalut, etc.).

#### **From 1.5 to 2 years, teach your child to rinse his mouth.**

**Children under two years old** should use fluoride-free toothpastes (First teeth, ROCS baby) or children's fluoride-free toothpastes (Elmex Kinder-Zahnpasta, Colgate for children, and Children's pearls complex).

**Children over two years of age are** recommended to use children's toothpastes containing fluorides ("Stages Oral B", "ROCS kids", "Carimed children").

When all 20 deciduous teeth erupt (by **about 2.5 years** ) and tight interdental contacts appear between them, the toothbrush will not be able to completely clean out food debris and plaque between the teeth, so start using flosses (flosses) or irrigators. This procedure should be carried out by parents until the child himself has learned how to use dental floss.

#### **Teeth brushing should last from 3 to 5 minutes, depending on the number of teeth and the bite of the child.**

First you need to brush your teeth on the upper, then on the lower jaw, sequentially, from right to left, or left to right, sweeping movements from the gum to the edge of the tooth ("from pink to white") - on the front (labial) surfaces and back (palatine and lingual) surfaces, and reciprocating movements ("back and forth") - on chewing surfaces. In conclusion, it is necessary to massage the gums with the help of circular movements of the brush with the capture of teeth and gums with closed jaws. And do not forget to clean your tongue using the brush bristles or a special surface on the back of the brush, as on the back of the tongue there is a large number of filiform papillae, between which a significant amount of plaque accumulates.

It is believed that before school age, parents must help children brush their teeth, due to poorly developed fine motor skills of their hands, and sometimes parental assistance is also needed at an older age.

If necessary, check the brushing. To do this, use special tablets or solutions that stain plaque (for example, "Dinal", "President").

2. Rinse your mouth after each meal with water or special solutions, dental elixirs, rinses that prevent the formation of plaque. In addition, at home once a week, you can rinse with 2% soda solution (alkalizing effect, neutralizing acids) and 2% sodium chloride solution (reduces the pathogenicity of the microflora of the oral cavity and increases the enamel resistance to carious factors).

Chewing gum with calcium ("Orbits for children with calcium") is used in children from 4 years old within 10-15 minutes after eating, but not as a replacement for a toothbrush and toothpaste.

3. Limit the number of snacks during the day. Frequent biting can cause active plaque formation. If you can't refuse snacks, eat fruits and vegetables, cheese, cottage cheese, nuts, and drink water or unsweetened tea.

4. Limit the intake of sweet, flour, starchy, soft and sticky foods (cookies, crackers, dryers, chips, popcorn, rolls, chocolate, cakes, ice cream, sugary sweets, toffee, sweets, caramel, dried fruits, honey), canned and refined food, acidic foods (lemon), marinades, as well as sweetened carbonated drinks (soft drinks, kvass, Coca-Cola), juices, including freshly squeezed, especially consumed through a straw (apple, citrus, grape, etc.), etc. to. they contain fruit acids and sugar, albeit natural; compotes, etc. Remember - the main thing - not the amount of carbohydrates, but the frequency and duration of their use! For example, it's better to eat a whole bar of chocolate at a time (and then go and brush your teeth or eat alkalizing foods) than eat this bar a bit every day, or better to eat a piece of chocolate than hold a lollipop for a long time on your cheek! Feel the difference?

5. Eat healthy foods: fruits (apples, pears), vegetables (carrots, cabbage, Jerusalem artichoke), dairy products (milk, cottage cheese, hard cheese), dairy products without sugar (kefir), buckwheat and oatmeal (without sugar), seafood (squid, shrimp, crab, fish), meat, eggs, greens (parsley, dill, spinach, green onions), garlic, nuts (hazelnuts, almonds, walnuts), poppy seeds, sesame, legumes (beans, peas), dark bread with a crust (peeled, rye). The harmful drinks listed above are best replaced with plain water or green tea.

6. And of course, do not forget to go for a routine examination to your dentist 2 times a year! He will clean your child's teeth with a special brush with paste, cover with special preparations to make the teeth strong, and seal new chewing teeth - cover their recesses with protective material.

Without fail, the doctor will draw the attention of the parents to the peculiarities of the formation of the occlusion in the child, i.e. closing of upper and lower teeth. Bite anomalies are important to identify and correct in a timely manner. In particular, bad habits should be excluded - long sucking of the nipples, finger, sucking the tongue, cheeks, etc. It is also important to notice breathing difficulties. This happens with diseases of the nose and paranasal sinuses.

Thus, a preventive measure is a complex of measures.

Many years of experience in carrying out preventive measures for children shows that a child whose parents began to monitor the health of his oral cavity on time and carry out preventive procedures does not know pain, trusts a dentist with confidence and is happy to undergo preventive examinations.

## 1 - Practical lesson

### Topic: Teething of deciduous and permanent teeth, root formation, terms of resorption of roots . Terms of formation of the roots of permanent teeth

#### 1.1. Technological model of the formation

Lesson time 3 hours	Number of students
Type of activity	Introduction of practice news
Plan	Give a complete correct answer to questions about the development of primary and permanent teeth, as well as the resorption of the roots of primary teeth
The objective of the training session	To study the development of milk and permanent teeth, the formation and timing of resorption of the roots.
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

#### Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (10 minutes )	<ol style="list-style-type: none"> <li>1. The purpose of the lesson</li> <li>2. Preparation of slides for lecture material</li> <li>3. Related literature <ul style="list-style-type: none"> <li>• N.V. Kuryakina - "Ter . ostomy . children's age "N. Novgorod 2001</li> <li>• T.F. Vinogradova - "Stom . children's age " 1987</li> <li>• N.G. Pakhomov- "Primary prevention in dentistry"</li> </ul> </li> </ol>	Record a subject and listen
Topic introduction (10 min)	<ol style="list-style-type: none"> <li>1. Keeping the audience clean.</li> <li>2. Checking students for practical classes.</li> <li>3. Check student attendance</li> </ol>	Are listening
2 Milestone (9 0 minutes )	<ol style="list-style-type: none"> <li>1. The division of students into 2 small subgroups , asks questions on the topic ;</li> <li>2. Use of slides and multimedia;</li> <li>3. conducts therapeutic work;</li> <li>4. Combines all the information on a given topic, actively participate ni their students encourages and assesses the general.</li> </ol>	Divided into small groups , watching , participating , listening. Student expresses his opinion

		complements and asks questions
The final stage (10 minutes )	1. Conclusion . 2. Independent work . 3. Homework .	Listen to Record Conclusion

Questions on the topic

1. During what period do permanent teeth bookmarks form?
2. **Teething permanent teeth?**
3. Teething

Text

The upper lip prevails over the lower, forming a step of the lips. The lips of the newly approved are soft, swollen, proboscis, transversely separated with a sucking pillow on the upper lip: due to this, the baby form tightly covers the nipple. Deep labio - chin groove, chin sloping back.

Factors that contribute to sucking include the physiological children of reproductive. At the same time, the distance between the vertices of the alveolar processes of the jaws of the sagittal plane reaches 5–7 mm, and the vertical gap is 2.5–2.7 mm; its absence determines the development of a deep bite.

The vestibule and the bottom of the oral cavity are small, transitional folds poorly expressed. The language is big.

The upper jaw consists of 2 symmetrical halves, which are combined late lateral suture. In the period of early embryonic development between the two parts of the once located intermaxillary bone.

The upper jaw of the newborn is wide and short, consists mainly of the alveolar process, which is located just below the sky. Flat underneath with well-defined transverse folds.

Usually in the sky there are 4-5 pairs of transverse folds, 2-3 pairs of which extend from the palatine sagittal suture. Transverse folds create w and p on to a st mucosa and assist in keeping the nipples during breastfeeding.

The maxillary cavity is only being outlined and on the roentgenogram has the appearance of an oblong shaped lumen. It lies medially relative to the alveolar process. The rudiments of the teeth are located almost under the orbit and are separated from it by a thin cystic plate.

The lower jaw consists of 2 non-fused halves that connect to using connective tissue. The alveolar bone is better developed than the basal part. This is due to the presence of the rudiments of temporary and permanent teeth.

The mandibular canal has an almost rectilinear shape and is located close to the edge of the lower jaw. The branch of the lower jaw is almost not developed, and the articular process rises above the level of the alveolar process. The angle of the lower jaw is equal to an average of 135 ° -140 ° .

Each jaw has 18 follicles, including 10 temporary and 8 permanent teeth (6321/1236). The rudiments of milk teeth on both jaws are located on the labial side, the rudiments of the permanent ones are deeper than the temporal on the lingual side on the lower jaw and on the palatine on the upper.

Gingival membrane is a double fold of mucous membrane. It has a similar shape in the front portion of the upper and lower jaws (fold Robin - Mazhit). It is rich in small papillary tubercles, vessels, as a result of which it can condense. The gingival membrane also has a large amount of elastic fibers. This anatomical formation is clearly visible immediately after the baby stops breastfeeding during feeding.

In newborns, the function of sucking is well developed. Each baby feeding (at 30 minutes, 6 to 4 times a day) promotes training mandible chew those larynx and facial muscles, muscles of the tongue daily for 3 hours. Therefore, improper feeding can lead to the development of malocclusion.

The child swallows and breathes when swallowed, and this is due to the features of the topography of the larynx. The high location of the entrance to the larynx (above the level of the lower - posterior edge of the soft palate) and its connection only with the oral cavity allows the child to breathe, suck and swallow at the same time.

Structural features of the temporomandibular joint:

- The head of the articular process is almost round in shape, has almost the same size (transverse and front-back)
- The fossa, which is the receptacle for the head of the lower jaw, is flat. It does not have an articular tubercle in front, and in the back, a well-defined articular cone limits movements of the lower jaw towards the middle ear;
- The mandibular fossa functions fully;
- The depth of the mandibular fossa is not more than 2 mm;
- The intraarticular disc in a newborn is a soft layer consisting of collagen fibers;
- There are no villi of the synovial membrane of the joint capsule.

The absence of an articular tubercle, the occipital inclination of an underdeveloped branch of the lower jaw, physiological retrogeneration, a wide flat articular fossa, an articular disc and an articular cone are formed create favorable conditions for movements of the lower jaw in the sagittal plane.

Teeth develop in close connection with the overall development and growth of the child. During the period of formation and growth, they are influenced by various environmental and internal factors, which are reflected in the growth rate, degree of mineralization, and timing of teething.

### **Development of temporary teeth**

Five periods are distinguished in the development of temporary (falling out, milk) teeth:

- 1st — bookmarks and intra-maxillary formation,
- 2nd - teething,
- 3rd — root and periodontal formation;
- 4th — stabilization;
- 5th - resorption of roots.

*In the period of laying the rudiments and the intra-maxillary formation of* teeth, the formation of tooth rudiments, their differentiation, histogenesis and liming of hard tissues of the tooth occur.

The first signs of tooth development appear on the 6-7th week of embryogenesis. The stratified squamous epithelium of the oral fossa in areas of future dental arches of the upper and lower jaws thickens and is immersed in the mesenchyme. As a result of this process, the vestibular (vestibular) and lingual dental plates are formed. The epithelial cells of the vestibular dental plate increase rapidly and then degenerate, forming a gap separating the cheeks and lips from the area where the teeth subsequently appear. Thus, the vestibule of the oral cavity arises.

On the free edge of the lingual dental plate, cell proliferation contributes to the appearance of epithelial outgrowths - the dental papillae in places corresponding to future temporary teeth. For temporary teeth, 10 such formations appear above and below, from which enamel organs are subsequently formed. At the 10th week of embryogenesis, mesenchyme begins to grow in each enamel organ, which forms the dental papilla. Around the epithelial tooth organ and the dental papilla, the mesenchyme is densified, covering the tooth germ and is called the tooth sac. Thus, the enamel organ, the tooth papilla and the tooth bag together form the tooth germ from which all the tooth tissue elements are formed.

Having reached a certain degree of development, the tooth rudiment begins to separate from the tooth plate, maintaining a connection with it in the form of thin epithelial cords - the neck of the epithelial tooth organ, which then dissolves, and the tooth rudiments become isolated. At this, the first stage of tooth development ends. This is followed by the stage of differentiation of the tooth germ. During this period of tooth development, important changes occur both in the tooth germ and in the tissues that surround them. First, the enamel organ is homogeneous in structure - all cells are the same and are arranged in layers. Subsequently, a protein fluid begins to accumulate between the cells of the central part of the enamel organ, which delaminates and pushes them apart. Between them remains a connection using the processes. Due to this, the cells of the central part of the enamel organ acquire a star shape and resemble cells of the reticular tissue. This area is called an enamel organ pulp or stellate reticulum. Cells adjacent to the surface of the dental papilla form a layer of internal enamel cells. These are tall cells of a cylindrical shape, from which ameloblasts (ameloblasts, adamantoblasts) subsequently form, i.e. cells that form an enamel.

Along the edge of the enamel organ, the internal enamel cells pass into the external enamel cells, which lie on the surface of the enamel organ and have a flat shape. The cells of the enamel organ are covered on the outside with a basal membrane called the enamel basal lamina that separates the enamel epithelium from the surrounding mesenchyme.

Almost simultaneously, the process of differentiation of the dental papilla begins. It grows and grows even deeper into the enamel organ, it penetrates the blood vessels. On the surface of the dental papilla, several rows of closely spaced cells with a dark basophilic cytoplasm are formed from

mesenchyme cells, called dentinoblasts (odontoblasts). The layer of dentinoblasts directly adheres to the internal enamel cells and is separated from them only with the help of a thin basement membrane. Around the dental primordia in the mesenchyme, beams of bone tissue for the wall of the alveoli continue to form.

An important point at the stage of differentiation of the tooth germ is the arching of the internal enamel epithelium, which determines the shape of the future tooth crown. It is at this stage that the influence of various adverse factors leads to malformations of the crown.

The differentiation of the cells of the enamel organ is regulated by growth factors, in particular, insulin-like growth factor 1, transforming growth factor p (TGF-p) and epidermal growth factor (EGF).

By the end of the 4th month of fetal development of the fetus, the period of histogenesis of dental tissues begins, during which tooth tissues arise - dentin, enamel and pulp. Cement is formed later, on the 4th-5th month of the postembryonic period, when the root development occurs, and after it - teething (Fig. 2 - div.color paste).

Dentin formation. Histogenesis of dental tissue begins with the formation of dentin. Dentinoblasts take an active part in this process. These cells form thin pre-collagen fibers, which later turn into collagen fibers and form the organic basis of the predentine.

Dentinoblasts synthesize and secrete type I collagen (the main organic component of dentin), glycoproteins, phosphoproteins, proteoglycans, glycosaminoglycans. Specific products of odontoblasts are the so-called phosphorin - phosphorylated proteins are found only in dentin. They are believed to play an important role in controlling the site and rate of dentine mineralization. Odontoblasts also produce calcium-binding proteins - osteocalcin and osteonectin, which are found in both dentin and bone. Odontoblasts possess not only secretory, but also lytic activity. About 15% of the collagen synthesized by them is destroyed by the odontoblasts themselves using the lysosomal apparatus.

Deposition of the first collagen fibers occurs directly in the amorphous intercellular substance of the dental papilla. When the layer of the predentine reaches a thickness of 40-80  $\mu\text{m}$ , it is pushed to the periphery by the newly formed layers of the predecessor, in which the fibers have a different direction - they are parallel to the surface of the dental papilla. Subsequently, these inner layers of dentin, rich tangential fibers form subpulpary dentin in the formed tooth, and the radial fibers lying in the outer layers of dentin formed first - cloak dentin.

As the dentin layer thickens, the Odontoblasts are gradually pushed into the papilla, leaving thin processes in the dentin - the dentinal processes of the odontoblasts surrounded by a thin cytoplasmic membrane. Dentinoblasts themselves are not included in the composition of the substance formed by them, but remain in the external parts of the dental papilla, and in the formed tooth in the outer layers of the pulp.

This is a characteristic feature of the development and structure of dentin, which throughout its existence has been cell-free tissue. Dentinoblasts play an important role in the liming process of dentin. With the help of their processes, they contribute to the delivery of mineral salts from the blood to the main substance of the dentin that develops.

Electron microscopic studies have shown that around the odontoblasts in the intercellular substance there are small vesicles that separate from the plasma membrane of these cells. Bubbles contain calcium binding lipids and alkaline phosphatase. It is believed that they create microenvironments in which the appearance of the first needle-shaped crystals of hydroxyapatite is possible. So begins the mineralization of the intercellular substance. The first crystals of hydroxyapatite that appeared in the vesicles break their membrane, grow and are deposited on collagen fibers in the area of enamel-dentin communication.

Liming of dentin of temporary teeth begins at the end of the 5th month of embryogenesis. This process lags behind the formation of the main substance of dentin and, therefore, between the odontoblasts and the dentin layer there is always a layer of unknown dentin (pre-dentin), which is preserved in the formed tooth.

Before the deposition of lime salts, it is observed in the dentin, which covers the top of the dental papilla, i.e. in the area of the future cutting edge of the tooth or its chewing tubercles. Subsequently, liming islands increase and merge with each other. Starting at the top of the dental papilla, the liming process extends to the lateral surfaces of the crown, neck and root of the tooth.

Mineralization of dentin occurs in such a way that discrete areas of liming of a spherical shape (dentin balls) are formed in it, which do not completely merge. Sections of little or completely unknown dentin, which are called interglobular dentin, may remain between these balls. Around the processes of odontoblasts, on the contrary, a collar of highly mineralized dentin is formed, which is called peritubular.

The duration of the period of activity of dentinoblasts carrying out deposits and mineralization of dentin is approximately 350 days in temporary teeth, and about 700 days in permanent teeth.

**Enamel formation.** Shortly after the start of activity, dentinoblasts and dentin deposits on the top of the dental papilla enameloblasts begin to function, which differentiate from the internal cells of the epithelial tooth organ. The formation of enamel begins - amelogenesis.

**The formation of dentin** precedes the onset of amelogenesis, but these processes are closely related and impossible without each other. They are a manifestation of the so-called mutual (reciprocal) inducing effect. The proliferation and separation of internal enamel cells give impetus to the differentiation of the odontoblast layer at the apex of the papilla, and deposition of a thin layer of dentin is in turn a necessary condition for the start of enamel formation. In the process of enamel development, two phases are distinguished: the formation of the organic base of enamel prisms (the so-called enamel matrix), their primary liming, as well as the maturation of enamel, which consists in the final liming of enamel prisms.

The process of formation of enamel is preceded by a change in the morphological and physiological polarity of ameloblasts. It consists in moving the nucleus from the outside, and cellular organelles, on the contrary, inward, towards the dentin. Changing the polarity physiological ameloblasts, when the core and organelles are reversed due to the fact that now in the dental sac sufficient amount grows vessels (capillaries), and nutrients not come into ameloblasts from the dental papilla and the outside - from tooth bag. In addition, the nutritional conditions (trophic) of ameloblasts from the side of the dental papilla are worsening due to deposits on its dentine apex.

In the first phase of the development of enamel, ameloblast forms an enamel prism due to complex transformations, and is the main structural element of enamel. This process begins with the formation of a short cytoplasmic process in the apical region of the ameloblasts facing the dentin.

The synthesis of enamel proteins - amelogenin and enameliniv takes place in the elements of the granular endoplasmic reticulum. In the Golgi complex, enamel proteins mature and form secretory granules entering the cytoplasmic process. When the length of these processes reaches 20  $\mu\text{m}$ , liming and formation of enamel prisms begins. The surface of the adjacent dentin in this case becomes uneven, which ensures a tight connection of enamel with dentin.

It is believed that dentin crystals initiate the formation of the first crystallization centers in enamel. With the elongation of enamel prisms, ameloblasts decrease and before the teething begins, they are reduced, almost completely turning into prisms. With the formation of enamel and the formation of a tooth crown, the epithelial dental organ decreases, its cells reduce and disappear.

The growth and development of enamel comes from the enamel-dentin message to the periphery of the tooth crown. The surface of the tooth enamel, just cut through, is covered with a thin structureless shell (enamel cuticle), which is closely connected with the membrane of enamel prisms and is the

remainder of the external enamel epithelium. After teething, it quickly erases, remaining on the contact surfaces of the teeth.

The second phase of the development of enamel - maturation - lasts about 3 months. It consists in reducing the content of water and organic substances, the accumulation and crystallization of mineral salts.

Immature enamel, which is formed by secretory ameloblasts and has undergone primary mineralization, consists of 65% water, organic substances - 20%, minerals - only 15%. Hydroxyapatite crystals are 29X3 nm in size, and their density is -1240 per 1  $\mu\text{m}^2$ . This enamel has the consistency of cartilage and is not able to fulfill its function. Enamel maturation is accompanied by an increase in the content of mineral substances (up to 96%), the size of hydroxyapatite crystals, respectively, the density of their arrangement decreases to 560 per 1  $\mu\text{m}^2$ , the enamel maturation process continues even after teething.

Mature enamel consists of 95-96% of mineral salts and 1-2% of organic substances. Almost all of it consists of densely located crystals of hydroxyapatite. Due to the maturation process, a high level of enamel mineralization is observed in its surface layer, and in the direction of enamel-dentin communication it decreases.

The enamel's peculiarity essentially distinguishes it from dentin, cement and bone, is that mineralization occurs extremely quickly after secretion - the time period separating these processes is only minutes. Therefore, when the enamel is deposited, it practically lacks the non-mineralization of its predecessor (peremal).

An important role in the mineralization of enamel is played by the proteins that are produced by ameloblasts. They perform a number of functions, namely:

- 1) participate in the binding of calcium ions and regulate their transport by secretory ameloblasts;
- 2) create primary sites of nucleation (initiation) during the formation of hydroxyapatite crystals;
- 3) promote the orientation of the hydroxyapatite crystals that grow;
- 4) form an environment that provides the formation of large crystals of hydroxyapatite and their dense enclosure in enamel. Enamel proteins are not collagenous, which also distinguishes enamel from other essential tissues of the human body. The main enamel proteins during secretion are amelogenin, which make up 90% of the proteins that secrete ameloblasts. The second group of enamel proteins is enamelines, which bind to hydroxyapatite crystals.

As the enamel ripens, the highest concentration of proteins in it is stored in the peripheral layer of enamel prisms, traditionally called their shell.

Liming of the enamel of temporary teeth begins at the 4th - 5th month of embryonic development. At the 18th-19th week (4.5 months) of pregnancy, the incisal margin and 1/3 of the incisor crowns, the incisor fangs and the medial-buccal tubercle of the first temporary molars are calcified.

At 20-25 weeks (6 months) of pregnancy, the incisor mineralization lasts, the liming of the fangs is almost complete, the mineralization of the buccal tubercles of the first temporary molars is accelerated, the liming of the lingual-medial tubercles appears, and the mineralization of the buccal-medial tubercles of the second temporary molars begins teeth.

At 26 weeks (7 months) of pregnancy, the mineralization of temporary incisors and fangs lasts, the buccal tubercles of the first temporary large molars almost merge, the first signs of mineralization of the distal-buccal tubercles of the second temporary large molars occur.

At 32 weeks (8 months) of pregnancy, the mineralization of temporary incisors and canines continues. The buccal tubercles of the first temporary large molars merge. The apex of the medial-language tubercles of the second temporary molars is formed.

At 36 weeks (9 months) of pregnancy, liming covers all surfaces of temporary incisors (except for the cervical region), the buccal tubercles of the first temporary large molars merge completely, their lingual tubercles clearly manifest, the mineralization process extends to the approximate surfaces of

the first temporary molars. Mineralization of the distal lingual tubercles of the second temporary large molars occurs more intensively.

By the time of birth, the crowns of central temporary incisors are almost fully formed, to a lesser extent, of the lateral incisors, half of the crown of temporary canines, chewing surfaces of temporary molars and the medial-buccal tubercles of the first permanent molars. The cervical section of the incisors, the vestibular, cervical and proximal fangs, the lingual surface of the first temporary molars, as well as the furrows of all temporary teeth are not fully mineralized.

The final maturation of the enamel occurs after teething, especially intensively during the 1st year after teething. The main source of inorganic substances in the enamel is saliva, but a certain amount can also come from the dentin. Given this particular importance for the full mineralization during this period of masses, the mineral composition of saliva and, in particular, the presence in it of the necessary amount of calcium, phosphorus, and fluoride ions. Throughout its life, enamel is involved in the exchange of ions, undergoing processes of demineralization (removal of mineral substances) and remineralization (re-entry of mineral substances), balanced under physiological conditions.

During its development, the teeth react to all changes that occur in the child's body. Everything that violates and inhibits the growth of the child, also inhibits the growth, development and teething.

The processes of the full formation and primary mineralization of tooth hard tissues during the period of maxillary development are affected by acute and chronic mother diseases (rheumatism, hypertension, nephropathy, endocrine pathology, heart defects, mental injuries, viral diseases, pregnancy toxicosis, etc.). High risk factors for the development of hard tissue defects and caries of temporary teeth are smoking and alcohol abuse by the mother.

Enamel saturation with mineral components is violated in premature infants in conditions of pathological birth, in children who have undergone various diseases during the neonatal period and infancy (rickets, hypovitaminosis, stomach and intestinal diseases, tuberculous intoxication, chronic starvation, etc.).

**The development of tooth pulp.** Pulp develops from the mesenchyme of the dental papilla. This process starts from its apex, where dentin has already formed. At the same time, differentiation of mesenchymal cells occurs in the central part of the dental papilla. Most of the mesenchyme cells turn into fibroblasts, and components of the intercellular substance begin to secrete. Collagen first accumulates in it in the form of isolated fibrils, which subsequently form fibers. As the pulp ripens, the amount of glycosaminoglycans in it decreases.

With the development of the tooth germ, the process of differentiation of the mesenchyme of the dental papilla and its transformation into loose connective tissue grows from its apex to the base; at the same time, this connective tissue sprouts with blood vessels and nerves.

### *Teething*

Teething is the process of vertical movement of a tooth from the place of its laying and development in the middle of the jaw until a crown appears in the oral cavity (Fig. 2). Teething of temporary teeth begins at the 5th month of life and ends by 2.5-3 years (table 1, 2). Temporary bite is divided into three periods: 1 - period of formation (from 6 months to 2-3 years), 2 - period of stable temporary bite (from 2.5 to 4 years), 3 - period of aging, or signs of erasure, late temporary bite (from 4 to 6 years). Due to the growth and development of the child, changes occur in the dentofacial system, new functions appear, or existing ones are restructured.

Signs of physiological teething are: timeliness, consistency in certain groups of teeth and parity.

First, teeth on the lower jaw erupt, with the exception of lateral incisors and the first temporary molars, which first erupt on the upper jaw. Despite the fact that the eruption of fangs is preceded by the eruption of the first temporary molars, the fangs in the temporary bite occupy the correct position

in the dental arch, as they have the ability to push the first molar back, since the second temporary molar has not yet erupted.

The first physiological increase in the height of the bite begins with the eruption of the first temporary molars. They play the same role in the temporary bite as the constant in the bite — they maintain the bite at a certain height.

The parity of eruption is expressed in the fact that the teeth of the same name on each half of the jaws erupt at the same time. Violation of the parity of teething of the same name on different sides of the jaws is a sign of growth retardation and in some conditions can lead to anomalies in the development of dental arches and jaws.

**Table 1. Timing of development of temporary teeth (according to W. Kunzel, 1988)**

Tooth	The first radiological signs of tooth crown mineralization, month of embryonic development	Duration of teething, month of life	Completion of root formation, year	The beginning of root resorption, year
I	5	6-8	1,5-2	4
eleven	5	8-12	2	5
III	6	16-20	4,5-5,0	8
IV	5	12-16	3.5-4.0	6.5-7.0
V	6	20-30	4.5-5.0	7.5-8.0

**Table 2. The average age of teething of temporary teeth (according to R. Illingworth, 1997)**

Tooth	Duration of teething (month of life)	
	Lower jaw	Upper jaw
I	6	7.5
eleven	7	9
IV	12	14
III	16	18
V	20-30	22-32

**Average teething and tooth loss  
(according to Borovsky, E.V. et al., 1989 and Carlson BM, 1994).**

Tooth name	Duration of teething (in months)	Dates of fall (in years)
Central incisors	6-8	6-7
Side incisors	8-12	7-8

Fangs	14-20	10-12
First molars	12-16	9-11
Second molars	20-30	10-12

### Teething Dates

Baby teeth	Teething time	Terms of root formation	Start resorption	Terms of root resorption
I	6 - 8	+ 2 years	from the 5th year	for 2 years
II	8 - 12	+ 2 years	from the 6th year	for 2 years
III	16 - 20	+3 years	from the 8th year	for 3 years
IV	14 - 16	+3 years	from the 7th year	for 3 years
V	20 - 30	+3 years	from the 7th year	for 3 years

By 10-12 months of life, all 8 incisors erupt. After a short break (2-3 months), the first temporary molars appear, followed by fangs (lower and upper), the latter erupting second large molars. These teething times can vary from 4 months to 2 years (early teething) or from 8-10 months to 3-3.5 years (late teething).

With teething and the development of chewing function, the alveolar processes of the jaws actively grow, the basal part of the lower jaw thickens; branches of the lower jaw grow; the relief and architecture of the jaws become more complicated. After complete eruption of temporary teeth, dental arches of a temporary bite are formed.

Up to 2.5 years, the period of temporary bite ends - the formation period.

The second period of the temporary bite is called the “stable temporary bite”. It lasts up to 4 years and has the following characteristics

1. A temporary bite has 20 teeth.
2. The group of premolars and the third molar are absent.
3. The teeth are located in the dental arch without tilt - vertically.
4. Crowns of teeth of almost the same height.
5. In temporary teeth, width is more pronounced than height.
6. In temporary teeth, a poorly expressed equator.
7. In the cervical region of temporary molars, an enamel roller is defined that provides the tooth with the shape of a truncated cone.
8. Dental arches constitute a semicircle with a radius large on the upper jaw.
9. The cutting edges and chewing surfaces of the teeth are in the same plane, so the occlusal plane is horizontal.
10. The roots of milk teeth are short and wide, they are formed within 2-2.5 years after teething during the next 2 years, the state of the root is stable, after which physiological resorption begins.

When cutting, the tooth crown is covered with the remains of ameloblasts and other cells of the enamel organ, which form several layers of cubic epithelium. Bone tissue above the crown is absorbed. The remains of the epithelium of the enamel organ merge with the epithelium of the oral cavity, forming a dense epithelial node. Its central cells degenerate, as a result of which a germination channel forms, through which the crown passes. Thus, during teething, the tooth practically does not come into contact with the connective tissue of its own plate of the mucous membrane, does not destroy its structural elements, in particular blood vessels. That is why this process is accompanied by bleeding.

In the process of eruption due to the remains of the epithelium of the enamel organ and the epithelium of the oral cavity, a cuticle is formed covering the enamel, and also provides a message between the enamel and gums. The normal condition of both the gums and the periodontium depends on the density of the gingival joint. In the case of penetration of pathogenic bacteria through this barrier, periodontitis gingivitis may occur.

A significant number of theories proposed regarding the mechanism of teething. The most common ones are:

root growth theory (Hunter, 1870);

the theory of increasing hydrostatic pressure in the periapical zone and tooth pulp (Yasvoin, 1929.1936);

theory of bone remodeling (Katz, 1940);

periodontal traction theory.

The theory of the tooth root growth explains the eruption of the tooth so that the root that grows, rests on the bottom of the real bone alveoli and if the tooth pushes out of it. However, this theory has several disadvantages. She cannot explain the complex movements of the rudiments of some teeth in the jaw before they begin to erupt, as well as the eruption of teeth with an emerging root.

Theory of hydrostatic pressure. According to this theory, not root growth promotes teething, but rather, the root develops in connection with teething. The cause of eruption is embedded in the tissue of the dental papilla, which differentiates. At the same time, fibroblasts produce a large amount of the main substance, the volume of tissue at the apex of the papilla increases, pressure is created inside the tooth germ, which makes the tooth move to the free edge of the gums.

Theory of bone remodeling. According to this theory, teething is due to a combination of processes of deposition and resorption of bone tissue in the wall of the alveoli. It is believed that the newly formed bone tissue at the bottom of the dental alveoli is able to push the tooth towards the oral cavity. However, most researchers believe that the formation and resorption of bone around the root of the tooth is a consequence, not the cause of its eruption.

The theory of periodontal traction has recently become widespread. According to this theory, the main mechanism for teething is the formation of periodontium. The fibroblasts that make up the periodontium are arranged in chains, combining with each other using desmosomes. U cells are characterized by a developed cytoskeleton with a pronounced network of active filaments. The latter are associated with certain sections of the cytolemma, to which fibronectin (an adhesive extracellular matrix glycoprotein) and collagen fibers also join. Such a structure indicates that fibroblasts can contract, and the force developing in this case is transmitted to the attachment sites of collagen fibers.

As a result, the tooth moves relative to the walls of the tooth cell (alveoli). Confirmation of this teething mechanism is experiments in which the synthesis of collagen fibers was deliberately disrupted. For example, in animals with hypovitaminosis C, teething slowed and sometimes stopped. However, the mechanism described is hardly the only one. It is necessary to agree with the opinion of those authors who believe that teething is a complex process that combines the action of several mechanisms.

Teething is one of the physiological indicators of the overall health of the child, its development and growth. Food quality, sanitary and hygienic conditions, pathological conditions in a child (rickets, hypovitaminosis, dyspepsia, intoxication, etc. .) Significantly affect the process of teething. So, erratic teething with a violation of the intervals between the appearance of certain groups of teeth can be a sign of rickets in a child.

### **Root and periodontal formation**

The formation of the tooth root begins before its eruption, i.e. in the postembryonic period. It begins before teething and continues for some time after it. Currently, the crowns of temporary teeth are mainly formed. In the region of the edges of the enamel organ, the cells of the internal and external enamel epithelium persist, intensively multiply and turn into the so-called Epithelial root vagina of Gerwig, which plays an important role in the formation of the tooth root ( Epithelial vaginal cells deeply grow into the adjacent mesenchyme, separating the area from which subsequently Thus, the enamel organ, which is mainly responsible for the formation of enamel, plays an important role in determining the external shape of the crown and roots of tooth

Mesenchymal cells of the dental papilla, which are attached to the Gertwig vagina from the inside, turn into dentinoblasts involved in the formation of root dentin. After the occurrence of dentin, the layer of Gertwig's vaginal epithelial cells loses its continuity and breaks up into individual epithelial islets connected by septa. Most of the islets dissolve and disappear, some remain and the so-called Malasse islets (epithelial pearls) are formed - epithelial remains on the root surface in the periodontium. They can be a source of cyst development.

Sophisticated th root development occurs in multi-rooted teeth. First, a single wide root canal forms, which in the process of development is divided into two or three arms, depending on the type of tooth.

The root dentin differs in chemical composition from coronal dentin, it is less mineralized, collagen fibrils do not have a clear orientation, and its formation rate is somewhat lower.

When the root is formed, the edge of the epithelial root vagina growing can meet a blood vessel or nerve in its path. In this case, it grows around the edges of these structures and in this area of the root there will be a dentin defect - an additional (lateral) canal of the tooth root, uniting the pulp from the periodontum. Such channels can become ways of spreading the infection.

**Cement development** . After the collapse of Gertwig's vagina, the mesenchymal cells of the tooth sac collide with the root dentin. At the same time, they turn into cementoblasts (cells similar to osteoblasts), which begin to deposit cement on the surface of the tooth root. The formation of cement occurs in the postembryonic period immediately before teething by the type of periosteal osteogenesis. Cement in its structure is similar to coarse fiber. Cementoblasts in their structure do not differ from osteoblasts. They form collagen fibers and the main substance, is mineralized with the formation of

hydroxyapatite crystals. With the development of intercellular substance, cementoblasts turn into cementocytes.

First, cement is formed that does not contain cells (cell-free, or primary), it is slowly deposited as the teeth erupt, covering 2/3 of the root surface located closer to the crown.

After teething, cement is formed containing cells (cellular, or secondary). Cellular cement is located in the apical third of the root. It is formed faster than cell-free, but inferior to it in degree of mineralization. The formation of secondary cement is a continuous process, as a result of which its layer thickens with age.

The development of periodontal and bone alveoli. Periodontium is formed from the mesenchyme of the tooth sac in parallel with the formation of the root. After cement is formed from the mesenchymal cells of the inner layer of the tooth sac, the remaining cells of its outer layer differentiate into fibroblasts and give rise to the formation of dense periodontal connective tissue. Bundles of periodontal collagen fibers at one end are embedded in the main substance of cement, with the other - transferred to the main substance of the alveolar bone. Due to this, the root is tightly attached to the wall of the bone alveoli.

The thickness of the periodontal fiber bundles grows only after the eruption of the tooth and the beginning of its functioning. Throughout life there is a constant restructuring of the periodontium according to the conditions of the load, changing.

The formation of the root and periodontium in temporary teeth lasts from 1.5-2 years (incisors) to 2-2.5 years (fangs, large molars) after eruption.

The next stage in the development of temporary teeth is the stabilization period.

The stabilization period is the period of the development of a functionally full-fledged temporary bite. It is characterized by the fact that all tissues of the tooth and its roots are fully formed and are in a stable state. This period lasts an average of 2.5-3 years. At the same time, functional stimuli significantly affect the processes of growth and formation of the child's masticatory apparatus; therefore, it is advisable to give masticatory loads during this period to ensure the full development of masticatory and facial muscles, jaws, and periodontal tissues.

Starting from 5-6 years, a temporary bite is replaced by a permanent one. This is preceded by the growth of the rudiments of permanent teeth and the physiological resorption of the roots of temporary teeth.

Due to the vertical advancement of the permanent tooth in the jaw, he begins to put pressure on the bone plate that separates it from the cell of the temporary tooth. In the connective tissue located in this place, osteoclasts are differentiated, which actively absorb bone tissue.

In the process of further growth, a permanent tooth presses on the root of the temporary tooth. In the connective tissue around the root, osteoclasts (more precisely, odontoclasts) also differentiate, which begin to resorb the root of the temporary tooth. These giant multinucleated cells most likely result from the fusion of mononuclear cells of the macrophage line. They are located on the surface of the tooth root, in gaps, are significant, the cytoplasm contains numerous mitochondria and lysosomes. The initial stage of destruction of tooth root tissues (cement and dentin) of odontoclastam consists in

their demineralization, then extracellular destruction and intracellular digestion of the decay products of their organic matrix occurs. During resorption of dentin, the process of its destruction is accelerated due to the fact that the processes of odontoblasts penetrate deeply into the dentinal tubules.

### **Anatomical features of primary teeth.**

The following features are important in the clinic .

- In a milk bite there are 20 teeth; premolars are absent.
- The teeth of the first teething are white, reminiscent of skim milk.
- The shape of the crowns of primary teeth in general terms is similar to that of permanent teeth, but they are much smaller, the layer of hard tissue is thinner, the tooth cavity is wider.
- Root canals and apical openings are wide during the period of formation and resorption.
- The border of the transition of the crown to the root is expressed sharply.
- A more reliable sign of differentiation is the protruding enamel thickening (*enamel cushion*) in the neck and lesser hardness of milk teeth. In addition to common features, there are individual characteristics.

### ***Incisors.***

In deciduous teeth, incisors are more convex than in permanent teeth. There are no furrows on the palatine surface. Signs of a corner are clearly expressed. The distal angle of the lateral incisor of the upper jaw is more rounded than that of the central incisor. The enamel roller on the lateral incisor in the neck is less pronounced than in the central one. The roots of the central incisors of the upper jaw are widened, and their tops are often curved in the labial side. The crowns of the central incisors of the lower jaw are smaller. Their roots are flat, with grooves on the medial and lateral sides.

***Fangs.*** The crown of the milk canine of the upper jaw, as a rule, is shorter than the constant and has convex surfaces. The presence of a sharp tooth and on the palatal surface of pronounced tubercles is characteristic. The crown of the canine of the lower jaw is already the canine of the upper. The tooth remains on it for a longer time. The root of the canine is round in shape with a slightly curved apex.

***The first molars .*** The crown of the first molar of the upper jaw is elongated in the medial-distal direction, on the masticatory surface there are two tubercles with a pronounced buccal-medial tuber. The palatal surface of the crown is more convex. Two furrows are located on the buccal surface of the tooth, giving the impression of a ribbed surface. The first milk molar of the upper jaw has three widely diverging roots. Their tops are as if cut off, the apical openings are wide. The crown of the first milk molar of the lower jaw is elongated in the anteroposterior direction. Four tubercles on the chewing surface are better expressed than other teeth. The enamel cushion in the neck is well developed. The buccal surface is divided into two parts: medial - wide and distal - narrow. The first milk molar of the lower jaw has two strongly diverging roots. The medial root is longer and wider than the distal.

***The second molars.*** The second milk molars of the upper jaw are characterized by the oblique shape of the crown and a pronounced enamel fold located between the anterolingual and posterior cheek tubercles, as well as the fusion of the posterior root with the palatine and the absence of a root sign. In the first milk molar of the upper jaw, this symptom is well defined. The second milk molars of the lower jaw are similar in shape and structure to the first permanent molars of the same jaw. Five tubercles are found on the chewing surface of the crown: 3 of them are located on the buccal edge,

and 2 - on the lingual. The most pronounced tubercle is the anterior cheek. The roots of these teeth in shape do not differ from the permanent ones, they only diverge to the sides.

**Resorption of the roots of milk teeth** . After 5 years, a change of milk bite to a permanent one begins. This is preceded by the growth of the rudiments of permanent teeth and the physiological resorption of the roots of milk teeth, which look shortened, corroded. Resorption of the roots of milk teeth begins with the root to which the rudiment of a permanent tooth is adjacent. The rudiments of the permanent teeth of the anterior group are located near the lingual surface of the root of the deciduous teeth, and the rudiment of the canine is much further from the alveolar edge of the jaw than the incisors. The rudiments of premolar are located between the roots of milk molars: on the lower jaw closer to the posterior root, and on the upper - closer to the posterior root, therefore, in single-rooted milk teeth, resorption begins on the lingual surface of the root, and then covers the root from all sides. In milk molars, resorption begins from the inner surface of the roots, i.e. from the surface facing the inter-root septum, where the rudiment of a permanent tooth is located. When the roots are resorbed, the pulp of the milk teeth is replaced by granulation tissue, which takes part in the resorption process. With a significant replacement of the pulp with granulation tissue, resorption is additional from the center. It ends at the time of eruption of a permanent tooth.

**Normally, the processes of eruption and resorption are completely balanced** , but sometimes this physiological process is accompanied by deviations. There is an acceleration or deceleration of the resorption process. Acceleration of resorption is most often observed in milk teeth with dead pulp, after a chronic injury, in the presence of a tumor, as a result of pressure exerted by neighboring teeth. Slow resorption is detected in the absence of the rudiments of permanent teeth.

Resorption of the roots of primary teeth must be considered in the treatment of pulpitis, periodontitis, tooth extraction and orthodontic interventions. Dental treatment with resorbed roots has its own specificity and differs from the method of processing and filling formed milk teeth.

***The resorption of the roots of the temporary teeth*** begins with that portion of the root to which the rudiment of the permanent tooth is located closer. Therefore, you need to know the location of the rudiments of permanent teeth at the roots of the corresponding temporary teeth. The rudiments of the permanent anterior teeth are located at the lingual surface of the roots of the temporary teeth, the fangs being much farther than the alveolar edge of the jaw than the incisors. The rudiments of small molars are located between the roots of the temporary large molars, on the lower jaw - closer to the posterior root, on the upper - in the distal buccal and further from the palatine root.

In single-root temporary teeth, the resorption site first appears on the lingual surface of the root, and then covers the root from all sides and extends in the direction from the root apex to the tooth crown. The lingual surface dissolves more than the labial surface, so the oblique line appears on the x-ray in this place.

In temporary large molars, the resorption process begins from the inner surface of the roots, that is, from the fact that it faces the inter-root gap, where the rudiment of a permanent tooth is located. Sometimes the resorption of the root surface facing the primordium is so pronounced that resorption reaches the root canal. The root of the tooth is thinned, but has a normal length. The distal root surface is absorbed later.

If the rudiment of a permanent tooth is absent, then the resorption of the root of the corresponding temporary tooth does not always or not the entire length and with less intensity. Such temporary teeth can be in the jaw for a long time.

The pulp of a temporary tooth during its resorption is actively involved in the processes of tooth decay. Osteoclast-like cells that differentiate the resorption of predentin and dentin from the tooth pulp are differentiated in it. The process begins at the root, and then covers the coronal pulp. Temporary large molars with affected pulp change earlier, the same teeth with healthy pulp.

Processes temporary tooth root resorption lead to a loss of its connection with the wall of the alveolus and ejecting it into the oral cavity of the crown. Removal of the crown most often occurs under the action of chewing forces. In this case, slight bleeding from damaged small vessels may occur. The granulation tissue formed at the location of the crown is rapidly epithelized.

The loss of milk teeth occurs, as a rule, symmetrically on the right and left halves of the jaw in girls, this process occurs faster than in boys. On the lower jaw, all teeth, with the exception of the second temporary molars, fall out faster. The process of tooth loss - the genetic is predetermined.

The resorption of the roots of temporary teeth is uneven and is determined by their ratio with the rudiment of permanent teeth. According to Vinogradova T.F., 1985, in the absence of dentoalveolar anomalies in children, there are three types of resorption of the roots of temporary teeth (physiological resorption).

First type	uniform resorption of all roots, which begins in the region of the apices, spreads vertically, reducing the root in length.
Second type	along with partial resorption of the roots and bifurcation sites, the resorption of one root, which faces the rudiment of a permanent tooth, predominates.
Third type	resorption of the bifurcation site predominates. In this case, the morphological usefulness of the apical part may be preserved.

Resorption of single-rooted teeth is most often carried out according to the first type, multi-rooted ones - according to the second and third types. In the later stages, tooth pulp is involved in physiological resorption, which carries out the resorption of dentin from the side of the tooth cavity. In this case, the source of osteoclasts is pulp cells. Along with the physiological, under the influence of a number of reasons (chronic inflammation, idiopathic resorption, the presence of neoplasms), pathological root resorption may develop.

### **Permanent teeth development**

In the process of development and formation of permanent teeth, four periods are distinguished: 1st - of the maxillary development, 2nd - teething, 3rd - the formation and growth of roots and periodontium, 4th - stabilization.

***The period of maxillary development*** . The source of the formation of I permanent teeth is itself tooth plate, from which developed the rudiments of permanent teeth. Starting from the 5th month of embryogenesis, enamel organs of permanent teeth are formed along the lower edge of the tooth plate behind each primordium of the temporary tooth. These teeth are called interchangeable because they replace the corresponding temporary teeth. It must be remembered that children do not have premolars, so milk molars are subsequently replaced by permanent premolars. As during the development of primary teeth, mesenchyme grows into the enamel organs of the permanent teeth and a papilla forms. A tooth pouch appears around it. Before other teeth, incisors and fangs are laid. In total there are 20 rudiments of replaceable permanent teeth. First, the beginnings of these teeth lie in the bone alveoli common with the rudiments of milk teeth. But subsequently, a bone septum grows between them. Thus, separate cells are formed for the milk and permanent tooth.

At the same time, the tooth plate continues to grow posteriorly in both jaws. Enamel organs of molars are formed along its edge. They have no predecessors among milk teeth, therefore they are also called additional enamel organs.

At the 24-25th week of pregnancy, the embryo of the first permanent molar tooth begins to form. A little later, at the 8th month of intrauterine development, the buds of the permanent incisors and canines are laid. Thus, 16 permanent teeth are laid in the embryonic period.

The processes of liming hard tissues of permanent teeth begin mainly after the birth of a child. The 6th tooth, or the first large molar, is mineralized first. At the 9th month of fetal development, the medial-buccal tubercle of this tooth is calcified. At the 2nd month of a child's life, all tubercles of the chewing surface are mineralized, at the 9th month - the entire chewing surface, at 3 years of age - the crown of the tooth, at 4 years of liming of the bifurcation of the roots and their formation begins, ends at 10 years.

The mineralization of the permanent central incisors of the upper and lower jaws begins at the 3-4th month of the child's life. By 9 months, 1/3 of the crowns calcify, up to 2 years - half of the crowns. Up to 3 years, the crowns of the incisors are formed by 3/4, and at 4 years of age there are signs of the formation of the necks of the teeth, and then the roots. The formation of roots ends in 9-10 years.

Liming of the permanent lateral incisors of the lower jaw begins at the 3-4th month of life, and the upper jaw - at the 9-12th month. At 2 years, the size of the lateral incisors on the upper and lower jaws becomes the same and is 7 mm. At the age of 4, the mineralization of the crown of the teeth ends and there are signs of neck formation, at the end of the 5th year of life, the formation of the roots of the teeth begins, which ends in 10-11 years.

Liming of permanent fangs begins at the 4-5th month of life. At 9 months, they have a mineralized crown tip. With age, the development of fangs slows down. At 1.5 years, the crown height is 4.5 mm, at 2 years - 7 mm, at 3 years there are 2/3 crowns formed, at 6 years of neck of the teeth are formed, at the 8th year, the formation of roots begins, which ends at 13 -15 years.

In the first small molars, the foci of mineralization occur in 1.5-2 years, in 4 years of mineralized 1/2 crowns, in 6 years 3/4 crowns are formed, at 7 years old root growth begins, and at 12-13 years this process ends .

The rudiment of the second small molar tooth occurs in 2 years, in 2.5 years there are two foci of mineralization, in 5 years 1/4 crowns are formed, in 6 years - 1/2, in 7 years - the entire crown, in 9 years liming of the root begins tooth, and at the age of 12-14, root formation is completed. The embryo of the second permanent molar occurs in 2.5 years, at 3 years the tubercles are snapped, and at 4 years of age the entire chewing surface, at 6 years of age a half of the crown, at 8 years of age the entire crown, at 9 years of age a bifurcation forms and begins to grow root, the formation of which ends in 15-16 years.

The embryo of the third permanent molar tooth is formed at 5 years old, at 8 years old liming of its masticatory surface begins, at 12 years old the mandibular crown formation ends.

The timing of mineralization of all permanent teeth may vary somewhat. Thus, the development of permanent and temporary teeth occurs of the same type, but at different times. During the period when the last stages of development take place in temporary teeth, there are rudiments of the permanent teeth in the jaws that are at the earlier stages. In the period from 3 to 6-7 years, from 48 to 52 teeth can be found in both jaws.

The development of permanent teeth is generally slower than temporary. So, for example, the period of formation of temporary incisors is 2 years, and permanent - close to years.

#### **Anatomical structure of permanent teeth**

A person erupts 32 permanent teeth: 4 incisors, 2 canines, 4 premolar, 6 molars (16 teeth in total) on each jaw. For many people, the third molar (wisdom teeth) does not erupt due to the absence of primordia, and then they have 28 teeth. The absence of wisdom teeth, and sometimes of lateral incisors and the second premolar, is a sign of reduction of the dento- maxillary system, which is predetermined by a change in the nutritional nature of modern man.

#### **Upper jaw Central incisor.**

The tooth has a chisel-shaped crown and one well-developed conical root. The vestibular surface of the crown is somewhat convex. On to bend about the first language of the crown surface has a small hill, from which extend lateral sides that reach the cutting edge. The cutting edge is slightly slanted in the distal direction and has an acute medial angle. The root is straight, slightly flattened in the medial distal direction and deflected distally from the vertical axis of the tooth. On the cross section, it has an oval shape. In general, the tooth cavity behind the shape repeats the appearance of the crown and root.

#### **Side cutter.**

The shape of the crown is also chisel-shaped. The medial angle of the crown is pointed, sometimes mound-like. The vestibular surface of the crown is convex. The lingual surface is concave and limited by the edges of the crown. The lateral ridges of the lingual surface often converge in the parietal region, forming a triangle, on top of which there is a recess in the enamel - the blind fossa. The root is significantly flattened in the medial distal direction. On the lateral surfaces of the root, longitudinal grooves are determined. The upper third of the root is often deflected in the distal-palatal direction. The tooth cavity corresponds to the reduced shape of the crown and root.

**Fangs.** The canine has one massive cone-shaped straight root with a slight deviation of its apex in the distal direction. On a cross section, the tooth has a rounded or oval shape. The vestibular surface of the crown is convex. On the tongue surface there is a longitudinal roller that divides it into two

facets, of which the lateral has a large area. Longitudinal enamel rollers of both surfaces pass into a cutting hump.

The lateral edges of the crown form two angles with a cutting edge, the medial of them is dumber than the lateral. The tooth has well-defined all three signs - the angle, the curvature of the crown, the deviation of the root. The tooth cavity follows the contours of the crown and root.

**The first premolar.** It has a prismatic crown, buccal and lingual surfaces and convex. On the chewing surface there are two mounds - buccal and palatine, of which the first is much larger. Between the knolls in the medial distal direction there is a groove ( fissure ).

The root is flattened, on its wide lateral surfaces there are deep longitudinal grooves, which near the neck of the tooth begin to divide the root into two: buccal and palatine. Palatine root developed more.

The tooth cavity follows the shape of the crown. The buccal horn of the pulp is located closer to the chewing surface. There are two root canals. palatine and buccal

### **The second premolar.**

The crown has a prismatic shape. On the chewing surface there are two mounds, of which the buccal is more developed. The humps are separated by a transverse groove ( fissure ), which runs in the center of the chewing surface. The buccal surface of the crown is larger than the lingual. The medial part of the vestibular surface of the crown is less convex compared to the distal (the opposite sign of crown curvature).

The root is often single, conical, straight, flattened in the medial distal direction, with wide lateral surfaces on which there are shallow longitudinal grooves. Sometimes closer to the apex there is a bifurcation of the root into two apices.

The shape of the tooth cavity resembles the shape of a crown. The buccal horn of the pulp protrudes more than the palatine. There can be two root canals. buccal and palatine (in approximately 50% of cases) or one.

**The first molar.** The largest among the large molars of the upper jaw. The crown has the shape of a rectangle (Fig. 18). The diamond-shaped chewing surface has four mounds: two palatine and two more developed buccal. Of the buccal mounds, the medial-buccal is more developed than the distal-buccal. The humps are separated by an H-like fissure . Near the medial-palatine mound, a small arched groove separates a small additional mound that does not reach the chewing surface is tuberculum anomale Corabelli.

The shape of the tooth cavity resembles the shape of a crown. The buccal horns of the pulp, especially the medial buccal, protrude more. The first molar has three root Palatine root more massive, round and straight, the other two - buccal-medial, buccal-distal - shorter, flattened on the sides and deflected in the distal direction. The medial-buccal root is more developed than the distal-buccal. Sometimes it has two root canals (approximately in cases) 25%.

**The second molar.** The crown is in the shape of a cube. On the chewing surface there are four mounds, which is divided among themselves by an X-like fiss with a bang . Cheek mounds developed more than the sky. The buccal-medial mound is the largest. The number of mounds and the location of fis with ur can vary.

The tooth has three molars. The palatine root is massive, straight, well passage. Both buccal roots - medial and distal - are flattened, deflected in the distal direction. Medial roots can have several root canals and apical holes.

### **Lower jaw**

**Central incisor.** This is the smallest tooth of a permanent bite (Fig. 19). Chisel, narrow crown is relatively high, the surface vestibular something convex, language, on the other hand, in a roll-formed . On the cutting edge of the tooth crown that has just been cut, three small teeth are clearly visible. The medial and distal corners of the crown differ little from one another. On the vestibular surface of the teeth of the cutting edge, they pass into small longitudinal enamel ridges.

The root is relatively short, flattened in the medial distal direction, has an oval shape in the transverse section. Almost imperceptible signs of crown curvature and root deviation. In general, the cavity of the tooth corresponds to its external form. The apex of the root may be inclined to the median (medial) plane.

**The lateral incisor is** somewhat larger than the central one. The crown also has an oloform shape, flattened in the section of the cutting edge. On the vestibular surface of the crown of the tooth that has just been cut, there are small longitudinal ridges that end on the cutting edge with well-marked three teeth. The cutting edge has disagreements in the corners: the distal angle is blunt, somewhat rounded, protrudes towards the canine, the medial is more acute. The tooth has one straight root, flattened on the sides, with longitudinal grooves on the contact surfaces, on the cross section it has an oval shape. The apex of the root is deflected distally. The cavity of the tooth crown u elevid hydrochloric shape the root canal is narrow.

**Fang** Behind the structure, the tooth is similar to the corresponding tooth of the upper jaw, but slightly less. The crown partially retains the rhomboid shape, however, its vestibular surface is already convex. There is a central mound on the cutting edge. The medial part of the cutting edge is shorter than the distal, and therefore the medial angle is sharper and located further from the neck of the tooth. The root is somewhat flattened on the sides, in a cross section it has an oval shape. The apex of the root is deflected distally. The tooth cavity has a fusiform shape with the greatest thickening in the area of the neck of the tooth.

**The first premolar.** The crown of the first premolar on the transverse section has a rounded shape. The vestibular surface of the crown is longer than the lingual. The masticatory surface has two mounds: the buccal mound is larger, significantly inclined to the middle and lingual, which is less inclined. The humps of the masticatory surface are interconnected by a roller, on the sides of which there are small indentations (pits). As a result of different sizes of mounds, the masticatory surface is not skewed to the lingual side.

The apex of the root is deflected in the distal direction. The cavity of the tooth corresponds to its external contours. The cavity of the crown without clear boundaries passes into the root canal

**The second premolar.** The crown partially resembles the shape of a canine, but does not have such a rounded shape on a transverse cut. The second premolar is slightly larger than the first. The mounds of the chewing surface are equally developed. They are separated by an enamel roller, on the sides of which there are small recesses (pits).

The root, as a rule, is one, somewhat flattened, its lateral surfaces are smooth and shiny. The apex of the root is deflected distally.

**The first molar.** The crown has a cubic shape. On the chewing surface there are five mounds, three buccal and two, more developed, lingual. Of the buccal mounds, the distal is most prominent. The mounds of the masticatory surface are separated by a F-like fiss with a bang, the longitudinal part of which reaches the enamel ridges along the edge of the crown. The transverse fissure of this surface can pass to the vestibular surface and end on it with small indentations (blind fossae).

The distal root is shorter than the medial, more direct and has one root canal. The medial root is flattened, with deep longitudinal grooves on wide lateral surfaces, arched, curved, has two root canals, medial-buccal and medial-lingual.

**The second molar.** It is inferior in size to the first, but has a crown shape similar to it and the number of roots. Cubic, slightly extended in the medial distal direction, the crown has four mounds on the chewing surface - two buccal and two lingual, with the latter more developed. The longitudinal fissure with cheeks on the chewing surface located closer to the lingual edge. The transverse fissure with cheeks can go out onto the vestibular surface of the crown and end in it with a blind fossa.

The tooth has two molars — the medial and distal. The distal root is large, straight, rounded or oval on the transverse section. The medial root is flattened in the medial distal direction, there are small grooves on its lateral surfaces. The root apex is directed distally.

Root canals - medial-buccal and medial-lingual - are bent, poorly passage often anastomose among themselves, open with isolated holes on the top of the root ear.

The root canals in children and adolescents are much wider than in older people, in which the enlightenment of the canals gradually narrows, especially in the apical part, up to complete obstruction.

In the roots of permanent teeth, in addition to the main canal, there are additional ones - of various lengths, diameters and locations, which contain deltoid branches of the pulp (apical delta).

In the root canals of temporary teeth, additional branches of the root pulp are less pronounced, sometimes they are completely absent or they disappear with the beginning of the resorption of the root. Often anastomose together at vertices Huschke root isolated open holes.

The root canals in children and adolescents are much wider than in older people, in which the enlightenment of the canals gradually narrows, especially in the apical part, up to complete obstruction.

The replacement of temporary teeth with permanent teeth begins at the age of 5-6 years, after the eruption of the first permanent large molars, which do not have temporary predecessors. This period lasts up to 12 years and is called the period of a shift bite. Replacement of temporary teeth occurs in the same sequence as their teething.

The period of eruption of permanent teeth with the correct development of the child coincides with the time of loss of temporary teeth (table 3).

After eruption of permanent teeth, a period of formation and growth of roots and periodontium begins. It lasts about 3.5-5 years, depending on the group affiliation of the tooth.

In the process of root formation of both a permanent and a temporary tooth, 5 stages are distinguished on the radiograph: 1st — incomplete root growth in length, 2nd — unformed root apex; 3rd — the unclosed apex of the root; 4th — the forming periodontium; 5th — the formed root and periodontium.

At the stage of incomplete growth of tooth roots at different ages, it has a different length. On the radiograph, this stage is characterized by the presence of two parallel light strips, starting from the crown of the tooth, gradually narrowing and ending with two tips. This structure of the root leads to the course of the root canal, which during this period gradually expands in the direction of the root apex, forms, and on the roentgenogram has the appearance of a funnel. In the lower part of the canal merges with the rounded section, has clear contours. This site is called a growth zone and in appearance resembles a granuloma. With the formation of the root, it decreases and disappears in the stage of the open apex, and instead of it a noticeably widened periodontal gap is noticeable. As soon as the root reaches its normal length, the formation of its apex begins.

### **Average teething time for permanent teeth**

(according to Borovsky, E.V. et al., 1989 and Carlson BM, 1994).

Tooth name	Duration of teething, years	Deadlines for the formation of roots, years
Central incisors	7-8	10-11
Side incisors	8-9	11-12
Fangs	12-13	fifteen
First premolars	9-11	12-13
Second premolars	11-12	13-14
First molars	6-7	10
Second molars	12-13	fifteen

In the stage of the unclosed apex of the root of the wall, its structure should be the same as in the stage of the unformed apex. However, its walls are thicker and in the region of the apex of the root are not completely closed. Therefore, the projection of the apical aperture, which is not present in the formed root, is clearly manifested on the radiograph. The root canal is wide, but with a smaller diameter near the apex of the root, and not at the neck of the tooth. The periodontal gap also becomes visible in the region of the apex of the root, where it is wider than in other parts of the root.

A wider periodontal gap remains for some time after the apex of the tooth root completes all development. This stage of root formation is called the stage of the reformed perudont. According to the literature, an extended periodontal gap appears in the area of 111 teeth aged 7 to 11 years, 62 | 26 - from 8 to 1 iroko, in 3 | 3 teeth - from 11 to 16 years old, in 54 | 45 teeth - from 13 to 17 years.

In the stage of the formed root and periodontium (stabilization), the periodontal gap has a uniform thickness along the entire length of the root - from the neck of the tooth to its apex. The apical hole in the radiograph is not detected. Changes in the width of the periodontal gap in the direction of its decrease or increase in the stabilization stage indicate the presence of a pathological process in the periodontium.

### **Root canal resorption**

ANATOMICAL DIFFERENCES OF TEMPORARY AND PERMANENT TEETH

1. The teeth in the temporary bite 20 in the permanent - 32.
2. In the permanent bite there are incisors, fangs, premolars and molars, in the temporary bite there are incisors, fangs, molars, but there are no premolars.
3. Milk teeth have a bluish-white hue, and permanent yellowish.
4. The size of the crown and root of a milk tooth is always less than that of a constant tooth.
5. The width of the crowns of milk teeth is more pronounced compared to their height.
6. The shape of the crown of temporary teeth is more convex than the permanent, which is why the crown of a milk tooth sharply dissociates from the root.
7. In the area of the neck of the milk tooth is a thickening of the enamel - an enamel roller. Due to this, the crown of the primary tooth has the largest diameter in the neck region, and the constant in the equator region.
8. The thickness of the hard tissues of the milk tooth is less than constant.
9. Hard tissues of milk teeth are less mineralized as compared to permanent, therefore less rigid.
10. The cavity of primary teeth is an extensive cavity of the tooth of permanent teeth.
11. Root canals and apical openings of temporary teeth are wider and freely passable than permanent, especially during the formation of roots.
12. The roots of deciduous teeth are less rounded than permanent, short and straight.
13. Widely diverge to the sides, since the rudiment of a permanent tooth is located between them.

1. Anatomical - physiological features of the child's body. Periods of childhood.
2. The development of teeth.
3. Primary mineralization of hard tissues of teeth.
4. The mechanism of teething. Timing eruption time and continuous teeth.
5. Growth, development and formation of the tooth root and periodontal tissues.
6. Secondary mineralization of hard tissues of teeth. Anatomical and physiological features child's body

The development of tissues and the improvement of the functions of individual organs and the whole of organism as a whole are processes that fundamentally distinguish a child's body from an adult.

According to the nature and intensity of changes occurring in the body, it is customary to distinguish the following periods of child development:

- 1) intrauterine (antenatal) development - 280 days (10 lunar months);
- 2) newborns - about 3-3.5 weeks;
- 3) thoracic - up to 1 year;
- 4) nursery - from 1 to 3 years;
- 5) preschool - from 3 to 6 years;
- 6) school - from 6 to 17 years, in this period there are:
  - Junior school - from 6 to 12 years old;
  - Senior school - from 12 to 17 years.

Intrauterine developmental period. Maxillofacial development areas of

The period of fetal development is the most important, responsible and most vulnerable phase of fetal development.

All anomalies, in general, are characterized by deviations from the normal development of the face, jaw and teeth during embryogenesis, begin mainly in the early stages and are of an initial nature.

Violation of the structure, shape and size that arise with the further growth and development of the dentofacial system are derivative, secondary in nature.

#### Tooth development

Teeth development lasts for two main periods - the maxillary (before teething) and the vinutritotic (after teething). The main stages of the development of human teeth are distinguished, which smoothly pass into each other and cannot be clearly delimited:

1) the laying of the tooth plate with the subsequent formation of dental primordia occurs during the period of intrauterine development. The formation of dental primordia can occur both in the antenatal and postnatal periods of human development. always maxillary.

2) tissue differentiation;

3) histogenesis;

4) primary (maxillary) mineralization.

5) teething;

6) the growth, development and formation of roots and periodontal tissues, with which the processes of secondary mineralization of hard tooth tissues are simultaneously activated. 7) stabilization (functioning). The duration of this period for each group of both temporary and permanent teeth is individual.

8) resorption (resorption) of the roots.

#### Bookmark and formation of the tooth germ

On Nab-7th week of intrauterine development along the upper and lower edges of the primary oral cavity (in the area of future dental arches of the upper and lower jaws), a thickening of the stratified squamous epithelium occurs, which grows into the underlying mesenchyme, creating a dental plate.

The tooth plate grows in depth, takes a vertical position and is divided into vestibular and lingual. The epithelium of the parietal part of the tooth plate first actively grows, thickens, later part of its cells degenerates, forming a gap - the vestibule of the oral cavity that separates the lips and cheeks from the gingival arch. The epithelium of the lingual part of the tooth plate, plunging into the mesenchyme, gives rise to all temporary and permanent teeth .

First, the epithelium proliferates in the form of buds, which transform into bulbous growths, which later take the form of caps, forming an enamel organ. In the enamel organ of the tooth germ, formed by two thickened layers of the multilayer epithelium, protein fluid is produced between the cells in the central part of the enamel organ and gradually delimits these layers into external and internal, between which an enamel organ pulp is formed.

As a result of differentiation, the cells of the enamel organ, which at first were identical in morphology, acquire a different shape, function, and purpose. The epithelium adjacent to the mesenchyme of the dental papilla is high cells of a cylindrical or prismatic shape, in the cytoplasm of which an increased content of glycogen accumulates. Subsequently, enameloblasts (ameloblasts, adamantoblasts) -cells are formed from these cells, producing an organic matrix of tooth enamel.

So the enamel organ gives rise to tooth enamel and cuticle, which is directly involved in the formation of tooth-gingival attachment. The function of the enamel organ is also that it gives the crown of the tooth a certain shape and induces the processes of dentinogenesis.

At the same time, under the concave part of the enamel organ, under the inner layer of its epithelium, mesenchymal cells that make up the dental papilla are intensively aggregated. It gives rise to the formation of dentin and tooth pulp. The mesenchyme surrounding each enamel organ and tooth papilla is compacted and forms a tooth sac, from which cement and periodont are formed.

Thus, as a result of the transformation of epithelial and mesenchymal tissue, which occurs most intensively during the laying, differentiation, and histogenesis periods, a tooth germ is formed.

The formation of the rudiments of all temporary teeth occurs in the antenatal period of development, starting from 6-7 weeks of embryogenesis. The formation of the rudiments of permanent teeth occurs

in the following sequence: the dental rudiments of the first permanent molars and central incisors begin to form at 5 and 8 months respectively of the intrauterine period of development. In the first six months of a child's life, the development of the dental rudiments of permanent lateral incisors occurs. In the second half of the 1st year of life and in the first half of the 2nd year of the child's life, the development of the tooth primordia occurs in the first premolars. At the end of 2 years of a child's life, the first rudiments of the second premolars are formed, in the 3rd year and second permanent molars and canines. The formation of the tooth rudiments of the third permanent molars (teeth of the "Wisdom") occurs before the age of 5 years. By this period of the child's development, the remains of embryonic tissues - epithelial and mesenchymal, which are capable of differentiation and initiate histogenesis, still remain in the bone tissue of the jaws.

Primary mineralization of hard tissues of teeth

The synthesis of the organic matrix of tooth hard tissues initiates their primary mineralization. The timing of the onset of primary mineralization of temporary teeth is reflected.

The primary mineralization of the hard tissues of the tooth occurs in the maxillary period of its development very intensively. It always starts from the cutting edge of the incisors and fangs, as well as from the tubercles of the chewing teeth and continues to the entire length of the tooth crown. Dentin located under the enamel is first structured by organic substances, later acquiring signs of mineralization. The period of primary mineralization of hard tissues of teeth lasts for different times. Primary mineralization is more active in temporary teeth, namely, in the central and lateral incisors of both jaws (6-8 months).

The young tooth enamel, which has not yet erupted, is similar in chemical composition to mature enamel. 65% of it consists of water, the content of organic substances is 20%, mineral substances - less than 15% (the so-called soft enamel). The quality of the processes of primary and secondary mineralization of hard tissues of the tooth forms in the future its caries resistance. After the intra-maxillary mineralization of the crown part of the tooth germ, it erupts.

### **Teething mechanisms. Teething time**

Teething is a complex physiological process, the mechanism of which is not well understood. The effect on the teething processes of the endocrine and nervous systems, diseases, metabolic disorders, diseases of the musculoskeletal system, hypovitaminosis, vitamin B hypovitaminosis, dyspepsia, infectious diseases, intoxications, hereditary factor

The correctness of teething is a criterion for the general condition. The signs of physiological teething are their teething at a certain time, in a certain sequence, in pairs, symmetrically. Teething ends with the intraochelial (follicular) period of its development.

During teething, certain changes occur in the tissues surrounding the tooth. The gum roller becomes edematous and soft; small elevations appear on it - dental tubercles covered with mucous membrane. The connective tissue of the gums, which lies in the path of movement of the tooth, which erupts, gradually shrinks and atrophies. The enamel epithelium covering the tooth crown has been reduced, it is in contact with the gum epithelium, breaking through it above the crown apex, and it cuts into the oral cavity.

During eruption in the area of the neck of the tooth along the edge of the gums, the epithelium of the oral and cavity fuses with the cuticle of the enamel, forming an epithelial attachment in the form of a slit-like deepening of the physiological gingival groove. The normal state of both the gums and the periodontium depends on the density of the gingival junction (A. I. Deltsova and Pel., 2002), see After eruption, the tooth crown is covered with a cuticle. The enamelled epithelium has been reduced, covering areas of the crown that have not yet erupted. The cuticle is the remainder of the outer layer of the epithelium of the enamel organ, a thin structureless film that is connected to the membrane of the enamel prisms. The tooth cuticle is quickly erased, remaining for a certain time only on the contact surfaces of the tooth crowns.

Clinically, the process of teething is accompanied by unpleasant sensations in the child, as a result of which she becomes restless, pulls everything in her mouth, and has increased salivation. Locally, all signs of an inflammatory reaction are manifested. Perhaps an increase in body temperature of the child, dyspeptic disorders. During teething, it practically does not come into contact with the connective tissue of its own plate of the mucous membrane, does not destroy its structure, in particular, blood vessels. That is why the process of teething is not accompanied by bleeding.

At the present stage, scientists believe that when teething occurs, a combination of several mechanisms occurs under the influence of the neurohumoral system — root growth, hole formation, construction of the microcirculatory bed of the pulp, formation of the ligamentous apparatus of the periodontium, the influence of growth hormone.

### **Growth, development and formation of the root (a) of the tooth and periodontal tissues**

Before the teething begins, the jaw completes the development of the tooth crown and the formation of its root begins. This physiological process also occurs actively during teething, and most actively after teething.

In the process of tooth root formation, cement develops. The formation of cement begins in the postembryonic period immediately before teething and occurs as periosteal osteogenesis. Cement in its structure is similar to coarse fiber. Cemenoblasts, by their structure, practically do not differ from osteoblasts. They form collagen fibers and the main substance, is mineralized with the formation of hydroxyapatite crystals. After the development of the substance by the cells, the cementoblasts turn into cementocytes, whose bodies are localized in the gaps, and the processes in the tubules.

**The pulp of the tooth** develops from the mesenchyme of the dental papilla. This process begins at its apex, where dentinoblasts first appear. At the same time, the differentiation of mesenchymal cells in the central part of the dental papilla begins. They increase in size, move away from each other. Gradually, the mesenchyme of the central departments turns into loose connective tissue rich in fibroblasts, macrophages (histiocytes) and other pulpocytes. With the development of the tooth germ, the process of differentiation of the mesenchyme of the dental papilla and its transformation into loose connective tissue and expands from its apex to the base. Together, this connective tissue sprouts through blood vessels and nerves.

**Periodontal formation** occurs from the mesenchyme of the tooth sac simultaneously with the formation of the tooth root. After cement is formed from the mesenchymal cells of the inner layer of the tooth sac, the remaining cells contained in the outer layer give rise to dense periodontal connective tissue. Bundles of periodontal collagen fibers (pericement) are embedded into the main cement material at one end, others go to the main substance of the alveolar bone. Due to this, the roots are tightly attached to the wall of the bone hole.

Growth, development, formation of the tooth root and periodontal tissues after eruption averages 1.5-2 years for temporary teeth and 3-5 years for blue teeth.

Growth, development and root formation has three stages:

- 1) incomplete root growth - "bell";
- 2) unformed root apex;
- 3) the uncovered root apex.

At the first stage of incomplete root growth - the "bell", the length of the root corresponds to the length of the crown, which is approximately 1/2 of its future length. The walls of the root are thin and widened from the inside of the inner side (from the pulp side), in the direction from the anatomical neck of the tooth to the apex of the root of the shoots. The zone is massive and clearly limited by the cortical plate of the socket.

For the second step-unformed root apex characteristic that root thin wall arranged parallel to each other, a root canal, extends to the top and passes into the sprout zone which radiographically represented bone loss with clear limitation on the periphery of the cortical plate alveoli.

In the third stage, the unclosed apex of the root of the canal wall is formed, the canal narrows at the apical foramen, the apical foramen has a wide sprout zone near the apex, and the periodontal fissure is slightly widened at the site of the sprout.

### **Secondary mineralization of hard tissues of teeth**

After the eruption of the tooth, along with the intra-maxillary development, the stage of its intraoral maturation, the secondary mineralization, is swallowed. Oral fluid (saliva) also becomes a source of all the necessary organic and mineral components to the tissues of the teeth and jaws, except for the bloodstream.

### **Teeth functioning period**

The stabilization period is the period of development of a functionally full-fledged temporary or permanent bite. During this period, especially with the development of a temporary bite, there is a need for sufficient chewing load, as this stimulates the development and growth of the jaws (and in them the rudiments of permanent teeth), the development and formation of chewing and facial muscles, the development of periodontal tissues

In the temporary bite, the stabilization period is conditionally divided into:

- the period of formation (from 2 to 4 years);

II-period of preparation for a physiological change of teeth (from 4 to 6 years). In the period of preparation for the physiological change of teeth, the occurrence of diastems and three between the temporary teeth, the physiological abrasion of the chewing tubercles of the cutting edges, and the formation of Tselinsky sites in retro-molar spaces are characteristic.

Normally, depending on the group of teeth of the temporary bite and the timing of the physiological replacement of teeth, the stabilization period can be from 2-4 years for incisors, up to 6-8 years for canines and second milk molars.

### **Resorption of the roots of temporary teeth . The main types of resorption**

For temporary (milk) teeth, another, the next stage of development is characteristic - resorption (resorption) of the roots. This period of development plays an important role in the physiological change of bite. At this stage of ontogenesis, a large number of osgeoclast cells appear in the bone structures of the alveolar ridge, which are transformed from osteoblasts and osteocysts.

In the absence of dentofacial anomalies, according to T.F. Vinogradova (1967), there are three main types of physiological resorption of the roots of temporary molars of the upper and lower jaws (Fig. 9).

I-uniform resorption of all roots. It begins in the region of the apices of the roots, spreads vertically, reducing the length of the roots. Moreover, the phenomena of resorption in the bifurcation region are minimal.

II-asymmetric resorption of roots. With this type of resorption, at the same time partial resorption occurs in the bifurcation region and the apex of one or two roots (in the tricorne tooth), which are located closer to the primordium of the permanent tooth

III-resorption in the area of bifurcation (trifurcation) of the roots. In this type of resorption, after complete resorption of the bone tissue, the function of the osteoclasts is taken over by the pulp cells of the temporary tooth, including odontoblasts.

## 2 - Practical lesson

Subject: **Ostom indices. examinations of organs and tissues of the oral cavity**

### 1.1. Technological model of the formation

Lesson time 3 hours	Number of students
Type of activity	Introduction of practice news
Plan	Provide a complete correct answer to questions about stom indexes. examinations of organs and tissues of the mouth
The objective of the training session	To study the development of milk and permanent teeth, the formation and timing of resorption of roots
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

### Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (10 minutes )	1. The purpose of the lesson 2. Preparation of slides for lecture material 3. Related literature <ul style="list-style-type: none"> <li>• N.V. Kuryakina - "Therapeutic dentistry children's age "N. Novgorod 2001</li> <li>• T.F. Vinogradova - "Dentistry for children" 1987               <ul style="list-style-type: none"> <li>• N.G.Pahomov- "Primary Prof. -k and dentistry"</li> <li>• EV Borovsky - " T er . Dentistry "1997</li> </ul> </li> <li>Yu.I.Vorobov-X-ray of the teeth and jaws - 1990 city of</li> <li>• K.Georgieva- "Emergency care in dentistry" 1983 g</li> </ul>	Record a subject and listen
2.Introduction topic (10 min)	1. Keeping the audience clean. 2. Checking students for practical classes. 3.Check student attendance	Are listening
3. The main stage (9 0 minutes )	1. The division of students into 2 small subgroups , asks questions on the topic ; 2. Use of slides and multimedia; 3. conducts therapeutic work; 4. Combines all the information on a given topic, actively participate ni their students encourages and assesses the general.	Divided into small groups , watching , participating , listening. Student expresses his opinion complements and asks questions

4. The final stage (10 minutes )	1. Conclusion . 2. Independent work . 3. Homework .	Listen to Record Conclusion
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### Questions on the topic

1. What indexes are used to evaluate the hygiene of the oral cavity?
2. What indicator of electrometric research corresponds to pulp of healthy teeth?
3. What is the ACE test for?
4. What method is used to study muscle function?
5. List laboratory examination methods.
6. Which index takes into account the state of oral hygiene without special staining?
7. What is the electroexcitation of temporary teeth during root resorption?

### Text

#### **Clinical examination methods**

#### **1. The purpose of the clinical examination. Survey methods basic and additional.**

The aim of a clinical examination of a child is to strive to correctly determine the diagnosis of the disease, which is the key to successful treatment of the patient and the prevention of the disease. Examination of the oral cavity is one of the links in examining a child.

The research methods used in dentistry can be divided into subjective methods - patient questioning (collection of medical and dental history), complaints and objective methods - external examination, palpation, percussion, auscultation, oral examination, thermal diagnostics, instrumental (physical and radiological) methods and laboratory examination methods , calculation of diagnostic models, photographing.

The survey begins with a survey of the child or with a survey of parents or relatives. Complaints can be associated with both the underlying and the concomitant illness.

The main complaint made by dental patients is complaints of pain in the maxillofacial region or in the area of the affected tooth.

Parameters are evaluated as:

- nature of pain (spontaneous, causal)
- localization (localized, spilled)
- duration (permanent, short-term)
- severity (acute, dull, aching, throbbing)
- irradiation of pain (with irradiation, without irradiation)

An important point in the study of a sick child is the correct and correctly completed history. Almost always, this allows the doctor to draw the right conclusions regarding the causes and nature of the disease, the severity of occurrence, the severity of the course and the period of its development.

#### **2. Clinical examination methods:**

#### **a) genealogical history; an anamnesis of life (development, nutrition, past illnesses, etc.); allergic history; disease analysis.**

Having ascertained the medical history, it is necessary to obtain information about the medical history. A history of life is collected over periods of childhood. Examination of dental status: Changes in tooth enamel (imperfect amelogenesis), dentin (imperfect dentinogenesis), enamel and dentin (Staton-Capdepon syndrome), size, shape, number of teeth, anomalies in jaw size (macro- and

micrognathia), as well as their position in skull (pro- and retrognathy), adentia, diastema, frenum attachment, small vestibule of the oral cavity, congenital nonunion of the upper lip, alveolar bone, hard and soft palate, dysostosis (congenital maldevelopment of the jaw bones).

An objective examination, as a rule, begins with an external examination, which includes (psycho-emotional state, physical development indicators, posture, gait, head position, speech formation, size of the mouth opening, breathing pattern (nasal, oral, mixed); the nature of swallowing, there are 2 types swallowing (somatic type: free swallowing, movement of the facial muscles is invisible, the tongue is located on the upper floor of the oral cavity and abuts against the hard palate behind the upper incisors, infantile type: facial muscles and neck muscles, for example ulcerous protrusions of the lips, an increase in the height of the lower third of the face, the tongue is located on the lower floor of the oral cavity and rests on the lips and cheeks), the state of chewing muscles is palpated and visual, normally palpation is painless, the muscles are relaxed at rest (palpation is carried out bimanually, symmetrically on both sides of the face), TMJ function.

Palpation is carried out symmetrically anterior to the tragus of the ear and along the front wall of the external auditory meatus. The nature and symmetry of the movements of the lower jaw are evaluated. Palpation should be painless, without clicks and crepitus. The amplitude of vertical movements is 40-50 mm, horizontally - 7 - 12 mm, the shape of the auricles, the skin condition along the line of fusion of the maxillary process with the mandibular (anterior to the tragus of the ear). When the fusion line changes in color, the presence of rudiments, one should look for other symptoms of violation of the formation of gill arches, the state of the lymphatic apparatus of the MHL diagnosis of lymphadenopathy is of great importance in the recognition of many infectious, immunological, tumor and other diseases of the oral organs. In this case, it is necessary to adhere to the following scheme: during the examination, it is necessary to establish the time of onset of soreness and / or enlargement of the lymph nodes, the dynamics of development; upon examination and palpation, the lymph nodes are examined in the following order: occipital, parotid, chin, submandibular, maxillary, superficial cervical, paratracheal.

**b) The study of dental status - the sequence of study of dental status; inspection; palpation; the study of functions (breathing, closing lips, opening the mouth, swallowing, speech articulation, etc.); percussion of teeth.**

Inspection of the oral cavity begins with a visual assessment of the color and topography of the oral mucosa, there is a violation of the integrity and the presence of damage elements. Inspection is carried out using 2 mirrors on the anatomical and topographic zones in natural light. WHO, (1997) recommends the following examination sequence:

- 1) Inspection of the oral mucosa:
  - Commissures, mucous membrane of the lips
  - Vestibule of the oral cavity
  - Cheek mucosa
  - The mucous membrane of the hard and soft palate
  - The back and sides of the tongue
  - The lower surface of the tongue and the bottom of the oral cavity
- 2) Oral hygiene and periodontal conditions.
- 3) Examination of teeth and dentitions.
- 4) Occlusion and orthodontic status.

Architectonics of the vestibule and the bottom of the oral cavity.

**The mucous membrane striae** are normally located in the area of premolars of permanent and molars of temporary teeth, are woven into the transitional fold.

The shape and depth of the vestibule (the distance from the gingival margin to the lowest point of the vestibule arch in a state of relaxation of the muscles of the chin and lips, normally 8-10 mm, 5 mm is a shallow vestibule.

The shape and attachment of the frenum of the lips and tongue (the frenulum normally has a triangular shape; the frenulum of the lips with a wide base is attached to the lip and ends along the midline of the alveolar process at a distance of 5 mm from the gingival margin). The “tension” test assesses the condition of the frenulum of the lips. Pulling the lip down and forward causes a displacement of the gingival margin from the surface of the teeth and “whitening” of the interdental spaces - a short bridle.

Normally, the gums are pale pink in color, dense, moderately moist, interdental papillae of spiky shape. Evaluate the consistency of the gums, determine the areas of pain, bleeding and discharge from pockets.

### **Dental examination:**

When evaluating the dentition, the relationship of the teeth, the presence of dental plaque, the degree of wear of the crowns, the presence of carious cavities and defects in teeth of non-carious lesions, and the quality of fillings are taken into account. Deformation of the dentition, close position of the teeth, the presence of three and diastemas, the identification of symptoms of traumatic occlusion.

To assess the condition of the bite, it is necessary to know the **periods of bite formation** :

#### **1. The period of the toothless jaws** - from birth to teething of the first tooth:

- the child has no teeth
- the presence in the jaw of 20 rudiments of temporary and 16 permanent (1,2,3,6 teeth) in each segment
- jaw ratio: sagittal gap 7-14 mm (infant retrogenia), vertical gap 1-2.5 mm

Adaptations to the act of sucking:

- flat sky
- unformed TMJ
- proboscis lips
- pronounced gingival cushions with a dense gingival membrane
- pronounced fat lump Bisha in the thickness of the cheek

#### **2. The period of temporary bite** - from 6 months to 6 years - from the first temporary to the eruption of the first permanent tooth

a) the period of the forming temporary bite (6 months-2.5-3 years):

- teething. Normal - timely, consistent, pairwise. With pathology, delayed, premature, inconsistent, unpaired.
- jaw ratio - the sagittal gap is eliminated. The vertical gap is eliminated due to teething. adaptations to the act of sucking disappear.
- nasal breathing, somatic swallowing.

b) the period of the formed temporary bite (2.5-3 years-6 years)

Dental arch in the form of a semicircle. 10 teeth on the upper and 10 teeth on the lower jaw.

- jaw ratio: the teeth of the upper jaw overlap the teeth of the lower jaw by 1/3 of the crown height (in the anterior section) In the anterior section - cutting-tubercular contact, in the lateral parts - fissure-tubercular contact. The palatine hillocks of the upper teeth are located in the fissures of the lower.

- there is a resorption of the roots of I and II teeth. Their physiological mobility, physiological abrasion of the incisors appears, tremas and diastemas appear in the anterior section

**3. The period of the replacement bite** is 6-12 years. From the eruption of the first permanent to the eruption of the last seventh tooth:

- teething of permanent teeth. Normal - timely, consistent pairing. The roots of permanent teeth are formed

- jaw ratio: the teeth of the upper jaw overlap the teeth of the lower 1/3 of the crown height in the anterior section. In the anterior part there is a cutting-tubercular contact, in the lateral parts there is a fissure-tubercular contact. The mesionic tubercle of the upper sixth tooth is located in the fissure of the lower sixth tooth

- there is a resorption of the roots of the canines and temporary molars, their mobility, physiological abrasion of III , IV , V teeth appears . The appearance of three between fangs and temporary molars.

**4. The period of formation of a permanent bite** (12-21 years). Ends with teething wisdom.

#### **Characteristic of orthognathic bite:**

- teeth of the upper jaw overlap the teeth of the lower jaw at 1/3 of the height of the crown in the anterior

- in the anterior section cutting-tubercular contact, in the lateral departments fissure-tubercular contact

- each tooth, except 41.31, and 17.27 or 18, 28 has 2 antagonists. As antagonists, the teeth of the upper jaw have the same and posterior teeth, and the teeth of the lower jaw have the same and anterior teeth

- the midline of the face coincides with the line between the central incisors of the upper and lower jaws

- lack of three and diastemas

- multiple contacts on the occlusal plane

- the teeth of the upper jaw are located along the arc of the semi-ellipse, and the teeth of the lower jaw along the parabola

**Bite** is the nature of closure of the dentition in the position of central occlusion. Bite can be physiological and pathological.

#### **Physiological forms of bite:**

1. Orthognathic bite

2. Straight bite. In the anterior section, the contact of the cutting edges of the incisors.

3. Orthognathic bite with deep incisal overlap. In the anterior section, the teeth of the upper jaw overlap the teeth of the lower jaw by more than 1/3 of the crown height while maintaining the cutting-tubercle contact

4. Physiological bipognathia. The vestibular inclination of the teeth of the upper and lower jaw.

5. Physiological opistognathia. Oral inclination of the teeth of the upper and lower jaw.

#### **Pathological forms of bite:**

1. Distal bite. It is characterized by a violation of the ratio of both anterior and posterior teeth, namely: the upper dentition is shifted forward with respect to the lower or the lower dentition is shifted back with respect to the upper.

2. Mesial bite. Violation of the closure of the dentition, namely: the upper dentition is displaced backward relative to the lower or lower dentition is displaced forward in relation to the upper.

3. Deep bite. The upper incisors overlap the same lower teeth without closing them.

4. Open bite. A group of teeth (in the anterior or lateral section) does not close, creating a vertical gap.

5. Cross bite. Distinguish:

a) **Vestibulo - occlusion** - displacement of the lower or upper dentition towards the cheek;

- b) **Palatine** occlusion - displacement of the upper dentition is palatine;
- c) **Linguoocclusion** - displacement of the lower dentition is lingual.

### **Dental examination.**

Examination of teeth and dentitions is carried out in a certain order, starting from the upper jaw, and each tooth is examined consecutively from tooth 1.8. to the tooth 2.8. on the upper jaw and from the tooth 3.8. to the tooth 4.8. on the bottom.

When examining each tooth, pay attention to the following:

- his position
- form
- color
- state of hard tissues (caries, fluorosis, hypoplasia)
- the presence of seals, tabs, their condition
- tooth stability
- position in relation to the occlusal surface of the dentition.

Determination of the periodontal condition is carried out using percussion:

**Percussion** - tapping on the cutting edge or chewing surface of the tooth with tweezers or a probe handle - to determine the condition of the periodontium. In the presence of an inflammatory process in the periodontium - pain. Percussion begins on the healthy side. Distinguish between vertical (strokes coincide with the axis of the tooth) and horizontal (strokes have a lateral direction) percussion.

**The mobility of the teeth** is determined with tweezers by rocking. There is physiological tooth mobility (it is natural, visually invisible and due to periodontal elasticity).

**Pathological mobility** (displacement noticeable by the eye even from the influence of a small effort). There are 4 degrees of pathological tooth mobility (Entin D.A.):

- I tooth displacement in one direction (vestibulo-oral)
- II tooth displacement in two directions (vestibulo-oral and mesio-distal)
- III tooth displacement in three directions (vestibulo-oral, mesio-distal and vertical)
- IV possible, among other things, rotational movements of the tooth.

A clinical examination, both primary and repeated, should be complete, and should include an assessment of the hygienic condition of the oral cavity.

For this purpose, you can use various hygiene indices:

#### **Hygiene Index Yu.A. Fedorova - V.V. Volodkina (1970)**

Purpose: the intensity of staining of the vestibular surface of 31,32,33,41,42,43 teeth is estimated

It is also possible to use a **modified index by L.V. Fedorova (1982)**, using which the intensity of staining of the vestibular surface is estimated 16,13,12,11,21,22,23,25,36,33,32,31,41,41, 43.45 teeth.

The material and methodology of both indices are the same.

**Material:** Schiller-Pisarev solution (1 g of crystalline iodine, 2 g of potassium iodide, 40 ml of distilled water).

#### **Methodology:**

- tooth isolation from saliva
- drying teeth and gums with air
- stain these teeth with a solution, while plaque stains dark brown.

**The presence of plaque is assessed** using the following codes:

- 1 - plaque is not detected;
- 2 - staining of one quarter of the surface of the tooth crown;

- 3 - staining of the half surface of the tooth crown;
- 4 - staining of three quarters of the surface of the tooth crown;
- 5 - staining the entire surface of the tooth crown.

Payment:

**Rating:** IG Fedorov-Volodkina

- 1.1-1.4 good care
  - 1.5-1.8 - satisfactory care
  - 1.9-2.5 - unsatisfactory care
  - 2.6-3.8 - poor care
  - 3.9-5.0 - very poor care
- Modified Fedorova Index
- 1.1-1.5 - good care
  - 1.6 -2.0 - satisfactory care
  - 2.1-2.5 - unsatisfactory care
  - 2.6-3.4 - poor care
  - 3.5-5.0 - very poor care

**Index Green-Vermillion Green Vermillion ( Oral Hygiene Index (OHI - S ) 1964**

A simplified oral hygiene index (OHI, OHI-S) is to estimate the surface area of a tooth covered with plaque and / or tartar. To determine OHI-S, the buccal surface 16 and 26, the labial surface 11 and 31, the lingual surface 36 and 46 are examined by moving the tip of the probe from the cutting edge in the direction of the gum

**Material:**

- Schiller-Pisarev rr
- excavator

**a) Determination of plaque index DI - S**

**Methodology:**

- tooth isolation from saliva
- air drying
- staining with dye solution

**Criteria for evaluation:**

- 0 - lack of staining of plaque;
- 1 - plaque covers no more than 1/3 of the surface of the crown;
- 2 - plaque covers from 1/3 to 2/3 of the surface of the crown;
- 3 - plaque covers more than 2/3 of the surface of the tooth crown.

**Payment:**

Assessment: 0 - hygiene standard up to 1 - satisfactory hygiene, more than 1 - unsatisfactory hygiene

**b) determination of tartar index CI - S**

**Methodology:** the same, determination of the presence of subgingival stone using an excavator

**Criteria for evaluation:**

- 0 points - no stone
- 1 point - supragingival tartar covers less than 1/3 of the surface
- 2 points - supragingival calculus covers 1/3 to 2/3 of the surface and there are small areas of subgingival calculus
- 3 points - supragingival calculus covers more than 2/3 of the surface and large areas of the subgingival calculus

**Payment:**

**Calculation OHI - S = DI + CI**

**OHI value - S :**

**Index Assessment Oral Hygiene Assessment**

- 0 - 0.6 Low Good
- 0.7 - 1.6 Average Fair
- 1.7 - 2.5 High Poor
- 2.5 - 3.0 Very High Poor

***Cavity Hygiene Performance Index ( PHR ) ( Podshadley , Haby , 1968)***

**Purpose:** evaluation of the effectiveness of hygiene

**Material:** Schiller-Pisarev solution

**Methodology:**

- saliva isolation and drying
- staining of the vestibular surfaces 16,11,26 and lingual surfaces 36,46 teeth
- rinse your mouth with tap water

The examined surface is conditionally divided into 5 sections: 1 - medial, 2 - distal 3 - mid-occlusal, 4 - central, 5 - mid-cervical.

**Evaluation Criteria:** 0 points - no staining

1 point - there is staining of any intensity,

**The calculation of the index by the formula:**

**Rating:**

- 0 - hygiene standard
- 0.1 - 0.6 - good hygiene
- 0.7 - 1.6 - satisfactory hygiene
- > 1.7 - poor hygiene

**Ramferda index** ( S . Ramfjord , 1956)

**Purpose:** determination of tartar on the vestibular, lingual and palatine surfaces, as well as the approximate surfaces of 11, 14, 26, 31, 34, 46 teeth.

The method requires preliminary staining with a solution of brown Bismarck.

**The rating** on a scale as follows:

- 0 - lack of dental plaque;
- 1 - dental plaque is present on some surfaces of the tooth;
- 2 - dental plaque is present on all surfaces, but covers more than half of the tooth;
- 3 - tooth plaque is present on all surfaces, but covers more than half.

The index is calculated by dividing the total score by the number of teeth examined.

**Methods for assessing periodontal conditions**

*Schiller-Pisarev quantitative test, papillary-marginal-alveolar index, PMA Index ( Schour , Massler , 1948)*

**Purpose:** to assess the severity of gingivitis (and subsequently recording the dynamics of the process).

Various modifications of this index have been proposed, but in practice, the PMA index in the Parma modification (1960) is more often used.

**Materials:** r Schiller-Pisarev

**Method:** staining the gums with Schiller-Pisarev solution

**Criteria for evaluation:**

- 0 - lack of inflammation;
- 1 - inflammation of only the gingival papilla (P);
- 2 - inflammation of the marginal gums (M);
- 3 - inflammation of the alveolar gum (A).

The PMA index is calculated by the formula:

### Parma Modification:

Evaluation criteria of the RMA index:  
30% or less - mild severity of gingivitis;  
31-60% - moderate severity;  
61% and above — severe.

### *Gum GI Index (Loe, Silness). (1963)*

Four sections are differentially examined for each tooth: the vestibular-distal gingival papilla, the vestibular marginal gum, the vestibular-medial gingival papilla, the lingual (or palatine) marginal gum.

Rating: 0 - normal gum;

1 - mild inflammation, a slight discoloration of the gingival mucosa, slight swelling, no bleeding during palpation;

2 - moderate inflammation, redness, swelling, bleeding upon palpation;

3 - pronounced inflammation with marked redness and swelling, ulceration, a tendency to spontaneous bleeding.

Key teeth in which the gum is examined: 16, 21, 24, 36, 41, 44.

To assess the results of the examination, the total score is divided by 4 and the number of teeth.

0.1 - 1.0 - mild gingivitis

1.1 - 2.0 - moderate gingivitis

2.1 - 3.0 - severe gingivitis.

### *Periodontal Disease Index - PDI ( Ramfjord , 1959)*

Includes assessment of gum and periodontal conditions. The vestibular and oral surfaces of the 16, 21, 24, 36, 41, 44 teeth are examined.

Plaque and tartar are taken into account. The depth of the gingival pocket is measured by a graduated probe from the enamel-cement joint to the bottom of the pocket.

Gingivitis Index

In the absence of epithelial attachment disorders:

0 - no signs of inflammation

1 - mild or moderate gum disease that does not extend around the tooth

2 - inflammation of the gums of moderate severity, spreading around the tooth

3 - severe gingivitis, characterized by severe redness, swelling, bleeding and ulceration.

#### PERIODONTAL DISEASE INDEX

In case of violation of epithelial attachment at least on one side:

0-3 - the gingival groove is determined no deeper than the cement-enamel compound

4 - gingival pocket depth up to 3mm

5 - gingival pocket depth from 3mm to 6mm

6 - the depth of the gingival pocket is more than 6 mm.

Payment:

#### *Kotschke Index*

**Purpose:** takes into account a large number of parameters, including the depth of the gingival pockets, bleeding gums, atrophy of the gingival margin, PMA, the degree of mobility of the teeth according to Fockie , iodine number Svrakova

**Method:** research 33,23,31,41,42,43

Criteria for evaluation:

-RMA 1 point - inflammation of the gingival papilla; 2 points - inflammation of the gingival margin; 3 points - inflammation of the alveolar gum

-Depth of gingival pockets 2 points-1-2 mm; 4 points-2-3mm; 6 points - more than 3 mm

- Gum bleeding 2 points - bleeding I degree, rare; 4 points - bleeding II degree - during brushing; 8 points - bleeding of the III degree - during meals or spontaneous

Atrophy of the gingival margin 1 point to 1 mm; 2 points-1-2 mm; 6 points - more than 3 mm

- Fockie tooth mobility 1 point - physiological mobility; 2 points - apparent mobility, not yet felt by the patient, 4 points - mobility of 1-2 mm without disturbing articulation; 8 points is the same, with a violation of articulation; 16 points - Mobility with tongue pressure

-Iodine number of Svrakov (using Schiller-Pisarev test) 0 points, pale yellow color; 2 points - brown color of the gingival papilla; 4 points-brown coloring of the gingival margin; 8 point brown gum

Payment:

Rating: Normal-0%

For the diagnosis and differential diagnosis of neurogenic diseases and diseases accompanied by paresthetic pain symptoms, it is necessary to conduct a sensitivity determination during a comprehensive clinical examination.

**Sensitivity disorders are quantitative and qualitative.**

The following types of disorders are **quantitative** :

1) Anesthesia:

- tactile
- pain - analgesia
- temperature thermanesthesia
- loss of a sense of localization - topanesthesia
- total anesthesia - loss of all types of sensitivity

2) Hyperesthesia - increased sensitivity, can be of all kinds

3) Hypesthesia - decreased sensitivity, can be of all kinds

4) Hyperpathy - a perversion of sensitivity

Sensory disorders **quality** :

1) polyesthesia - single disorders are perceived as multiple

2) alloesthesia - a feeling of irritation in a symmetrical area of the opposite side

3) thermalgia - a painful sensation of cold and heat

4) dysesthesia - a perversion of various irritants

5) paresthesia - a disorder of sensitivity without external stimuli

To determine the sensitivity disorder, special studies are carried out:

**The study of pain sensitivity.** Held with a pin or probe. Symmetric sections of the sick and healthy side are examined.

The study of tactile sensitivity. It is carried out with a cotton swab, a brush from the healthy side to the patient. Tactile sensitivity is best developed in hard and soft palate, tongue, and corners of the mouth. Maximum sensitivity on the red border of the lips and the tip of the tongue

**Pharyngeal reflex.** Examine with wide open mouth by touching the back wall of the pharynx with a metal spatula.

**Rating:**

- norm - a light touch causes vomiting or swallowing;
- decrease - motion data are called up when a spatula draws a line;
- absent - does not cause irritation of the reaction;
- increased - irritation causes a gag reflex

#### **4. The study of taste sensitivity**

Rinse the mouth with 10 ml of solution  $t = 20-25\text{ C}$  for 3-5 seconds at intervals for bitter 3 minutes, for the rest - 2 minutes

Use:

20% sugar

10% table salt

0.2% solution of hydrochloric acid to you

0.1% solution of quinine sulfate

They also study the taste sensitivity of individual sections of the tongue by applying solutions to it.

#### **5. Temperature sensitivity**

Using thermodiagnosics, sensitivity to cold and thermal stimuli is determined. This method is important in the differential diagnosis of caries and pulpitis.

To determine the reaction to cold, use cooling aerosols - Dentoculum, Kulan ( VOCO ), Pulpofluoran ( Septodont )

Indications for use: diagnosis of dental diseases, cooling of orthopedic thermoplastic structures, etc.

Method of application: in order to diagnose and detect the reaction of pulp to cold, a small portion of the drug is sprayed onto a foam / cotton swab through a thin tube that is applied directly to the carious cavity, non-carious defect, or to the area of the entire tooth. By the reaction of the patient, one can judge the condition of the tooth pulp, the presence of dentin hyperesthesia, etc. The test is very simple and reliable, well tolerated by patients.

Never spray cooling aerosols directly onto the tooth and mucous membrane; this can lead to irreversible tissue reactions.

### **6. Evaluation of trigeminal nerve function.**

Explore the following reflexes:

**Conjunctival** - a light touch of a cotton swab to the conjunctiva causes the eyelids to close

**Corneal** - touching the cornea causes the eyelids to **close**

**Mandibular** - tapping with a hammer on the chin with a wide open mouth causes contraction of the masticatory muscles and closure of the jaws

When the branches of the trigeminal nerve are affected, a sharp painful disturbance of sensitivity occurs in the corresponding zones, pain when pressing on the exit points of the affected branches. With damage to the motor component of the nerve, there is paralysis of the masticatory muscles on the side of the lesion, hypotension, atrophy, lower jaw displacement towards the lesion. When the mandibular nerve is damaged, a disorder of the sensitivity of the skin of the chin occurs (Vincent's symptom).

### **7. Assessment of the functions of the facial nerve.**

Pay attention to the symmetry of the palpebral fissures, the position of the eyebrows, the uniformity of the frontal and nasolabial folds, the location of the corners of the mouth at rest, and the presence of tics. If there are jerks, they are given the task of wrinkling their forehead, frowning, raising their cheeks. When the facial nerve is affected, paralysis of the facial muscles occurs on the side of the lesion, which is characterized by the following symptoms: folds on the forehead and nasolabial fold are smoothed, the angle of the mouth is lowered, the palpebral fissure is widened, and it does not close - a hare eye; the eyeball is rejected up and out - Bell's symptom; lacrimation and salivation, taste disorders in the anterior 2/3 of the tongue

### **8. Evaluation of the functions of the glossopharyngeal and vagus nerves.**

The sonority of the voice is determined, the swallowing of food, the position of the tongue and soft palate at rest and during phonation are evaluated

The taste sensitivity of the posterior third of the tongue to bitter and salty, soft palate and pharyngeal reflexes is examined.

The defeat of the glossopharyngeal nerve is accompanied by a loss of taste in the bitter and salty on the back third of the tongue and the sensitivity of the mucous membrane of the upper half of the pharynx.

With a unilateral lesion of the vagus nerve, paralysis of the soft palate, pharynx and vocal cords occurs on the side of the lesion. In this regard, there is a deviation of the tongue in a healthy direction, a lag of half the palate during phonation, loss or decrease of reflexes on the affected side, hoarseness.

Complete bilateral lesion leads to death.

### **9. Evaluation of the function of the hyoid nerve.**

The patient is asked to stick his tongue out, pay attention to the location of the tongue - along the midline or deviates to the side; its appearance is the presence of atrophy, tremor; active movements of the tongue in different directions.

The defeat of the hyoid nerve causes paralysis of the muscles of the peripheral type of the diseased half of the tongue. At the same time, muscle atrophy and deviation of the tongue towards the focus are noted

## **Physical examination methods in dentistry**

### **Electroodontodiagnosis (EOM)**

Electroodontodiagnosis is an integral part of modern dentistry. Its widespread use avoids diagnostic errors, improves the quality of treatment measures.

It is used to study the condition of the pulp and periodontium by determining the electrical excitability when exposed to electric current. The study determines the minimum, threshold force of irritation of the nerve receptors of the pulp of the teeth.

An increase or decrease in the sensitivity threshold indicates various pathological and physiological processes taking place in the hard tissues of the tooth.

- **Electrical excitability** is the property of nervous tissue to be excited under the influence of electric current.

- **The electrical conductivity** of tissues depends on the water content in them, so pulp is the best conductor of electric current compared to dentin containing 4-5% water.

On the teeth there are sensitive points from which irritation is caused at the lowest amperage. In the frontal teeth - the middle of the cutting edge, in the masticatory teeth - on the top of the tubercle

With various pathological processes in the hard tissues of the tooth, the histological structure and hemodynamic processes in the pulp change, which is accordingly reflected in quantitative indicators of the tooth's excitability.

Formed milk tooth has a normal electrical excitability. As the root is resorbed and the tooth mobility increases, its reaction decreases, and with strong mobility it disappears. During teething of permanent teeth, the electrical excitability of the pulp is usually sharply reduced or absent. As the formation of the roots, the reaction to the electric current normalizes, and in the teeth with the formed roots comes back to normal.

### **Technique of electroodontodiagnosis :**

When conducting electroodontodiagnostics, nothing should distract the patient. The tooth is isolated from saliva, carefully dried with cotton balls in the direction from the cutting edge to the equator. For drying, do not use an air gun and chemicals (alcohol, ether), as this can lead to the development of a pain attack (for example, with pulpitis) and a change in the threshold of excitability of the tooth pulp. Since the teeth are moistened during breathing, drying is periodically repeated.

If the tooth is intact or is covered with a filling, then conductive rubber or cotton wool moistened with water is placed on the working part of the active electrode, and the electrode is placed on sensitive points: the middle of the cutting edge on the front teeth, the top of the buccal tuber at the premolars, the top of the anterior buccal tuber at the molars. It was experimentally established that from these points the reaction occurs at a minimum current strength.

A seal in the neck, on the contact surface or fissure does not interfere with the study. If a filling is located in place of the sensitive point of the tooth, then the active electrode is placed directly on the filling. It is undesirable to conduct a study of the electrical excitability of the pulp from a filling adjacent to the gum, since in this case the current can go into the soft tissues.

If there is an amalgam filling in the tooth, it should be remembered that amalgam is a good conductor through which the electric current branches out widely, but only part of the current supplied to the tooth enters the pulp. To accurately determine the threshold of excitability in such cases, it is advisable to remove the seal and then conduct an electroodontodiagnosis.

If the excitability is checked from a seal in contact with an adjacent seal, then in order to prevent current leakage, a celluloid plate greased with petroleum jelly is introduced between them.

In carious teeth, electrical excitability is checked from the bottom of the carious cavity. It is first necessary to remove the softened dentin and dry the cavity. In this case, cotton wool or conductive rubber does not need to be placed on the working part of the active electrode, and the metal working part of the active electrode should touch the bottom of the cavity. The study is carried out at 3-4 points. A guideline for excitability is the minimum current obtained at any point.

When conducting electrical diagnostics from the bottom of the tooth cavity, an active electrode without turunda or conductive rubber is placed on the mouth (or projection of the mouth) of each root canal. In this case, the values obtained for each root canal are taken into account separately.

It must be remembered that during the study, in order to avoid current leakage, one should not allow any contact of the active electrode with saliva, mucous membrane of the lips, cheeks, gums.

The intact pulp reacts to a current ranging from 2 to 6  $\mu\text{A}$ . (An exception is only the third molars, of which 15-20% do not respond to the threshold current. This is due to the varying degree of mineralization of the anterior buccal tubercle and deviations in the innervation of the pulp horns of these teeth).

The reaction to a current of up to 2  $\mu\text{A}$  indicates an increase in the electric excitability of the pulp, more than 6  $\mu\text{A}$  - a decrease.

It must be remembered that a change in the parameters of electroodontodiagnostics is possible not only in case of tooth disease, but also in various conditions and pathological processes, such as unformed tooth roots, radicular cyst, trauma to teeth and jaws, diseases of the trigeminal nerve, etc.

The degree of electrical excitability of the pulp depends on its functional and morphological state.

With caries, the electrical excitability varies between 7-20  $\mu\text{A}$  for single-rooted and 7-25  $\mu\text{A}$  for multi-rooted teeth. If with superficial and moderate caries, the indications of electroodontodiagnostics do not differ much from the norm, then with deep caries there is a decrease in excitability, which indicates more pronounced changes in the nerve elements of the coronal pulp, but these changes are reversible.

It must be remembered that when the study is carried out from the bottom of the cavity, then out of three or four of the obtained values of the test current strength, one should focus on the minimum, i.e. threshold.

With pulpitis, electroodontodiagnosis allows you to clarify the degree and prevalence of inflammation, to differentiate a limited process from a diffuse one. With inflammation of the coronal pulp, the excitability decreases and the threshold value can be in the range of 7-60  $\mu\text{A}$ . A decrease in excitability to 20-25  $\mu\text{A}$  (with the appropriate clinic) indicates a limited process, i.e. focal pulpitis and inflammatory changes of a reversible nature. A pronounced decrease in electrical excitability (25-60  $\mu\text{A}$ ) indicates the prevalence of the process in the coronal pulp. The reaction of the pulp above 60  $\mu\text{A}$  indicates the death of the coronal pulp and the transition of inflammation to the root, while the threshold value of the current strength will be 61-100  $\mu\text{A}$ .

The data of electroodontodiagnosis and the clinic of the disease help to choose a treatment method. With a limited focus of inflammation and a slight decrease in pulp excitability, a biological treatment method or vital amputation can be used; with a sharp decrease in excitability, the pulp must be extirpated.

With complete destruction of the nerve elements of the pulp, the response occurs due to electric stimulation of the nerve elements of the periodontium, while the readings of the excitability threshold will be above 100  $\mu\text{A}$ .

In everyday practice, there are cases when there are remnants of inflamed pulp in the root canals. Checking the excitability of the pulp separately from the mouth of each channel helps to identify them. Of particular importance is the study of electroexcitability in the treatment of pulpitis in the teeth with "impassable" root canals, as electroodontodiagnosis is the only, today, reliable way to determine the complete death of the root pulp.

The intact periodontium when applying irritation from the mouth of the root canal responds to a current in the range of 100-200  $\mu\text{A}$  (during the study there is a sensation of a jolt, a light blow).

In the presence of periapical changes in the periodontium of the studied tooth (various forms of periodontitis, radicular cyst, etc.), the reaction appears at a current strength of more than 200  $\mu\text{A}$ .

In modern devices for electroodontodiagnostics, a current supply of only up to 200  $\mu\text{A}$  is provided, therefore, with periapical changes in the studied tooth, sensations will be absent even at a maximum current strength (200  $\mu\text{A}$ ).

**Electroodontodiagnosis for non-carious lesions of hard tissues of teeth**

Electroexcitation of teeth depends on the state of the nerve elements of the pulp. Therefore, if there are no secondary inflammatory-degenerative changes in the pulp, tooth sensitivity in diseases of hard tissues of non-carious origin does not differ from that of healthy ones. Even in the case of a severe degree of damage with pathological abrasion of hard tooth tissues and wedge-shaped defects, the electroexcitability usually decreases only within 7-15  $\mu\text{A}$ , which cannot be evidence of the development of serious pathological processes in the pulp, but is mainly associated with a change in the electrical conductivity of hard tissues.

**Luminescent diagnostics** - the method is based on the ability of tissues and their cellular elements to change their natural color under the influence of ultraviolet rays. Used to determine the marginal fit of fillings, recognition of initial dental caries, as well as some diseases of the oral mucosa.

In Wood's rays, healthy teeth fluoresce with a snow-white color, and the affected areas look darker with clear contours. The tongue fluoresces in shades from red to orange. The glow of the tongue in blue indicates the appearance of leukoplakia. The lesions with lichen planus produce a whitish-yellow glow, erosion and ulcers - dark brown, areas of hyperkeratosis of lupus erythematosus - white-bluish.

**Laser Doppler flowmetry (LDF)** - The method is used to study the state of blood microcirculation in periodontal tissues and in the pulp of a tooth. The physical basis of the laser Doppler flowmetry method is as follows. Laser radiation is delivered to the tooth or gum through a light guide probe. Radiation scattered by red blood cells moving in the microvasculature undergoes a change in frequency (Doppler effect), proportional to the speed of their movement. Radiation reflected from red blood cells enters the analyzer through a light guide probe for further processing. An analog signal is generated at the output of the device, which is proportional to the value of blood perfusion in the probed area. Special programs allow you to register an LDF-gram and calculate microhemodynamic parameters.

Depending on the objectives of the study, tissue sensing can be carried out in various parts of the gums or in the pulp of the tooth.

Diagnostic capabilities of the method:

- Diagnosis of vitality of tooth pulp in the treatment of caries, pulpitis by a biological method, in case of tooth trauma, orthodontic treatment, odontopreparation
- Assessment of the degree of blood microcirculation disorders in the periodontium in the treatment of its diseases.

**Rheography** is a bloodless method for studying the blood supply to tissues. It consists in the graphic recording of pulse fluctuations in the electrical resistance of tissues due to the activity of the heart and the state of peripheral vessels. Using rheography, the functional state of the vessels, their tone and structure are evaluated. For research, an RPG 2-02 rheograph with a multi-channel electrocardiograph, stainless steel or silver electrodes are used. Their size, shape and location depend on the object being studied and the technique used.

When analyzing rheograms, qualitative characteristics are taken into account, based on the description of the curve shape and amplitude-frequency data, and a quantitative indicator determined by the calculation of the pulse volume of blood flow using the tetrapolar technique.

**Electromyography** - a method based on recording the biopotentials of muscle fibers. Muscle tissue contraction is caused by a stream of impulses that appear in various parts of the central nervous system and spread through the motor nerves to the muscles. There are three main types of electromyography:

- *Interference* (surface, total, global) electrodes are applied to the skin
- *Local* - the study is carried out using needle electrodes
- *Stimulating* - stimulate the nerve innervating this muscle

An electromyographic study of the masticatory muscles begins with palpation of the location of the motor point (the site of the greatest muscle tension at the time of its maximum contraction). This point is palpated in the form of a dense formation, usually for the chewing muscle itself, the motor point is 2 cm above the corners of the lower jaw. For the temporal muscle - anterior to the scalp, along the fibers of the anterior muscle bundles.

The functional state of the masticatory muscles is examined during the period of functional rest of the lower jaw, when closed in central occlusion, when swallowed.

When analyzing EMG, the following indicators are determined: the average amplitude of the biopotentials, the number of chewing movements in one cycle, the duration of one chewing cycle, the synchronism of muscle work, the time of bioelectric activity and the bioelectric rest of the chewing muscles in the phase of one chewing movement.

**Myotonometry** - in the area of motor points (the areas of greatest muscle tension at the time of their maximum contraction), a myotonometer is applied and the force developed by the probe of the myotonometer when immersed to the required depth (3-5 mm) in the area of the studied muscle is measured.

The level of immersion is indicated by the small hand of the dial, and the degree of muscle tension in grams is shown by the large hand. The studied muscles are evaluated at rest and with maximum compression of the teeth. Myotonometry data allows you to judge a change in muscle tone. Normal values at rest and at stress are 45 g / cm<sup>2</sup> and 180 g / cm<sup>2</sup>, respectively.

**Ultrasound diagnostics** - for diagnostic purposes, ultrasound is applied with a frequency of about 0.8 MHz and higher, an intensity of 0.1 W / cm, in a pulsed mode. Under these conditions, it is possible to view soft tissue to a depth of 18-20 cm.

In dentistry it is used for: ultrasound of the thyroid gland, biolocation of tumor formations of the neck, diagnosis of diseases of the parotid and submandibular salivary glands.

**Laboratory research methods** include a clinical study of peripheral blood, a biopsy, a cytological study, a study of the environment of the oral cavity, diagnostic methods for allergic conditions.

A clinical examination of peripheral blood is performed for all surgical patients, as well as for children who have applied for various diseases of the oral mucosa and periodontium.

**Cytological method** - based on the study of cellular elements, their individual structural features and conglomerates of cells. In dentistry, it is used in the diagnosis and in monitoring the dynamics of development and the effectiveness of the treatment of destructive processes of MFD.

**Histological method** - based on the study of tissue structures. Using a biopsy, tissue is taken and a preparation for microscopy is made.

**Diagnostic methods for allergic conditions.**

Modern allergology has a large number of specific diagnostic tests, for the conduct and interpretation of the results of which are necessary specialists - allergists and relevant conditions.

In the development of dental diseases of an allergic nature, reactions of a delayed type are predominant, although immediate allergic reactions are observed in practice. According to the nature of the developing pathology, methods of sensitization and types of immune factors, allergic reactions of a delayed and immediate type have fundamental differences. However, these reactions can develop in parallel, independently of each other; delayed-type hypersensitivity may be an early stage of an immediate allergic response. Specific and nonspecific tests are used.

**The study of the environment of the oral cavity.**

- pH determination of mixed saliva
- determination of the temperature of the oral mucosa
- bacterioscopic and bacteriological studies are carried out to clarify the causes of diseases of the oral mucosa caused by a specific infection
- lysozyme content in mixed saliva. The average content of lysozyme in the saliva of healthy children aged 1 month. up to 6 years  $59 \pm 41.06$  mcg / ml
- determination of interferon in saliva; in the saliva of healthy children, interferon is absent
- determination of the quantitative and qualitative composition of the microflora of the oral cavity
- determination of the sensitivity of oral microorganisms to antibiotics.

### **Hygiene Indices**

Assessment of the hygienic condition of the oral cavity is carried out by methods that are called indices in the literature. In total, more than 80 indexes are described. All of them to one degree or another reflect the dynamics of the microflora of the oral cavity and the condition of periodontal tissues.

To identify plaque, tartar and evaluate oral hygiene, as well as the effectiveness of hygienic measures, the surfaces of the studied teeth are painted with solutions of Logol, methylene blue, fuchsin, etc., and then special indices are calculated that display the amount and quality of dental plaque.

To assess the hygienic condition of the oral cavity, indices are used that can be conditionally divided into 4 groups: 1st — (indices that estimate the plaque area; 2nd — (indices that evaluate the thickness of the plaque; 3rd — (indices that evaluate the mass of plaque; 4th - (indices that evaluate the physical, chemical, microbiological parameters of plaque.

### **Periodontal Indexes**

#### **PMA Index (Papillary Marginal Alveolar)**

PMA Index (Papillary Marginal Alveolar) proposed by Masser and modified by Parma in 1960. Used to assess the inflammatory process of the gums.

[RMA Index Rating Scale :](#)

- 1 point - inflammation of the gingival papilla (P);
- 2 points - inflammation of the edge of the gums (M);
- 3 points - inflammation of the alveolar gums (A).

The PMA index is calculated as a percentage of the formula:

$$\text{PMA index} = (\text{TOTAL POINTS} / 3 * \text{NUMBER OF TEETH}) * 100$$

The total score is determined by adding all the highest indicators of each tooth. Number of teeth under the age of 6 years — 20, 6-11 years — 24, 12-14 years — 28, 15 years and older — 30.

[Criteria for evaluation:](#)

- up to 20% - mild severity of gingivitis;
- 25-50% - moderate severity of gingivitis;
- above 51% - severe severity of gingivitis.

### 3-practical lesson

Topic: **Rules for the protective and barrier complex of the oral cavity. Oral fluid - saliva**

#### 1.1. Technological model of the formation

Lesson time 3 hours	Number of students
Type of activity	Introduction of practice news
Plan	Give the full correct answer to questions about the fluid of the mucous membrane of the saliva, composition, properties, value
The objective of the training session	Examine the oral mucosa. Teach you how to make a diagnosis.
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

#### Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (10 minutes )	1. The purpose of the lesson 2. Preparation of slides for lecture material 3. Related literature <ul style="list-style-type: none"> <li>• N.V. Kuryakina - "Therapeutic dentistry children's age "N. Novgorod 2001</li> <li>T.F. Vinogradova - "Dentistry for children" 1987</li> <li>• N.G. Pakhomov- "Primary prevention in dentistry"</li> <li>• EV Borovsky - " T erapevticheskaya Dentistry" 1997.</li> <li>Yu.I.Vorobov-X-ray of the teeth and jaws - 1990 city of K. Georgieva - "Emergency care in dentistry" 1983.</li> </ul>	Record a subject and listen
2. Leading a topic (10 minutes)	1. Keeping the audience clean 2. Checking students for a practical lesson 3. Check student attendance.	Are listening
3 Milestone (90 minutes )	1. The division of students into 2 small subgroups , asks questions on the topic ; 2. Use of slides and multimedia; 3. conducts therapeutic work; 4. Combines all the information on a given topic, actively participate ni their students encourages and assesses the general.	Divided into small groups , watching , participating , listening. Student expresses his opinion complements and asks questions

4. The final stage (10 minutes )	1. Conclusion . 2. Independent work . 3. Homework .	Listen to Record Conclusion
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### Text

The mucous membrane of the oral cavity is a "shock" organ, the site of antigen-antibody reactions that can cause primary and secondary damage to the mucosa. In the system of "external barriers", the oral mucosa is the first line of defense of the body against various pathogenic environmental factors.

The stability of anatomical formations and the oral mucosa to damaging factors of microbial origin depends on the state of the defense systems. According to the concept of local immunity, mucous membranes as integument facing the external environment protect the internal environment of the body and maintain the constancy of the internal environment through the close interaction of an evolutionarily developed complex of non-specific and specific defense mechanisms. The insufficiency or perverse nature of the protective reactions, combined with the prolonged persistence of microbial associations in the oral cavity that cause damage to its tissues, can lead to the development of many pathological processes: caries, gingivitis, stomatitis, periodontopathy and other diseases.

The effectiveness of local protection against infectious agents is ensured by specific and nonspecific mechanisms (it should be remembered that the definition of "nonspecific" is sufficient in immunology), the latter being more important in the oral cavity than in many other organs. Initially, local immunity was understood as a complex of cellular and secretory nonspecific and specific reactions, including the barrier functions of mucous membrane cells, phagocytic activity of neutrophils and macrophages, T-cell immunity, antibodies, antimicrobial proteins of external secrets, and enzyme inhibitors. Local immunity was not identified with secretory immunity, but the B-cell response of the lymphoid tissue of the mucous membranes with the participation of the glandular epithelium supplying the secretory component was considered as its central link. Later, the concept of local immunity expanded and now includes the response of all the cells of the lymphoid row inhabiting the mucous membranes, in cooperation with macrophages, neutrophilic and eosinophilic granulocytes, mast cells and other cells of connective tissue and epithelium.

#### 4 - Practice

### Topic: Caries factors. Soft plaque. The importance of stones in the development of caries and periodontal diseases

#### 1.1. Technological model of the formation

Lesson time 3 hours	Number of students
Type of activity	Introduction of practice news
Plan	Giving a complete correct answer to questions about soft plaque
The objective of the training session	Learn all about soft plaque.
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

#### Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (10 minutes )	1. The purpose of the lesson 2. Preparation of slides for lecture material 3. Related literature <ul style="list-style-type: none"> <li>• N.V. Kuryakina - "Therapeutic dentistry children's age "N. Novgorod 2001</li> <li>T.F. Vinogradova - "Dentistry for children" 1987</li> <li>• N.G. Pakhomov- "Primary prevention in dentistry"</li> <li>• E.V. Borovsky - "Therapeutic dentistry" 1997.</li> <li>Yu.I.Vorobov-X-ray of the teeth and jaws - 1990 city of K. Georgieva - "Emergency care in dentistry" 1983.</li> </ul>	Record a subject and listen
2. Leading a topic (10 minutes)	1. Keeping the audience clean 2. Checking students for a practical lesson 3. Check student attendance.	Are listening
3. The main stage (90 minutes )	1. The division of students into 2 small subgroups , asks questions on the topic ; 2. Use of slides and multimedia; 3. conducts therapeutic work;	Divided into small groups , watching , participating , listening. Student expresses his opinion

	4. Combines all the information on a given topic, actively participate in their students encourages and assesses the general.	complements and asks questions
4. The final stage (10 minutes )	1. Conclusion . 2. Independent work . 3. Homework .	Listen to Record Conclusion

Text

### Plaque

Currently, dental deposits are considered in line with other biofilms, covering various tissues of the human body and playing in most cases a physiological role. The oral cavity is compared to a tropical coral reef - both in one and in the other biotope it is warm, humid and rich in food, which provides ideal conditions for the prosperity of many living organisms. The normal purpose of natural dental deposits is physical and bacteriological protection against exogenous colonization of the oral cavity by pathogenic flora. But in certain situations, for example, due to the conditions of the oral cavity, or with poor hygiene of the human oral cavity, adverse changes occur in the biochemistry, composition and structure of the dental deposits, which gives them pathogenic properties.

#### Classification of dental plaque

By localization:

- Gingival
- Subgingival

By structure and properties:

- cuticle
- soft dental deposits:
  - pellicle
  - tooth plaque
  - soft plaque
  - food residues
  - dense dental deposits

The surface of the enamel before teething is covered with an organic shell, which is called the cuticle. Its thickness is about 1 micron. Immediately after teething, the cuticle is erased, remaining only in the cervical region.

The enamel exposed after the loss of the cuticle is surrounded by the oral fluid and adsorbs its components on the surface. Therefore, the composition of the pellicle repeats the mineral and organic composition of the oral fluid. Remains of the shells of microbial cells are found in the pellicle, but there is no active microflora in it.

The first layers are detected 20 minutes after cleansing the surface of the pellicle.

Pellicle formation begins with the interaction of the acidic groups of salivary glycoproteins with  $Ca^{2+}$  ions of tooth enamel, while the main groups of glycoproteins react with hydroxyapatite phosphates.

The layered structure of the pellicle causes a difference in charges in the bowels and on the surface, which gives the pellicle the properties of a semipermeable membrane. Pellicle differentiates the flows of macro- and microelements from enamel and into enamel, providing trophism, ripening and remineralization.

On the other hand, it plays the role of an accomplice pellicle caries, since the uneven surface of its outer layer organizes selective attachment of microorganisms (increases adhesion *S. Sanguis* and reduces - *S. Salivarius*), and glycoproteins pellicle and minerals are used for microbial growth medium.

Pellicle is always present on all surfaces of the tooth in contact with saliva, but, being thin and transparent, can only be detected using natural (food, tobacco) and artificial (chromogenic bacteria, tar and tar, coloring components of drugs) dyes.

Dental plaque is a translucent, soft, non-mineralized substance adjacent to the pellicle.

### **Mechanisms of dental plaque formation:**

1. Primary colonization
2. Fast bacterial growth
3. Secondary colonization

During the initial colonization, several stages of the attachment of microorganisms to the pellicle occur:

1. Stage electrostatic interaction between the pellicle proteins and the surface structures of the microbial cell. Role of Pioneer normal play representatives protective microflora (*S. Mitis*, *S. Sanguis*, *S. Intermedius*, *S. Oralis*) .but in a situation related to the risk of dental caries, they can get ahead of *S. Mutans*.
2. Stage Mechanical attachment of microbial cells to the pellicle by means of special membrane outgrowths (pili)
3. Stage. The creation of irreversible chemical bonds by the surface proteins of the microbial cell and the surface glycoproteins of the pellicle.

About 50% of the total number of microorganisms in plaque forming karieslabilnyh young persons is *S. Mutans*, he is an optional anaerobic. Very important is the ability of the *S. Mutans* for carbohydrate processing whose final product is lactic acid

After 12-24 hours from the onset of microbial attachment, a second phase develops: pioneer bacteria release substances into the matrix of plaques that stimulate the active reproduction of microorganisms in the surrounding medium, "rapid bacterial growth" begins.

Microbial plaque grows in breadth and height, doubling its biomass by the end of the first day. It is called mature or late plaque.

If within 2-3 days the plaque is not destroyed, its internal environment becomes more anaerobic. The update phase begins.

The biochemistry of a dental plaque depends on the access of oxygen to its deeper layers, therefore, after 48 hours, the proportion of obligate anaerobes capable of producing cytotoxic substances increases in the plaque, and the plaque may acquire properties that are less pathogenic for dental hard tissues, but are dangerous for the health of the periodontium.

Soft plaque is a loose, porous substance consisting mainly of processed food residues and water.

The plaque can be quite voluminous, but it does not have a structural organization and reliable mechanisms of connection with the underlying layers, therefore, it is not durable. The waste products of microflora plaque irritate the gum tissue, causing halitosis.

If a soft coating exists on the enamel surface for a long time, it becomes denser, organizes close ties with the plaque, pellicle and is firmly fixed together with them on the tooth. Dense plaque can be stained with food colors in tan, sometimes dark brown (for smokers), green (with the help of chromogenic chlorophyll-containing bacteria) or black (with the participation of chromogens or in the presence of iron).

Plaque serves as the basis for the formation of supragingival stone, which is formed when the plaque is infiltrated with minerals of the oral fluid.

To detect dental plaque use:

- Inspection,
- Inspection after drying the surface of the teeth with an air stream
- sounding
- Inspection after staining

Staining is necessary to detect dental plaque. Plaque is visible even without staining, but this procedure helps to accurately take into account the amount of deposits and more convincingly discuss with the patient the level of hygiene of his oral cavity.

Most dyes used non-specifically react with any organic substrate: with a plaque matrix, bacterial cells, food residues, saliva components, oral mucosa, red border of the lips, skin, etc. An exception is sodium fluorescein, which becomes visible (yellow) only in those areas where the dye is sorbed to form a significant layer, i.e. in areas with dental deposits and only with ultraviolet light through special filters.

Distinguish:

red (erythrosine, fuchsin)

blue (methylene blue, gentian violet)

brown (Bismarck brown, Schiller-Pisarev solution) dyes and mixtures thereof.

There are “double” indicators combining erythrosine and malachite green, which, depending on age and pH of the plaque, stains it either in red (fresh plaque) or in blue (old plaque).

From an aesthetic point of view, it is important to distinguish between persistent and unstable dyes. Unstable solutions are those containing iodine compounds (Lugol's solution, Schiller-Pisarev's solution), since they are volatile, staining disappears after 10-20 minutes. This is convenient in cases where it is assumed only the diagnosis of dental plaque and patient motivation, but not a hygienic procedure. To conduct professional oral hygiene or to teach individual brushing, it is advisable to use persistent dyes.

In order to analyze the level of oral hygiene and its dynamics, the received information must be registered using standard units. To perform this task, use hygiene indices.

Signs of an ideal index:

- Easy to use
- Requires minimal time
- Requires minimal hardware
- Index criteria are clear, well observable and reproducible in repeated studies.
- Available for statistical processing
- Has a sensitive scale
- Patient acceptable

Quantitative determination of dental plaque is required for various purposes: epidemiological and clinical, respectively, a different amount of information, and therefore various technical methods for obtaining it are suitable.

For individual work with the patient, the so-called full (total) indices, suggesting the study of all surfaces of all teeth, are recommended.

Simplified indices, for the determination of which it is enough to study only some of the most significant surfaces of certain teeth, are suitable for large clinical and epidemiological examinations.

All indexes are copyrighted, so you must strictly follow the methodology for their implementation.

The condition of the teeth is largely determined by the characteristics of the environment surrounding the tooth, the oral fluid. It is with the properties of the oral fluid that the processes of natural secondary maturation of enamel are associated.

Oral fluid or full saliva consists of mixed saliva and organic impurities (microbial and epithelial cells, food debris, etc.).

Mixed saliva is complete saliva without impurities that can be removed by centrifugation, or a mixture of pure saliva from all sources.

Pure saliva is a fluid produced and secreted into the oral cavity by three pairs of large and many small salivary glands.

From 300 to 1500 ml of saliva is released daily into the oral cavity. Saliva production during the day is uneven: approximately 300 ml of the so-called base saliva, which is unstimulated, is produced outside the meal, stimulated saliva is released within 2 hours against the background of the meal, and saliva practically stops during the remaining time of 8 hours of night sleep.

99% of saliva consists of water and 0.5% of it contains organic and mineral components

### **Functions of the oral fluid:**

**BARRIER.** The oral cavity is located at the beginning of the digestive tract and respiratory tract, so saliva plays an important role in the formation of a wet and slippery coating for the teeth and mucous membrane of the digestive tract and respiratory tract, which protects them from the mechanical effects of food. Mucins perform this task, and their function can be defined as protective mechanical.

Oral fluid also provides antimicrobial protection - serous secretion proteins perform this function, forming a protective layer of mucin and white blood cells.

Saliva protects tooth enamel, creates conditions for its durability. In general, enamel is the only mineral structure in contact with the external environment and not protected by cellular layers. The task of protecting enamel is solved by regulating the mineral composition of saliva, which is carried out by cells of the excretory ducts, as well as mineral-binding proteins of serous secretion.

**DIGESTIVE FUNCTION** is expressed in the fact that the oral fluid moistens, envelops, facilitates swallowing, dissolves salts, sugars, breaks down polysaccharides

**REGULATORY** function: oral fluid initiates the formation of digestive juices in the gastrointestinal tract, the release of gastrointestinal hormones, mineralization of the teeth and supports oral homeostasis. Coagulation factors are present in saliva.

The **MINERALIZATION FUNCTION** is expressed in the formation of enamel apatite, and the prevention of precipitation from saliva of a supersaturated calcium phosphate solution.

**ISOLATION** function is determined by the removal of end products of exchange

The incremental function of the salivary glands is associated with the release of hormones in the composition of saliva, as well as factors whose effect is similar to the actions of a number of hormones.

### **Microcrystallization of Saliva**

Currently, saliva is considered as:

- liquid crystal structure
- a solution containing Ca and (NRA<sub>4</sub>) ions in a micellar state.

The main component of saliva - mucin - is a liquid crystal.

Microcrystals are very variable in shape and have individual characteristics. There is no clear reference for crystals in healthy individuals. This is due to the condition of the body, the oral cavity (the presence or absence of prostheses), with a diet.

The formation of crystals can characterize the remineralizing ability of saliva, and the intensity of caries is associated with the type of microcrystallization:

Type 1 - a clear pattern of crystal-prismatic structures fused together and occupying the entire surface of the droplet. This is a compensated form of caries.

2nd type — individual dendritic crystal-prismatic structures of smaller sizes are visible (than with the 1st type). This is a subcompensated form.

3rd type - a large number of isometric located crystalline structures of irregular shape. This is a decompensated form.

In the acinar cells of the salivary glands, the so-called "primary saliva" is formed. It does not differ in electrolyte composition from blood plasma, but passing through the salivary ducts varies greatly. The final saliva is low in Na, Cl. And by the time saliva enters the mouth, it becomes isotonic.

The qualitative and quantitative composition of electrolytes determines the pH and buffer capacity of saliva. Mixed saliva has a neutral reaction (pH 6.8 - 7.4). The potential of buffer systems makes it possible to withstand factors that can change the acidity of the oral fluid - lactate and organic acids produced by microorganisms.

Saliva is oversaturated with calcium and phosphorus. Phosphates are in a free and protein bound state. Phosphates in the form of  $\text{HPO}_4^-$ ,  $\text{H}_2\text{PO}_4^-$  are components of phosphate buffer systems.

The calcium content in saliva is close to its plasma content. Calcium is present both in ionized form and in a state bound to proteins. The ratio of ionized calcium to total is 0.54. This concentration is necessary to maintain the consistency of tooth tissue.

The constancy of tissues is supported by regulation of pH; an obstacle to the dissolution of tooth tissues; the introduction of ions into mineralized tissues (ionic substitutions).

### 1. **PH regulation.**

Under physiological conditions, calcium and phosphorus do not precipitate, since they are in the form of micelles. The main type of micelles are calcium phosphates-  $\text{Ca}_3(\text{PO}_4)_2$ , which form an insoluble core.

Micelles in the saliva support insoluble calcium salts in a dissolved state.

The micelle core consists of calcium phosphate molecules, on the surface of which there are an abundance of hydrogen phosphate ions surrounded by a water – protein shell.

Colloidal stability of micelles is provided by K and Na ions at physiological concentrations and pH values of mixed saliva, which are close to neutral. A change in the ionic composition and pH of saliva is reflected in the structure of micelles and their remineralizing properties.

In this case, the total negative charge of the micelle decreases, and calcium ions are washed out from the diffuse layer, the stability of micelles is violated, which can increase the likelihood of their aggregation. Under these conditions, saliva cannot take part in remineralization, since it becomes unsaturated with calcium and inorganic phosphate. If the pH of saliva is maintained at 6.2 for a long time, then it turns into demineralizing.

Increasing the pH of saliva (alkalization) leads to the rapid deprotonation of phosphates,  $\text{H}_2\text{PO}_4^-$  forming  $\text{PO}_4^{3-}$  ions, which, interacting with calcium, form sparingly soluble salts (with formation of tartar).

The destabilization of pH occurs with the participation of acid-forming microflora. For caries-resistant individuals, the saliva pH is 7.39, for medium -resistant ones - 7.25, and for low-resistance - 7.23.

With an increase in the concentration of K and Na in mixed saliva, there is a loss of the potential-forming layer of phosphate ions with the formation of soluble salts, which may underlie the initial stages of stone formation.

All the described changes are accompanied by a violation of the structure of micelles, which leads to a loss of their stability. The study of dried drops of oral fluid taken from the subjects showed that they have a different microcrystalline structure. The formation of microcrystals can characterize the remineralizing ability of saliva. Irregular crystal shape is often observed in patients with active caries.

Buffer systems of saliva are involved in maintaining a constant pH, which ensures that the pH is maintained in optimal ranges. After drinking such drinks as Coca-Cola, Fanta, beer, a decrease in the pH of saliva is possible to 5.5, which is critical for the dissolution of enamel, but within 15 minutes, saliva pH is restored. The buffer capacity of saliva is provided by three main buffer systems: bicarbonate, phosphate and protein. Bicarbonates provide 80% of the buffer capacity, the second most important is the phosphate system and the third is the protein system. The buffer capacity varies significantly and depends on the nature of the diet, time of day, and the state of the gastrointestinal tract. An increase in the rate of salivation leads to an increase in pH, so during the day the pH is higher than at night.

**2. Obstruction of the dissolution of tooth tissue.**

**3. The incorporation of ions into mineralized tissues (ionic substitutions).**

Mature tooth enamel does not undergo renewal; there are no remodeling processes inherent in bone tissue, therefore, these features are overcome by ion exchange. In mature enamel, demineralization-remineralization processes constantly occur. Saliva is involved in the circulation of calcium and phosphorus, in the regulation of their level in the oral fluid, necessary for the preservation of the enamel crystal lattice. Fluctuations in the mineral composition of the liquid phase surrounding the tooth can contribute to its demineralization. For example, rinsing the oral cavity for 15 minutes with sucrose leads to 1/3 depletion of dental plaque, which contributes to the washing out of phosphates from HAP crystals. Further, upon receipt of new portions of saliva enriched in phosphate, vacant seats are filled. Thus, the physicochemical processes of demineralization - remineralization proceed constantly in mature enamel. Therefore, the regulation of calcium and phosphorus in saliva is important for the balance of these processes.

In its prevalence, periodontal disease can compete with tooth decay.

Periodontium - the teeth, the gums, periodontal ligaments, the jaw bone and the cement of the tooth covering its root. The treatment of periodontal disease is a very long and unpleasant process.

Periodontal disease is chronic in nature and if treatment is not timely, lead to loosening and tooth loss. In periodontal diseases, the pathological process can cover all the teeth, or only some of them.

Periodontal diseases include periodontitis and gingivitis.

With gingivitis, the interdental papillae and gingival margin are infected. Most often, gingivitis is sick for young people. Most often, gingivitis develops as a result of other diseases: cardiovascular, gastrointestinal, diabetes, etc. But the development of gingivitis is possible as a result of poor oral hygiene.

With gingivitis, the inflammatory process develops in the gum tissue. In those cases when the bone tissue of the jaws is involved in the pathological process, they speak of periodontitis, i.e. gum disease. With periodontitis, pathological gingival pockets are formed - slit-like spaces between the teeth and the jaw bone filled with plaque.

The causes of periodontal disease are influenced by various factors. There are no definite answers. The cause may be microbial dental plaque and microflora of the oral cavity, overload of certain groups of teeth, improperly made prosthesis, crowns, prostheses, as well as deposits of tartar. The causes may be genetically determined or the cause may be to listen to acquired bad habits. The latter include malnutrition and occupational hazards. In the case of periodontitis, it is very important to detect it and take measures in time, otherwise you will have to install a clasp prosthesis.

One of the causes of periodontitis and gingivitis can be plaque deposits. The fact is that the microbial plaque that forms in the mouth affects periodontal disease. A large number of microorganisms located in the plaque produce enzymes that violate the integrity of the oral mucosa layer, as a result of the integrity of the endotoxins easily enter the periodontal tissues, which leads to the disease.

The worse the hygienic condition of the oral cavity, the better conditions are created for the growth of dental plaque, and therefore, for the development of the inflammatory process in periodontal disease.

Of great importance in the occurrence of periodontal disease is tartar.

Periodontal disease (translated from Greek para-about, odontos-tooth) - so the people call a number of periodontal diseases (the main of which are gingivitis, periodontitis, periodontal disease).

Periodontium is a complex of tissues surrounding and fixing a tooth in the jaw bones, which includes: the gum adjacent to the tooth, the muscle ligaments that hold the tooth in the jaw bone, and the bone tissue around the tooth itself.

According to WHO, periodontal disease affects up to 80-95% of the adult population of the globe. The early manifestations of periodontal disease can occur even in childhood, which is associated with a prolonged state of physiological stress (development, teething, tooth formation) of periodontal tissues in children, 80% of which, according to WHO, already have gingivitis, in Moscow, gingivitis was detected in 70% of children age 10 years.

Treatment of periodontal and oral mucosal diseases is determined by the characteristics of the course of the disease. It is symptomatic, because the cause of this disease has not been established. First of all, this is the treatment of the patient's chronic somatic diseases - atherosclerosis, cardiovascular pathology. Use proteolytic, antimicrobial, anabolic drugs. Means are prescribed that improve local blood circulation and metabolic processes in periodontium (auto and vacuum massage, darsonvalization, gum shower and other physiotherapeutic procedures).

#### **Useful Oral Care Tips**

- 2 times a year prophylactically visit the dentist.
- Eat more fruits and vegetables to mechanically cleanse your teeth and improve overall immunity.
- After each meal, use a toothbrush, floss, rinse your mouth to remove food debris and restore pH in the mouth.

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The most affordable and effective remedy for periodontal disease is daily gum self-massage: done in circular motions of the thumb. Attention is also paid to rational nutrition, including cabbage, tomatoes, red pepper, parsley, beets and other products containing vitamins B and C, beta-carotene, zinc, folic acid.

After eating, rinses with decoctions of anti-inflammatory and tanning herbal remedies are prescribed: sage, chamomile, oak bark.

To eliminate the increased sensitivity of the necks of the teeth, the use of fluoride varnish, fluogel, and soda powder is recommended.

Doctors pay special attention to systematic, proper oral care: the use of special toothpastes that prevent the formation of tartar, only soft toothbrushes, brushing teeth at an angle of 45 degrees in one direction from the gums to the teeth, so as not to increase the depth of the defects.

To increase the stability of the periodontium and prevent the development of inflammation, surgical methods of treatment are used: gingivectomy, removal of supra- and subgingival dental deposits, prosthetics. There are also special cosmetic fillings that brighten up flaws in the teeth and gums.

If it is possible to achieve stabilization of the process - a favorable prognosis, remission may last several years. Malignant, active course of the disease leads to early tooth loss.

Preventive measures are aimed at thorough sanitation of teeth, medical examination by a periodontist once every six months.

## 5 - Practice

### Topic: The role of microorganisms in caries. Cariogenic oral cavity. Focal demineralization of enamel. Clinical methods for determining soft plaque

#### 1.1. Technological model of the formation

Class time 3 soat	Number of students
Type of activity	Introduction of practice news
Plan	Explain the complete correct answer to questions about focal demineralization.
The objective of the training session	To study the number of affected teeth with focal demineralization of enamel.
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

#### Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (10 minutes )	1. The purpose of the lesson 2. Preparation of slides for lecture material 3. Related literature <ul style="list-style-type: none"> <li>• N.V. Kuryakina - "Therapeutic dentistry children's age "N. Novgorod 2001</li> <li>T.F. Vinogradova - "Dentistry for children" 1987               <ul style="list-style-type: none"> <li>• N.G. Pakhomov- "Primary prevention in dentistry"</li> <li>• E.V. Borovsky - "Therapeutic dentistry" 1997.</li> </ul> </li> <li>Yu.I.Vorobov-X-ray of the teeth and jaws - 1990 city of K. Georgieva - "Emergency care in dentistry" 1983.</li> </ul>	Record a subject and listen
2.Introduction of the topic (10 minutes)	1. Observance of the cleanliness of the audience. 2. Checking students for practical classes. 3.Check student attendance.	
2 Milestone (90 minutes )		Divided into small groups ,

	<ol style="list-style-type: none"> <li>1. The division of students into 2 small subgroups , asks questions on the topic ;</li> <li>2. Use of slides and multimedia;</li> <li>3. conducts therapeutic work;</li> <li>4. Combines all the information on a given topic, actively participate ni their students encourages and assesses the general.</li> </ol>	watching , participating , listening. Student expresses his opinion complements and asks questions
4. The final stage (10 minutes )	<ol style="list-style-type: none"> <li>1. Conclusion .</li> <li>2. Independent work .</li> <li>3. Homework .</li> </ol>	Listen to Record Conclusion

### Text

Focal demineralization of enamel is one of the main problems in dentistry, since the development of the carious process begins with the focus of demineralization, and after this there is further destruction of tooth tissues. Based on this fact, it follows that to prevent the spread of the carious process, it is necessary to stop it at the initial stage. Authors E.V. Borovsky and G.N. Pakhomov is proposed to abandon the term “white spot”, since it does not reflect the essence of the changes that occur in tooth tissues in the early stages of dental caries, and replace it with the term “focal enamel demineralization”. For early caries, a certain localization is characteristic, and to emphasize this symptom, it is proposed to call focal demineralization.

Focal demineralization of enamel is a systemic lesion of the cervical areas of the teeth as a result of underdevelopment and a decrease in the amount of calcium in the tooth tissue. This condition is formed during the maturation of tooth tissue after eruption. A feature of this disease is the defeat of almost all teeth. By the change in tooth tissue, this process is similar to initial caries. In the cervical area of the teeth, chalky areas are determined, which are especially clearly visible when the tooth is dried by a stream of air. The current level of fundamental scientific knowledge leaves no doubt that the initial stages of the carious process in enamel are associated with its demineralization, due to the direct effect on the tooth surface of organic acids produced by the microbes of tooth plaque. Their formation is largely stimulated by the presence of easily fermentable dietary carbohydrates. The primary destruction of enamel during caries - demineralization - occurs with a local change in pH below 4.5. However, a short-term decrease in pH is not enough to cause significant changes in the mineral composition of enamel, since after about 30 minutes the pH of the dental plaque returns to its previous value (Stefan curve). With frequent use of sucrose, a critical pH is created on the enamel surface for a long time - below 4.5, which leads to enamel demineralization. From this it follows that the frequent intake of sucrose leads to a critical level of pH on the surface of the enamel under the dental plaque. It was found that the yield of acids from a mature (cariesactive) plaque is two times greater than from an immature (cariesactive) plaque. Studies have shown that the initial carious lesion limited by enamel appears morphologically as minor changes in the surface layer with pronounced changes in the underlying enamel . The clinical manifestation of such changes is a chalk-like spot with a smooth surface, detected by drying. It is proved that beginning lesions can be remineralized to normal. For this, restriction of sucrose intake, thorough oral hygiene, as well as the use of fluoride are necessary. The process of remineralization of enamel, in the presence of a focus of demineralization without damaging dentin, occurs when calcium, phosphorus and fluorine ions enter its crystal lattice.

The focus of remineralization is characterized by a change in the color of enamel - the appearance of a brown spot, which is associated with the penetration of the focus of demineralization in addition to the mineral components of exogenous pigments. In the event of an unfavorable development of the situation in the oral cavity, when cariogenic factors are not eliminated, focal enamel demineralization continues. The rate of progressive carious lesion varies depending on the location and conditions in the oral cavity. The lesion formation time from the initial stage to the stage of the carious cavity on smooth surfaces is on average 12 to 18 months, although with poor oral hygiene, frequent use of food containing sucrose, focal enamel demineralization (white carious spot) may occur after 3-4 weeks. The development of the carious process depends on many factors. A very important one is the oral fluid, the composition and properties of which reflect the state of the organs and systems of the whole organism and determine the occurrence and speed of the carious process. The secretion of the salivary glands during secretion from the ducts is oversaturated with calcium and phosphates, which ensures the entry of these ions into the enamel. An important role in maintaining the normal state of the oral cavity, including teeth, belongs to the buffer properties of saliva, which are due to the presence of bicarbonate, phosphate and protein buffer systems in it. The high activity of the carious process is always accompanied by a decrease in the buffer capacity of saliva.

Enzymes of the oral fluid affect the processes occurring in the enamel. Their activity determines many processes, including the breakdown of carbohydrates in the oral cavity to organic acids, which are involved in the process of demineralization of enamel. The question arises about the influence of common diseases on the occurrence and development of dental caries. Research results show that a change in the general condition of the body affects the tissues of the oral cavity by changing the composition of the oral fluid. Violation of salivation entails a change in the normal ionic balance between oral fluid and enamel, which entails changes in the tooth tissue. It should be noted that the creation of adverse conditions in the oral cavity does not always lead to the appearance of foci of demineralization, the occurrence of which depends on the structural features and chemical composition of tooth tissues.

#### Grouping for microscopic examination

The concept of the method of infiltration is to impregnate a carious spot with a high-flowing polymer resin, which completely stabilizes the carious process at the initial stage. To do this, first we apply Icon-Etch for two minutes: 15% hydrochloric acid, in order to remove the pseudo-contact layer from the stain surface, then apply Icon-Dry for 99 seconds: 99% ethanol to dry, and then the main stage of treatment, first impregnation for 3 minutes with Icon-infiltrant and exposure to it, and then another application of methacrylate on the surface of the spot for 1 minute. Icon is available in two types: for the vestibular surface; for an approximate surface. The standard Icon kit includes 3 syringes: - Icon-Etch: 15% hydrochloric acid, pyrogenic silicic acid, surface-active substances; - Icon-Dry: 99% ethanol; - Icon-Infiltrant: methyl methacrylate, initiating agents, additives.

Sets differ from each other by the presence of different nozzles. The package contains six nozzles for the vestibular surface or six nozzles for the proximal surface, depending on the type. Also, triangular-shaped wedges are provided for the approximate surfaces, which improve the fixation of the nozzles between the teeth. Manufacturers recommend using Icon only at the initial stages of the carious process without violating the integrity of the enamel, since this drug only impregnates the stain

structure, but does not repair damaged areas of the tooth surface. In this regard, we thought about how to improve this technology and how to expand the indications for the application of this technique for the treatment of caries in the stage of a defect. After that, the question arose about the possibility of using this drug in combination with other restoration technologies. For this, the main dental filling materials were taken. Then a laboratory study was conducted, the purpose of which was to study the effectiveness of the use of the infiltration method in combination with various restoration technologies for the treatment of artificially created focal demineralization of enamel in the stage of in vitro defect. In addition to this drug, during the study we used a number of filling materials

The first two points differ in different generations of adhesive systems . This was necessary for a comparative analysis of the effectiveness of various adhesive technologies in combination with one filling material for filling carious cavities in patients of two different study groups. Both systems have their advantages and disadvantages, today there is a very large selection of adhesives, and for the most effective, high-quality and long-lasting restoration of tooth defects, it is necessary to clearly know the composition, rules and techniques of use of each generation.

During the study, light curing composite material was used in three groups. In two of them, a composite of traditional consistency (pasty) was used, and in the third, a fluid consistency. Since flowable composites have the ability to spread over the surface, forming a thin film (thixotropy), they can penetrate into inaccessible areas and not drain from the treated surface. Flowable composites have sufficient strength (under compression of 250-300 MPa) and, due to the above properties, are used in clinical practice for restoration of small cavities, filling of cervical defects and sealing fissures. As for compomers, according to the manufacturers, they combine the positive properties of composites and glass ionomers. From a chemical point of view, the compomer is a combination of photopolymerizable groups of composite resins and acid groups of glass ionomer polymers.

There is one positive property of glass ionomer cement, affecting tooth tissue, through the release of fluoride ions by cement. Due to this, there is an anticariogenic effect, which, combined with the method of infiltration, doubles the risk of recurrent caries in an already restored tooth. Due to the molecular connection of SIC with dentin and their biological compatibility, as well as non-toxicity to pulp, the use of this material does not require significant preparation of hard tooth tissues and the use of adhesive technologies to improve adhesion between tissues and filling material.

Methods of treatment of the studied patient groups

In a detailed study of the restored defects using the EcuSphere Shine light-curing composite in combination with the 5th generation adhesive system, uneven detachment of the filling material from the tooth tissues was determined, and the restoration with Ketac Molar glass ionomer cement completely collapsed during the manufacture of the sections on the San 450 microtome. The penetration of the preparation was also confirmed. The initial layers of dentin, where areas saturated with an infiltrant are identified. This fact has very important clinical significance, since in the case of incomplete infiltration of the entire volume of damaged tissues, the likelihood of a relapse of the carious process is high. However, in an in vitro study, we studied drug infiltration on dry samples, while dentinal fluid is present in the vital in dentin, which can become an insurmountable obstacle to the penetration of a hydrophobic infiltrant. Thus, on the experimental model, it was possible to establish the effectiveness of combining the Icon infiltration method with the restoration of light-curing fluid filling materials, in this study, such as EcuSphere Flow composite and PrimaFlow compomer. The obtained images clearly show the tight contact of the filling material with the tissues

of the tooth, this indicates a high adhesion between them. After a combination of methods, no damage was detected on the enamel surface, which confirms the safety of using the presented treatment regimen in practice.

Using research in a scanning electron microscope, the results of the use of the Icon infiltration method in combination with various in vitro restoration technologies were studied. Enamel normally consists of mineral and organic matter. Organic matter is represented by formations of moderate electron density, which are not visible due to masking by mineral substances based on calcium phosphate (hydroxyapatite), which forms crystals or is located amorphously. Hydroxyapatite crystals are rod-shaped. The crystals are tightly adjacent to each other, the layer of organic matter is not visible, it is difficult to measure it in view of the fact that they overlap each other in length. Crystals form crystallites, inside which crystals have the same orientation. Crystallites form enamel prisms. Their organic frame is not visible due to the high degree of mineralization. With a clinically pronounced carious process, which is accompanied by a defect in the form of a carious cavity in the prisms of enamel and dentin, demineralization occurs, accompanied by the destruction of prisms of crystallites and crystals, up to the complete dissolution of the mineral fraction. At the same time, the organic component of enamel in the form of arcades (77.5 to 101.5 urn), which pass one into another, is clearly visible. As a rule, adjacent arcades form a star.

Inside the arcades, the organic matter has thin strands arranged in the form of a net consisting of fibrils with a diameter of about 3.5 sp, of the same direction. Against the background of a practically absent ordered mineral component, it is possible to observe individual preserved crystallites, crystals, and fragments of prisms of fine-grained mineral matter. Normally, when studying dentin ultrastructure, the main morphological components are hydroxyapatite crystals, which are smaller in comparison with enamel. The crystals are combined into crystallites, which, along with single crystals, alternate with collagen fibrils oriented around the dentinal tubules. Inside the crystallites, as a result of a weakly expressed demineralizing effect, it is possible to observe: the drusen of crystals in the crystallite, their transverse striation, to determine the size of the intercrystalline space of about 5 sp.

Microscopic examination revealed significant differences between the samples. The results of the effective application of the method of infiltration in combination with the light-curing composite EcuSphere Shine in combination with an adhesive system of 5 and 6 generations are obtained.

Analysis of the immediate results of treatment

Based on the laboratory and clinical studies, the effectiveness of the method of treatment of focal enamel demineralization in the stage of defect by the method of infiltration in combination with various restoration technologies has been proved. In a laboratory study for the restoration of the EcuSphere Shine composite light-cured composite material in combination with a 6th generation adhesive system, the presence of filling material in the tooth cavity is noted on the sections. But, despite this, the sealed defect is penetrated through the entire thickness by microcracks and partial exfoliation of the filling material from the walls of the cavity is observed. After testing this technique on patients, satisfactory results were obtained combining this material with Icon. Visually, the restored tooth defects of patients of this group are smooth, without violating the integrity of the surface, without visible transitions of filling material in the tooth tissue. Such a difference between the two types of studies is possible, due to the difference in the structure of the extracted tooth.

Also, the effectiveness of restoration with the EcuSphere Shine composite material in combination with adhesive systems of 5 and 6 generations was compared. In the course of the laboratory study, the adhesive system of the 6th generation showed a more effective result than the fifth, but despite this, in the course of the clinical study, all restorations proved the feasibility of applying this technology in practice. The difference in the application of these two combinations is that when using the 6th generation adhesive, the restoration process takes less time, due to the one-step application of the substance used, in contrast to the fifth, which is consistent with the data of W. U. (2003). Also, I would like to note the advantages of composite materials, unlike the other studied. They are very convenient to use, due to their pasty consistency and a large number of shades, they allow for aesthetic restorations on the front teeth. During the manufacture of sections for microscopic examination, restoration with Ketac Molar glass ionomer cement completely collapsed, which in turn indicates poor adhesion to the walls of the cavity of the infiltrated lesion. In the clinic, this method has proven itself in cases where the patient has a deep carious lesion on the oral side, combined with extensive focal mineralization of enamel on the vestibular surface. In this situation, we used infiltration on the vestibular surface, and the defect was restored with glass ionomer cement, which is consistent with the data of Graham D. (2003).

As for flowable composite materials, in our study, such as EcuSphere Flow fluid composite and PrimaFlow compomer, they successfully proved both in laboratory research and in clinical. The obtained images clearly show tight contact of the filling material with the tissues of the tooth, which indicates a high adhesion between them. The transition of the filling material into the tooth tissue is smooth, without visible damage and cracks. In clinical use, these materials are convenient due to their fluid consistency, due to which they are able to flow into hard-to-reach places of the prepared cavity. After a combination of methods, no damage was detected on the enamel surface. Fluid materials were used to seal small defects.

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The aim of a clinical examination of a child is to strive to correctly determine the diagnosis of the disease, which is the key to successful treatment of the patient and the prevention of the disease. Examination of the oral cavity is one of the links in examining a child.

The research methods used in dentistry can be divided into subjective methods - patient questioning (collection of medical and dental history), complaints and objective methods - external examination, palpation, percussion, auscultation, oral examination, thermal diagnostics, instrumental (physical and radiological) methods and laboratory examination methods, calculation of diagnostic models, photographing.

The survey begins with a survey of the child or with a survey of parents or relatives. Complaints can be associated with both the underlying and the concomitant illness.

The main complaint made by dental patients is complaints of pain in the maxillofacial region or in the area of the affected tooth.

Parameters are evaluated as:

- nature of pain (spontaneous, causal)
- localization (localized, spilled)
- duration (permanent, short-term)
- severity (acute, dull, aching, throbbing)
- irradiation of pain (with irradiation, without irradiation)

An important point in the study of a sick child is the correct and correctly completed history. Almost always, this allows the doctor to draw the right conclusions regarding the causes and nature of the disease, the severity of occurrence, the severity of the course and the period of its development.

### **3. Clinical examination methods:**

**a) genealogical history; an anamnesis of life (development, nutrition, past illnesses, etc.); allergic history; disease analysis.**

Having ascertained the medical history, it is necessary to obtain information about the medical history. A history of life is collected over periods of childhood. Examination of dental status: Changes in tooth enamel (imperfect amelogenesis), dentin (imperfect dentinogenesis), enamel and dentin (Staton-Capdepon syndrome), size, shape, number of teeth, anomalies in jaw size (macro- and micrognathia), as well as their position in skull (pro- and retrognathia), adentia, diastema, frenum attachment, small vestibule of the oral cavity, congenital nonunion of the upper lip, alveolar bone, hard and soft palate, dysostosis (congenital maldevelopment of the jaw bones).

An objective examination, as a rule, begins with an external examination, which includes (psycho-emotional state, physical development indicators, posture, gait, head position, speech formation, size of the mouth opening, breathing pattern (nasal, oral, mixed); the nature of swallowing, there are 2 types swallowing (somatic type: free swallowing, movement of the facial muscles is invisible, the tongue is located on the upper floor of the oral cavity and abuts against the hard palate behind the upper incisors, infantile type: facial muscles and neck muscles, for example ulcerous

protrusions of the lips, an increase in the height of the lower third of the face, the tongue is located on the lower floor of the oral cavity and rests on the lips and cheeks), the state of chewing muscles is palpated and visual, normally palpation is painless, the muscles are relaxed at rest (palpation is carried out bimanually, symmetrically on both sides of the face), TMJ function.

Palpation is carried out symmetrically anterior to the tragus of the ear and along the front wall of the external auditory meatus. The nature and symmetry of the movements of the lower jaw are evaluated. Palpation should be painless, without clicks and crepitus. The amplitude of vertical movements is 40-50 mm, horizontally - 7 - 12 mm, the shape of the auricles, the skin condition along the line of fusion of the maxillary process with the mandibular (anterior to the tragus of the ear). When the fusion line changes in color, the presence of rudiments, one should look for other symptoms of violation of the formation of gill arches, the state of the lymphatic apparatus of the MHL diagnosis of lymphadenopathy is of great importance in the recognition of many infectious, immunological, tumor and other diseases of the oral organs. In this case, it is necessary to adhere to the following scheme: during the examination, it is necessary to establish the time of onset of soreness and / or enlargement of the lymph nodes, the dynamics of development; upon examination and palpation, the lymph nodes are examined in the following order: occipital, parotid, chin, submandibular, maxillary, superficial cervical, paratracheal.

**b) The study of dental status - the sequence of study of dental status; inspection; palpation; the study of functions (breathing, closing lips, opening the mouth, swallowing, speech articulation, etc.); percussion of teeth.**

Inspection of the oral cavity begins with a visual assessment of the color and topography of the oral mucosa, there is a violation of the integrity and the presence of damage elements. Inspection is carried out using 2 mirrors on the anatomical and topographic zones in natural light. WHO, (1997) recommends the following examination sequence:

1) Inspection of the oral mucosa:

- Commissures, mucous membrane of the lips
- Vestibule of the oral cavity
- Cheek mucosa
- The mucous membrane of the hard and soft palate
- The back and sides of the tongue
- The lower surface of the tongue and the bottom of the oral cavity

2) Oral hygiene and periodontal conditions.

3) Examination of teeth and dentitions.

4) Occlusion and orthodontic status.

Architectonics of the vestibule and the bottom of the oral cavity.

**The mucous membrane striae** are normally located in the area of premolars of permanent and molars of temporary teeth, are woven into the transitional fold.

The shape and depth of the vestibule (the distance from the gingival margin to the lowest point of the vestibule arch in a state of relaxation of the muscles of the chin and lips, normally 8-10 mm, 5 mm is a shallow vestibule.

The shape and attachment of the frenum of the lips and tongue (the frenulum normally has a triangular shape; the frenulum of the lips with a wide base is attached to the lip and ends along the midline of the alveolar process at a distance of 5 mm from the gingival margin). The "tension" test assesses the condition of the frenulum of the lips. Pulling the lip down and forward causes a displacement of the gingival margin from the surface of the teeth and "whitening" of the interdental spaces - a short bridle.

Normally, the gums are pale pink in color, dense, moderately moist, interdental papillae of spiky shape. Evaluate the consistency of the gums, determine the areas of pain, bleeding and discharge from pockets.

### **Dental examination:**

When evaluating the dentition, the relationship of the teeth, the presence of dental plaque, the degree of wear of the crowns, the presence of carious cavities and defects in teeth of non-carious lesions, and the quality of fillings are taken into account. Deformation of the dentition, close position of the teeth, the presence of three and diastemas, the identification of symptoms of traumatic occlusion.

To assess the condition of the bite, it is necessary to know the **periods of bite formation** :

#### **1. The period of the toothless jaws** - from birth to teething of the first tooth:

- the child has no teeth
- the presence in the jaw of 20 rudiments of temporary and 16 permanent (1,2,3,6 teeth) in each segment
- jaw ratio: sagittal gap 7-14 mm (infant retrogenia), vertical gap 1-2.5 mm

Adaptations to the act of sucking:

- flat sky
- unformed TMJ
- proboscis lips
- pronounced gingival cushions with a dense gingival membrane
- pronounced fat lump Bisha in the thickness of the cheek

#### **2. The period of temporary bite** - from 6 months to 6 years - from the first temporary to the eruption of the first permanent tooth

a) the period of the forming temporary bite (6 months-2.5-3 years):

- teething. Normal - timely, consistent, pairwise. With pathology, delayed, premature, inconsistent, unpaired.
- jaw ratio - the sagittal gap is eliminated. The vertical gap is eliminated due to teething. adaptations to the act of sucking disappear.
- nasal breathing, somatic swallowing.

b) the period of the formed temporary bite (2.5-3 years-6 years)

Dental arch in the form of a semicircle. 10 teeth on the upper and 10 teeth on the lower jaw.

- jaw ratio: the teeth of the upper jaw overlap the teeth of the lower jaw by 1/3 of the crown height (in the anterior section) In the anterior section - cutting-tubercular contact, in the lateral parts - fissure-tubercular contact. The palatine hillocks of the upper teeth are located in the fissures of the lower.

- there is a resorption of the roots of I and II teeth. Their physiological mobility, physiological abrasion of the incisors appears, tremas and diastemas appear in the anterior section

#### **3. The period of the replacement bite** is 6-12 years. From the eruption of the first permanent to the eruption of the last seventh tooth:

- teething of permanent teeth. Normal - timely, consistent pairing. The roots of permanent teeth are formed

- jaw ratio: the teeth of the upper jaw overlap the teeth of the lower 1/3 of the crown height in the anterior section. In the anterior part there is a cutting-tubercular contact, in the lateral parts there is a fissure-tubercular contact. The mesionic tubercle of the upper sixth tooth is located in the fissure of the lower sixth tooth

- there is a resorption of the roots of the canines and temporary molars, their mobility, physiological abrasion of III , IV , V teeth appears . The appearance of three between fangs and temporary molars.

#### 4. The period of formation of a permanent bite (12-21 years). Ends with teething wisdom.

##### **Characteristic of orthognathic bite:**

- teeth of the upper jaw overlap the teeth of the lower jaw at 1/3 of the height of the crown in the anterior
- in the anterior section cutting-tubercular contact, in the lateral departments fissure-tubercular contact
- each tooth, except 41.31, and 17.27 or 18, 28 has 2 antagonists. As antagonists, the teeth of the upper jaw have the same and posterior teeth, and the teeth of the lower jaw have the same and anterior teeth
- the midline of the face coincides with the line between the central incisors of the upper and lower jaws
- lack of three and diastemas
- multiple contacts on the occlusal plane
- the teeth of the upper jaw are located along the arc of the semi-ellipse, and the teeth of the lower jaw along the parabola

**Bite** is the nature of closure of the dentition in the position of central occlusion. Bite can be physiological and pathological.

##### **Physiological forms of bite:**

6. Orthognathic bite
7. Straight bite. In the anterior section, the contact of the cutting edges of the incisors.
8. Orthognathic bite with deep incisal overlap. In the anterior section, the teeth of the upper jaw overlap the teeth of the lower jaw by more than 1/3 of the crown height while maintaining the cutting-tubercle contact
9. Physiological bipognathia. The vestibular inclination of the teeth of the upper and lower jaw.
10. Physiological opistognathia. Oral inclination of the teeth of the upper and lower jaw.

##### **Pathological forms of bite:**

6. Distal bite. It is characterized by a violation of the ratio of both anterior and posterior teeth, namely: the upper dentition is shifted forward with respect to the lower or the lower dentition is shifted back with respect to the upper.
7. Mesial bite. Violation of the closure of the dentition, namely: the upper dentition is displaced backward relative to the lower or lower dentition is displaced forward in relation to the upper.
8. Deep bite. The upper incisors overlap the same lower teeth without closing them.
9. Open bite. A group of teeth (in the anterior or lateral section) does not close, creating a vertical gap.
10. Cross bite. Distinguish:
  - a) **Vestibulo - occlusion** - displacement of the lower or upper dentition towards the cheek;
  - b) **Palatine occlusion** - displacement of the upper dentition is palatine;
  - c) **Linguoocclusion** - displacement of the lower dentition is lingual.

##### **Dental examination.**

Examination of teeth and dentitions is carried out in a certain order, starting from the upper jaw, and each tooth is examined consecutively from tooth 1.8. to the tooth 2.8. on the upper jaw and from the tooth 3.8. to the tooth 4.8. on the bottom.

When examining each tooth, pay attention to the following:

- his position

- form
- color
- state of hard tissues (caries, fluorosis, hypoplasia)
- the presence of seals, tabs, their condition
- tooth stability
- position in relation to the occlusal surface of the dentition.

Determination of the periodontal condition is carried out using percussion:

**Percussion** - tapping on the cutting edge or chewing surface of the tooth with tweezers or a probe handle - to determine the condition of the periodontium. In the presence of an inflammatory process in the periodontium - pain. Percussion begins on the healthy side. Distinguish between vertical (strokes coincide with the axis of the tooth) and horizontal (strokes have a lateral direction) percussion. The practicing dentist should independently prevent the examination of the oral cavity. Dental prophylaxis in the treatment regimen of a general disease prevents the appearance of foci of inflammation in the oral cavity. This includes pathology of the gastrointestinal tract, cardiovascular system, allergic reactions, neurogenic and endocrine disorders.

We are also talking about infectious and non-infectious processes of various nature that seriously violate homeostasis and therefore require treatment in a hospital (childhood infection, radiation sickness, myocardial infarction, blood diseases, tuberculosis, pemphigus).

The dentist, in addition, must clearly understand the possibilities for preventing complications from diseases that pose a threat to the patient's life in order to refer him to a specialist in a timely manner: hematologist, for blood pathology; oncologist - with malignancy of the tumor or ulcer, dermatologist - with pemphigus.

Particular alertness to a possible social risk or threat to the life of the patient. So, in some cases, the patient who turned to the dentist serves as a patent source of infectious diseases: AIDS, syphilis, tuberculosis. In this situation, the dentist sends the patient to a specialized institution to establish a diagnosis and subsequent treatment.

Depending on the specific situation, the dentist builds his actions, including the following general rules that prevent the onset and development of the disease.

Each team participating in the dental examination should be equipped with the following tools and materials:

- WHO periodontal probes (CPITN);
- flat dental mirrors;
- cotton or liglin rollers;
- sterilizing solutions;
- gloves and masks;
- pencils;
- WHO inspection cards.

1. Reception of each patient is carried out using personal protective equipment and sterile instruments.
2. The initial examination of the oral cavity is carried out only with the use of tools (mirror, probe spatula, tweezers).
3. General preventive measures include elimination of the cause capable of causing the disease.
4. Rational oral hygiene is a mandatory measure of dental prophylaxis.



## 6 - Practice

### Topic: Preventive examination of the oral cavity. Professional oral hygiene

#### 1.1. Technological model of the formation

Lesson time 3 hours	Number of students
Type of activity	Introduction of practice news
Plan	Give the full correct answer to questions about changes in the composition of saliva during the development of caries.
The objective of the training session	To study the development of caries.
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

#### Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (10 minutes )	1. The purpose of the lesson 2. Preparation of slides for lecture material 3. Related literature <ul style="list-style-type: none"> <li>• N.V. Kuryakina - "Therapeutic dentistry children's age "N. Novgorod 2001</li> <li>T.F. Vinogradova - "Dentistry for children" 1987</li> <li>• N.G. Pakhomov- "Primary prevention in dentistry"</li> <li>• E.V. Borovsky - "Therapeutic dentistry" 1997.</li> <li>Yu.I.Vorobov-X-ray of the teeth and jaws - 1990 city of K. Georgieva - "Emergency care in dentistry" 1983.</li> </ul>	Record a subject and listen
2. Leading a topic (10 minutes)	1. Keeping the audience clean 2. Checking students for a practical lesson 3. Check student attendance.	Are listening
3. The main stage (90 minutes )	1. The division of students into 2 small subgroups , asks questions on the topic ; 2. Use of slides and multimedia; 3. conducts therapeutic work; 4. Combines all the information on a given topic, actively participate ni their students encourages and assesses the general.	Divided into small groups , watching , participating , listening. Student expresses his opinion complements and asks questions
4. The final stage (10 minutes )	1. Conclusion . 2. Independent work .	Listen to Record Conclusion

### Text

*Hygiene* (Greek *hygienos* - healing, bringing health) is a branch of medical science that studies the influence of environmental factors on humans and develops optimal requirements for the conditions of human life.

For dentists, *oral hygiene* is a science and practice that reduces the amount of dental deposits to a level that is safe for dental tissue and marginal periodontal disease.

Distinguish between individual oral hygiene and professional. Under the individual oral hygiene understand the activities that a person conducts on his own, usually at home.

Professional oral hygiene is a system of scientifically based treatment and preventive measures performed by medical personnel aimed at improving the organs and tissues of the oral cavity, as well as at preventing the occurrence and progression of dental diseases.

It should be clarified that the concept of "professional hygiene" includes not only mechanical removal of dental plaque. There are three main groups of activities, these are: *preventive, educational and therapeutic*.

The main stages of professional oral hygiene are:

1. Index assessment of the hygiene of the oral cavity.
2. Motivation of the patient.
3. Antiseptic treatment of the oral cavity.
4. Anesthesia.
5. Removal of dental plaque.
6. Grinding and polishing teeth.
7. Irrigation of the oral cavity.
8. Quality control of the manipulations.
9. Fluoride Prevention
10. Selection of personal hygiene products and training in hygiene skills.
11. Determining the date of the next visit.

**1. Index assessment of the hygiene of the oral cavity.** For the index assessment of the hygienic condition of the oral cavity, many indices are used. Most common among them are OHI - S ( J . C . Green , J . R . Vermillon , 1964) and PLI ( Sylness , H . Loe , 1964).

The OHI - S index is determined using a dental probe. The buccal surface of the 16th and 26th teeth, the labial surface of the 11th and 31st, the lingual surface of the 36th and 46th are examined for the presence of hard and soft dental deposits, while the teeth should not be affected by caries. For research, the probe is installed parallel to the axis of the tooth and begin to advance it in zigzag movements from the occlusal surface to the neck, noting the level at which there is plaque. The following estimates are used: 0 - no plaque; 1 - plaque covers no more than 1/3 of the tooth surface; 2 - plaque covers from 1/3 to 2/3 of the tooth surface; 3 - plaque covers more than 2/3 of the tooth surface. Plaque Index (DI-S) is calculated using the formula:

$$DI-S = \frac{\text{The sum of 6 teeth}}{6}$$

The index of 0.0-0.6 indicates good oral hygiene, 0.7-1.8 - satisfactory, and 1.9-3.0 indicates a poor hygiene condition.

Assessment of the tartar index (CI-S) is carried out as well as plaque: 0 - no stone; 1 - supragingival stone on 1/3 of the tooth surface; 2 - supragingival stone on 2/3 of the surface of the crown or individual sections of the subgingival stone; 3 - the supragingival stone covers more than 2/3 of the tooth surface or the subgingival stone girdles the neck of the tooth. Tartar index is calculated using the same formula as plaque.

$$OHI-S = DI-S + CI-S$$

A simplified hygiene index (OHI-S) is evaluated according to the following values: 0-0.6 good oral hygiene; 0.7-1.6 satisfactory; 1.7-2.5 unsatisfactory; more than 2.6 - poor oral hygiene.

The PLI plaque index is also performed using a dental probe without staining and allows you to evaluate the hygiene of all or individual teeth. Visually examine four surfaces of the tooth (vestibular, oral, distal and medial) for the presence of soft dental deposits. The amount of plaque on the tooth surface is determined by the following estimates: 0 points - no plaque in the gingival region; 1 point - a thin film of plaque in the gingival region is detected only by a probe; 2 points - plaque is visible in the cervical region; 3 points - on a large part of the tooth surface and in the interdental spaces there is a significant amount of plaque. The plaque index of one tooth is calculated by the formula:

$$\text{PLI (tooth)} = \frac{\Sigma \text{ points of four surfaces}}{4}$$

Oral PLI is calculated as the sum of the scores of all the teeth examined divided by their number.

**2. Motivation of the patient.** Long-term work with patients confirms that an important task for the dentist in the treatment and prevention of dental diseases is to motivate, educate and instruct the patient. The most important thing is to find in the person of the patient a conscious and actively helping ally in the fight against his disease. It can be very difficult to find the right words and arguments. Our speech is a universal code that we use to exchange information with other people. We can easily form perceptions of reality that we do not need, when deciphering, giving the words such a meaning that is completely different from the original one. Using speech, we generalize, distort and skip a lot of information from previous experience. How much time and effort is lost when the patient does not correctly understand the words of the doctor.

In an individual conversation with the patient, the dentist must have sufficient authority. With an indifferent and negative attitude to his work, the doctor is not able to carefully and attentively listen to the patient's complaints, makes medical mistakes and is aggressive and irritable, thereby losing confidence. The doctor should show healthy optimism, honesty and truthfulness. The words of the doctor have a huge suggestive (inspiring) effect on any person, especially on the patient. Therefore, it is important to relate to the conversation with sufficient responsibility. You should not deprive the patient of the opportunity to take care of himself and his health, correcting behavior correctly and creating conscious positive goals. It is always better to help than to save.

Motivation is the motivation that causes the patient's activity and determines the direction of his actions. The task of the dentist is to ensure that the patient has a persistent need for attention to his health in general and to dental health, in particular. It is necessary to convince a person that due to regular and high-quality oral hygiene and preventive examinations at the dentist, you can get rid of toothache and the need to have removable dentures in old age. The conversation should be structured in such a way as to very tactfully prompt the patient the answer to the question "why should I do this? What is the point?"

Observation of children has shown that forced planting and coercion cause a sharp rebuff. Therefore, in young patients, the following methods and types of motivation will be effective. *Visual* motivation i.e. a personal example of parents at home, in a clinic, is an indication of dental plaque with dyes and colorful prospectuses, and when conducting hygiene classes, video films are shown. *Auditory* motivation involves verbal reasoning, discussion, and the conviction of the need to maintain quality oral care. *Tactile* motivation is a feeling of smoothness and comfort that a child receives after a professional hygienic tooth treatment in a clinic and what he should strive for when taking care of the oral cavity at home. *Olfactory* motivation includes a feeling of fresh breath, as a factor in health, purity and beauty.

**3. Antiseptic treatment of the oral cavity** (rinse or irrigation) is a mandatory procedure before and after removal of dental plaque. Among the chemicals used as antiseptics, you can use:

- oxidizing agents (0.5 - 1.5% hydrogen peroxide, 0.1% aqueous solution of potassium permanganate);
- halogens (1% aqueous solution of iodinol);
- detergents (0.02 - 1% etonium, 0.05% chlorhexidine bigluconate, 0.025% decamethoxin);
- phenol-containing antiseptics (listerin, triclosan);
- derivatives of nitrofurans (0.02% furatsilin, 1: 25000 furazolidone);
- salts of heavy metals (0.25% copper sulfate, zinc lactate).

In addition, you can use rinsing agents ( Plax , Healing Balm, and others) and tinctures of herbs (calendula, chamomile, St. John's wort, etc.) with an alcohol content of up to 7%.

**4. Anesthesia.** Removing pain sensitivity is carried out in accordance with the indications and contraindications. For this purpose, local application, infiltration or conduction anesthesia is used. Anesthesia allows the doctor to more thoroughly and efficiently perform the procedure for cleaning teeth. For application anesthesia, a spray of 10% lidocaine, xylonor gel or lidoxor, etc. can be used. Infiltration and conduction anesthesia is often performed with preparations based on 4% articaine with adrenaline, 3% mepivacaine or 2% lidocaine.

**5. Removal of dental plaque** can be carried out by various methods: chemical, manual, electromechanical, rotating tools for an angled or special tip, as well as using a surgical laser. The effectiveness of professional dental scaling depends on the knowledge and manual skills of the doctor, on his conscientiousness and practical experience.

Basic principles of dental plaque removal:

- a) a detailed history of somatic diseases;
- b) determining with the help of a probe and special coloring agents the type of dental deposits (soft or hard), their quantity and localization (supragingival or subgingival);
- c) adequately select the means and method of removing dental plaque;
- d) it is necessary to have good lighting;
- d) in accordance with the ergonomics of the position of the doctor-patient-assistant;
- f) correctly fix instruments, use appropriate intra- and extraoral supports, protect surrounding tissues from damage;
- g) take into account the principles of consistency and sequence of removal of dental plaque in order to cover all surfaces of the selected group of teeth;
- h) in accordance with the diagnosis, designate a specific date for the next visit for prevention and maintenance therapy.

A number of chemicals, usually acids, are used to soften the density of mineralized dental deposits. There are special preparations such as Detartrol ultra or Depuration Solution , which are applied to the tooth surface for 30-60 seconds, then washed off, and tartar is removed by the usual method.

*Manual removal of dental plaque.* There are special tool kits for manual dental scaling, which include various types of instruments, the main of which are: periodontal probes, sickle-shaped scalers, hooks, Gracey curettes , excavators, files, chisels. Using probes, gingival pockets, their length and depth are detected, tartar, overhanging edges of fillings and crowns, and the presence of carious cavities are detected. To remove stones that are firmly connected with the tooth, scalers, hooks (or universal curettes), excavators, files and chisels are used. Curette Gracey - is more subtle and tools designed for finishing the tooth surfaces, namely for smoothing the root surface and the removal of granulation tissue. A distinctive feature of scalers and hooks (universal curettes) from Gracey curettes is the angle between the front surface and the lower third of the rod. For hooks and scalers, the angle will be  $90^\circ$  , and for Gracey curettes ,  $70^\circ$  . A distinctive feature of scalers is the sharp tip of the instrument, while the hooks and curettes have a rounded end.

Files (rasps, files) are rarely used due to difficult adaptation to the uneven surface of the tooth and limited tactile sensations. These tools have a round or oval base with many cutting edges. Designed for scraping mineralized deposits, sometimes they are used to remove overhanging edges of fillings and prostheses.

Excavators have only one cutting edge. The excavator blade is located at an angle of  $100^\circ$  to the handle and is bent at an angle of  $45^\circ$  . They are effective for use on a flat root surface.

Chisels are designed to remove tartar from the proximal surfaces of the teeth, especially closely spaced, where the use of other tools is difficult. The tool has two cutting edges, beveled at an angle of  $45^\circ$  . The bit is inserted from the front surface and the stone is removed in the interdental spaces with a push movement. Manipulation is performed with a strictly horizontal position of the patient, because of the danger of aspiration.

When carrying out professional removal of supra- and subgingival dental deposits, it is necessary to use correctly and qualitatively sharpened instruments. The sharpness of the hand tool can be visually determined: if the cutting edge of the working part is noticeable by the reflected light from the lamp, then it requires sharpening. When using a blunt instrument, the doctor exerts excessive pressure on it, deforming the cement or dentin of the root. In addition, an adequate angle between the tool and the root surface to be treated

should be observed: it should not be less than 45 ° or exceed 90 ° , since the effectiveness of removing dental deposits will depend on this.

Depending on the depth of damage to the tissues of the marginal periodontium and the number of dental deposits in one session, one to four quadrants can be processed. The procedure should be consistent: the tool moves to the next tooth surface only after the processing of this surface is completed, gradually moving from the tooth to the tooth of a certain quadrant.

*Electromechanical removal of dental plaque.* There are three main types of electromechanical tools: sound (pneumatic) scalers; magnetostrictive ultrasonic scalers and piezoelectric ultrasonic scalers. The basis of ultrasonic removal of dental plaque is the use of the following mechanisms: machining, irrigation, cavitation, acoustic turbulence.

You should remember the main limitations when working with ultrasonic devices. Contraindications to the use of scalers are:

- acute infectious and respiratory diseases (including the common cold);
- chronic infectious diseases (bacterial endocarditis, chronic bronchitis, bronchial asthma, rheumatoid arthritis);
- weakening of the immune system;
- various forms of arrhythmias, heart defects with cyanosis;
- use of pacemakers (artificial pacemakers);
- temporary bite, teeth with unformed roots;
- the presence of tumors;
- disorders of the blood coagulation system;
- the presence in the oral cavity of veneering coatings, laminates, gold and ceramic crowns, implants;
- limited use of scalers in pregnant women.

Particular precautions are required for patients suffering from hepatitis, tuberculosis, HIV infection, for which the removal of dental plaque is carried out with utmost care at the end of the work shift.

Pneumatic scalers are low-frequency and operate in the range from 3000 to 8000 cycles per second. These tools operate using compressed air that is supplied from the turbine of the dental unit. This type includes KaVo SONICflex LUX , MicroMega Air ScalerR , Titan - SR tips . Acoustic devices provide elliptical oscillatory movements of the tip of the instrument, making active all surfaces of the nozzle. Manual pressure on the tip should be very light, since tightly pressing the nozzle to the tooth surface dampens working vibrations.

Magnetostrictive devices (Dentsply Cavitron MED BOBKET, Simplifide Systems, Inc., Sonatron; PERIOjin Odontoson) operate in the range from 18,000 to 45,000 cycles per second with obligatory water cooling. Inside the tip of these tools are many flat metal plates with a specific orientation or a ferromagnetic rod, which are able to expand and contract under the influence of a magnetic field generated by the passage of electric current. The oscillatory movements of the nozzle tip vary from linear to circular and allow all surfaces (lateral, back, front) to be active.

Piezoelectric scalers ( Pieson Master , system 402 ( EMS ), Amdent US 30, Pro - Select , Suprasson P - Max , etc.) operate in the range from 25,000 to 60,000 cycles per second and, like magnetostrictive devices, require water cooling. To cool the instrument, it is possible to use not only distilled water, but also pharmacologically active substances, such as chlorhexidine bigluconate, furatsilin, hydrogen peroxide, etc. The principle of vibration reproduction is based on the stretching of crystals in an alternating current field (piezoelectric effect). The movement of the working part of the tip is linear or reciprocating, which makes active only two sides of the nozzle. In addition, it should be remembered that the stronger the pressure on the tip, the less effective the tool.

A modern device for professional oral hygiene is the Vector system . It allows you to: carefully remove over- and subgingival dental deposits, effectively irrigate periodontal pockets, destroying bacteria and endotoxins from the root surface, carefully polish the surface of teeth, dentures and implants, de-epithelization of the surface of the gingival pocket. Vector ( Durr - Dental ) is an ultrasonic device with an oscillation frequency of about 25000 Hz, having various types of tips and nozzles. A special tip with a metal ring ensures the nozzle does not move in the horizontal plane, but in the vertical (along the axis of the tooth). The tool works precisely linearly, parallel to the tooth surface without rotation and impacts. The Vector system uses metallic and flexible tools made from modified polymers. Metal tools are designed to remove tartar and micro-preparation, and carbon ones - to sparingly remove the supra- and subgingival deposits from the surface of root

cement, implants. Removal of supra- and subgingival dental deposits occurs almost painlessly. The technique of using the Vector system is similar to working with ultrasonic scalers. If necessary, a grinding and polishing suspension (particles of hydroxyapatite with a grain size of about 10 µm) can be used to process the tooth surface, which is supplied by pulsating emissions to the nozzle. An abrasive carborundum-containing suspension (grain size 40-50 microns) is used to prepare hard tooth tissues.

When working with ultrasonic scalers, it is recommended :

1. before starting work, let water through the system for 2 minutes to flush it;
2. be sure to use a mask and glasses for protection;
3. use adequate cooling;
4. carry out quality control of work with hand tools;
5. the shape and size of the nozzle must correspond to the contours of the tooth surface being machined;
6. a tool for removing dental plaque must be driven back and forth parallel to the surface of the tooth with light manual pressure .

#### **Features of removing dental plaque in children:**

- in the presence of mineralized dental deposits for their removal, preference is given to hand tools;
- to remove dental deposits, use hand tools only with a rounded end (curettes);
- the use of low-frequency (pneumatic) scalers is allowed; the use of magnetostrictor and piezoelectric scalers is not recommended;
- when working with scalers, contact of the tip tip with hard tissues of teeth should be avoided (the destruction of mineralized dental deposits should occur only due to the effect of cavitation);
- polishing the tooth surface with rubber cups, low abrasive polishing strips, flosses, polishing pastes is of great importance.

*Laser systems* . In recent years, laser devices have been widely used in medical practice. In therapeutic dentistry, neodymium and erbium lasers (with a wavelength of 1064 nm to 2900 nm) can be used. The principle of operation of such lasers is based on the effects of ablation (evaporation of a tissue site to a certain depth) and vaporization (evaporation of water). The most optimal data for an erbium laser (Er : YAG laser ). To remove dental plaque, nozzles of various lengths are used in accordance with the depth of the periodontal pocket. The operating mode with detection allows processing in precisely those areas where dental deposits have been detected. Tissues after laser treatment are relatively sterile.

**6. Grinding and polishing teeth.** After removing dental deposits with manual and electromechanical instruments, the root surface becomes rather rough, which contributes to a more rapid fixation of bacterial plaque. Therefore, after tooling, grinding and polishing should be carried out.

It is far from always possible to completely remove all dental deposits using hand and electromechanical tools. The most inaccessible places on the surface of the teeth are: grooves on the root surface, deep intraosseous pockets, furcations, concave surfaces of the teeth. In these areas, the use of fine-grain diamond burs, special PERIO - PRO ( Busch ) burs , and also EVA- angle tips (1000-1500 rpm) are shown.

In addition, tools such as periopoliry ( P . Romhild , Mikrona ), which represent a system for polishing and smoothing the root surface. Periopolis is an angled tip into which a tool for removing dental deposits such as a curette is inserted.

For scaling and smoothing the root surface, a special tip ( Profin ® Directional System ) has been developed , in which special nozzles are used. As nozzles, plastic polishing files of various sizes can be used. Together with abrasive paste, they are inserted into the interdental space and, making reciprocating movements with an amplitude of 1.2 mm, free the tooth surface from plaque.

Hanging edges of fillings, crowns, inlays, excess material in the subgingival region are the most common causes of inflammation in periodontal tissues. As a rule, their elimination is associated with a number of difficulties. To facilitate this process, you can use Profin Lamineer ® nozzles , as this system provides

various additional files for grinding, finishing and polishing in the subgingival and proximal areas of the tooth and on the root surface.

*Tools for polishing the surface of the tooth.* After removal of supra- and subgingival dental deposits and smoothing of the root surface, polishing is carried out. The purpose of polishing is to create a smooth tooth surface by eliminating retention points.

A smooth tooth surface can be achieved using special rubber cups, end brushes, polishing strips, flosses and polishing pastes.

Soft rubber cups can be different in shape: hollow, with protrusions (ribs), jumpers, back spiral protrusions on the inner or outer surface, and also have different stiffness: soft, medium hard, hard. Polishing of tooth surfaces is carried out at a rotation speed of 2000-5000 rpm. The rubber cup is pressed against the tooth in such a way that its edge extends and it penetrates into all the recesses and subgingival region of the tooth. For polishing chewing surfaces it is convenient to use rotating brushes with polishing paste. Do not use brushes in the subgingival margin.

Approximate surfaces are polished using alumina-coated polishing strips, flat dental floss or polishing paste strips, rubber polishing cones for a dental handpiece, and flosses. Good cleaning and polishing tooth surfaces can be achieved using the tip of S . E .T. Prophy - Leader .

To remove non-mineralized dental plaque, professional toothpastes (CCS paste, Cleanicent (Hawe Neos Dental), Detartrine (Septodont), Detartrine fluor (Septodont), Detartrine Z (Septodont), Magnasil (Young), Nupro (Dentsply), Prophylactic Past ( Products Dentaries), Protect (Butler), Pro-xyt RDA 36 (REA 4) (Vivadent), Proxyt RDA 7 (REA 2) (Vivadent), Rembrandt (Butler), Remot (Lege Artis), Sitsalicine (Pierre Rolland), Polident (VladMiVa).

To polish the surface of the teeth after removal of dental plaque, low abrasive pastes are used, and in order to remove pigmented plaque, it is advisable to use high and medium abrasive pastes. As an abrasive, as a rule, they use silicon dioxide, zirconium oxide, zirconium silicate, pumice powder, calcium phosphate. Polishing pastes may or may not contain fluoride. Fluoride-free pastes are used to polish teeth before they are sealed, and fillings are made from composite materials. For ease of use, unidoses (single doses) of polishing pastes are issued or the paste is placed in a ring-shaped retainer on the finger of the hand.

The most modern devices for cleaning tooth surfaces are air-abrasive systems (hand blasters). Key representatives: Air-Flow (EMS), Prophyflex (KaVo), Prophy-Jet Cavitron (equipped with a waste powder intake system (Dentsply)), ProphyEST (Geosoft Pro).

Indications for the use of handyblasters:

- polishing the tooth surface after scaling;
- cleaning the tooth surface before fixing braces;
- high - quality cleaning of fissures of the chewing surface;
- removal of stained deposits from the tooth surface (smoker's plaque, etc.);
- cleaning the enamel surface before sealing the fissures;
- treatment of carious cavities for better adhesion of enamel to restoration materials.

Handiblasts are available in a separate unit or in the form of a special tip that connects to the dental unit instead of a turbine.

Handiblaster very effectively removes plaque and plaque from hard-to-reach areas of the tooth, which is done by applying a mixture of water and bicarbonate soda under pressure to the tooth surface. It should be noted that handyblasters are used exclusively for cleaning tooth enamel, since the effect of an air-powder mixture on cement and root dentin, as well as periodontal tissue, leads to serious defects in hard and soft tissues. It is not recommended to use handblasters in the field of fillings made of composite materials. Handiblasts are contraindicated in patients with a sodium-free diet, with severe diseases of the respiratory tract, in patients with infectious diseases (hepatitis, HIV), pregnant women and patients taking medications that affect the salt balance.



## 7 - Practical lesson

Topic: **Rules and means of personal hygiene of the oral cavity. The main means of oral hygiene.**

### 1.1. Technological model of the formation

Lesson time 3 hours	Number of students
Type of activity	Introduction of practice news
Plan	Give the full correct answer to the questions from this topic "rules of personal hygiene of the oral cavity"
The objective of the training session	Learn personal hygiene to prevent dental deposits.
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

### Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (10 minutes )	1. The purpose of the lesson 2. Preparation of slides for lecture material 3. Related literature <ul style="list-style-type: none"> <li>• N.V. Kuryakina - "Therapeutic dentistry children's age "N. Novgorod 2001</li> <li>• T.F. Vinogradova - "Dentistry for children" 1987               <ul style="list-style-type: none"> <li>• N.G. Pakhomov- "Primary prevention in dentistry"</li> <li>• E.V. Borovsky - "Therapeutic dentistry" 1997.</li> </ul> </li> <li>Yu.I.Vorobov-X-ray of the teeth and jaws - 1990 city of</li> <li>• K.Georgieva- "Emergency care in dentistry" 1983 g</li> </ul>	Record a subject and listen
2. Leading a topic (10 minutes)	1. Keeping the audience clean 2. Checking students for a practical lesson 3. Check student attendance.	Are listening
3. The main stage (90 minutes )	1. The division of students into 2 small subgroups , asks questions on the topic ; 2. Use of slides and multimedia; 3. conducts therapeutic work; 4. Combines all the information on a given topic, actively participate ni their students encourages and assesses the general.	Divided into small groups , watching , participating , listening. Student expresses his opinion complements

		and asks questions
4. The final stage (10 minutes )	1. Conclusion . 2. Independent work . 3. Homework .	Listen to Record Conclusion

## Text

Today, more and more people understand that beautiful teeth are an integral element of the culture of modern man, a symbol of prosperity and health. Therefore, **dental hygiene** has recently acquired special relevance, although many still neglect these rules, and often simply do not know how to properly care for your teeth and oral cavity.

Independently take care of your teeth and observe [oral hygiene](#) and **dental hygiene** from a very young age. Such a good habit will be the key to the health of your oral cavity.

Teeth should be brushed twice daily with toothpaste or toothpaste from both the outside and the inside. A toothbrush removes food debris and plaque, and a powder or paste freshens the oral cavity, eliminates bad breath and destroys harmful microflora.

Dental powders are complex mixtures based on calcium hydrofluorophosphate and with the addition of white magnesia to give them lightness and friability. Magnesium peroxide contained in tooth powders disinfects the oral cavity and whitens teeth.

Toothpastes come in two types: therapeutic and prophylactic (serve to prevent diseases of the teeth and gums, and also contribute to their treatment) and hygienic (only refresh and clean). The composition of the toothpaste contains abrasive substances for polishing the surface of the teeth and cleaning them from plaque. Typically, this is precipitated chalk, aluminum oxide and hydroxide, calcium phosphates, zirconium orthosilicate, silicon dioxide. For better preservation of the paste, gelatin-like components synthesized from cellulose, glycerin, sorbitol and other substances are added. A little chlorphenol or formalin is introduced into pastes to provide a disinfectant effect. Foaming is provided by sulfonated soap, for example, sodium salt of alizarin oil.

In therapeutic and prophylactic pastes include fluorine-containing substances - sodium fluorophosphate, tin fluoride, sodium fluoride, etc. These additives form a hard protective layer on the surfaces of tooth enamel. In addition, fluoride-containing additives slow down the formation and spread of bacterial plaque on the teeth, which causes tooth decay. Anti-inflammatory substances are also introduced into toothpastes, which strengthen the oral mucosa and reduce bleeding of the gums. To give the toothpaste a pleasant taste and smell add mint, cinnamon, eucalyptus or clove oil, as well as citric acid and other substances.

Transparent toothpastes are made on the basis of a silica gel and can contain any taste and healing components, but their ability to mechanically clean teeth is worse than other pastes.

Failure to comply with the rules **of dental hygiene** and oral cavity often leads to an unpleasant odor. To eliminate bad breath and strengthen the gums, it is recommended to rinse with a decoction of one tablespoon of hypericum flowers in one glass of water. Prevention and treatment of inflammation of the oral mucosa is carried out with alcohol or vodka tincture of St. John's wort. Mint broth perfectly refreshes the mouth after eating. To remove yellowness on the teeth, you can use baking soda with the addition of a few drops of lemon juice instead of toothpaste twice a week.

For **dental hygiene**, it is helpful to eat a tough apple after a meal. The fibers of his fiber will remove plaque, and the saliva liberally liberated during hard chewing will wash off the remaining carbohydrates. In addition, malic acid will restore normal acid-base balance in the oral cavity.

A visit to a hygienist will be far from superfluous, which will help you choose both tools and tools for brushing your teeth and **dental hygiene** .

#### Tooth Powders

Until recently, tooth powders were the most common oral care product. The main cleaning component for any tooth powder is chemically precipitated chalk, to which perfume is added.

Our industry produces a fairly large assortment of tooth powders “Good morning”, “Moidodyr”, “Special”, “Eaglet”, “Pearl”, etc. They differ from each other only in taste and refreshing properties, as well as in the content of additives.

Some tooth powders have a more pronounced effect, they well cleanse all surfaces of teeth from soft plaque and food residues, remove smoker's plaque and ideally polish tooth enamel. We should not forget that tooth powders are much cheaper than pastes.

Along with the positive properties, tooth powders have disadvantages. In particular, they are contaminated very quickly by microorganisms, the deodorizing and refreshing properties of the tooth powder appear only at the beginning of use, and the expressed abrasive properties do not allow regular use, the powders do not have a therapeutic effect, since it is impossible to introduce useful therapeutic additives into them.

#### Toothpastes

Toothpastes are currently the most common oral care products.

Toothpaste is a dispersion of part of the powder in a continuous liquid phase, in which the dispersed base is abrasive substances, structure-forming agents and other fillers, insoluble in the dispersed medium. Dispersion medium-gel containing surfactants, bioactive additives, flavors, etc.

Abrasive substances provide a cleaning and polishing effect of toothpastes. These include alkali metal phosphates, complex aluminosilicates, aluminum hydroxide, titanium oxide, aqueous silicogels.

Abrasive substances should be selected so that bioadditives and surfactants are sorbed minimally on them.

Binding components provide plastic mass. These include polyhydric alcohols glycerin, ethylene glycol, as well as hydrocolloids - extracts from seaweed, dextran, pectin.

Foaming agents have a stabilizing effect. These substances are detergents that form a foam. These include: alesarin oil, sodium lauryl sulfate, lauryl sarcosylate, sodium salt of fatty acid touride.

A number of requirements are imposed on toothpastes: they must be neutral, have cleaning and polishing properties, have a pleasant smell, taste and appearance, a cooling and disinfecting effect, be harmless and have a therapeutic and prophylactic effect.

All toothpastes are divided into two groups: hygienic and therapeutic.

#### Hygienic Toothpastes

Hygienic toothpastes have only a cleansing and refreshing effect and do not contain special additives.

The main components of any domestic-made hygienic paste are chemically precipitated chalk 23-43%, glycerol 10-33%, sodium salt of carboxymethyl cellulose 1-1.8%, perfume oil 1-1.5%, sodium lauryl sulfate, perfume, water and preservative.

The most common hygienic pastes: “Orange”, “Mint”, “Family”.

Children's hygienic pastes: “Wait a minute”, “Carlson”, “Pinocchio”, “Nursery” have good taste due to pleasant fragrances, which include various essential oils and food essences. This helps to quickly teach children to brush their teeth daily, turning the necessary procedure into a pleasant one.

#### Therapeutic preventive toothpastes

In addition to the well-known components, therapeutic and preventive toothpastes contain biologically active additives: vitamins, extracts, infusions of medicinal plants, salts, trace elements, enzymes. Such

pastes are intended both for daily oral care with a preventive and hygienic purpose, and for targeted prevention of dental caries, periodontal diseases, non-carious lesions, and diseases of the oral mucosa.

Therapeutic toothpastes include:

"Extra", "Novelty", "Chlorophyll", "Forest", "Phosphodont", "Parodontol", "Propolis".

Colgate Total toothpaste is a unique combination of a fluorine compound and a long-acting antibacterial system triclogard (triclogard = triclosan + copolymer), which provides long-lasting protection of teeth and gums for 12 hours. Triclosan is a broad-spectrum antiseptic. The PVM \ MA copolymer retains triclosan on soft and hard tissues of the oral cavity for up to 12 hours.

A visit to the dentist should be done at least twice a year. Indeed, professional **dental hygiene** includes a set of diagnostic and therapeutic measures designed to identify dental deposits and choose the optimal method for their removal.

## 8 - Practice

Topic: **Teeth cleaning methods. Dental disease prevention methods .**

### 1.1. Technological model of the formation

Lesson time 3 hours	Number of students
Type of activity	Introduction of practice news
Plan	To give a complete correct answer to questions about methods of preventing stoma diseases - correctly solve situational problems and test questions.
The objective of the training session	Learn Dental Disease Prevention Methods
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

### Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (10 minutes )	1. The purpose of the lesson 2. Preparation of slides for lecture material 3. Related literature <ul style="list-style-type: none"> <li>• N.V. Kuryakina - "Therapeutic dentistry children's age "N. Novgorod 2001</li> <li>• T.F. Vinogradova - "Dentistry for children" 1987               <ul style="list-style-type: none"> <li>• N.G. Pakhomov- "Primary prevention in dentistry"</li> <li>• E.V. Borovsky - "Therapeutic dentistry" 1997.</li> </ul> </li> <li>Yu.I.Vorobov-X-ray of the teeth and jaws - 1990 city of</li> <li>• K.Georgieva- "Emergency care in dentistry" 1983 g</li> </ul>	Record a subject and listen
2. Leading a topic (10 minutes )	1. Keeping the audience clean 2. Checking students for a practical lesson 3. Check student attendance.	Are listening
3. The main stage (9 0 minutes )	1. The division of students into 2 small subgroups , asks questions on the topic ; 2. Use of slides and multimedia; 3. conducts therapeutic work; 4. Combines all the information on a given topic, actively participate ni their students encourages and assesses the general.	Divided into small groups , watching , participating , listening. Student expresses his opinion complements

		and asks questions
4. The final stage (10 minutes )	1. Conclusion . 2. Independent work . 3. Homework .	Listen to Record Conclusion

### Questions on the topic

1. Charter Method
2. Dental brushing rules
3. Bass method

### Text

Dental Disease Prevention :

- 1) primary - the use of various methods and means to prevent the occurrence of dental diseases. The initial signs of tissue damage during preventive measures may stabilize or undergo reverse development;
- 2) secondary - the use of traditional methods of treatment to stop the developed pathological process and preserve tissues. Includes the treatment of dental caries (fillings, endodontic procedures), therapeutic and surgical treatment of periodontal diseases and other diseases of the oral cavity;
- 3) tertiary - replenishment of the anatomical and functional integrity of the dentition. The use of funds necessary to replace the missing organs and tissues, and the rehabilitation of patients, bringing their condition as close to normal as possible, are provided.

Primary prevention methods include:

- individual oral hygiene;
- professional oral hygiene;
- endogenous use of fluoride preparations;
- the use of local prophylaxis;
- dental education.

Individual oral hygiene. The leading component of dental disease prevention is oral hygiene. Systematic brushing, removal of soft dental deposits contribute to the physiological process of maturation of tooth enamel. Biologically active components that are part of hygiene products enrich tooth and periodontal tissues with salts of phosphates, calcium, trace elements, vitamins, and increase their resistance to harmful influences. Regular massage of the gums when brushing your teeth helps to activate metabolic processes, improve blood circulation in periodontal tissues.

Individual hygiene - thorough and regular removal of dental deposits by the patient from the surfaces of the teeth and gums using various means.

Toothbrushes are the main tool for removing deposits from the surfaces of teeth and gums. Now there are many models of toothbrushes designed to remove plaque from the smooth, occlusal and proximal surfaces of the teeth. The development of a new design of brushes is carried out using a computer.

Toothbrushes differ:

- head size;
- fiber properties;
- the shape of the brush field of the head and the arrangement of the beams;
- rigidity;
- pen design.

**Toothbrush head size.** Currently (both adults and children) it is recommended to use brushes with a small head, which can be easily manipulated in the oral cavity and clean hard-to-reach surfaces of the teeth. The size of the head of the children's toothbrush should be 18-25 mm.

**Fiber properties.** For the manufacture of toothbrushes, synthetic fibers are predominantly used. At the same time, brushes made from natural bristles are still on sale. This material is naturally inferior to synthetic fibers in quality. Its disadvantages are the presence of a middle channel filled with microorganisms, the difficulty of keeping the brush clean, the impossibility of perfect processing of the ends of the bristles and the difficulty of giving it a certain stiffness.

**The shape of the brush head field.** In the lateral projection, you can distinguish several profiles of the head of the toothbrush - flat, concave, convex, multi-level. A brush with a concave shape of the working part of the head is better to clean the vestibular surfaces of the teeth, while with a convex - lingual. Brushes, in which the bristles are located at different levels, more effectively than flat ones, remove plaque, especially from the proximal surfaces of the teeth.

**Location of fiber bundles.** In the brush head, the bristles are organized in bunches, usually located in 3 or 4 rows. This arrangement allows you to better clean all surfaces of the teeth. Tufts of bristles, as a rule, have different heights: longer (softer) along the periphery, shorter in the center. Each group of bundles contributes to a more thorough removal of plaque in a particular area of the dentition. Direct high fibers clear plaque in the interdental spaces; short - in fissures. Bundles of fibers located in an oblique direction, penetrating into the periodontal sulcus, remove plaque from the cervical region.

Some models of toothbrushes have a power protrusion for better cleaning of molars, especially the distal surfaces of the last molars, and deep penetration into the interdental spaces.

Often toothbrushes are equipped with an indicator - two rows of bundles of fibers stained with multi-colored food coloring, which become discolored as they are used. The signal for replacing the brush is discoloration of the bristles at half its height. This usually occurs after 2 to 3 months with daily two-time brushing.

The stiffness of the brush depends on the composition of the fiber, the diameter and length of the bristles, as well as the number of bristles in the bundle. There are several degrees of rigidity of toothbrushes: very hard, hard, medium, soft, very soft.

Recommendations to patients on the use of a toothbrush of varying degrees of rigidity are purely individual. The most widely used brushes are medium hard. As a rule, children's toothbrushes are made of very soft or soft fiber.

**Pen design.** The shape of the handle of the toothbrushes can be straight or curved at different angles, however, its length should be sufficient to provide maximum comfort when brushing your teeth. Children's toothbrushes "ral-B", "Disney Mickey M-use L-10" (for children from 2 years old) and "Squish Grip" (from 4 years old) are very soft, with a small head, indicator bristles and a comfortable non-slip a pen.

You can teach your child to brush their teeth properly using toothbrushes, which change the initial color of the handle when brushing your teeth (within 2-3 minutes). Toothbrushes, in which a rattle is mounted in a handle, have the same property. With the correct (vertical) movements of the brush, a sound is made, and with horizontal (incorrect) the toothbrush is "silent".

**Interdental brushes.** Special toothbrushes are designed to clean the interdental spaces, cervical areas of teeth, spaces under fixed orthodontic structures. Usually they are small in size, their working part can consist of one bundle of fibers trimmed in the form of a cone or several bundles placed in one row. With such brushes, replaceable brushes of different sizes are used.

**Electric toothbrushes.** This type of toothbrushes is now used quite widely. An example is the Braun - ral-B Plak C-nt-r-l 3D electric toothbrush. There are 3 types of bristles in this brush: soft FlexiS-ft with a spongy structure, higher ones - "power protrusions", indicator. A small brush head makes a pulsation with a frequency of 20,000 vibrations per minute, which loosens plaque, and reciprocating movements

with a frequency of 7600 vibrations per minute, in which plaque is removed even from hard-to-reach surfaces. At the same time, gum massage is provided.

For children, special children's electric toothbrushes have been developed.

Teeth brushing methods. Cleansing milk teeth from the moment of eruption. From the moment of teething of the first milk teeth, they must be cleaned at least 1 time per day with a special toothbrush, which parents put on their finger.

From 1 year old, a child can brush his teeth 2 times a day with a soft children's toothbrush, from 2-2.5 years - 2 times a day, using a soft toothbrush and gel-like children's toothpaste. The control of the correct brushing of teeth in all age periods should be the absence of visible plaque.

Dental floss (flosses). Flosses are designed to thoroughly remove plaque and food debris from the contact surfaces of the teeth that are difficult to reach for the brush.

They are made from special synthetic fiber. They can be waxed and non-waxed, round and flat, sometimes with menthol impregnation. In addition, there are superflosses - threads with one-sided thickening. Such a thread has a hard tip and a combination of non-waxed fragments with wider nylon fibers. It allows you to clean the contact surfaces of the teeth, and also contributes to a more thorough removal of food and plaque residues from the orthopedic and orthodontic structures in the oral cavity.

Dental floss application method. A thread 35-40 cm long is wound around the first phalanx of the middle fingers of both hands. Then, the stretched thread is carefully introduced (using the index fingers on the lower jaw and the thumbs on the upper jaw) along the contact surface of the tooth, being careful not to injure the gingival papilla. With a few movements, the threads remove all soft deposits. Consistently clean the contact surfaces of each tooth.

Children can independently use flosses from 9-10 years old. Up to this age, it is recommended that parents clean the contact surfaces of teeth in children.

Various methods are known by which plaque removal is performed. In this regard, the doctor must conduct a detailed briefing and demonstration on the model of the selected method, and the patient consistently perform movements until complete mastery of the selected method for daily brushing.

Charter Method . (1922 year.). - the toothbrush is set at an angle of 45 ° to the gingival margin. The movements are circular, shaking and vibrating so that the bristles penetrate into the interdental spaces. Recommended for gum massage. The method is used to prevent relapse after a course of treatment of inflammatory periodontal diseases:

- gingivitis
- periodontitis.

Stillman's method (1933). The toothbrush is set at an angle of 45 ° to the axis of the tooth and is pressed as much as possible on the gingival margin to the visible gingival anemia. Next, a slight movement is carried out until the blood flow in the gums of this area is restored.

The lingual surfaces of the teeth are cleaned by placing the brush parallel to the axis of the tooth. Chewing surfaces are cleaned with movements directed perpendicular to the occlusal plane.

Smith-Bell Method . (1948.). Toothbrush set perpendicular to the chewing surface. The movements of the toothbrush repeat the way of food during chewing: by pressing and rotating, the head of the toothbrush moves towards the gum, glides along it and moves to the next tooth.

The Leonardo Method . (1949). The toothbrush is set perpendicular to the surface of the teeth. Vertical movements are carried out in the direction from the gum to the crown of the tooth: on the upper jaw - from top to bottom; on the lower jaw - from the bottom up.

The vestibular surface of the teeth is cleaned with closed jaws from top to bottom and from bottom to top.

Chewing surfaces are cleaned back-and-forth (“forward - backward”).

The Bass Method (1954). The head of the toothbrush should be at an angle of 45 ° to the axis of the tooth. The vestibular surfaces of the teeth are cleaned with vibrating movements "forward - backward" without moving the ends of the bristles. Internal surfaces are cleaned in the same way. Chewing surfaces are cleaned with the movements of the toothbrush "forward - backward".

The Reite Method (1970). The brush is placed parallel to the axis of the tooth at the beginning and at an angle of 90 ° to the axis of the tooth at the end of the movement - "rolling" movements from the gum to the crown.

The chewing surfaces of the teeth are cleaned with forward-backward movements.

Phones Method. Toothbrush bristles are set perpendicular to the vestibular surface of the tooth. The dentitions are closed; toothbrush movements are circular.

Lingual (palatal) surfaces of the teeth are cleaned alternately in circular motions. Circular (spiral) movements allow an ideal massage of the gums, which makes it possible to recommend this method of brushing teeth for periodontal diseases for the purpose of treatment and prevention.

The chewing surfaces of the teeth are cleaned in a circular motion.

Already at 2 years old, the child should brush his teeth with a toothbrush without toothpaste independently and with toothpaste with the help of his parents. When performing the ritual of oral hygiene, elements of visibility, games and surprise moments should be present. Teeth are cleaned once a day, for 2 minutes. If the child begins to be capricious and the desire to care for his teeth disappears, then it is better to postpone the procedure. Children should have a desire and desire for oral hygiene.

At 6-7 years old, the child should know the rules for brushing your teeth.

Everyone knows that brushing your teeth is very important. But how important is brushing your teeth CORRECTLY? As practice shows, not everyone knows about this. Dentists can confirm that with regular, but improper brushing, there is still a risk of tooth decay, periodontal inflammation and other troubles. RuDenta offers several simple ways to [prevent tooth decay](#).

## **Teeth Brushing Methods**

**The standard method of brushing your teeth .**

The dentition is conditionally divided into several segments: molars, premolars (if any) and front teeth on each side. (it turns out 4-6 segments).

Toothbrushing is carried out with open dentition. The brush is placed at an angle of 45 degrees to the surface of the tooth.

They begin to brush their teeth from the buccal surface of the upper jaw on the left (segment 1), where they perform 10 brushing movements with a brush, and then gradually pass through all other segments (10 movements per segment).

After that, the palatal surface of the upper teeth is cleaned, passing through the segments from left to right, making 10 sweeping movements on each segment.

The next step in brushing your teeth is to clean the chewing surface of molars and premolars. Cleaning is carried out with sweeping movements along their chewing surface in the direction from the mouth. It is necessary to make 10-15 movements on each side.

On the lower jaw, teeth are cleaned in the same sequence. First on the buccal, and then on the lingual and finally on the chewing surface of the teeth (left to right).

When cleaning the palatal surface of the upper incisors and the lingual surface of the lower, the brush is perpendicular to the dentition. The cleaning procedure should end with a gum massage, which is carried out with closed dentition by circular movements of the toothbrush with the grip of teeth and gums, moving from left to right.

*I want to immediately draw your attention to the main mistakes in brushing your teeth.*

- 1 . The prevalence of horizontal movements when brushing all surfaces of the teeth.
- 2 . The reciprocating nature of the movements.
- 3 . Brushing only the vestibular surface of the teeth.
- 4 . Insufficient number of movements made at each stage of cleaning.

#### **Leonard's method .**

The toothbrush is placed perpendicular to the surface of the teeth, making vertical movements in the direction from the gum to the crown of the tooth. The vestibular surfaces of the teeth are cleaned when the dentition is closed, the palatine surfaces are cleaned when the dentition is not closed, and the chewing surfaces are cleaned with brush movements back and forth. This method avoids damage to the gums.

#### **Bass method .**

The bristles of the brush, located at an angle of 45 degrees to the axis of the tooth, partially penetrate into the gingival groove and interdental spaces.

The cleaning of the vestibular and oral surfaces of the teeth is carried out by vibrating movements without prejudice to the ends of the bristles. Chewing surfaces are cleaned with back and forth movements.

This method allows you to cleanse the cervical region of the molars.

#### **Phonics Method .**

When the dentition is closed, the bristles of the brush, located perpendicular to the vestibular surface of the teeth, perform circular movements. Lingual and chewing surfaces of the teeth are cleaned with the same movements with open dentitions alternately on the upper and lower jaw.

This method is used in individuals who do not have periodontal disease.

And now, I want to tell you about other oral hygiene products. These include flosses. Flosses are special threads that are designed to cleanse the space between the teeth. At the moment, they no longer look like threads. They are more like stripes. Some of these are used by dentists to polish fillings. But they are less imaginative. There are various options. They can be saturated with fluorides. According to some studies, this helps reduce the likelihood of tooth decay, but to a small extent. I want to say by this that if you do not find fluoride soaked flosses, you should not try to stop the train because of this. Also, flosses can be with and without wax. Floss soaked with wax, it seems to me, it will be better to polish the interdental surfaces, thereby preventing the adhesion of bacteria.

So, let's try to summarize. It is better to use floss soaked in wax and fluoride with a pleasant aromatic fragrance.

Use of flosses is necessary after each meal. More details on how to use floss will be discussed later.

I want to say a few words about toothpicks. Some use them to remove food debris from the interdental spaces and from the carious cavities. But you can damage the gums. With skillful handling of floss, gums are less damaged. Also, a toothpick can be broken in the cavity. In my practice, such cases are not isolated, while patients themselves did not notice how they broke toothpicks.

**Reite Method. (1970)**

The brush is placed parallel to the axis of the tooth at the beginning and at an angle of 90 degrees to the axis of the tooth at the end of the movement. Rolling movements are made from the gum to the crown. Chewing surfaces of the teeth are cleaned with brush movements back and forth.

**Smith-Bell Method. (1948)**

Toothbrush set perpendicular to the chewing surface. The movements of the toothbrush repeat the movements of food during chewing: by pressing and rotating, the head of the brush advances towards the gum, glides along it and moves to the next tooth.

**Stillman's method. (1933)**

The toothbrush is installed at an angle of 45 degrees to the axis of the tooth and is pressed as much as possible on the gingival margin until the gingival anemia is visible. Next, a slight rotational movement is carried out until the blood flow in the gums of this area is restored. The lingual surfaces of the teeth are cleaned by placing the brush parallel to the axis of the tooth. Chewing surfaces are cleaned with movements directed perpendicular to the occlusal plane.

**Charter Method. (1922)**

A toothbrush is set at an angle of 45 degrees to the gingival margin. Perform circular, shaking and vibrating movements so that the bristles penetrate into the interdental spaces. This method is recommended for gum massage. This method is used to prevent relapse after a course of treatment of inflammatory periodontal diseases: gingivitis, periodontitis

**The KAI brushing method is used by children under 6 years old.**

1. We close the teeth and smile. We begin to draw circles on the front surface of the teeth. We drew 10 pieces in front, go to the side - 10 on the right, 10 on the left.
2. Open your mouth - clean the tubercles and fossa on the teeth forward - backward 10 times. That is, chewing surfaces on the right and left on both jaws.
3. The inner surface of the teeth is cleaned with sweeping movements from red to white - from the gum to the crown. 10 movements for every two teeth (the last point is not always successful for the child; anyway, after self-brushing, repeated adult brushing is necessary using the standard method).

## Flossing

This procedure is carried out once a day. Children under 9 years old are cleaned by their parents, later on their own.

1. Unwind about 50 cm of floss and wind on the middle fingers so that 3-4 cm of thread remains between the fingers.
2. Holding the floss firmly against one of the tooth surfaces, gently lower it through the tight interdental contact. Try not to make much effort so as not to injure your gums.
3. Moves up and down to clean the surface of one tooth under the gum. Bring the thread to the feeling of stop - it is 2-3 mm under the visible edge of the gum.
4. Without removing the floss from the interdental space, clean the adjacent tooth with similar movements.
5. Try to constantly shift the thread to the fresh part, so you will clean each tooth with a clean portion of the thread and by the end of cleaning use the entire unwound section.

Flossing is done after brushing with toothpaste

**Brushes for cleansing the interdental spaces.**

Used by [children with orthodontic fixed structures](#) or in the presence of wide interdental spaces. The cleaning technique is simple - with movements back and forth you clean the interdental space, while holding the brush perpendicular to the side surface of the tooth.



## 9 - Practice

**Topic: Toothpastes. Properties and chemical composition of toothpastes. Therapeutic toothpastes.**

1.1. Technological model of the formation

Lesson time 3 hours	Number of students
Type of activity	Introduction of practice news
Plan	Give the full correct answer to questions about the properties and chemical composition of toothpastes
The objective of the training session	To study the properties and chemical composition of toothpastes.
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (10 minutes )	1. The purpose of the lesson 2. Preparation of slides for lecture material 3. Related literature <ul style="list-style-type: none"> <li>• N.V. Kuryakina - "Therapeutic dentistry children's age "N. Novgorod 2001</li> <li>• T.F. Vinogradova - "Dentistry for children" 1987               <ul style="list-style-type: none"> <li>• N.G. Pakhomov- "Primary prevention in dentistry"</li> <li>• E.V. Borovsky - "Therapeutic dentistry" 1997.</li> </ul> </li> <li>Yu.I.Vorobov-X-ray of the teeth and jaws - 1990 city of</li> <li>• K.Georgieva- "Emergency care in dentistry" 1983 g</li> </ul>	Record a subject and listen
2.Introduction of the topic (10 minutes)	1. Compliance with the cleanliness of the audience 2. Checking students for a practical lesson. 3.Check student attendance.	Are listening
3. The main stage (90 minutes )	1. The division of students into 2 small subgroups , asks questions on the topic ; 2. Use of slides and multimedia; 3. conducts therapeutic work; 4. Combines all the information on a given topic, actively participate ni their students encourages and assesses the general.	Divided into small groups , watching , participating , listening. Student expresses his opinion complements and asks questions

4. The final stage (10 minutes )	1. Conclusion . 2. Independent work . 3. Homework .	Listen to Record Conclusion
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### Questions on the topic

1. Composition and properties of toothpastes
2. The chemical composition of toothpastes
3. Hygienic toothpastes

### Text

#### Toothpastes, composition and properties.

One of the main means of oral hygiene is toothpastes. Until recently, in our country, tooth powders prevailed (which include chemically precipitated chalk, and about 2 percent, by weight, perfumes) whose advantage over pastes is in price. However, the powders are quickly contaminated with microbes, and the fragrance disappears soon after the start of use, however, the abrasive properties of these hygiene products do not allow their regular use. At present, toothpastes are the most common means of caring for the oral cavity. Dental parts usually consist of an abrasive filler (chemically precipitated chalk, dicalcium phosphate, calcium pyrophosphate, sodium metophosphate, aluminum silicate, etc.); a binder component (glycerol, carboxymethyl cellulose sodium salt, sodium alginate, etc.), surfactants (alizarin oil, sodium lauryl sulfate, which have high foaming activity), antiseptics and perfumes. In addition, therapeutic and prophylactic additives can be introduced into the infusion: salts, extracts of medicinal plants, trace elements, enzymes. Depending on whether such additives are introduced, pastes are divided into hygienic and therapeutic. A number of requirements are imposed on toothpastes: they must be neutral, have cleaning and polishing properties, have a pleasant smell, taste and appearance, cooling and disinfecting effects, be harmless and have a therapeutic and prophylactic effect.

#### What are toothpastes.

According to the Lukins, all toothpastes can be divided into hygienic and therapeutic.

#### Hygienically e toothpastes.

Hygienic toothpastes have only a cleansing and refreshing effect and do not contain special therapeutic and prophylactic additives. The main components of any domestic-made hygienic paste are chemically precipitated chalk (23-43%), glycerin (10-33%), sodium carboxymethyl cellulose ( 1-1.8%), perfume oil (1-1.5%), sodium lauryl sulfate, perfume, water and preservative. The most common Russian hygienic toothpastes: " Orange ", " Mint ", " Family ". Hygienic pastes produced by some pre activities, do not contain antiseptics and do not affect the microflora, however, pastes, the production of which has been launched recently, have a rather pronounced antiseptic effect (BAM, Moskovskaya, Olympus, "Wait a minute," etc.) pastes: "Well, wait a minute \*'," Carlson "," Pinocchio "," Nursery "have good taste due to pleasant fragrances, which includes various essential oils and food essences. Good taste properties of children's hygienic pastes are their main feature. This helps to quickly teach children to brush their teeth daily, turning the necessary procedure into a pleasant one.

#### Therapeutic and prophylactic e toothpastes.

In addition to the well-known components, therapeutic and preventive toothpastes contain biologically active additives: vitamins, extracts, infusions of medicinal plants, salts, trace elements, enzymes. Such pastes are intended both for daily oral care with a preventive and hygienic purpose, and for targeted prevention of dental caries, periodontal diseases, non-carious lesions, diseases of the

oral mucosa. In turn, all therapeutic and prophylactic pastes can be divided into 5 groups depending on the components included in their composition: 1) pastes containing herbal preparations; 2) saline toothpastes; 3) toothpastes containing enzymes; 4) toothpastes containing various biologically active additives; 5) anti-cariogenic toothpastes. Pastes containing herbal preparations improve metabolic processes, stimulate tissue regeneration, help reduce gum bleeding, have excellent deodorizing properties. Lesnaya toothpaste contains 5% coniferous-carotene mass. Whose contains chlorophyll, carotene, ascorbic acid, tocopherol, balsamic resins. Thanks to this complex of pastes, it has a very beneficial effect on the gum tissue, has good deodorizing and refreshing properties, helps to stop bleeding of the gums, activates the regeneration of the oral mucosa. New toothpaste is one of the best domestic pastes in terms of hygiene (cleansing) and taste properties and therapeutic effect on the tissues of the oral cavity. It contains a whole range of useful biologically active substances: carotene, vitamins C and K, tocopherol, chlorophyll. The paste has a good cleansing effect, helps to reduce inflammation in the periodontium, eliminates bleeding and increases the regenerative activity of the oral mucosa. Chamomile toothpaste contains water-alcohol infusions of St. John's wort and chamomile, has an anti-inflammatory, antiseptic and astringent effect, has good cleansing and taste properties.

Sputnik toothpaste contains spinach extract and water-alcohol infusion of eucalyptus. Spinach extract contains vitamins C and P, chlorophyll in a significant amount. The composition of the eucalyptus infusion includes essential oils and tannins. The paste has a good therapeutic effect on the mucous membrane of the oral cavity and periodontium.

Pinocchio children's toothpaste contains extracts of chamomile, yarrow and cloves, has a pronounced anti-inflammatory effect, and is recommended for gingivitis.

Children's toothbrush, the Nutcracker meta is prepared on the basis of calendula extract, the main components of which are carotene, lyconin, essential oils, organic acids. The paste has a pronounced anti-inflammatory effect, has phytoncidic properties.

The "Ira" toothpaste has a pronounced anti-inflammatory property, reduces gum bleeding, promotes restoration processes in the gum, and has a local anesthetic effect, as the paste contains extracts of calamus rhizome, yarrow, cloves, abundant in tannins, vitamins C, K and carotene. "Ira" is able to inhibit the growth of bacteria, have a bacteriostatic effect on *Staphylococcus aureus* and *Streptococcus aureus*.

"Parodontax" - a toothpaste made on the basis of natural substances, prevents the development of bleeding and inflammation of the gums, inhibits the development of bacteria without disturbing the normal microflora of the oral cavity, neutralizes the acid breakdown products of sugars, strengthens the gums and teeth, gives a long-lasting feeling of cleanliness and freshness. The composition of the paste includes peppermint, myrtle, sage, chamomile, rataniya, sodium bicarbonate, which makes it possible to widely use this toothpaste for the prevention and treatment of inflammatory periodontal diseases.

It should be noted that all therapeutic and prophylactic pastes are recommended for widespread use in the complex treatment of periodontal and oral mucosal diseases.

Salt toothpastes contain various salts and mineral components that improve blood circulation, stimulate metabolic processes in the periodontium and oral mucosa, cause an increased outflow of tissue fluid from the inflamed gums, and have some analgesic effect. Salts contribute to the dissolution of mucus, prevent the formation of soft plaque, contribute to the detachment of microorganisms from the surface of tooth enamel.

Toothpastes include "Balsam" toothpaste, which includes healing brine of Kuyalnitsky estuary, known for its medicinal properties. The paste contains a complex of microelements, which have a positive effect on periodontal tissues and contribute to better cleaning of the oral cavity.

"Yubileinaya" toothpaste contains brine of the Morshinsky mineral water source, the only one in the world with a high content of potassium with an optimal content of magnesium-sulfate component. "

This combination of chemical elements has a beneficial effect on blood circulation in the oral mucosa and periodontal tissues, improving trophism and tissue nutrition, and has a pronounced anti-inflammatory and cleansing effect.

Toothpastes containing enzymes are hygiene products with a high cleansing effect, they dissolve soft plaque, food debris, nicotine plaque, thereby improving the hygiene of the oral cavity.

So, the white-pink toothpaste contains a complex of proteolytic enzymes that dissolve soft plaque well. Paste reduces inflammation in the parodont and the oral mucosa.

Special paste. in addition to enzymes, it contains substances that help to remove not only food residues, soft plaque, but also nicotine plaque in smokers. The increased cleansing effect of the paste is associated with the ability of enzymes to dissolve the protein-lipid bases of soft dental deposits, without affecting negatively zyg6a enamel.

Smile toothpaste contains ugly, magnesium sulfate and magnesium peroxide, all of these components are able to dissolve soft dental deposits, providing a good cleansing and anti-inflammatory effect.

The "Enchantress" paste, in addition to enzymes, contains a water-alcohol infusion of nettle and polyvinylpyrrolidone, which removes soft dental deposits and pigmented plaque formed on the teeth. Pasta helps to reduce inflammation in the periodontium.

It is toothpastes containing enzymes that are recommended for oral hygiene in the treatment of periodontal and oral mucosa diseases in the acute phase.

Toothpastes, the content of various biologically active additives (vitamin B<sub>2</sub>, boroglycerin), have anti-inflammatory and regenerative effects, which allows them to be used in the treatment of gingivitis, periodontal disease and diseases of the oral mucosa.

First of all, Prima paste, which includes Vitamin B (calcium pantotheiate), has anti-inflammatory and regenerative effects, and is used in the treatment of inflammatory diseases of the oral mucosa and periodontium.

Boroglycerin toothpaste contains 10% boroglycerin, which provides it with active antiseptic, bacteriostatic, bactericidal, fungistatic and fungicidal effects. It is advisable to apply the paste for acute and chronic candidiasis, stomatitis, glossitis and cheilitis, as well as for inflammatory periodontal diseases (gingivitis, periodontitis, idiopathic periodontal diseases).

Yagodka paste contains 7% boroglycerin, which provides fungicidal and fungistatic effects, as well as an antiseptic effect in relation to Staphylococcus aureus. It is recommended to use the paste for oral hygiene 3-4 times a day in the treatment of candidiasis, as it fully replaces the need for treatment of the oral cavity with a solution of borax in glycerin.

Anti-caries toothpastes strengthen the mineral tissues of the tooth and prevent the formation of plaque. This is achieved by introducing fluorine, phosphorus and calcium compounds into the composition of toothpastes.

Of the fluorine compounds in toothpastes, sodium monofluorophosphate, sodium fluoride, tin fluoride, and organic fluorine-containing compounds are used.

When creating fluoride-containing toothpastes, much attention is paid to the concentration of fluoride in them. It is believed that in order to saturate tooth hard tissues with fluoride ions, it is necessary to use weak fluorine concentrations not exceeding 2% in the tube. Effectively toothpastes containing 1-3 mg of fluoride in 1 g of paste.

Studies of the caries prophylactic effect of fluoride-containing toothpastes have shown that their use reduces the growth of caries in children by 15-35%.

The anti-carious effect of toothpastes is primarily due to the fact that topical fluorides increase enamel resistance to adverse effects.

The penetration of fluorine into the enamel structure creates a more robust system of fluoroapatite, promotes the fixation of phosphorus-calcium compounds in the hard tissues of the tooth, in addition, fluorine preparations inhibit the growth of microflora of soft plaque.

The most active anticariogenic effect of fluoride and pastes, containing it, manifested during the ripening of enamel forelocks, i.e. in childhood. Later anticariotic effectiveness of fluoride pastes is significantly reduced. Thus, it is advisable to use them to prevent dental caries, mainly in childhood. The use of fluoride-containing toothpastes in our country is associated with some features. A huge space with different climatic and geographical conditions and unequal fluorine content in drinking water and food products in certain regions of the country does not allow the widespread use of fluoride-containing toothpastes, since they can get into such areas and areas where the human body sufficient or large amounts of fluorine are already being supplied. In this case, fluoride-containing toothpastes are not only useless, but their use can be harmful. In this regard, fluoride-containing toothpastes should be prescribed by a doctor individually, depending on the specified conditions of the region of the country. It is advisable that the purchase of toothpastes in various regions of the country be coordinated by dentists.

Despite all the positive qualities, fluoride-containing toothpastes in 30–35% of cases do not have anti-cariogenic effects. In this regard, other therapeutic pastes have been developed that contribute to the strengthening of tooth enamel.

Usually, mono- and disubstituted phosphates of potassium and sodium, glycerophosphate of calcium and sodium, calcium gluconate, salts of phosphoric acid, macro- and microelements that can change (rebuild) the chemical composition of hard tooth tissues are introduced into such pastes.

In our country, the Zodiac toothpaste is produced, sodium fluoride and sea buckthorn oil are introduced into the paste, which have anti-cariogenic, anti-inflammatory and epithelizing effects. Therefore, this toothpaste can be recommended for the prevention and treatment of caries in the stage of a white spot, as well as for diseases of periodontal and oral mucosa.

Pasta "Cheburashka" contains sodium fluoride, phosphates and trace elements, they have an anti-cariogenic effect and can be recommended for both children, adults and adults.

Fluorodent belongs to the group of fluoride-containing toothpastes, it contains sodium fluoride, which makes it possible to use this paste for the prevention and treatment of dental caries, and also to reduce hyperesthesia of hard tooth tissues, and the paste is able to reduce caries susceptibility, strengthening the crystal structure of tooth enamel.

Toothpastes "Pearls" and "Apbat" refer to phosphate-containing therapeutic and prophylactic means of oral hygiene. The composition of such pastes includes calcium glycerophosphate and an antiseptic, pastes differ only in taste. Both pastes are very effective for caries and hyperesthesia of hard tissues of teeth. It is known that calcium glycerophosphate, applied locally, helps to strengthen the enamel crystal lattice, activates mineralization processes.

Crystal paste also refers to fluorine-containing remineralizing and other hygiene products. In addition to sodium fluoride, enzymes: ribonuclease and lysozyme were introduced into the composition, they contribute to the complete cleansing of the tooth surface, hydrolyzing food debris and soft plaque to low molecular weight water-soluble compounds. The paste is effective for tooth decay and periodontal diseases, it is able to consolidate the results of treatment, normalize metabolic and trophic processes in periodontal tissues and the oral mucosa.

Dental paste "Remodent" is prepared on the basis of a preparation obtained from animal bones (developed under the guidance of Professor G.P. Pakhomov, 1982, Latvia), contains soluble compounds of calcium, phosphate, a number of macro- and microelements. Studies have shown the high efficiency of the paste. Repeated use of this toothpaste leads to an improvement in the structure and composition of tooth enamel, making it more resistant to cariogenic effects, reduces the permeability of dental tissues, their solubility in acids. The paste is effective for the prevention and treatment of caries in the stage of a white spot, with increased sensitivity of the teeth to external stimuli.

In recent years, shop flushing has been full of imported toothpastes, the world-famous cariopreventive pastes are especially popular, among them are Blend-d-med. The paste contains sodium fluoride,

which, thanks to its high biological activity, is easily absorbed by hard tooth tissues, providing maximum protection against tooth decay. ,

The florist system of this toothpaste holds calcium in tooth enamel, thereby contributing to the restoration of the hydroxyapatite crystal.

Dentists of the world testify that this paste helps protect teeth from caries and keep them healthy.

There are several modifications of the Blend-a-med paste for children with milk teeth, for adolescents, universal paste and combined toothpaste, the latter, in addition to the florist system, contains antibacterial agents and biologically active preparations that make it possible to use this paste not only for prevention and treatment dental caries, but also with diseases of the oral mucosa and periodontal diseases. Universal paste is able to prevent the formation of soft plaque and stones.

Aqua-fresh toothpaste also contains sodium fluoride, which has a high biological activity, providing dental hardness with caries resistance. Toothpaste has a pleasant taste, well refreshes and deodorizes the oral cavity.

"Signal" refers to fluoride-containing toothpastes, has a therapeutic and prophylactic anti-caries effect. Colgate paste contains sodium fluoride, which provides protection against caries, increases caries resistance by restoring a hydroxyapatite crystal. The paste reduces the hypersensitivity of dental hard tissues, refreshes and deodorizes the oral cavity.

Using therapeutic and preventive dental parts, it is possible to regulate the intake of macro- and microelements in the tooth tissue, to contribute to the physiological process of "ripening" of tooth enamel and to keep teeth healthy for many years.

Systematic oral hygiene, regular removal of soft dental deposits have a beneficial effect on the gingival mucosa, and its massage during brushing improves blood circulation in periodontal tissues and activates metabolic processes, which fully ensures the health of the teeth and tissues surrounding them.

There is no limit to the improvement of objects and means for caring for the oral cavity, and to understand all of the variety offered by trade, you need to know their properties, differences, quality indicators, and simply indications for use. Therefore, we want to keep you updated on the ever-changing market of oral hygiene products. Only a professional dentist can and should prescribe one or another hygiene product to his patient, depending on the condition of the teeth and oral mucosa. But, since toothpastes and other oral hygiene products are dispensed from pharmacies without prescriptions, the pharmacist should be well-versed in their nomenclature and have a clear idea of their properties and rules for use.

Pastes vary significantly in their composition and therapeutic effect, and we offer you material on the properties and purpose of some toothpastes on the Russian market.

The range of toothpastes of the cosmetic association "Freedom": what are the sources of diversity and what it gives to the consumer

"Carimed", "Periodontal". "Comme il faut", "Chistyulya", "Forgiment", "Extra". "Pearls", "Peppermint", "Family" ... Some of these toothpastes have recently gone on sale for the first time. The names of others have been well known for decades. They are united by the fact that they are all produced by the cosmetic association "Freedom".

Despite all the difficulties, the Freedom Cosmetic Association, the patriarch of the domestic perfumery and cosmetics industry, seeks to keep up with world standards and world fashion in the production of toothpastes.

Svoboda's new products - Parodontol toothpastes - Carimed, Komilfo, and Chistyulya children's gel toothpaste - can rightfully be attributed to the new generation of Russian toothpastes. Hydroxyapatite, which is part of Parodontol, provides microprocessing with calcium and phosphate ions of bone and dental tissue, "blocking" microtrack

splint in them, reduces tooth sensitivity, has anti-inflammatory properties, which are enhanced by the water-alcohol extracts of nettle and yarrow herbs included in the paste. Due to the lack of fluoride components in this paste, it can be used in areas with a high fluoride content in drinking water.

The name of toothpaste "Carimed" emphasizes its effectiveness in protecting teeth from caries. Both Carimed and Parodontol are made using the most modern and high-quality abrasive - silicon dioxide.

### **A little history of toothpastes.**

Our ancestors brushed their teeth with crushed glass, charcoal, tar, ash, wool with honey ... Three centuries ago in Europe they began to brush their teeth with salt. Then they switched to chalk. Since the beginning of the 19th century, chalk-based tooth powders have been widely used in Western Europe and Russia. Here, by the way, we could meet them back in the 70-80s of the XX century! Since the end of the XIX century, the world began to switch to toothpastes in tubes (the pioneer is the Colgate company).

In the 20s of our century, the search for a replacement for chalk as a dental abrasive begins.

Searches have led to the use of silicon dioxide, which is well compatible with fluorine compounds and other active components, with controlled abrasion, which allows the creation of pastes with a wide range of desired properties. And finally, the optimal pH value is 7, due to which pastes based on silicon dioxide normalize the acid-base balance in the oral cavity. Today, almost all the best toothpastes in the world are produced on the basis of silicon dioxide as an abrasive.

On the basis of silicon dioxide, toothpastes "Parodontol", "Carimed", "Komilfo" and children's gel "Chistyulya" of the "Freedom" association are produced.

The therapeutic and prophylactic effect of "Carimed" is based on the interaction of its constituent silicon dioxide and sodium fluoride. Fluoride, contributing to the fixation of calcium ions in tooth enamel, makes it more resistant to acids. The abundant foam formed during cleaning with "Carimed" actively fights the formation of soft plaque.

Properties dental claim Asta "Komilfo" due to specially selected combination of fluoride, calcium glycerophosphate and urea, which perfectly protects teeth from caries and enhances the dental enamel. Sodium bicarbonate, which is part of the paste in combination with silicon dioxide, gives the paste excellent cleaning properties and helps to remove tartar and plaque. Children's gel toothpaste "Chistyulya". Its composition includes sodium fluoride and calcium glycerophosphate, which provide the gel with high mineralizing qualities. During the development of Chistuli, it was taken into account that fluoride must be present in the gel in a children's dosage. The cleaning properties of the gel, provided by silicon dioxide, are also focused on a gentle regime that maximally corresponds to the structure and formation of children's teeth. And finally, the attractive appearance of the pleasant taste of caramel have the fact that the gel will be popular among the guys.

At the Freedom association, they carefully respect traditions, carefully analyze the world and their own experience, work in contact with research institutes, clinics, and certification bodies. Since August 1997, the Scientific Center has been operating as part of the association, including an analytical center and a tasting council.

By producing chalky toothpastes, Freedom has always sought to acquire high-quality chalk for them with a low content of aluminum and iron oxides. The chalk used is harmless to the body and has a good cleansing ability with minimal abrasion of tooth enamel. And now, the association produces therapeutic and preventive toothpastes on a chalk basis - "Fluorodent", "Phosphodent", "Extra", "Pearls" and others. The cost of chalk-based pastes is significantly lower than the cost of pastes made using silicon dioxide.

The features and some of the exceptional qualities of "old acquaintances" make them attractive to certain groups of people, which is due to the peculiarities of the treatment and oral hygiene of these people, as well as their tastes.

“Phosphodent”, for example, contains, in addition to fluorine and sodium phosphate, the sea buckthorn oil preparation, rich in provitamin A, vitamin E and trace elements. The paste has anti-caries properties and promotes the healing of the oral mucosa. Extra toothpaste contains chlorophyll-carotene paste isolated from needles of pine and spruce needles, containing chlorophyll, a complex of vitamins, carotene and other biologically active and bactericidal substances.

"Pearl" has a salty taste due to the introduction of table salt, which contributes to the outflow of tissue fluid from the inflamed gum, in addition to its composition calcium glycerophosphate, which reduces the sensitivity of tooth enamel and increases resistance to caries.

In “fluorodent” there are especially many calcium, fluorine and phosphorus teeth useful for enamel - they are present in it in the form of components of calcium carbonate, calcium glycerophosphate, phosphate, sodium, sodium fluoride and other compounds.

Speaking of other domestic pastas, mention should be made of such as:

The first phosphate-containing paste “Pearls appeared more than 30 years ago in Leningrad, Nikolaev, Kharkov. Calcium glycerophosphate included in this paste provides a mineralizing and anti-caries effect.

In recent years, a huge number of various foreign pastes have appeared on our market, however, there are a few calcium and phosphate-containing pastes. These are Aquafi-esh and Colgate with calcium. These pastes are served as the latest achievement, although they are fundamentally very similar in composition to the domestic Cheburashka created more than 25 years ago (Fedorov Yu. A. and other SSR MKI A617 / 16). The differences are only in the number of active components.

The high competitiveness of the modern market for toothpastes required domestic manufacturers specific actions. As a result of the research, toothpastes of a new class were developed and tested.

The use of a wide range of phosphate-containing toothpastes currently goes in three directions: firstly, for the prevention of caries in children and adults with regular daily brushing, in combination with applications for teeth;

secondly, phosphate-containing pastes are indispensable in the treatment of non-carious lesions (abrasion, erosion, wedge-shaped defects, fluorosis, hypoplasia, etc.) This is extremely important, since over the past 10-12 years, the frequency of non-carious lesions that occur after teething has increased in 10-15 times, and in 80-85% of cases this is associated with impaired thyroid function and impaired tooth mineralization (Maksimovsky Yu. M., Fedorov Yu. A., 1995);

thirdly, brushing your teeth and especially the application of phosphate-containing toothpastes should be carried out during the entire period of orthodontic treatment (especially with fixed devices and a bracket system), which will prevent the appearance of areas of enamel demineralization, which is almost inevitable in the absence of correct and effective preventive measures.

Thus, phosphate-containing toothpastes have certain and undeniable advantages over others, especially fluoride-containing pastes.

They do not have an age qualification, because they are active even after the end of the main mineralization processes (15–16 years), almost to the very old age.

Unlike fluorine, calcium glycerophosphate is a natural semi-finished product of calcium-phosphorus metabolism and does not have any adverse effects both on the body as a whole and on the oral tissue directly.

Therefore, widespread use of phosphate-containing pastes ("Pearls", "New Children's Pearls", "Bambi", etc.) in prevention and treatment programs, of course, should be preferred.

**WELEDA CARE FOR Oral Cavities** Almost all modern toothpastes and other oral care products contain excessive amounts of highly active synthetic fluoride and foam-forming compounds (tensids), which, in our opinion, bring a lot of harm to the whole body in addition to benefits. In particular, they

destroy not only pathogenic, but also healthy flora on the oral mucosa. Our toothpastes and balms are based only on natural ingredients in reasonable doses, which allows us not to harm the body as a whole with a high cleansing and healing effect.

#### ASH TOOTH PASTE "VELA" ("WELEDA SOLE-ZAHN-CREME)

It is a high quality active oral care product. With its combination of natural mineral salts that neutralize acid-containing residues, the paste has its own wonderful, descriptive properties. In addition, ash paste at the time of its application activates the natural salivation, which causes physiological self-cleaning of the oral cavity. You will quickly get used to the tart-fresh, brackish taste of pasta and love it just as quickly. This paste has a beneficial effect on the hardness and whiteness of tooth enamel, and prevents tooth decay. An important rule: apply the paste to a DRY toothbrush and brush your teeth and gums in a circular motion for a long time until saliva is released.

Composition (full declaration): water-alcohol extract from the plant Mirra, Ratania and from Horse Chestnut Bark; natural sodium bicarbonate; glycerol; natural silicon oxide, a mixture of essential oils; blackthorn juice plants; rock salt; natural sodium sulfate and sodium silicate; Jojoba oil.

TOOTH PASTE "VELELA" (WELEDA-ZAHNCREME) Toothpaste "Veleda", unlike the Ashpaste, is intended for the care of highly sensitive gums and teeth prone to frequent inflammation. Therefore, in addition to the pronounced cleansing effect, a calming and anti-inflammatory effect comes to the fore. Cleansing is achieved using natural chalk. This paste can serve as a good basis for the prevention of periodontal disease.

Composition: water-alcohol extract from Ratania and Mirra; a piece of chalk; glycerol; natural silicon oxide; a mixture of essential oils.

VEGETA PLANT DENTAL G (PFLANZEN-ZAH CREME WELEDA) Because of the soft and fresh flavors, this toothpaste was especially loved by children .. It cleans teeth perfectly and has a more mint-like taste for toothpastes, however<sup>1</sup> not due to synthetic tol, but from -for the presence of other natural ethereal villages. In it, as well as in other means of "Veled" of this series, it does not contain artificial tensides and fluorine compounds.

Composition: sorbitol; water-alcohol grave from Mirra and Ratania; gkm soldering silicon oxide; alginate

natural algae product mix of essential oils.

Laboratories of Veleda in Switzerland, France, Germany, Holland and other countries.

The specialists of this company constantly maintain constant scientific technological links with the most important laboratory of Veleda - nature itself.

One of the largest domestic manufacturers "Ural gems" in the modern market presents the following toothpastes.

Edent and Edent-Junior toothpastes were developed by leading cosmetologists and dentists in the Ural region.

"Eledent" and "Eledent-Junior" contain active fluoride compounds, peppermint oil and Eleutherococcus infusion. Thanks to a specially selected paste composition, they have a triple effect on the teeth:

- make tooth enamel firmer, protecting teeth from caries damage;
- accelerate the circulation of the gums, "preventing periodontal disease;
- perfectly tone the oral cavity.

Persistent refreshing taste and plentiful foam will complete the effective action of "Eledent".

Teeth when using these pastes will be healthy, and breathing fresh.  
Edent-Junior toothpaste tastes like peppermint and fruit.  
Recommended by the OSTAS Dental Association.

Medical and preventive toothpaste Tropicana

It has the following advantages:

- effective against caries
  - removes plaque
  - provides clean oral cavity and plentiful foam
- exotic coconut flavor
- the content of fluorine and calcium glycerophosphate is more effective than the content of fluorine alone.

More recently, a new paste O \* Kay.

This paste has a pleasant lemon taste, and the quality is not inferior to foreign counterparts. It provides a clean oral cavity and fresh breath.

SmithKline Beecham is represented in the domestic market by two pastes: Aquafresh and Macklins.

### **Aquafresh**

The Aquafresh toothpaste of the Anglo-American company SmithKline Beecham appeared on the Russian market relatively recently, it is ideal for all family members, for adults and children.

This is a multicomponent paste of a unique composition, thanks to which it has antibacterial protective and deodorizing effect. Aquafresh includes three pharmacologically active components:

sodium monofluorophosphate, calcium glycerophosphate and calcium carbonate. In addition, there is fluoride in the paste - for some reason it has recently become a necessary element of all or almost all modern pastes supplied to our market. And the presence of calcium glycerophosphate in Aquafresh makes fluorine more active, creating the necessary conditions for the formation of fluorapatite on the enamel surface, which was not dissolved by acid. Calcium carbonate, in turn, creates an alkaline environment in the oral cavity, which normalizes the pH level.

It should be emphasized that the unique composition of the Aquafresh paste compares favorably with other similar pastes in the increased pharmacological activity of the ingredients. This is manifested in a decrease in plaque formation, and the presence of calcium glycerophosphate enhances the action of sodium monofluorophosphate and sodium lauryl sulfate in the dissolution of dental plaque and reduces the activity of calculus formation.

At the same time, the main pharmacological effect of Aquafresh is to prevent the destruction of tooth enamel, strengthen its crystal lattice, and increase resistance as a result of the interaction of sodium monophosphate, calcium glycerophosphate and sodium carbonate. Aquafresh destroys bad breath from the mouth not only due to deodorizing properties, but also as a result antibacterial activity of all components. Toothpaste - tricolor. The main components are separated by strips of white, red and blue, which prevents mixing them in the tube, giving the paste a unique storage stability that cannot be achieved using traditional technologies for combining dissimilar ingredients. Clinical studies have confirmed the safety of all components of the Aquafresh paste (including dyes), the absence of negative effects on modern filling materials. Given the high pharmacological activity of this hygiene products, you must strictly adhere to the instructions for use, which is placed on the package. Aquafresh toothpaste is most effective when used to clean your teeth after eating.

Aquafrech Whitening

This paste contains a unique component of triclin, which does not damage the enamel, removes an unpleasant yellow hue and stains that form on the teeth. Unlike other whitening products, this toothpaste can be used every day.

Aquafresh toothpaste consists of three multi-colored ingredients, each of which performs a specific function:

white - protects your teeth from caries, red - removes plaque from your teeth,

blue (or green, with a milder paste) - gives freshness to breathing.

The paste also disinfects the oral cavity, and with regular use, gradually removes tartar.

Aquafresh toothpaste has a unique set of properties, both therapeutic and prophylactic.

Aquafresh is a registered trademark. Approved by the Ministry of Health of the Russian Federation.

The McKlins toothpaste of the British company SmithKline Beecham is a new effective tool for the prevention and treatment of tooth decay. The anti-caries effect of the paste is provided by the pharmacological interaction of four active components: sodium monofluorophosphate, glycerophosphate and calcium carbonate, as well as the antimicrobial agent triclosan.

Compared with the precursors of this company, the inclusion of an antimicrobial agent Triclosan in Macklins provides additional protection for the oral cavity from plaque containing pathogenic microflora, the activity of which leads to a shift in pH to the acid side and the development of caries.

Macklins toothpaste has a multi-component anti-caries mechanism. The action of the first component, triclosan, is directed against the development of bacteria on food residues on tooth enamel.

The introduction into the paste of triclosan at a concentration of 0.215% has a significant antibacterial effect by reducing the formation of plaque in comparison with a control that does not contain triclosan Macleans toothpaste.

The second critical component of MacLins is calcium carbonate. It is traditionally included in the composition of the pastes of this company. He performs a double role in the paste: firstly, it creates an alkaline environment that neutralizes bacterial and food acids, thereby preventing acid demineralization of tooth tissue, and secondly, it replenishes the deficit of endogenous calcium that is washed out as a result of demineralization.

And finally, the last two main components - sodium monophosphate and calcium glycerophosphate perform the main anti-caries function in the Maclins toothpaste. The presence of fluoride in the paste is a key point in creating a fundamentally new structure on the surface of tooth enamel fluoroapatite, which is insensitive to acid dissolution and, therefore, prevents the demineralization of the tooth surface. In addition, fluoride inhibits that phase of oxygen-free bacterial glucose metabolism (glycolysis), which leads to the formation of acid in plaque. Toxicological studies have proven the complete safety of the fluoride found in MacLins toothpaste.

The introduction of calcium glycerophosphate in a concentration of 0.13% (by weight) into the toothpaste helps prevent demineralization of tooth enamel.

Pasta Macklins when used twice a day will help in:

- Removing plaque - one of the causes of gum disease
- Anti-Caries
- And provide a feeling of cleanliness and freshness.
- Macklins contains a combination of fluorine with calcium glycerophosphate, which is more effective than fluoride alone.
- Macklins contains an active antibacterial reagent - Triclosan. Active ingredients Triclosan is an antibacterial reagent Sodium Monofluorophosphate 0.8%, Calcium Glycerophosphate 0.13%.

Some toothpastes protect teeth from caries, others from plaque and bad breath, and still others prevent the formation of tartar. In the summer of 1997, the United States Food and Drug Administration

recommended for widespread use and authorized the sale of Colgate Total toothpaste manufactured by Colgate Palmolive.

Prior to this, not a single toothpaste received the recommendations of the Food and Drug Administration - the first was Colgate Total.

The new Colgate Total toothpaste eliminates the effects of bacteria even between brushings. Scientific studies and special clinical trials have proven that a combination of substances such as triclosan, gantrez and sodium fluoride provide complete and continuous protection of the oral cavity. Triclosan is an antibacterial drug little known to our dentists, which is widely used abroad in the perfume industry (perfumes, toilet soap, etc.), and is also included in Colgate Palmolive toothpastes and rinses. A well-known manufacturer of oral care products believes that triclosan synthesized with a copolymer significantly improves and prolongs the therapeutic effect of toothpastes and rinses. This applies to increasing caries resistance of tooth enamel and to the prevention of periodontal disease. Toothpaste containing 0.3% triclosan and U / a copolymer PVM / MA (based on 0.243% sodium / silica fluoride) inhibits plaque formation and formation of tartar, prevents development and helps to reduce the severity of gingivitis. The clinical effect of the use of antibacterial paste is significantly higher compared to conventional fluoride-containing toothpastes.

A dynamic study of the microflora of the oral cavity suggests that the long-term (1 year) use of Colgate Total toothpaste does not cause adverse changes in the microbial ecology in the direction of enhancing the growth of opportunistic and pathogenic flora, and also does not lead to the formation of resistant strains.

American dentists believe that Colgate Total - the highest achievement in the field of production of dental care products at home since the advent of fluoride-containing toothpastes (Louis Julieber).

Colgate Total paste is recommended for use by independent dental associations in 30 countries, including the American, Canadian and British associations.

#### Pastes, gels, rinses firm "Pierre Fabre" (France)

A carefully thought-out concept and a high level of technology have allowed Pierre Fabre dental products to occupy a leading position in France among oral care products.

An integrated approach to the problem of prevention and treatment of dental diseases is implemented in the creation of a series of several unidirectional drugs used sequentially.

### **Three lines of drugs**

1. Means for the treatment of inflammatory diseases of the gums and oral mucosa

Eludryl - rinse is effective against a wide range of pathogens, has a bactericidal and antifungal effect. Eludryl is distinguished by pronounced anti-inflammatory and analgesic properties. The drug has been successfully used in the treatment of stomatitis, gingivitis, periodontitis, aphthous lesions, as well as in the pre- and postoperative periods.

Parodium - gel for gums. It contains three active components and has a triple effect: antibacterial, anti-inflammatory and hemostatic.

Indications: local gingivitis and gingivophragia. Efficiency is very high.

Elugel is a gum gel with a high (0.2%) chlorhexidine content, which has antibacterial and fungicidal effects against a wide range of pathogens.

It is used as a strong local antiseptic effect (after extraction, implantation).

Pasoral is an oral gel with pronounced anti-inflammatory and analgesic effects, effective against a wide range of microorganisms. Indications: ulceration of the oral mucosa and lesions caused by wearing dentures.

## 2. Means for the prevention of inflammatory diseases of the gums and oral mucosa

Elgidium - toothpaste for special purposes. Chlorhexidine, which is part of the drug, has an antiseptic and anti-inflammatory effect, and calcium has a hemostatic effect and stimulates collagen synthesis. Paste is used in the treatment of inflammatory diseases of the oral cavity; to prevent these diseases, effectively prevents the appearance of bacterial plaque.

Lysotak is a gel-like solution used before brushing to remove plaque and prevent the formation of tartar. Contains sodium citrate and borate, which have the ability to bind coloring matter (tannin, caffeine, etc.)

## 3. Means for the treatment and prevention of dental hypersensitivity

These drugs are based on a new fluorine-containing compound - fluorinol, which is 12 times stronger than ordinary fluorine.

Sensigel is a therapeutic gel whose action is based on that. that fluorinol quickly and efficiently mineralizes tooth tissues and closes expanded dentinal canals, and potassium nitrate interacts with nerve endings, interferes with the transmission of nerve impulses, and quickly relieves pain. E.ch ^ if.and / n ^ - prophylactic gel-like paste of a similar action.

Corident Series "KRKA" (Slovakia)

Corident Xylitily (Xylitol Corridor) - for complete oral care, against tooth decay. Xylitol strengthens enamel, enhances fluorine activity, prevents the formation of tartar.

Corident family Fresh - paste for the whole family with the active component of fluoride in two forms.

Universal anti-caries paste of soft action.

Corident Family Cool is a paste for children and adolescents with anti-caries effects, specially designed for milk and growing teeth.

Corident Pearl - tooth polishing paste, as soft as normal, suitable for daily use

application. Removes tartar and eliminates darkening of teeth, removes plaque from tea, coffee, tobacco.

The leading manufacturer of products for dentistry "ARKAM" plant (Germany) presents treatment-and-prophylactic series for the protection and care of teeth "LACALUT" For adults

LACALUT ACTIVE (LACALUT AKTIV), toothpaste, tube 50g.

Toothpaste "Lacalut Asset" is intended to protect against periodontal disease.

The first signs of the disease: increased tooth sensitivity and bleeding gums. Complex the components of toothpaste is aimed at eliminating these signs and preventing periodontal disease.

Main components: aluminum lactate, aluminum fluoride, chlorhexidine, allantoin.

Aluminum lactate - the main active ingredient in toothpaste - significantly compacts and strengthens gums, stops their bleeding, reduces acute sensitivity to external irritants (hot-cold, sweet-sour).

Chlorhexidine - has an antiseptic and bactericidal effect, prevents the appearance of bacterial plaque on the teeth.

Allantoin - relieves inflammation of the gums, reduces their bleeding. Aluminum fluoride - additionally strengthens tooth enamel and thus serves as protection against caries.

Toothpaste "Lacalut fluoride." Designed to Protect Against Caries Lacalut Fluoride Toothpaste is an optimally selected composition of components for the prevention and control of tooth decay.

Main components: sodium fluoride, octadecyl diamidihydrofluoride, chlorhexidine. The fluoride system - the main active component of toothpaste - quickly and in significant quantities is fixed on tooth enamel (especially on its damaged areas and at the roots of teeth) and increases its resistance to acid.

Chlorhexidine - has an antiseptic and bactericidal effect, prevents the formation of plaque on the teeth.

LACALUT SENSITIVE, toothpaste, tube 50 g. Protects sensitive teeth and open neck of teeth, protects against cervical caries. Thanks to a specially selected composition, it reduces the response to irritants "hot / cold", "sweet / sour", provides stability with high sensitivity of the teeth.

Lacalut Sensitive Toothpaste is for sensitive teeth. Thanks to a specially selected complex of medical toothpaste "Lacalut Sensitive" protects sensitive teeth, gently cleanses them and open the neck of the teeth, protects against cervical caries. Main components: aluminum lactate, aluminum fluoride, octadecyl diamidihydrofluoride, chlorhexidine.

Aluminum lactate (aluminum salts) - is fixed at the level of nerve endings located in the dentin, and prevents the transmission of external stimuli. Thus, the sensitivity of the teeth is reduced by contact with hot, cold, sweet, sour, as well as when brushing, in addition, the gums are strengthened and tightened.

Fluoride system - strengthens the enamel, which prevents the occurrence of caries (in particular, cervical caries).

Chlorhexidine - acts antiseptically, bactericidal, preventing the occurrence of bacterial plaque.

LACALUT FLUOR (LACALUT FLUOR), toothpaste, tube 50g. Slows down the process of darkening teeth when smoking or drinking coffee and tea. Specially cleaning particles thoroughly and gently clean and remove plaque on the teeth, which, with daily use, acquire a natural whiteness. Protects hard tooth tissue from acids and caries.

LAKAKLYT multi toothbrush, medium hardness. Carefully rounded bristles with a wavy profile thoroughly brush teeth, interdental spaces and hard to reach parts of molars, gently massage the gums and improve blood circulation.

LACALUT spray for the oral cavity, 20ml. - Spray with antibacterial and refreshing effect to prevent plaque on the teeth. The aroma of peppermint oil acts quickly and steadily.

LAKALUT FLUOR Chewable Dragee No. 12 - For quick and easy dental care throughout the day. Chewing tablets with fluoride cleanse, massage the gums, prevent tooth decay and refresh. Practical when there is no toothbrush at hand.

For children

LACALUT toothpaste for children "KAPT'N BLAUBAR" with vitamins A and E, 50 ml. The content of active ingredients complies with the recommendations of the German Dental Society. Provides soft toothbrushing and plaque removal.

Thanks to aminofluoride, milk and sensitive teeth will be protected from caries. Vitamins A and E complement oral care. It does not contain sugar, and the taste of fresh raspberries makes the care of children's teeth a pleasant procedure. LACALUT toothbrush for "KAPT'N BLAUBAR" Effective for the care of milk and permanent teeth, which is confirmed by the Children's Dental Center of the University of Leipzig. The soft rounded surface of the bristles gently cleans the teeth and massages

sensitive gums, the special shape of the handle of the toothbrush is convenient for the child's hand, and the color of the surface of the bristles facilitates the dosage of the toothpaste, making brushing a pleasure! LACALUT CHILDREN'S DENTAL KIT SET "KAPT'N BLAUBAR" - special children's toothbrushes and pastes of the Lacalut series, as well as a charming toy.

Cosmetic factory Pollena Lechia from Poland also presented its goods on the domestic market:

#### COLODENT BI-FLUOR

The paste is intended for adults and children over 7 years of age.

It consists of modern combinations of 2 fluorine compounds (sodium fluoride and sodium monofluorophosphate), which intensively enriches enamel with fluorine.

. Due to this, the teeth become more resistant to the effects of acids formed in the oral cavity, and less susceptible to caries, as evidenced by many years of research.

COLODENT BI-FLUOR toothpaste is made on the basis of specially selected silica gels, which have excellent cleaning, polishing and absorption properties.

It effectively removes all kinds of staining and deposits. Perfectly selected olfactory-flavoring • composition leaves a fresh feeling in the oral cavity.

#### COLODENT REMI

A unique set of two toothpastes on the Polish market. Its action is based on regular alternate use, with each toothbrushing, first the REMI K paste, and then, after rinsing the oral cavity, the REMI A paste. In the 2-stage brushing procedure, the crystal structure of the tooth enamel surface is updated, because the REMI K paste contains a set of free cations, and the REMI A paste contains an active additive in the form of a specially selected set of free anions.

The regular use of these toothpastes contributes to the re-mineralization of the initial stage of caries damage to the enamel, thereby hindering the further development of caries.

COLODENT REMI is intended for adults and children ^ / [ / / over 7 years of age.

The effectiveness of the anti-caries action of REMI pastes is confirmed by many years of clinical research.

#### COLODENT ANTI-KAM

This paste prevents tartar deposits, since JcaK contains sodium pyrophosphate, which inhibits the crystallization processes that lead to the formation of tartar, and sodium fluoride, which has an anti-caries effect.

The composition of the paste includes a specially selected set of components with excellent cleaning, polishing and absorption properties.

COLODENT ANTI-KAM, like all other pastes of this family, is listed in the register of the Ministry of Health and Social Welfare.

#### COLODENT HERB F

The systematic use of COLODENT HERB F toothpaste prevents gingivitis and tooth decay. It includes extracts from sage and chamomile, which have a bacteriostatic and anti-inflammatory effect.

These well-known medicinal herbs used for centuries alleviate the unpleasant symptoms of periodontitis (for example, bleeding gums).

Due to the presence of active fluoride ions in the paste (in the form of sodium monovtrophosphate), its daily use enriches the outer layer of tooth enamel with fluorine, thereby reducing the susceptibility of teeth to caries.

The paste is intended for adults and children over 4 years of age.

## SENSODYNE

Sensodyne is a therapeutic and prophylactic toothpaste specially created in order to alleviate the suffering of people with hypersensitivity of teeth and prevent the development of more serious diseases of the oral cavity, which can lead to tooth loss. There are two types of toothpaste Sensodyne — Sensodyne Classic contains strontium chloride, which helps to close the tubules in the dentin and thus protects against pain. Sensodyne F, due to the content of potassium chloride, which prevents the penetration of painful irritation on the pulp of the tooth, creates a protective sheath for the actual dental nerves. At the same time, Sensodyne F contains fluorine, which effectively protects tooth enamel from tooth decay.

Both varieties of toothpaste — Sensodyne Classic and Sensodyne F — also contain / therapeutic elements that prevent periodontal disease.

Clinical trials of Sensodyne have been ongoing for 30 years. and the results of these tests invariably confirm the efficacy of Sensodyne in the treatment of hypersensitive teeth. That is why leading dentists in the world recommend using Sensodyne regularly.

## 10 - Practice

**Topic: Role in the prevention of caries of a balanced diet. Oral hygiene products.**

1.1. Technological model of the formation

Lesson time 3 hours	Number of students
Type of activity	Introduction of practice news
Plan	Give the full correct answer to the questions from this topic "the role in the prevention of caries of a balanced diet"
The objective of the training session	Explore balanced nutrition in dental disease prevention
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (10 minutes )	1. The purpose of the lesson 2. Preparation of slides for lecture material 3. Related literature <ul style="list-style-type: none"> <li>• N.V. Kuryakina - "Therapeutic dentistry children's age "N. Novgorod 2001</li> <li>• T.F. Vinogradova - "Dentistry for children" 1987               <ul style="list-style-type: none"> <li>• N.G. Pakhomov- "Primary prevention in dentistry"</li> <li>• E.V. Borovsky - "Therapeutic dentistry" 1997.</li> </ul> </li> <li>• Yu.I.Vorobov-X-ray of the teeth and jaws - 1990 city of</li> <li>• K.Georgieva- "Emergency care in dentistry" 1983 g</li> </ul>	Record a subject and listen
2. Leading a topic (10 minutes)	1. Keeping the audience clean 2. Checking students for a practical lesson 3. Check student attendance.	Are listening
3. The main stage (9 0 minutes )	1. The division of students into 2 small subgroups , asks questions on the topic ; 2. Use of slides and multimedia; 3. conducts therapeutic work; 4. Combines all the information on a given topic, actively participate ni their students encourages and assesses the general.	Divided into small groups , watching , participating , listening. Student expresses his opinion complements and asks questions
4. The final stage (10 minutes )	1. Conclusion . 2. Independent work . 3. Homework .	Listen to Record Conclusion

Text

The concept of "**rational nutrition**" includes the introduction into the diet of the main nutrients: proteins, fats, carbohydrates, mineral salts, as well as biologically active nutrients (vitamins, hormones), in optimal ratios in quantity and quality to ensure normal metabolism. Adequate nutrition is a prerequisite for the normal growth of children and adolescents, their harmonious physical and neuropsychic development, maintains a high level of health, provides resistance to the effects of adverse environmental factors, and contributes to their effective learning. According to K.A. Pohis (1997), the following was established:

1. Modern children eat less than their peers a few years ago, consuming on average noticeably fewer calories than before. On the other hand, they began to move less and, therefore, spend less energy. However, the need for basic food ingredients, vitamins, minerals and ballast **substances** remains unchanged. This requires that foods rich in valuable nutrients are present in the diet.
2. Modern children consume milk and dairy products by almost a third less than 10 years ago. Therefore, the daily intake of calcium in the body decreased by 26% of the recommended amount.
3. Children began to eat more sausages, therefore, they receive a lot of polyunsaturated fats.
4. The amount of ballast substances is far from ideal indicators, and it is they that provide a feeling of satiety and promote digestion, which is of fundamental importance for maintaining the intestines in a healthy state.
5. Children consume too little fluid. In addition, they prefer sugar-rich lemonades and fruit drinks. Drinking and mineral water, tea are not popular.
6. Children eat too much sweet. Already from 4-5 years of age, children consume an average of 60 to 70 g of sugar per day (this amount is permissible only for an adult).

An additional source of sugar is sweet drinks, soft drinks, yogurts, pastries, sweets, etc., which leads to weight gain, the development of caries and candidiasis. Traditionally, the leading place in the prevention of dental caries belongs to calcium, phosphorus, fluorine, and unsaturated carbohydrates. However, to reduce the role of the nutritional factor to a lack of a mineral element or an excess of only unsaturated carbohydrates in the diet is unlawful. Resistance of teeth to caries is associated with the nutritional features of the child.

Modern data on the body's need for nutrients and the relationship between them are summarized in the study of balanced nutrition. With a balanced diet, optimal quantitative and qualitative relationships between the main food substances and biologically active substances: proteins, fats, carbohydrates, vitamins and minerals are provided. The ratio of proteins, fats, carbohydrates in the daily diet of the child in accordance with the recommended standards of nutrients and energy, approved in **1991 year**, is as follows: - for children from 0 to 3 months - 1: 3: 6; - for children from 4 to 6 months - 1: 2: 5; - for children from 7 to 12 months-1: 2: 4,5; - for children from I year to 6 years - 1: 1: 4; - for children from 7 to 10 years old ~ 1: 1: 4,4; - for children from 15 to 15 years old - 1: 1: 4.3. Proteins are necessary for the child as the main plastic and building material for the synthesis of hormones, enzymes and antibody production. **Protein** in the food of children of preschool and school age should provide 15% of its total calorie content. The amount of animal protein in the food of a child 3-4 years old should be 70%, 5-10 years old - 60%, 11-17 years old - at least 50% of their total number.

It is believed that at this level, the need for essential amino acids is fully satisfied. The proteins of meat, fish, milk and eggs are distinguished by the most favorable ratio of amino acids, providing a high level of retention and resynthesis of proteins in the body. A lack of protein leads to growth retardation, impaired formation of physiological functions, and a decrease in the production of hormones and enzymes. The production of antibodies decreases, which predisposes to frequent and protracted **diseases**. Fatigue increases in children, school performance deteriorates in schoolchildren, anemia develops. Excess protein can cause allergic and other pathological reactions: increase the excitability of the nervous system, increase the consumption of other components of food.

Children may develop subfibrillitis, hypovitaminosis. Fats are sources of energy for the body, are used to form cell membranes, are important as carriers of fat-soluble vitamins A., D, E, K, etc. With a lack

of fat in a child's food, growth slows down, immunity decreases, and pathological skin changes develop. Excess fat inhibits digestion, reduces the digestion and absorption of proteins, disrupts calcium-phosphorus metabolism, which increases the permeability of enamel, even if the proportion of sugar in the diet is insignificant. Carbohydrates are an important part of the diet, the main energy requirement is replenished, especially at a young age, due to carbohydrates - about 55% of the diet. Some authors (E.A. Beyulo, 1972, M.I. Snigur, M.F. Radchenko, 1961, M.I. Snigur, 3.T. Koreshkova, 1988) consider that **the** body's **need** for carbohydrates can be covered by polysaccharides of plant products, which, like sugar, are well absorbed by the body, before being split in the digestive tract, are gradually absorbed into the blood, but have a much smaller cariogenic effect on teeth than sucrose. Other authors (V.G. Kislyakovskaya, L.P. Vasiliev, D.V. Gurvich, 1976) believe that for the constant maintenance of sugar in the blood, part of the carbohydrate should consist of easily digestible sugars. A lack of carbohydrates worsens digestion, leading to malnutrition.

An excess of carbohydrates leads to **obesity**, decreased mobility, impaired phosphorus-calcium metabolism, the development of atherosclerosis, and contributes to sensitization of the body. In some diseases, the amount of sugar in the diet should be drastically reduced or completely eliminated. In such cases, sugar substitutes are used to add sweetness to the food. Saccharin is used in the form of sodium salt. The sweetness of saccharin is 400-500 times the sweetness of sugar. Saccharin passes quickly through the digestive tract, and 98% of it is excreted in the urine. A definite relationship has been established between the intake of saccharin and bladder cancer in rats. The question of the effect of saccharin on human health and the possibility of its widespread use has not been finally resolved. It can be stated that saccharin is undesirable to use daily for a long time. In our country, the use of saccharin is allowed only in the production of drinks and confectionery for patients with diabetes. Cyclomats can not be used by children and pregnant women - these are derivatives of aminosulfonic acid, they are converted into toxic cyclohexalalanine or carcinogenic dicyclohexylamine in the body. Fructose practically does not cause tooth decay. The consumption rate is 0.5-1.0 g per kg of body weight. Sorbitol is obtained by restoring fructose. Mannitol is also obtained from fructose. Xylitol is a metabolic product in the body. Xylitol forms from 5 to 15 g per day. In industry, xylitol is obtained by hydrogenation of xylose, a component of wood. Xylitol has a choleric and laxative effect. It is not assimilated by most types of microorganisms. Xylitol products are not microbially degraded. The sweetness of xylitol interrupts the sweetness of sugar in 2 times.

Nutrition has a great influence on both the formation and development of teeth, as well as their susceptibility to caries. A rational diet and oral care along with other factors is an important point in the formation of resistance to caries.

The intrauterine period is the most important in the formation of the dentofacial system. At 6-10 weeks of gestation, the rudiments of all deciduous teeth are formed, from 5 months of pregnancy, mineralization of hard tissues and the formation of permanent ones begin. Violation of this physiological process in the 1st trimester of pregnancy is caused by a woman's diseases, adverse hereditary factors. One of the leading roles in the prevention of caries during pregnancy is nutrition that is rational in quantitative and qualitative terms, which provides a normal, strong structure of the hard tissues of the teeth during their development. Timely use of a pregnant woman high-grade protein nutrition, vitamins, minerals contributes to the normal development of the fetus.

After the birth of the baby, mother's milk has the ideal anti-caries effect, as it provides the baby with all the necessary components. The necessary additives to the diet are fruit and vegetable juices, mashed potatoes, and then fresh vegetables and fruits.

A balanced diet provides an optimal ratio of proteins, fats and carbohydrates, minerals and vitamins.

Proteins perform a plastic function, being a structural component of cells and tissues. The most favorable ratio of amino acids, structural elements, is most found in beef, rabbit, chicken, turkey, milk, fish and eggs. From plant products - in soybeans, beans, peas. Proteins of animal origin with a balanced diet should make up about half of their total amount. This level satisfies the body's need for essential amino acids. Excess protein can cause allergic and other pathological reactions: increase the excitability of the nervous system, increase the

consumption of other food components. A lack of protein leads to growth retardation, impaired formation of physiological functions, and a decrease in the production of hormones and enzymes. The production of antibodies is reduced, which predisposes to frequent and protracted diseases. Fatigue increases in children, school performance deteriorates in schoolchildren, anemia develops.

Fats are sources of energy for the body, they are important as carriers of fat-soluble vitamins A., D, E, K, etc. With a lack of fat in a child's food, growth slows down, immunity decreases, and pathological skin changes develop. Excess fat inhibits digestion, reduces the digestion and absorption of proteins, disrupts calcium-phosphorus metabolism, which increases the permeability of enamel, even if the proportion of sugar in the diet is insignificant. Fats are found in animal and vegetable fats.

Carbohydrates are of great importance in nutrition as an energy source. The main source is natural plant products (fruits, berries) or confectionery. Easily digestible carbohydrates include culinary sugars and starch, as a result of which oral bacteria can absorb them. After sugar intake, its increased concentration in the oral cavity persists for 20-40 minutes, and this time is used by microflora of dental plaque to utilize carbohydrate residues with cariogenic effect. It is advisable to eat vegetables and fruits after eating sweet, sticky, soft foods, as well as in between main meals. A lack of carbohydrates worsens digestion, leading to malnutrition. Excess carbohydrates leads to obesity, decreased mobility, impaired calcium-phosphorus metabolism, and the development of atherosclerosis. A special role in the prevention of caries belongs to calcium and phosphorus. The problem is that calcium is rather difficult to absorb by the body, its absorption increases in the presence of dairy and fermented foods, and decreases with an excess of phosphorus, potassium and fat. The greatest amount of calcium is found in milk and cheese. Inorganic salts of phosphorus support the acid-base state of the body, participate in the construction of tooth enamel. A lot of phosphorus in meat, fish, bread, beans, peas, cheeses. Fluoride can be found in sea fish and Georgian tea. It provides a pronounced anticariogenic effect and combats bleeding gums. It is advisable to eat fruits and berries. But remember that if you have an intense course of caries, you need to limit sorrel, spinach, rhubarb, because they contain oxalic acid, and it binds calcium and it does not enter enough in the tooth tissue.

Mineral components in a balanced state are found in goat milk, gooseberries, apples, carrots, radishes, beans, pumpkins, cabbage, onions, apricots, peaches, cherries.

Vitamins play an important role in preventing tooth decay. Prolonged vitamin deficiency. And during the period of development of teeth leads to increased susceptibility of teeth to caries due to imperfections in the structure of hard tissues. It was revealed that a deficiency of vitamin D leads to a delay in the development of dentin, to a violation of the formation of enamel.

In the prevention of caries, the ingestion of coarse food, which has a pronounced cleansing effect, also plays a role. Fruits, vegetables and rough foods should be recommended to everyone, especially children, as it helps to clean your teeth.

In the prevention of caries, the role of a balanced diet is important, which provides for the optimal ratio of proteins, fats and carbohydrates, minerals and vitamins.

After the birth of the baby, mother's milk has the ideal anti-caries effect, as it provides the baby with all the necessary components.

The most common mistake of parents is feeding the baby from the bottle with sweet mixtures, cereals, compotes and juices at night. Indeed, at night, bacteria that provoke the development of caries intensively multiply on the baby's teeth. The milk and juices used for night feeding should be diluted with water, gradually increasing its share in the drink.

To prevent tooth decay and for normal tooth growth, it is necessary to include foods rich in vitamin D, calcium, fluoride and other mineral elements in the child's diet. If the nutrition is balanced, then these substances in the body will be enough. The greatest amount of calcium is found in milk and cheese. A lot of phosphorus in meat and fish. You can supplement the diet with vitamin preparations from the pharmacy, as agreed with the doctor.

In the prevention of caries, the ingestion of coarse food, which has a pronounced cleansing effect, also plays a role. Fruits, vegetables and rough foods should be recommended to everyone, especially children, as it helps to clean your teeth.

The main disadvantage of the diet is the increased consumption of carbohydrates in the form of simple sugars (sugar, confectionery, sweets). Eat sweets in moderation. Be sure to brush your teeth more often to remove their residues and wash the bacteria formed acids. If you cannot brush your teeth, rinse your mouth thoroughly

with water or use sugar-free chewing gum. It is recommended for children over 3 years old who do not have diseases of the digestive system. It is important to remember that using it is only 5-10 minutes after eating.

## Oral hygiene

*Hygiene* (Greek *hygienos* - healing, bringing health) is a branch of medical science that studies the influence of environmental factors on humans and develops optimal requirements for the conditions of human life.

For dentists, *oral hygiene* is a science and practice that reduces the amount of dental deposits to a level that is safe for dental tissue and marginal periodontal disease.

Distinguish between individual oral hygiene and professional. Under the individual oral hygiene understand the activities that a person conducts on his own, usually at home.

Professional oral hygiene is a system of scientifically based treatment and preventive measures performed by medical personnel aimed at improving the organs and tissues of the oral cavity, as well as at preventing the occurrence and progression of dental diseases.

It should be clarified that the concept of "professional hygiene" includes not only mechanical removal of dental plaque. There are three main groups of activities, these are: *preventive, educational and therapeutic*.

The main stages of professional oral hygiene are:

1. Index assessment of the hygiene of the oral cavity.
2. Motivation of the patient.
3. Antiseptic treatment of the oral cavity.
4. Anesthesia.
5. Removal of dental plaque.
6. Grinding and polishing teeth.
7. Irrigation of the oral cavity.
8. Quality control of the manipulations.
9. Fluoride prophylaxis.
10. Selection of personal hygiene products and training in hygiene skills.
11. Determining the date of the next visit.

**1. Index assessment of the hygiene of the oral cavity.** For the index assessment of the hygienic condition of the oral cavity, many indices are used. Most common among them are OHI - S ( J . C . Green , J . R . Vermillon , 1964) and PLI ( Sylness , H . Loe , 1964).

The OHI - S index is determined using a dental probe. The buccal surface of the 16th and 26th teeth, the labial surface of the 11th and 31st, the lingual surface of the 36th and 46th are examined for the presence of hard and soft dental deposits, while the teeth should not be affected by caries. For research, the probe is installed parallel to the axis of the tooth and begin to advance it in zigzag movements from the occlusal surface to the neck, noting the level at which there is plaque. The following estimates are used: 0 - no plaque; 1 - plaque covers no more than 1/3 of the tooth surface; 2 - plaque covers from 1/3 to 2/3 of the tooth surface; 3 - plaque covers more than 2/3 of the tooth surface. Plaque Index (DI-S) is calculated using the formula:

The sum of 6 teeth

$$DI-S = \frac{\text{-----}}{6}$$

The index of 0.0-0.6 indicates good oral hygiene, 0.7-1.8 - satisfactory, and 1.9-3.0 indicates a poor hygiene condition.

Assessment of the tartar index (CI-S) is carried out as well as plaque: 0 - no stone; 1 - supragingival stone on 1/3 of the tooth surface; 2 - supragingival stone on 2/3 of the surface of the crown or individual sections of the subgingival stone; 3 - the supragingival stone covers more than 2/3 of the tooth surface or the subgingival stone girdles the neck of the tooth. Tartar index is calculated using the same formula as plaque.

$$OHI-S = DI-S + CI-S$$

A simplified hygiene index (OHI-S) is evaluated according to the following values: 0-0.6 good oral hygiene; 0.7-1.6 satisfactory; 1.7-2.5 unsatisfactory; more than 2.6 - poor oral hygiene.

The PLI plaque index is also performed using a dental probe without staining and allows you to evaluate the hygiene of all or individual teeth. Visually examine four surfaces of the tooth (vestibular, oral, distal and medial) for the presence of soft dental deposits. The amount of plaque on the tooth surface is determined by the following estimates: 0 points - no plaque in the gingival region; 1 point - a thin film of plaque in the gingival region is detected only by a probe; 2 points - plaque is visible in the cervical region; 3 points - on a large part of the tooth surface and in the interdental spaces there is a significant amount of plaque. The plaque index of one tooth is calculated by the formula:

$$PLI (\text{tooth}) = \frac{\Sigma \text{ points of four surfaces}}{4}$$

Oral PLI is calculated as the sum of the scores of all the teeth examined divided by their number.

**2. Motivation of the patient.** Long-term work with patients confirms that an important task for the dentist in the treatment and prevention of dental diseases is to motivate, educate and instruct the patient. The most important thing is to find in the person of the patient a conscious and actively helping ally in the fight against his disease. It can be very difficult to find the right words and arguments. Our speech is a universal code that we use to exchange information with other people. We can easily form perceptions of reality that we do not need, when deciphering, giving the words such a meaning that is completely different from the original one. Using speech, we generalize, distort and skip a lot of information from previous experience. How much time and effort is lost when the patient does not correctly understand the words of the doctor.

In an individual conversation with the patient, the dentist must have sufficient authority. With an indifferent and negative attitude to his work, the doctor is not able to carefully and attentively listen to the patient's complaints, makes medical mistakes and is aggressive and irritable, thereby losing confidence. The doctor should show healthy optimism, honesty and truthfulness. The words of the doctor have a huge suggestive (inspiring) effect on any person, especially on the patient. Therefore, it is important to relate to the conversation with sufficient responsibility. You should not deprive the patient of the opportunity to take care of himself and his health, correcting behavior correctly and creating conscious positive goals. It is always better to help than to save.

Motivation is the motivation that causes the patient's activity and determines the direction of his actions. The task of the dentist is to ensure that the patient has a persistent need for attention to his health in general and to dental health, in particular. It is necessary to convince a person that due to regular and high-quality oral hygiene and preventive examinations at the dentist, you can get rid of toothache and the need to have removable dentures in old age. The conversation should be structured in such a way as to very tactfully prompt the patient the answer to the question "why should I do this? What is the point?"

Observation of children has shown that forced planting and coercion cause a sharp rebuff. Therefore, in young patients, the following methods and types of motivation will be effective. *Visual* motivation i.e. a personal example of parents at home, in a clinic, is an indication of dental plaque with dyes and colorful prospectuses, and when conducting hygiene classes, video films are shown. *Auditory* motivation involves verbal reasoning, discussion, and the conviction of the need to maintain quality oral care. *Tactile* motivation is a feeling of smoothness and comfort that a child receives after a professional hygienic tooth treatment in a clinic and what he should strive for when taking care of the oral cavity at home. *Olfactory* motivation includes a feeling of fresh breath, as a factor in health, purity and beauty.

**3. Antiseptic treatment of the oral cavity** (rinse or irrigation) is a mandatory procedure before and after removal of dental plaque. Among the chemicals used as antiseptics, you can use:

- oxidizing agents (0.5 - 1.5% hydrogen peroxide, 0.1% aqueous solution of potassium permanganate);
- halogens (1% aqueous solution of iodinol);
- detergents (0.02 - 1% etonium, 0.05% chlorhexidine bigluconate, 0.025% decamethoxin);
- phenol-containing antiseptics (listerin, triclosan);
- derivatives of nitrofurans (0.02% furatsilin, 1: 25000 furazolidone);
- salts of heavy metals (0.25% copper sulfate, zinc lactate).

In addition, you can use rinsing agents (Plax, Healing Balm, and others) and tinctures of herbs (calendula, chamomile, St. John's wort, etc.) with an alcohol content of up to 7%.

**4. Anesthesia.** Removing pain sensitivity is carried out in accordance with the indications and contraindications. For this purpose, local application, infiltration or conduction anesthesia is used. Anesthesia allows the doctor to more thoroughly and efficiently perform the procedure for cleaning teeth. For application anesthesia, a spray of 10% lidocaine, xylonor gel or lidoxor, etc. can be used. Infiltration and conduction anesthesia is often performed with preparations based on 4% articaine with adrenaline, 3% mepivacaine or 2% lidocaine.

**5. Removal of dental plaque** can be carried out by various methods: chemical, manual, electromechanical, rotating tools for an angled or special tip, as well as using a surgical laser. The effectiveness of professional dental scaling depends on the knowledge and manual skills of the doctor, on his conscientiousness and practical experience.

Basic principles of dental plaque removal:

- a) a detailed history of somatic diseases;

- b) determining with the help of a probe and special coloring agents the type of dental deposits (soft or hard), their quantity and localization (supragingival or subgingival);
- c) adequately select the means and method of removing dental plaque;
- d) it is necessary to have good lighting;
- d) in accordance with the ergonomics of the position of the doctor-patient-assistant;
- f) correctly fix instruments, use appropriate intra- and extraoral supports, protect surrounding tissues from damage;
- g) take into account the principles of consistency and sequence of removal of dental plaque in order to cover all surfaces of the selected group of teeth;
- h) in accordance with the diagnosis, designate a specific date for the next visit for prevention and maintenance therapy.

A number of chemicals, usually acids, are used to soften the density of mineralized dental deposits. There are special preparations such as Detartrol ultra or Depuration Solution, which are applied to the tooth surface for 30-60 seconds, then washed off, and tartar is removed by the usual method.

*Manual removal of dental plaque.* There are special tool kits for manual dental scaling, which include various types of instruments, the main of which are: periodontal probes, sickle-shaped scalers, hooks, Gracey curettes, excavators, files, chisels. Using probes, gingival pockets, their length and depth are detected, tartar, overhanging edges of fillings and crowns, and the presence of carious cavities are detected. To remove stones that are firmly connected with the tooth, scalers, hooks (or universal curettes), excavators, files and chisels are used. Curette Gracey - is more subtle and tools designed for finishing the tooth surfaces, namely for smoothing the root surface and the removal of granulation tissue. A distinctive feature of scalers and hooks (universal curettes) from Gracey curettes is the angle between the front surface and the lower third of the rod. For hooks and scalers, the angle will be  $90^\circ$ , and for Gracey curettes,  $70^\circ$ . A distinctive feature of scalers is the sharp tip of the instrument, while the hooks and curettes have a rounded end.

Files (rasps, files) are rarely used due to difficult adaptation to the uneven surface of the tooth and limited tactile sensations. These tools have a round or oval base with many cutting edges. Designed for scraping mineralized deposits, sometimes they are used to remove overhanging edges of fillings and prostheses.

Excavators have only one cutting edge. The excavator blade is located at an angle of  $100^\circ$  to the handle and is bent at an angle of  $45^\circ$ . They are effective for use on a flat root surface.

Chisels are designed to remove tartar from the proximal surfaces of the teeth, especially closely spaced, where the use of other tools is difficult. The tool has two cutting edges, beveled at an angle of  $45^\circ$ . The bit is inserted from the front surface and the stone is removed in the interdental spaces with a push movement. Manipulation is performed with a strictly horizontal position of the patient, because of the danger of aspiration.

When carrying out professional removal of supra- and subgingival dental deposits, it is necessary to use correctly and qualitatively sharpened instruments. The sharpness of the hand tool can be visually determined: if the cutting edge of the working part is noticeable by the reflected light from the lamp, then it requires sharpening. When using a blunt instrument, the doctor exerts excessive pressure on it, deforming the cement or dentin of the root. In addition, an adequate angle between the

tool and the root surface to be treated should be observed: it should not be less than 45 ° or exceed 90 ° , since the effectiveness of removing dental deposits will depend on this.

Depending on the depth of damage to the tissues of the marginal periodontium and the number of dental deposits in one session, one to four quadrants can be processed. The procedure should be consistent: the tool moves to the next tooth surface only after the processing of this surface is completed, gradually moving from the tooth to the tooth of a certain quadrant.

*Electromechanical removal of dental plaque.* There are three main types of electromechanical tools: sound (pneumatic) scalers; magnetostrictive ultrasonic scalers and piezoelectric ultrasonic scalers. The basis of ultrasonic removal of dental plaque is the use of the following mechanisms: machining, irrigation, cavitation, acoustic turbulence.

You should remember the main limitations when working with ultrasonic devices. Contraindications to the use of scalers are:

- acute infectious and respiratory diseases (including the common cold);
- chronic infectious diseases (bacterial endocarditis, chronic bronchitis, bronchial asthma, rheumatoid arthritis);
- weakening of the immune system;
- various forms of arrhythmias, heart defects with cyanosis;
- use of pacemakers (artificial pacemakers);
- temporary bite, teeth with unformed roots;
- the presence of tumors;
- disorders of the blood coagulation system;
- the presence in the oral cavity of veneering coatings, laminates, gold and ceramic crowns, implants;
- limited use of scalers in pregnant women.

Particular precautions are required for patients suffering from hepatitis, tuberculosis, HIV infection, for which the removal of dental plaque is carried out with utmost care at the end of the work shift.

Pneumatic scalers are low-frequency and operate in the range from 3000 to 8000 cycles per second. These tools operate using compressed air that is supplied from the turbine of the dental unit. This type includes KaVo SONICflex LUX , MicroMega Air ScalerR , Titan - SR tips . Acoustic devices provide elliptical oscillatory movements of the tip of the instrument, making active all surfaces of the nozzle. Manual pressure on the tip should be very light, since tightly pressing the nozzle to the tooth surface dampens working vibrations.

Magnetostrictive devices (Dentsply Cavitron MED BOBKET, Simplifide Systems, Inc., Sonatron; PERIOjin Odontoson) operate in the range from 18,000 to 45,000 cycles per second with obligatory water cooling. Inside the tip of these tools are many flat metal plates with a specific orientation or a ferromagnetic rod, which are able to expand and contract under the influence of a magnetic field generated by the passage of electric current. The oscillatory movements of the nozzle tip vary from linear to circular and allow all surfaces (lateral, back, front) to be active.

Piezoelectric scalers ( Pieson Master , system 402 ( EMS ), Amdent US 30, Pro - Select , Suprasson P - Max , etc.) operate in the range from 25,000 to 60,000 cycles per second and, like magnetostrictive devices, require water cooling. To cool the instrument, it is possible to use not only distilled water, but also pharmacologically active substances, such as chlorhexidine bigluconate, furatsilin, hydrogen peroxide, etc. The principle of vibration reproduction is based on the stretching

of crystals in an alternating current field (piezoelectric effect). The movement of the working part of the tip is linear or reciprocating, which makes active only two sides of the nozzle. In addition, it should be remembered that the stronger the pressure on the tip, the less effective the tool.

A modern device for professional oral hygiene is the Vector system . It allows you to: carefully remove over- and subgingival dental deposits, effectively irrigate periodontal pockets, destroying bacteria and endotoxins from the root surface, carefully polish the surface of teeth, dentures and implants, de-epithelization of the surface of the gingival pocket. Vector ( Durr - Dental ) is an ultrasonic device with an oscillation frequency of about 25000 Hz, having various types of tips and nozzles. A special tip with a metal ring ensures the nozzle does not move in the horizontal plane, but in the vertical (along the axis of the tooth). The tool works precisely linearly, parallel to the tooth surface without rotation and impacts. The Vector system uses metallic and flexible tools made from modified polymers. Metal tools are designed to remove tartar and micro-preparation, and carbon ones - to sparingly remove the supra- and subgingival deposits from the surface of root cement, implants. Removal of supra- and subgingival dental deposits occurs almost painlessly. The technique of using the Vector system is similar to working with ultrasonic scalers. If necessary, a grinding and polishing suspension (particles of hydroxyapatite with a grain size of about 10 µm) can be used to process the tooth surface, which is supplied by pulsating emissions to the nozzle. An abrasive carborundum-containing suspension (grain size 40-50 microns) is used to prepare hard tooth tissues.

When working with ultrasonic scalers, it is recommended :

7. before starting work, let water through the system for 2 minutes to flush it;
8. be sure to use a mask and glasses for protection;
9. use adequate cooling;
10. carry out quality control of work with hand tools;
11. the shape and size of the nozzle must correspond to the contours of the tooth surface being machined;
12. a tool for removing dental plaque must be driven back and forth parallel to the surface of the tooth with light manual pressure .

*Features of removing dental plaque in children:*

- in the presence of mineralized dental deposits for their removal, preference is given to hand tools;
- to remove dental deposits, use hand tools only with a rounded end (curettes);
- the use of low-frequency (pneumatic) scalers is allowed; the use of magnetostrictor and piezoelectric scalers is not recommended;
- when working with scalers, contact of the tip tip with hard tissues of teeth should be avoided (the destruction of mineralized dental deposits should occur only due to the effect of cavitation);
- polishing the tooth surface with rubber cups, low abrasive polishing strips, flosses, polishing pastes is of great importance.

*Laser systems* . In recent years , laser devices have been widely used in medical practice. In therapeutic dentistry, neodymium and erbium lasers (with a wavelength of 1064 nm to 2900 nm) can be used. The principle of operation of such lasers is based on the effects of ablation (evaporation of a tissue site to a certain depth) and vaporization (evaporation of water). The most optimal data for an erbium laser (Er : YAG laser ). To remove dental plaque, nozzles of various lengths are used in

accordance with the depth of the periodontal pocket. The operating mode with detection allows processing in precisely those areas where dental deposits have been detected. Tissues after laser treatment are relatively sterile.

**6. Grinding and polishing teeth.** After removing dental deposits with manual and electromechanical instruments, the root surface becomes rather rough, which contributes to a more rapid fixation of bacterial plaque. Therefore, after tooling, grinding and polishing should be carried out.

It is far from always possible to completely remove all dental deposits using hand and electromechanical tools. The most inaccessible places on the surface of the teeth are: grooves on the root surface, deep intraosseous pockets, furcations, concave surfaces of the teeth. In these areas, the use of fine-grain diamond burs, special PERIO - PRO ( Busch ) burs , and also EVA-angle tips (1000-1500 rpm) are shown.

In addition, tools such as periopoliry ( P . Romhild , Mikrona ), which represent a system for polishing and smoothing the root surface. Periopolis is an angled tip into which a tool for removing dental deposits such as a curette is inserted.

For scaling and smoothing the root surface, a special tip ( Profin ® Directional System ) has been developed , in which special nozzles are used. As nozzles, plastic polishing files of various sizes can be used. Together with abrasive paste, they are inserted into the interdental space and, making reciprocating movements with an amplitude of 1.2 mm, free the tooth surface from plaque.

Hanging edges of fillings, crowns, inlays, excess material in the subgingival region are the most common causes of inflammation in periodontal tissues. As a rule, their elimination is associated with a number of difficulties. To facilitate this process, you can use Profin Lamineer ® nozzles , as this system provides various additional files for grinding, finishing and polishing in the subgingival and proximal areas of the tooth and on the root surface.

*Tools for polishing the surface of the tooth.* After removal of supra- and subgingival dental deposits and smoothing of the root surface, polishing is carried out. The purpose of polishing is to create a smooth tooth surface by eliminating retention points.

A smooth tooth surface can be achieved using special rubber cups, end brushes, polishing strips, flosses and polishing pastes.

Soft rubber cups can be different in shape: hollow, with protrusions (ribs), jumpers, back spiral protrusions on the inner or outer surface, and also have different stiffness: soft, medium hard, hard. Polishing of tooth surfaces is carried out at a rotation speed of 2000-5000 rpm. The rubber cup is pressed against the tooth in such a way that its edge extends and it penetrates into all the recesses and subgingival region of the tooth. For polishing chewing surfaces it is convenient to use rotating brushes with polishing paste. Do not use brushes in the subgingival margin.

Approximate surfaces are polished using alumina-coated polishing strips, flat dental floss or polishing paste strips, rubber polishing cones for a dental handpiece, and flosses. Good cleaning and polishing tooth surfaces can be achieved using the tip of S . E .T. Prophy - Leader .

To remove non-mineralized dental plaque, professional toothpastes (CCS paste, Cleanicdent (Hawe Neos Dental), Detartrine (Septodont), Detartrine fluor (Septodont), Detartrine Z (Septodont),

Magnasil (Young), Nupro (Dentsply), Prophylactic Past ( Products Dentaries), Protect (Butler), Proxyl RDA 36 (REA 4) (Vivadent), Proxyl RDA 7 (REA 2) (Vivadent), Rembrandt (Butler), Remot (Lege Artis), Sitalsicine (Pierre Rolland), Polident (VladMiVa).

To polish the surface of the teeth after removal of dental plaque, low abrasive pastes are used, and in order to remove pigmented plaque, it is advisable to use high and medium abrasive pastes. As an abrasive, as a rule, they use silicon dioxide, zirconium oxide, zirconium silicate, pumice powder, calcium phosphate. Polishing pastes may or may not contain fluoride. Fluoride-free pastes are used to polish teeth before they are sealed, and fillings are made from composite materials. For ease of use, unidoses (single doses) of polishing pastes are issued or the paste is placed in a ring-shaped retainer on the finger of the hand.

The most modern devices for cleaning tooth surfaces are air-abrasive systems (hand blasters). Key representatives: Air-Flow (EMS), Prophyflex (KaVo), Prophy-Jet Cavitron (equipped with a waste powder intake system (Dentsply)), ProphyEST (Geosoft Pro).

Indications for the use of handyblasters:

- polishing the tooth surface after scaling;
- cleaning the tooth surface before fixing braces;
- high - quality cleaning of fissures of the chewing surface;
- removal of stained deposits from the tooth surface (smoker's plaque, etc.);
- cleaning the enamel surface before sealing the fissures;
- treatment of carious cavities for better adhesion of enamel to restoration materials.

Handiblasts are available in a separate unit or in the form of a special tip that connects to the dental unit instead of a turbine.

Handiblaster very effectively removes plaque and plaque from hard-to-reach areas of the tooth, which is done by applying a mixture of water and bicarbonate soda under pressure to the tooth surface. It should be noted that handyblasters are used exclusively for cleaning tooth enamel, since the effect of an air-powder mixture on cement and root dentin, as well as periodontal tissue, leads to serious defects in hard and soft tissues. It is not recommended to use handblasters in the field of fillings made of composite materials. Handiblasts are contraindicated in patients with a sodium-free diet, with severe diseases of the respiratory tract, in patients with infectious diseases (hepatitis, HIV), pregnant women and patients taking medications that affect the salt balance.

13. **Irrigation of the oral cavity with** antiseptics completes the professional removal of dental plaque, which is described in paragraph 3.

14. **Quality control of the manipulations.** After removing dental plaque, the doctor must check the quality of the measures taken using a probe, a mirror and an air spray. Each processed tooth is viewed sequentially and accurately from all surfaces and, if necessary, a repeated removal of dental plaque is carried out at the same or a second visit.

15. **Fluoride Prevention.** This stage is very important in the process of professional hygiene, because after polishing the enamel surface, a layer enriched in fluorides is removed. The tooth surface must be coated with fluorine-containing preparations: Du-raphat (Woelm), Duraphat (Colgate),

Bifluorid 12 (VOCO), Fluocal (Septo-dont), Fluor Protector (Vivadent), Fluoridin (VOCO), Fluoride (Russia), Belak F (VladMiVa).

**10. Selection of personal hygiene products and training in hygiene skills.** Individual hygiene procedures in the oral cavity vary depending on age and the specific clinical situation. Oral care is carried out from the moment of birth and lasts a lifetime. Individual hygiene products include:

- toothpastes and gels;
- toothbrushes;
- tooth powders;
- interdental products (flosses, ribbons, brushes, massagers);
- liquid hygiene products (rinses, elixirs, balms);
- chewing gums (therapeutic and prophylactic);
- special care products for structures and prostheses.

### **Oral Hygiene Methods**

#### ***Oral hygiene in children up to a year***

1. Motivational work and training in oral hygiene should be carried out with every pregnant woman visiting a dentist:

a) the selection of individual hygiene products for women is carried out in accordance with the clinical situation;

b) tells about the causes of dental diseases in children with learning to care for the oral cavity of a newborn:

- Do not kiss the child in the face;
- it is impossible to lick the nipple from the child's mouth, it must be treated with boiled water;
- It is not recommended to lick a baby spoon before feeding the baby;
- it is necessary after each meal to clean the oral cavity of the baby with a disposable soft terry cloth dipped in warm boiled water or with the help of a children's toothbrush for toothless jaws;
- the first erupted teeth must be wiped with a damp cloth from the gums to the cutting edge of the tooth, removing all plaque. The procedure is carried out 2 times a day.

c) the necessity of visiting the dentist with a child after 1.5 years to correct oral hygiene is explained.

It should be noted that only parents carry out hygienic measures in the child's oral cavity, therefore it is necessary to have 2 toothbrushes. One of them is designed to cleanse the teeth of the child by the parents and should have a long handle and a small head with very soft bristles, for example, Oral - B Plus 30, Indicator 30. the other toothbrush is designed for the child with a convenient thick and bright handle, and also small head with very small bristles. The baby should like the toothbrush and will use it as a toy. Toothpaste during this period is not practical to use because of the following considerations: firstly, foam makes it difficult to visually control movements in the mouth, secondly, the baby will most likely swallow it, and thirdly, it can cause a strong vomiting;

#### ***Oral hygiene in children 2-3 years old***

1. During this period, the oral care of the child is also carried out by the parents 2 times a day. Gradually, it is necessary to teach the child to spit in connection with the introduction of hygienic toothpastes into this procedure. These include: "Children's", "Little Red Riding Hood", "Well, wait a minute!", "Moidodyr", "Orange", "Mint", etc.

2. From the age of 3, a child is trained in oral hygiene.

The child is explained:

a) why do we need teeth (for chewing, speech and beauty);

b) if you do not care for your teeth, then they can hurt;

c) how to brush your teeth,

At this age, children improve coordination of movements, they are already capable of a longer concentration of their attention. Therefore, gradual training in their method of cleaning **KA I** is possible. Its essence is as follows:

they start brushing their teeth from chewing surfaces, moving the brush with short translational movements from the extreme tooth of one side to the extreme tooth of the other side separately on the upper and lower jaws;

the vestibular surfaces are cleaned in a circular motion with the teeth closed, while simultaneously capturing the upper and lower teeth, gradually moving the brush from the extreme right teeth to the extreme left; on the oral side, the teeth are cleaned in the same sequence as on the chewing one, performing sweeping vertical movements from the gingival margin to the chewing surface.

3. Parents continue to complete the hygiene procedure after the child. In addition, you should start brushing your teeth with additional hygiene products - flosses, with special attention being paid to densely standing milk molars. To prevent caries, parents floss approximate surfaces using flosses. Flosses resemble a double-toothed fork, between the ends of the teeth of which dental floss is stretched. Flosses can be disposable. In reusable spools, devices for thread tension are attached to the holders. The flossing technique corresponds to the two-handed method, which is used in the next age period.

### ***Oral hygiene in children from 4 to 6 years***

1. The working part of the toothbrush should be small and narrow with medium hard bristles (to remove Priestley plaque).

2. Children brush their teeth under the supervision of adults, especially with regard to the amount of extruded paste (not more than a pea), since the use of preventive toothpaste is already desirable. Currently, preference is given to fluoride pastes with a low content of fluoride ions. In places where water does not contain fluoride compounds and other trace elements, toothpaste with fluoride may be its only source. In places of residence with a high and high content of fluorine compounds in drinking water sources (1.5 and more mg / l) fluoride pastes should not be used.

In pastes designed for children under 6 years old, the fluorine content does not exceed 500 ppm, for example, pastes "Stages", "Vitosha", "Drakosha" (peach, strawberry), "Dragon dragon gel with calcium" and others. This is due to the fact that children swallow up to 30% of toothpaste while brushing their teeth.

To prevent children from swallowing toothpaste, fruit flavors are less and less often introduced into children's toothpastes. During the period of milk and shifts, low abrasive gel toothpastes are used.

After a child has brushed his teeth, it's good to demonstrate the quality of brushing, using special stains to detect plaque, and to help the child complete oral hygiene, especially in the area of erupted 6 teeth.

3. The procedure should be completed with the help of floss, for the prevention of proximal caries, especially in the area between the milk and permanent molars.

4. At this age, rinse aid should be used. The range of liquid oral hygiene products for children is limited. Non-alcoholic rinsing agents are used. Rinsing agents include antiseptics (triclosan, cetylpyridine chloride, chlorhexidine) and fluorides, for example: Plax, (Colgate), Profluorid-M (Voco). Due to them, rinsing agents acquire anti-plaque properties, that is, the ability to prevent the formation and formation of soft plaque.

### *Oral hygiene in primary school children (7-10 years)*

1. For a mixed bite, a toothbrush with soft bristles, an indication of the degree of wear and a large handle is preferred. Children of this age should be proficient in the KA I method, gradually mastering the more effective Martaller method. This is a method of instructing students. It is a simplified version of the standard method, adapted to their psychophysical capabilities. Since children make maximum efforts in the first stages of cleaning, it is first recommended to clean chewing surfaces:

- the brush is installed on the **chewing** surface of the upper teeth on the right, where 10 short horizontal movements are made, and then the brush is gradually moved along the jaw arch to the opposite edge, where 10 cleaning movements are also made. Then similarly clean the chewing surface of the lower teeth.

- **the vestibular** surfaces are cleaned with closed teeth and relaxed cheeks so that the brush head can move freely in anticipation of the oral cavity. Set the brush perpendicular to the vestibular surfaces on the right and make vertical zigzag movements (up to 10 on one segment), cleansing the teeth of the upper and lower jaws at the same time and applying the same effort when moving the brush up and down. Thus, they advance to the extreme teeth on the left.

- when cleaning **oral** surfaces, the brush head is placed almost vertically. Short sweeping movements move along the palatine surfaces of the teeth of the upper jaw from one edge to the other. Then the brush head is placed on the lingual surface of the lower teeth (the handle "looks up") and pass along the lingual surface of the lower teeth in the same way.

2. After 6 years, the child can use toothpaste with a higher content of fluorides (youthful, adult). The content of fluoride compounds in toothpastes for adolescents, on average, is 1000 ppm (Colgate Bugs Bunny ; Colgate Tweety ; Forest balm with pine nut oil and others).

3. Adults necessarily carry out cleaning control, as well as perform flossing of the approximate surfaces using the two-handed method. Particular attention should be paid not only to contacts in the area of molars, but also to the approximate surfaces of the frontal group of teeth of the upper and lower jaws. Flossing can be bobbin and ring (depending on the retention of the thread). Usually a length of 30-40 cm is used, which is wound on the middle finger of one hand (reel). The second end is wound with 2-3 turns on the middle finger of the second hand. The length of the stretched thread

between the fingers is about 4-5 cm, during flossing, the thread is held on both sides by the thumb and forefinger of both hands.

In the ring method, the length of thread is the same, but its ends are connected with a triple knot. All fingers, except the thumbs, are inserted into the ring. A section of the thread, 1.5-2 cm long, is held by the fingers of both hands, in the process, gradually moving to a new section, twisting the ring.

Insert the thread into the interdental space very carefully, pushing through the contact point. The thumb and forefinger are used on the upper jaw, and two index fingers on the lower jaw. At the moment of passing the contact point, a click is heard. Further, the pressure on the floss must be reduced and the floss carefully guided along the tooth surface to be cleaned to the level of the gingival groove. Cleansing movements should be carried out in a horizontal plane in the oral-vestibular direction. Passing into the adjacent interdental space, use a clean piece of thread.

Liquid oral hygiene products for adolescents are the same as for adults, it is not recommended to use alcohol containing rinses.

### ***Oral hygiene in children 10-14 years old***

1. Basic hygiene products at this age are medium-hard brushes and preventive ones, including adults, fluoride pastes: Pepsodent, Colgate, Blend-a-honey, Silka, Family, Zodiac , “Fluodent”, “Sage”, “Oksigenol”, “Fluorodent”, “Binaka”, as well as pastes containing calcium salts and phosphates: “Cedar balsam with calcium”, “32 pearls with minerals”, “Pearls”, “Arbat, Moskvichka, Cheburashka. The following toothpastes containing enzymes can be used for children: “Pink and White”, “Smile”, “Special”, Enchantress”, “Phosphotase”, “Transparent”, “Crystal”. In the event that there are periodontal diseases, it is possible to use toothpastes containing herbal preparations and biologically active substances: Lesnaya, Karofila, Lamident, Chlorophyllic, Azulena, Emerald, Novinka-72, “Chamomile”, “Eureka”, “Aira”, “Pinocchio”, “Extra”, “Rosodent”, “The Nutcracker”, etc.

The main method of brushing your teeth is the Martaller method.

Flushing is used to clean the formed and forming contact surfaces.

#### *The technique of using flosses:*

You should take 30-40 cm of dental floss, wrap most of it on the middle finger of one hand and fix it on the middle finger of the other hand, leaving a distance of 10 cm free. These fingers should be used as “coils”, gradually rewinding the thread to clear a clean area . Thumbs and index fingers need to be pulled horizontally, carefully inserted into the interdental space, lowered to the neck level of one of the teeth without touching the gingival papilla, and a “sawing-scraping” movement is made, pressing the floss firmly against the tooth wall. Then, moving the floss, lower its clean area into the same interdental space, pressing against the contact wall of another tooth, and again make a “sawing-scraping” movement. Similarly, clean all interdental spaces.

Particular attention should be paid to the hygiene of children undergoing orthodontic treatment. The presence of any orthodontic structures in the oral cavity complicates the procedure for brushing your teeth. The presence of removable or non-removable orthodontic equipment contributes

to the formation of dental plaque and mineralized dental plaque. To care for the oral cavity, as well as elements of removable and non-removable equipment, special hygiene products are recommended.

To clean removable orthodontic appliances, it is recommended to use ordinary brushes for brushing teeth and special (single and double-sided) brushes, as well as brushes with increased stiffness and a larger size than those for brushing. For chemical cleaning, you can use special solutions or instant tablets. The removable structures are soaked in them for 10-20 minutes (“Cogea tabs”, “Protefix”).

Caring for the oral cavity in the presence of fixed structures is much more difficult. It is necessary to use brushes for special purposes: orthodontic, single-beam, sulcular (Bulter, Oral-B). Orthodontic toothbrushes have a longitudinal V-shaped recess on the entire surface of the bristle field, and shorter internal bristles along the bristle field allow to qualitatively clean the vestibular surfaces of the teeth in the presence of a fixed arc on them. The movements of such a brush when brushing your teeth are carried out only in a vertical plane. In addition, an Oral-B Advantage preventive toothbrush can be used with a micro-textured bristle that has a power protrusion and an active V-shaped recess in the lower third of the brush head. Sulcus toothbrushes have two rows of bristles and are designed to clean the gingival groove and narrow interdental spaces, they are convenient for oral hygiene in the presence of both orthodontic and orthopedic structures, as well as with crowded teeth.

Aids are small and single-beam toothbrushes, brushes (interproximal brushes), flosses, superflosses, dental tapes, interdental stimulants.

Quite effective may be the use of cleaning with a constant or pulsating water jet, as well as special solutions using oral irrigators (whirlpools). It is advisable to use non-alcoholic rinses with anticariotic, anti-plaque, anti-inflammatory, antimicrobial action.

#### ***Oral hygiene in children 15-18 years old***

Oral hygiene in children 15-18 years old is practically no different from that in adults. During this period, the role of parents in periodical monitoring and material support is still important.

Medium-hard toothbrushes and fluoride-containing toothpastes are used (in regions with a low fluorine content in water).

The main is the **standard** method of brushing your teeth:

- the dentition is conditionally divided into molars, premolars and front teeth on the right and left sides. Teeth should be cleaned with open dentition. The brush is placed at 45 ° to the tooth surface. They begin to clean the vestibular surface of the upper jaw on the left, performing 10 sweeping movements from the neck of the tooth to the cutting edge at each site, then the palatine. Similarly, brush the teeth of the lower jaw. The chewing surface of the teeth is cleaned with horizontal movements. The procedure is completed in a circular motion on the vestibular surface with the capture of teeth and gums.

Additional hygiene products include flosses or dental tapes and rinses.

#### ***Oral hygiene in adults with diseases of marginal periodontal disease with slight swelling, slight plaque and no abscess***

1. After motivation, it is necessary to remove the dental plaque:
  - a) with gingivitis - ultrasound (in 1-2 visits);
  - b) in chronic periodontitis - by manual or combined method (in 3-4 visits).
2. Training in individual oral hygiene should begin with the first visit:

a) it is recommended to use a toothbrush with a small head, artificial bristles of medium hardness, located in bunches and at different levels. Brush change every 2-3 months due to abrasion and bacterial contamination;

b) the use of complex toothpastes with fluoride and medicinal herbs is shown: "Dentavit" medicinal herbs; "Health" with sage extract; "Health" with chamomile; "Health" with calamus; Silca Blue Mint et al .;

c) a standard method of brushing your teeth will be suitable for oral care;

d) to clean the lateral surfaces of the teeth, it is necessary to use dental flosses (flosses), and where wide interdental spaces - with brushes of the appropriate size.

*The method of using the brush:*

The brush is introduced alternately into each interdental space, performing 8-10 reciprocating movements, first from the outside, and then from the inside.

e) to reduce the formation of plaque, increase the acid resistance of enamel, and deodorize the oral cavity, it is recommended to use a rinse aid (for example, "Healing Balm"), which contains sodium fluoride, triclosan and herbal extracts. Rinse your mouth 2-3 times a day after eating for 15-30 seconds.

***Oral hygiene in adults with diseases of marginal periodontal disease with slight edema, profuse plaque and without abscess formation***

1. After motivation, it is necessary to remove the dental plaque:

a) with gingivitis - ultrasound (in 1-2 visits);

b) in chronic periodontitis - by manual or combined method (in 3-4 visits).

2. Training in individual oral hygiene should begin with the first visit:

a) it is recommended to use a toothbrush with a small head, artificial bristles of medium hardness, located in bunches and at different levels. Brush change every 2-3 months due to abrasion and bacterial contamination;

b) plentiful plaque will help to eliminate pastes with soda and active cleaning components: "Dentavit" whitening; Silca Baking Soda : Lacalut fluor : Elce med Brillant Weiss . For therapeutic purposes, pastes need to be alternated and changed. A good complex is represented by toothpastes with fluoride and anti-inflammatory components, such as "Dentavit" medicinal herbs; "Dentavit" antimicrobial with silver; "Health" with sage extract; "Health" with chamomile; "Health" with calamus; Silca Blue Mint ; Silca Vitamin Plus ;

c) for the care of teeth, the patient can be recommended an effective and easily remembered method of brushing, which was developed by Professor V.G. Bokaya. The brush is placed with bristles perpendicular to the vestibular surface of the teeth and makes scraping movements from the mucous membrane of the gums to the chewing surface and the cutting edge of each tooth, at the rate of 20-25 movements per tooth. Then in the same way they brush their teeth from the oral side. Chewing surfaces are cleaned with horizontal movements;

d) to clean the lateral surfaces of the teeth, it is necessary to use dental flosses (flosses), and where wide interdental spaces - with brushes of the appropriate size;

e) to reduce the formation of plaque, increase the acid resistance of enamel, and deodorize the oral cavity, it is possible to recommend the use of the Healing Balm rinse, which contains sodium fluoride, triclosan, and herbal extracts. Rinse your mouth 2-3 times a day after eating for 15-30 seconds.

***Oral hygiene in adults with diseases of marginal periodontal disease with slight swelling, with purulent exudate from the gingival pockets and without abscess formation***

1. After motivation, it is necessary to remove the dental plaque:
  - a) with gingivitis - ultrasound (in 1-2 visits);
  - b) in chronic periodontitis - by manual or combined method (in 3-4 visits).
2. Training in individual oral hygiene should begin with the first visit:
  - a) it is recommended to use a toothbrush with a small head, artificial bristles of medium hardness, located in bunches and at different levels. Brush change every 2-3 months due to abrasion and bacterial contamination;
  - b) to care for the oral cavity, it is necessary to use pastes with triclosan and chlorhexidine for 2-3 weeks ("Dentavit" with the antimicrobial component triclosan; "Dentavit" multi-care with natural microgranules; Lacalut activ ; El - ce med Brillant 40 Plus ). After complex treatment, you can use therapeutic and prophylactic pastes with fluoride and anti-inflammatory components, such as "Dentavit" medicinal herbs; "Dentavit" healing balm; "Health" with sage extract; "Health" with chamomile; "Forest"; Silca Herba ; Silca Herb Plus ; El - ce med Enzim KomplexA et al .;
  - c) in the process of treatment, rinses and other liquid oral care products should be used: Eludryl, chlorhexidine bigluconate 0.02%; decoctions and infusion of herbs (calendula, St. John's wort, chamomile, etc.), rinse "Healing balm", etc .;
  - d) a good method of brushing your teeth in this situation is the technique proposed by the American dentist Bass . It includes three stages. At the first stage, with open dentitions, horizontal or light circular cleaning movements are made on the chewing surfaces of the teeth. Then the external surfaces of the teeth are cleaned separately on the upper and lower jaws. First, the toothbrush is placed at the height of the last large chewing tooth obliquely to the gum (angle 45 ° ), the brush is lightly pressed and 8-10 vibrating, "wiping" movements are performed. Then the brush is moved slightly forward, capturing the already cleaned area, and again produce 8-10 vibrating, wiping movements. These movements continue to the canine and incisors, reaching the last chewing tooth on the other side. They also clean the internal surfaces of the teeth;
  - e) to clean the lateral surfaces of the teeth, it is necessary to use dental flosses (flosses), and where wide interdental spaces - with brushes of the appropriate size.

***Oral hygiene in adults with marginal periodontal disease with severe swelling and bleeding without abscess formation***

1. Before learning individual oral hygiene and removing dental plaque, the inflammatory process in periodontal tissues should be reduced with the help of local drug treatment. For this, it is recommended to use anti-inflammatory drugs. Solcoseryl Dental Adhesive Paste (Solco Basel AG company) is highly effective.

*Method of application of Solcoseryl Dental Adhesive Paste:*

- a) first you need to dry with a cotton or gauze swab the mucous membrane of the oral cavity;
  - b) with the help of cotton turunda or a trowel, apply Solcoseryl Dental Adhesive Paste to the mucous membrane of the gums;
  - c) with a cotton ball, abundantly moistened with water, distribute the drug on the surface of the mucous membrane of the gum;
  - d) Solcoseryl Dental Adhesive Paste should be applied 1-3 times a day for 2-3 days.
2. After drug exposure, it is necessary to conduct training in individual oral hygiene using a model and a toothbrush.

*Training Methodology:*

a) it is recommended to use a toothbrush with a short working part, artificial, soft and thin bristles with rounded tips;

b) **the** Charter method is currently a more gentle and effective method of brushing your teeth. To do this, it is necessary to set the toothbrush so that the bristles are at an angle of 45 ° to the gingival margin, with tips to the chewing surface. Without tearing the bristles from the tooth surface, perform light shaking or circular movements, penetrating into the interdental spaces. 10-15 cleaning movements are performed from the vestibular surface of the last chewing tooth of the upper jaw. Gradually moving, in turn clean all the teeth. Then they move to the oral surface, making similar movements. In a circular motion clean the chewing surface. Then brush the teeth of the lower jaw. All movements must be done slowly, in order to avoid the appearance of abrasions on the inflamed mucous membrane. At first it will take 3-5 minutes. Teeth should be brushed after breakfast and dinner;

c) it is recommended to use toothpastes with salts and anti-inflammatory components to reduce swelling and bleeding, such as Dentavit with minerals from the Dead Sea; Elce med Enzim Komplex A ; Silca Vitamin Plus ; "Dentavit" healing balm; Pomorin, Balm, etc .;

d) **you** should refrain from using additional hygiene products (dental floss, brushes and toothpicks).

3. 2-3 days after training in rational oral hygiene, it is recommended to carry out professional removal of dental plaque:

a) with gingivitis, ultrasound removal of dental plaque is used in 1-2 visits, followed by manual monitoring by sounding;

b) in chronic periodontitis, a manual or combined method of removing dental plaque is used in 3-4 visits (manually, dental plaque is removed using scalers, hooks, excavators, curettes and other tools). After antiseptic treatment of the oral cavity (chlorhexidine bigluconate, listerin, miramistin, etc.), dental deposits are carefully removed from the vestibular surface of the teeth of one of the quadrants under visual control, being careful not to injure the mucous membrane of the gums. Then they move to approximate surfaces using non-coarse pushing and scraping movements, taking into account the anatomical structure of the tooth (root notches, enamel-cement border). Tartar is removed from the oral surface by scraping movements. Using a mirror and a probe, a control inspection of the treated area is carried out. After antiseptic treatment, it is necessary to polish the surface of the roots, necks and crowns of teeth using special rubber cups, brushes, polishing strips, flosses and polishing pastes.

4. 10-14 days after the removal of dental plaque, it is advisable to appoint a control examination in order to correct individual and professional oral hygiene.

***Oral health in adults with periodontal disease with marginal abscessed variem***

1. After providing emergency surgical care for 5-10 days to treat the oral cavity, the patient is recommended to rinse 2-3 times a day:: “Eludryl”, chlorhexidine bigluconate 0.02%; decoctions of herbs (calendula, St. John's wort, chamomile, etc.) with the addition of salt to a hypertonic solution, etc.
2. For hygienic oral care you must use:
  - a) a toothbrush with a short working part, artificial, soft and thin bristles with rounded tips;
  - b) **the** Charter method is currently a more gentle and effective method of brushing your teeth.
  - c) it is recommended to use toothpastes with salts and anti-inflammatory components to reduce swelling and bleeding, such as Dentavit with minerals from the Dead Sea; El - ce med Enzim Komplex A ; Silca Vitamin Plus ; "Dentavit" healing balm; "Pomorin", "Balm"; "Dentavit" with an antimicrobial component of triclosan; “Dentavit” multi-care with natural micro-granules; Lacalut activ ; El - ce med Brillant 40 Plus , etc .;
  - d) **you** should refrain from using additional hygiene products (dental floss, brushes and toothpicks).
3. After 2-3 days, carry out professional dental plaque removal.
4. Correction of individual and professional hygiene should be carried out during a checkup after 7-10 days.

***Oral hygiene in adults with diseases of marginal periodontal disease with increased tooth sensitivity and gum recession***

1. Professional oral hygiene must be carried out under anesthesia and subsequent mandatory treatment with fluorine preparations.
2. For individual oral hygiene, use:
  - a) a toothbrush with soft bristles and rounded tips;
  - b) toothpastes: “Dentavit” multi-care with natural microgranules; "Dentavit" Q 1 0 ; Lacalut Sensitive; Oral-B Sensitiv; El-ce med Sensitiv Plus; Sensigel, etc .;
  - c) when exposing the roots for the care of the oral cavity, it is recommended to use the modified Stillman method. To do this, the toothbrush is set so that the ends of the bristles lie on the cervical region of the tooth and partially cover the adjacent gum at an oblique angle to the axis of the tooth. In this case, weak rotational movements of the brush and 20 short shaking (back and forth) movements along the attached gum, gingival margin and tooth surface are performed. Similarly clean lingual surfaces. To clean the chewing surfaces, the brush is placed with bristles perpendicular to it;
  - g) to clean the lateral surfaces of the teeth you need to use brushes of the appropriate size
  - e) it is recommended to use additional liquid hygiene products (rinses with fluoride and anti-inflammatory components, such as “Healing Balm”, “ Colgate Total Plax ”, “ Oral - B Advantag ”, etc.)

## 11 - Practice

**Topic: Fluoride-containing preparations in the prevention of caries. Their meaning and methods of use. Fluoride-containing tablets. Fluoridation of milk and water. Fluoridation of salt. Topical use of fluoride-containing drugs. Fluoride varnish, fluoride pastes, solutions and gels**

### 1.1. Technological model of the formation

Class time 30 min	Number of students
Type of activity	Introduction of practice news
Plan	Give the full correct answer to questions about the Roles in the Prevention of Fluoride Caries
The objective of the training session	To study the role in the prevention of fluoride caries
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

### Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (10 minutes )	1. The purpose of the lesson 2. Preparation of slides for lecture material 3. Related literature <ul style="list-style-type: none"> <li>• N.V. Kuryakina - "Therapeutic dentistry children's age "N. Novgorod 2001</li> <li>T.F. Vinogradova - "Dentistry for children" 1987</li> <li>• N.G. Pakhomov- "Primary prevention in dentistry"</li> <li>• E.V. Borovsky - "Therapeutic dentistry" 1997.</li> </ul> Yu.I.Vorobov-X-ray of the teeth and jaws - 1990 city of K. Georgieva - "Emergency care in dentistry" 1983.	Record a subject and listen
2, Introduction to the topic (10 minutes)	1. Keeping the audience clean 2. Test students practical practice 3. Check student attendance.	Are listening
3. The main stage (90 minutes )	1. The division of students into 2 small subgroups , asks questions on the topic ;	Divided into small groups , watching ,

	2. Use of slides and multimedia; 3. conducts therapeutic work; 4. Combines all the information on a given topic, actively participate ni their students encourages and assesses the general.	participating , listening. Student expresses his opinion complements and asks questions
4. The final stage (10 minutes )	1. Conclusion . 2. Independent work . 3. Homework .	Listen to Record Conclusion

### Questions on the topic

1. The role of fluoride in caries prevention
2. What are 2 ways of influencing fluoride

### Text

In Russian literature, the term “fluorine” is most often encountered, but it should be remembered that the drugs used to prevent dental caries are not chemically pure fluorine, but fluoride compounds, where the element is contained in the form of a fluoride ion associated with any cation.

Probably the earliest mention of the effect of fluorides was found in the poet Marquez Valerius Martialis (40-104). Describing the teeth of Thais, a friend of Alexander of Macedon, he wrote: "Thais has black teeth, Lakenia has white teeth like snow. Why? The second one is bought, the first one has her own teeth." Apparently, black teeth were widespread in the volcanic region of Italy, where Martialis lived, and were a manifestation of the influence of excess fluoride on the developing tooth enamel.

Another mention of the influence of fluorides is found in Icelandic literature of a thousand years ago. After a volcanic eruption, the sheep ate grass contaminated with fallen ash, became ill, and they developed symptoms that can now be interpreted as acute or chronic fluoride poisoning.

At the end of the 19th century, two events were described. In 1886, Moisson isolated elemental fluoride. Many scientists have described vegetation disturbance in the vicinity of smelters producing hydrofluoric acid, superphosphates, and glass.

In 1931, three different research groups discovered that the cause of a tooth defect, known as mottling, is an excess of fluoride in drinking water. At the same time, T.Dean investigated the prevalence of spotted tooth damage in some states of America and noted that with an increase in mottling, tooth decay was less pronounced. Based on these data, an assumption was made about the possibility of artificially increasing the fluoride content in drinking water where its concentration is low, to reduce the intensity of caries.

T. Dean in 1931 found that people who consumed water from sources with a fluoride content of 1 mg / l or higher showed 50% less carious lesions than at a concentration of 0.1 - 0.3 mg / l. Since a fluoride concentration of 1 mg / L was not accompanied by the appearance of tooth fluorosis, this level was considered optimal.

For the first time, artificial fluorination of drinking water was carried out in 2 cities of America. These studies have shown that with minimal effort and without significant changes in the nature of nutrition, the intensity of dental caries can be reduced by 60-70%. The results were so impressive that

fluoridation of drinking water began to be actively introduced in America and other countries. In 1966, water fluoridation became one of the most important modern public health measures.

Fluorine makes up 0.065% of the elements of the earth's crust and is an important component of the general biogeochemical cycle in which life proceeds.

Fluorides enter the human body with water, but there are other sources: foods, drugs, pesticides. Some people inhale fluoride compounds in the air in a number of industries. Today, a significant part of fluorides entering the human body is the result of human activity. Potential sources of fluorine emissions are the production of phosphoric acid and superphosphate, aluminum, glass, sulfuric acid, plastics and hydrocarbons. A large amount of solid products containing fluorine compounds are emitted into the environment by industrial enterprises.

When studying the fluoride metabolism in the human body, it turned out that these compounds have an affinity for the minerals from which bones and teeth are built. The accumulation of such compounds occurs in those areas of skeletal tissue that are in contact with circulating fluids (for example, dentin, adjacent to the pulp, surface enamel).

The amount of fluoride contained in blood plasma and deposited in tissues directly depends on its intake in the body from various sources, primarily from drinking water.

The process of fluoride accumulation in tooth tissues most intensively occurs during the formation of enamel and in the first years after teething, when it is mineralized.

Temporary teeth are characterized by a lower concentration of fluoride than permanent ones.

With age, the concentration of fluoride in permanent teeth decreases, which is probably due to the gradual loss of enamel as a result of erosion.

If we consider the distribution of fluoride in tooth enamel, the following picture will be presented.

The fluoride content is higher in the surface layers of enamel and decreases to deeper layers, and no fluoride is detected in the organic matrix of enamel and dentin.

In the area of the cutting edge, chewing surface of the tooth, the concentration of fluoride is much higher than in the neck. This phenomenon is probably due to the fact that the cutting edge is formed first, develops and mineralizes for a longer time, as a result of which it adsorbs more fluoride.

However, this statement is true only for recently erupted teeth, since with age it is in the neck region that the concentration of fluoride becomes higher, which can be explained by erasing the enamel in the region of the cutting edge.

In saliva, the concentration of fluoride is 1 mol / L, or 0.019 ppni, which corresponds to approximately 1/50 of the optimal value of fluoride in drinking water (1 ppm).

The concentration of fluoride in plaque ranges from 4 to 50-60 ppm. Moreover, most of it is connected, and only a small amount is in ionic form. The liquid phase of plaque may contain 10 times more fluoride than saliva.

Our ideas about the mechanism of action of fluorides change depending on the receipt of new scientific data.

For a long time, the prophylactic effect of fluoride-containing preparations was explained only by the formation of fluorapatite in enamel.

At the same time, the formation of calcium fluoride seemed unfavorable, since it is soluble in saliva and quickly lost from the surface layers of enamel.

According to the modern concept, the cariesstatic effect of fluoride is ensured by its accumulation in tissues and oral fluids. With a decrease in the pH of plaque, free fluoride is released from them, which slows down the process of enamel demineralization.

With the regular introduction of fluoride, such reserves are replenished in the form of globules of microcrystals of calcium fluoride formed on the surface of enamel. The constant flow of even small concentrations of fluoride, such as those present in toothpastes, is sufficient to maintain enamel resistance. It is now recognized that after the formation of microcrystals of calcium fluoride, they are coated with calcium phosphate and proteins contained in saliva. Phosphate ions are adsorbed on the

active centers of calcium fluoride crystals, which leads to the formation of a surface layer of fluorohydroxyapatite. This process significantly slows down the rate of dissolution of calcium fluoride.

With decreasing pH, calcium fluoride becomes unstable, and fluoride ions react with calcium and phosphate ions released from the enamel during the formation of carious damage. In this case, ion precipitation is observed in the form of fluoridapatite, which, therefore, is the result of inhibition of caries. In an acid attack, calcium fluoride acts as an ideal fluoride releasing agent.

Research results show that strongly bonded fluoride included in the crystal lattice can be considered a potential protection factor against caries. However, fluoride, which is located at the interface between enamel and oral fluid, is involved in the direct reaction of the development and inhibition of caries.

For penetration into the liquid phase of plaque or enamel, fluoride must be dissolved in saliva. The driving force of fluoride transport into plaque and enamel liquid is the concentration gradient due to the difference in the concentrations of this ion in different media. Therefore, a new line of research is currently being developed: the kinetics and concentration of fluoride in various layers of the oral fluid. Studies have shown that fluoride is also effective in the prevention of tooth root caries, so it should be used in all age groups.

Fluoride exerts its influence in two ways, affecting tooth enamel and plaque bacteria.

The influence of fluoride coming from outside on the tooth enamel depends on when this effect occurs. If the optimal doses of fluoride arrive before teething, then:

- the size of the crystals of hydroxyapatite increases;
- in hydroxyapatite, hydroxyl groups (OH) are replaced by fluorine ions with the formation of fluorapatite crystals;
- reduced carbonate content; ^ - enamel becomes more durable; - fissures are less deep and wider. If fluoride arrives after teething, it reduces the solubility of enamel, promotes the remineralization of partially demineralized enamel.

These features determine the significantly greater efficiency of using systemic compared to local methods of fluoride administration.

When exposed to fluoride bacteria, plaque bacteria disrupt the metabolism of pathogenic bacteria without affecting the normal microflora of the oral cavity, as a result of which its cariogenicity decreases.

Fluorine compounds in saliva and plaque inhibit glucose transport into the cells of pathogenic bacteria and the formation of extracellular polysaccharides, which form the plaque matrix. Low concentrations of fluoride are able to suppress the activity of enzymes involved in the formation of organic acids, reducing their concentration.

Although the level of fluoride in plaque and saliva is low, it is sufficient to significantly affect the rate of tooth decay. It should be emphasized that fluoride does not so much prevent the occurrence of initial carious damage, but inhibits the rate of its progression. It is very difficult to achieve the inclusion of fluoride in intact enamel, so it is important to create its low concentration in the liquid phase of early carious damage.

Fluoride can have both beneficial and harmful effects on people, depending on the dose taken. Even Paracelsus (1493-1541) said that all substances are poisons, but the right dose divides them into poisons and drugs.

Excessive intake of fluorides for many years can lead to fluorosis.

In excessive concentrations, fluorides are toxic: they can inhibit the activity of enzymes, kill living cells, but active fluorine has these effects.

The use of fluorides for the prevention of dental diseases still causes lively discussions, despite the fact that the use of artificially fluorinated drinking water for this purpose with a fluoride concentration of 1 mg / l is not associated with negative consequences for humans.

Researchers suggest that the “optimal” fluoride intake per day ranges between 0.05 and 0.07 mg per kg of body weight. The total fluoride intake per day should not exceed 0.1 mg / kg of body weight in order to avoid the occurrence of fluorosis of teeth and bones.

The U.S. National Academy of Sciences suggested that 1.5 to 4 mg fluoride per day is safe.

The lethal dose for adults is taking 5-South sodium fluoride (32-64 mg / kg body weight). For children, urgent help is needed when taking fluoride, starting with 5 mg / kg of body weight.

The first manifestations of fluoride poisoning are nausea, vomiting, abdominal pain. As an antidote, per os milk or lime water is recommended.

Symptoms manifested by the absorption of excess fluoride preparations are numerous: fluorosis, changes in the gastric mucosa, and a decrease in the concentration ability of the kidneys.

In people living in an area with an optimal fluoride content in water (about 1 ppm), the prevalence of very weak forms of tooth fluorosis is 15–20%, but this is not a clinical or cosmetic problem. The increase in fluorosis is due to an increased intake of total fluoride during tooth development, and this lesion becomes clinically pronounced when the concentration of fluoride in water exceeds 2 mg / L. In this case, it is necessary to take into account the daily intake of fluorides from all sources, including food. For example, in areas where the fluoride content in water is optimal, children receive 0.5 mg per day. If this amount in water is 1.6-1.8 mg / l, then 0.75-1 mg mg per day is ingested, and then the total amount of fluorides can cause fluorosis.

Fluoride absorption can occur when using drugs for local dental treatment.

In pastes, the concentration of fluoride is about 1000 ppm, while patients swallow about 25% of this amount, and small children even more, therefore, in children fluoride-containing pastes can be used only under the supervision of parents, starting from 3-4 years. At the same time, 20 years of experience with fluoride-containing toothpastes in the Scandinavian countries have not given rise to fluorosis.

Rinse solutions contain 0.05% NaF (0.023% F, which is equivalent to 230 ppm), or 0.2% (900 ppm F). As with toothpastes, approximately 25% of fluoride is swallowed by children, and the result may be the development of fluorosis. For children under 6 years of age, rinsing is not recommended, and for younger schoolchildren, the volume of rinse should not exceed 5 ml.

Brushing fluoride-containing toothpaste 2 times a day. It gives an amount of fluoride similar to that swallowed with water and food - 0.5 mg. Approximately the same amount of Fluoride comes as a result of 1 tooth brushing in combination with 1 rinse or from 2 rinses per day. Any of these sources of fluoride +0.5 mg from water and food gives 1 mg per day, i.e. the amount that fluorosis can cause in some children.

When applying gel with acidified fluoride phosphate (APF), patients swallow from 15 to 100% (average 30%), so gels should be used with caution, especially in children. When performing the application, salivation should be used, and after the procedure is completed, thoroughly rinse the oral cavity for 30 seconds to 1 minute.

Excessive intake of fluoride during the formation of enamel can lead to fluorosis, affect the morphology of the crown, resulting in the formation of less carious susceptible gaps and fissures.

The exact mechanism for the development of fluorosis is not yet known, but a high level of plasma fluoride can inhibit the removal of the enamel matrix during the maturation phase. Fluorous enamel contains more fluoride in the inner layers compared to normal enamel, is more sensitive to fractures and abrasion.

The intake of fluoride in concentrations of 0.7-1.2 ppm causes a decrease in the intensity of dental caries. With an increase in fluoride concentration to 1.5-3.0 ppm, tooth fluorosis of moderate form and low prevalence may occur; 4.0-8.0 ppm - severe dental fluorosis and moderate skeletal bone fluorosis; 8.0 and more ppm - severe fluorosis of teeth and skeleton bones.



## 12 - Practice

### Subject: Fluoride-free preparations in the prevention of caries. Remodent, Calcium Fitin, Vitamins

#### 1.1. Technological model of the formation

Lesson time 3 hours	Number of students
Type of activity	Introduction of practice news
Plan	Give the full correct answer to questions from this topic Mineral fluoride-free preparations used in the prevention of caries. Remodent
The objective of the training session	Examine fluorine-free mineral preparations used in caries prevention. Remodent
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

#### Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (10 minutes )	<ol style="list-style-type: none"> <li>1. The purpose of the lesson</li> <li>2. Preparation of slides for lecture material</li> <li>3. Related literature <ul style="list-style-type: none"> <li>• N.V. Kuryakina - "Therapeutic dentistry children's age "N. Novgorod 2001</li> <li>T.F. Vinogradova - "Dentistry for children" 1987 <ul style="list-style-type: none"> <li>• N.G. Pakhomov- "Primary prevention in dentistry"</li> <li>• E.V. Borovsky - "Therapeutic dentistry" 1997.</li> </ul> </li> <li>Yu.I.Vorobov-X-ray of the teeth and jaws - 1990 city of K. Georgieva - "Emergency care in dentistry" 1983.</li> </ul> </li> </ol>	Record a subject and listen
2. Leading a topic (10 minutes)	<ol style="list-style-type: none"> <li>1. Keeping the audience clean</li> <li>2. Checking students for a practical lesson</li> <li>3. Check student attendance.</li> </ol>	Are listening
3. The main stage (90 minutes )	<ol style="list-style-type: none"> <li>1. The division of students into 2 small subgroups , asks questions on the topic ;</li> <li>2. Use of slides and multimedia;</li> <li>3. conducts therapeutic work;</li> <li>4. Combines all the information on a given topic, actively participate ni their students encourages and assesses the general.</li> </ol>	Divided into small groups , watching , participating , listening. Student expresses his opinion complements and asks questions

4. The final stage (10 minutes )	1. Conclusion . 2. Independent work . 3. Homework .	Listen to Record Conclusion
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### Text

Remineralizing prophylaxis is one of the promising directions for the prevention of dental caries based on the use of the remineralization effect to increase the resistance of dental tissues.

Enamel remineralization processes are possible due to two properties of enamel - permeability and ability to restore its composition or change it in the direction of increasing its resistance.

The main components of remineralizing therapy are calcium, phosphates and fluorides, which in ionized form are part of hydrofluoroapatite, which restores and strengthens the hard tissues of the tooth.

**Calcium chloride** is widely used in medical practice, including for periodontal diseases. For its introduction, the electrophoresis method is often used, which provides, in comparison with applications, a deeper (to the cortical layer of the alveoli) and more complete penetration into the tissues. With enteral administration, the drug is not completely absorbed, and if it gets under the skin and muscles, the drug causes necrosis due to a very significant irritant effect.

**Calcium gluconate** does not exhibit an irritating effect, which expands the choice of methods for its use. For exogenous remineralizing therapy, a 10% aqueous solution is used in the form of a 15-minute solution with a three-fold change of solution to a cleaned and saliva-free tooth surface. The preventive course includes 3-5, and treatment 12-30 sessions performed daily or every other day. Possible electrophoresis of a 10% solution (10-12 sessions), enteral (1-3 g. 2-3 times a day before meals with water, milk or fruit juices), intramuscular and intravenous administration (5-10 ml. 10 % solution daily or every other day).

**Calcium lactate** is slightly more effective than gluconate, as it contains a higher percentage of calcium. It is prescribed for 0.5-1 g. 2-3 times a day for 30 days.

**Calcium glycerophosphate** (a mixture of alpha and beta isomers of glycerol – **calcium** phosphoride salt) along with remineralizing also has an anabolic, restorative and tonic effect. In dentistry it is used as a preventive and therapeutic agent for caries and non-carious lesions of the teeth. The methods of administration are the same as for calcium gluconate.

**Calcium hydroxide** due to the activation of the plastic function of pulp cells enhances dentin formation; due to the neutralization of the acidic reaction of the medium has an anti-inflammatory effect; creating a high concentration of hydroxyl ions, exhibits antimicrobial activity; direct contact of the drug with the pulp of the tooth is accompanied by surface coagulation of the protein, which protects the deeper layers of the pulp from the irritating effect of the drug. Calcium hydroxide is the basis of such preparations as calmecin (in addition to calcium hydroxide it contains zinc oxide, dry blood plasma and sulfacyl sodium), calxyl, bio- and vitapulp, calxid, regeneeneran, reogan, etc. The latter is used in the treatment of pulpitis, deep caries , periodontitis of teeth with unformed roots and other pathology of hard tissues.

Calcium metabolism is closely associated with phosphorus metabolism, which makes it rational to use preparations containing both calcium and phosphorus-calcium glycerophosphate, calcium phosphate, calcium monophosphate, phytin (a mixture of calcium and magnesium salts of various inositol phosphoric acids), lipocerebrin, and cerebro lecithin as remineralizing agents. other

A very effective means of preventing and treating the initial stages of caries is **remodent**, an animal bone tissue preparation containing a complex of macro- and microelements necessary for enamel remineralization.

An aqueous solution of remodent (3%) is used in the form of a 15-minute application with a double change of tampons on a previously cleaned and dried enamel surface. At the end of the procedure, it is not recommended to rinse your mouth and eat food for two hours. The course of treatment is from 2 to 28 sessions, conducted 2 times a week. For the prevention of caries, a 3% aqueous solution of the drug is prescribed in the form of 3-5 minute rinses of the oral cavity (1-2 times a week, 15-25 ml per rinse). Remodent is also a part of medical and preventive varnishes, gels, and "Remodent" toothpaste.

Organic and inorganic fluoride compounds (sodium, potassium, tin and titanium fluorides, aminofluoride, fluoride varnish, fluoride-containing gels and toothpastes) play a significant role in the prevention and treatment of dental caries.

Fluorides form, with the main mineral component of enamel (hydroxyapatite), hydroxyfluoroapatite and fluorapatite, which are more resistant to acids and other cariogenic factors. Fluorine preparations activate the processes of remineralization and protein metabolism of tooth enamel, reduce its permeability and acid-producing activity of the microflora of the oral cavity.

Fluorides are prescribed orally and topically (in the form of rinses, applications, electrophoresis and phonophoresis).

**Sodium fluoride** is prescribed for children from 6 years old and adults in the form of mouth rinses after eating and brushing your teeth in the passage mode (3 rinses for 1 minute); daily for 1 passage (0.05% solution) or 1 passage in

1-2 weeks (0.02% solution) for 9 months. For four- and five-minute applications, a 0.2% solution or 1-2% gel of the preparation is applied, applied to the tooth surface after plaque removal, isolation from saliva and drying (treatment course - 4-7 applications 2 times a year). Also shown is prophylactic daily use of 1 tablet daily (at least 250 days a year).

**Ftorlak** is a composition of natural viscous resins containing 2.9% fluorine, fir balsam, shellac, chloroform and ethyl alcohol. The fluoride varnish film is held on the tooth surface for many hours, giving off the fluoride ions to the surface layer of enamel and contributing to the formation of more durable and less soluble fluoroapatite.

**Vitafluor** contains sodium fluoride in combination with vitamins A, C and D2. Its prophylactic administration to children in regions with insufficient fluoride content in drinking water (less than 1 mg / l) is especially advisable. The drug is contraindicated with a fluorine content in water of more than 1.5 mg / l, as well as with signs of A- and D2-hypervitaminosis.

**Sensigel** as a component contains a new compound of fluorine - nicomethanol fluorohydrate (fluorinol) - and potassium nitrate.

**Fluorinol** surpasses inorganic fluorides by 12 times in its ability to be fixed in enamel and dentin, helps to strengthen the crystal structure of the dentin lattice and to reduce irritation of the nerve endings of dentin by fixing potassium ions in them. The gel base provides prolonged contact of the active components with the tooth surface during and after the use of Sensigel. To prolong its effect, the use of Elgifluor gel toothpaste is recommended. The latter also contains two active components - fluorinol and a halogen-containing antiseptic chlorhexidine.

An important characteristic of a number of remineralizing agents is their odontotropic effect - the ability to stimulate the protective properties of tooth pulp, manifested by the formation of secondary (reparative) dentin. The named ability is possessed by preparations based on calcium hydroxide (calmecin), calcium gluconate and glycerophosphate, zinc preparations (zinc, zinc-salicylic, zinc-eugenol paste), lysozyme, chlorophyllipt, vitamins D, C, P, etc. Odontotropic drugs are used for deep tooth decay, in the process of biological treatment of pulpitis, with vital amputation of pulp and other dental pathology.

### **Means for the treatment of hyperesthesia**

For local treatment:

1. products that destroy the organic substance of hard tooth tissues (silver nitrate, zinc chloride);
2. funds that affect the change in their structure (fluorine preparations).

**Silver nitrate** (Argenti nitras) (lapis).

Apply a 30% aqueous solution of silver nitrate. When combined with organic substances, hard tissues of the tooth form albuminates. Due to the fact that organic substances in enamel and dentin are a little recommend the renewal of silver nitrate with 10% formalin solution, 4% solution of tannin or eugenol.

Silver nitrate is used only for the treatment of molars, because it paints teeth in black.

**Zinc chloride** (Zinci chloridum).

Apply a 30% aqueous solution. As a precipitating solution, potassium ferrocyanide 10% solution is used. After application of a 30% solution of zinc chloride (1 min), an application of potassium ferrocyanide 10% (1 min) is carried out. Course 3 - 4 procedures.

### **Remineralizing solutions**

When using remineralizing substances, it is advisable to heat them up to 40-45 °C, taking into account that increasing the temperature of the solution by 1 ° enhances the precipitation of ions on the enamel surface by 1%.

When choosing the concentration of a remineralizing solution, it should be remembered that a high concentration of calcium only leads to the mineralization of the surface layer of enamel, while low concentrated solutions contribute to remineralization throughout the depth of the enamel.

In the interests of the combined use of remineralizing solutions and fluorine solutions, the fact of the assistance of fluorine ions to accelerate the inclusion of calcium and phosphorus enamels in the grid indicates the fact.

Extremely significant for the remineralizing effect of the solutions used is their pH level . A decrease in pH promotes the activation of the penetration of their ions into the enamel and their better stabilization in the structural network.

The method of topical administration of drugs is also essential. Their introduction by electrophoresis is more effective than ordinary rinses and applications. The success of remineralizing therapy is largely dependent on good hygiene.

### **Application with Remodent solution**

" Remodent" - a drug synthesized from natural materials, consists of a complex of macro- and micronutrient ions necessary to activate the process of remineralization of caries prevention. Unlike fluorine, the drug promotes the replacement of calcium and phosphorus ions in the crystal lattice of tooth enamel .

On pre-cleaned ( with a toothbrush and toothpaste) and dried teeth, a cotton swab saturated with Remodent's solution is applied for 15-20 minutes. During this time, the swab is changed twice. After application, it is not recommended to rinse your mouth and take food for 2 hours. The following applications are carried out twice a week for the same technique. The course of treatment is 20-30 applications.

In addition, in order to prevent dental caries, one can recommend rinsing the mouth with a 3% Remodent solution for 3–4 minutes (1-2 times a week) for 10 months a year. One rinse is 15-25 ml of solution.

### 13 - Practice

**Subject: Demineralization. Remineralization and mineralization of tooth enamel throughout life. General and local (exogen, endogen) methods for the treatment of caries in the stasis spot. Importance in the prevention of caries closure of blind fossae and fissures.**

#### 1.1. Technological model of the formation

Lesson time 3 hours	Number of students
Type of activity	Introduction of practice news
Plan	Explain the complete correct answer to questions about demineralization. Remineralization of tooth enamel during life
The objective of the training session	To study the value of enamel in milk and permanent teeth.
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

#### Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (10 minutes )	1. The purpose of the lesson 2. Preparation of slides for lecture material 3. Related literature <ul style="list-style-type: none"> <li>• N.V. Kuryakina - "Therapeutic dentistry children's age "N. Novgorod 2001</li> <li>T.F. Vinogradova - "Dentistry for children" 1987</li> <li>• N.G. Pakhomov- "Primary prevention in dentistry"</li> <li>• E.V. Borovsky - "Therapeutic dentistry" 1997.</li> </ul> Yu.I.Vorobov-X-ray of the teeth and jaws - 1990 city of K. Georgieva - "Emergency care in dentistry" 1983.	Record a subject and listen
2. Leading a topic (10 minutes)	1. Keeping the audience clean 2. Checking students for a practical lesson 3. Check student attendance.	Are listening
3. The main stage (90 minutes )	1. The division of students into 2 small subgroups , asks questions on the topic ;	Divided into small groups ,

	2. Use of slides and multimedia; 3. conducts therapeutic work; 4. Combines all the information on a given topic, actively participate ni their students encourages and assesses the general.	watching , participating , listening. Student expresses his opinion complements and asks questions
4. The final stage (10 minutes )	1. Conclusion . 2. Independent work . 3. Homework .	Listen to Record Conclusion

### Text

**Caries of cervical enamel and cement.** The main role is played by (1) *actinomyces* and (2) *filamentous bacteria* (*filaments*). The latter include bacteria *Leptotrychia buccalis* (the only species of the genus *Leptotrychia*) and *Corynebacterium matruchotii* (*Bacterionema matruchotii*).

Cariogenic microflora is localized in **plaque** (supra- and subgingival): aerobes (streptococci) predominate in *supragingival*, anaerobes (fusobacteria, treponema, actinomyces, bacteroids, capnocytophages and others) predominate in the *subgingival* plaque. In most people, streptococci (*S. mutans*, *S. sanguis*, *S. mitis*, *S. salivarius*) and enterococci (*E. faecalis*) account for over 50% of microorganisms in mild supragingival plaque.

Irrefutable evidence of the etiological role of microorganisms in the development of caries was obtained by gnotobiology (*gnotobiology* studies multicellular organisms that have lived since they were born in a microbial environment under sterile conditions; such animals are called *gnotobionts*). In gnotobionts, which were kept on a cariogenic diet for a long time, a carious process occurs only when microflora of the oral cavity is introduced into food (Orlander et al., 1954). In addition, convincing evidence of the infectious nature of caries is the proven possibility of anticariogenic immunization.

Thus, the etiological factor in caries is only infect. All other factors contributing to the development of caries should be considered as conditions for the implementation of the causative pathogen. The classical localistic theories of the development of caries (*parasitic* and *chemical*), in essence, represent a single belief system: microorganisms of the oral cavity during fermentation form organic acids that wash mineral substances from the hard tissues of the tooth, as a result of which their organic matrix is “exposed”, which is destroyed again under the influence of microorganisms.

#### Features of cariogenic microflora

We can distinguish the qualitative and quantitative features of cariogenic microflora of the oral cavity. A qualitative feature is the formation of *dysbiosis*, a quantitative one is an increase in the total mass of microorganisms occurring in a special concentration medium (*dental plaque*).

**1. Dysbiosis (dysbiosis) of the oral cavity.** The oral cavity is a complex biocenosis with the greatest species diversity of microorganisms (bacteria, fungi and protozoa). This microbial community has

been formed over the long evolution of humans. The microflora of the oral cavity is the result of a thousand-year adaptation to a certain diet and, in general, to a certain eating behavior. A change in the nature of the diet and food addictions of a person, especially noticeable over the past century, has also caused a change in the composition of the microflora of the oral cavity. This primarily relates to an increase in the proportion of easily digestible carbohydrates (mono- and disaccharides) in food. It is important that such a shift in emphasis in eating behavior begins in childhood. The development of the food industry is accompanied by an increase in the range of refined products, which are also not natural in the food landscape.

Changes that occur in the structure of microbial associations of macroorganisms are called *dysbiosis* (*dysbiosis* is a special case of dysbiosis in relation to bacteria). Caries is a result of oral dysbiosis caused by a change in the nature of food, a kind of microecological disaster.

So,  $\alpha$ - and  $\gamma$ -streptococci (the main normal inhabitants of the oral cavity) as representatives of the *resident* (*permanent*) flora prevent the multiplication and fixing of microorganisms accidentally caught here (representatives of the *transient* flora, for example, intestinal bacteria). The proportion of lactobacilli in the oral cavity under normal conditions is insignificant, however, during acidification of the environment (this is facilitated by digestible carbohydrates, as well as the developed carious process), the number of lactobacilli increases sharply, which is one of the manifestations of dysbiosis. But the most important feature of oral dysbiosis is a change in the composition of the *oral streptococcus* population. When easily digestible carbohydrates, primarily sucrose, come from food, an advantage is given to those that actively metabolize carbohydrates and form organic acids (especially *S. mutans*).

**2. Tooth plaque.** A quantitative feature of cariogenic microflora is its concentration. The concentration medium is *plaque* (*soft plaque*) intimately connected with the surface of the tooth. The basis of the plaque is made up of microorganisms fixed on a polysaccharide *base* (*stroma*, *matrix*), impregnated to various degrees with mineral substances. Dental plaque is the result of a modification of the *pellicle* under the influence of microorganisms multiplying in it.

Three stages of plaque formation are distinguished:

- Adhesion (fixation) of microorganisms to the pellicle
- Foundation education
- Active reproduction of microorganisms with the accumulation of products of their vital activity.

There are (1) *supragingival* (around the neck of the tooth), (2) *subgingival* (in the gingival groove and its pathological analogs) dental plaque, and (3) plaque formed in the fissures on the chewing surface of molars and premolars (*fissural plaque*). Microorganisms are distributed unevenly in the oral cavity. The main places of localization of microbial flora are saliva, the back of the tongue and dental plaque. Obligatory anaerobes are found only in the subgingival plaque, aerobic species are found in the supragingival and fissural plaque. The maximum concentration of microorganisms in 1 ml of saliva of a healthy person corresponds to  $10^7$  microbial bodies for aerobes and  $10^8$  for anaerobes, while in a dental plaque there are  $10^{11}$  microbial bodies per 1 g of its mass, i.e. 1000 times more.

Hypermineralized plaque is called *tartar*. The accumulation of bacteria on the surface of the formed tartar promotes its growth. Tartar is much more difficult to remove from the surface of the tooth than a soft coating.

Thus, a qualitative change in the microbial landscape of the oral cavity (dysbiosis is the predominance of cariogenic species) and an increase in the concentration of microorganisms associated with the formation of dental plaque lead to the development of caries.

### **Conditions for the development of caries**

In general, the conditions conducive to the development of caries can be divided into *local* (the nature of food, the state of hard tooth tissues, the composition of saliva) and *general* (heredity, age, state of general resistance, endocrine disorders).

The most important of these are the following:

1. A cariogenic diet (especially the presence of sucrose).
2. Lack of antimicrobial action of saliva.
3. Hypomineralization of the hard tissues of the tooth (this is characteristic of childhood; deficiency of parotin, dioxycholecalciferol).
4. Increased solubility of minerals in the hard tissues of the tooth (result of fluoride deficiency).
5. Immunodeficiency states (primary or secondary).

### **I. Cariogenic diet**

A cariogenic diet is characterized by the following features:

1. *The presence of refined and easily digestible products.* The cariogenic effect of *sucrose* is widely recognized. Its use is considered as one of the prerequisites for caries. For the development of caries, it is important not so much the amount of carbohydrates consumed, but how long they stay in the oral cavity and the frequency of intake. The experiment showed that with the direct introduction of a cariogenic diet into the stomach in rats, caries did not occur. If the rats ate it themselves, they developed caries. Intensive caries is noted in people who consume sweets in between meals.
2. *Low food rigidity.* Insufficient rigidity of food reduces the effectiveness of mechanical toothbrushing (*abrasive action of food*) during chewing and contributes to the formation of plaque. Low rigidity is due to the widespread use of currently intensive cooking, as well as the use of refined products.
3. *An imbalance of vitamins, macro- and microelements in the diet.* Some trace elements contained in food, primarily *selenium*, have a pronounced cariogenic effect. The cariogenic effect of selenium is due to its antioxidant properties. Compounds of selenium and other antioxidants block oxygen-dependent bactericidal mechanisms realized, in particular, by neutrophilic granulocytes of saliva, and thereby sharply reduce the antimicrobial potential of the oral fluid. A cariogenic effect has also been observed in *vanadium* and *molybdenum* compounds. Foods poor in *calcium* and *phosphorus* contribute to tooth decay.

### **II. Antimicrobial deficiency of oral fluid**

Saliva is a natural regulator of the stability of the microbial biocenosis of the oral cavity. It has pronounced bacteriological, mycotic, and protozoa-static properties.

The main antimicrobial factors of saliva are the following:

1. Mechanical flushing of microorganisms from the surface of the teeth and mucous membrane with their subsequent swallowing and entering the bactericidal environment of the stomach.
2. Non-specific humoral factors of antimicrobial protection - *lysozyme* (*muramidase*), *lactoferrin*, etc. (secreted by neutrophilic granulocytes).
3. Specific humoral antimicrobial factors *are class A immunoglobulins* (primarily they are opsonins and agglutinins, respectively covering the surface and gluing together microbial cells, as well as preventing their fixation to the surface of the teeth).

4. Saliva cells ( *neutrophilic granulocytes* migrating into the lumen of the ducts of the salivary glands and into the oral cavity). Neutrophilic granulocytes not only phagocytize and destroy microorganisms, but also secrete a number of biologically active substances with protective potential ( *lysozyme* , *lactoferrin* , etc.).

Violations arising in the implementation of the antimicrobial function of saliva can be associated with a decrease ( *hyposialia* ) or cessation ( *asialia* ) of salivation. Hypo- and asialia, which is formed as a result of exposure to the salivary glands of ionizing radiation, should be especially noted. With radiation treatment of malignant neoplasms, less commonly non-tumor processes, the head and neck may contain salivary glands (both large and small) in the volume of irradiated tissues. The salivary gland parenchyma has high radiosensitivity (radiosensitivity); when it is destroyed (radiogenic destruction ), organic salivation is formed. In this case, a pronounced activation of the carious process ( *radiation caries* ) occurs . **Radiation caries** - caries that developed within a year after completing a course of radiation therapy. All teeth are affected. The localization of radiation caries in the cervical region is characteristic.

### **III. Hypomineralization of hard tooth tissues**

With a decrease in the calcium content in the surface layer of enamel, its solubility increases and resistance to caries decreases. Normally, in the hydroxyapatite crystals, the Ca / P molar ratio ranges from 1.3 to 2.0. The more this indicator exceeds the minimum level (1.3), the higher the enamel resistance to caries. The processes of mineralization of hard tooth tissues depend on both local and general factors. Among the common factors, one of the main factors is *age* . Compared with the hard tissues of adults, children's teeth have fewer mineral components and more organic ones. In addition, the enamel permeability of children's teeth is higher than in adults, due to the greater volume of microspaces. As the enamel ripens with age, the volume of microspaces and the permeability of this tissue decrease. This feature allows the dental tissues of the child's body to more easily lose calcium, and organic substances serve as a trophic matrix for microorganisms. Especially often caries develops during periods of change of milk teeth and puberty.

The processes of mineralization of hard tissues of the tooth also depend on the state of local mechanisms of metabolism of inorganic compounds. Mineralization of enamel, especially the surface layers, is carried out under the influence of saliva washing it. Dentin mineralization processes depend on the state and functional activity of odontoblasts and are carried out using the phosphatases synthesized by them. These enzymes are distributed in the dentin by secretion from the processes of odontoblasts into the dentinal fluid of the tubules. Consequently, hyposialia, deficiency of mumps and minerals in saliva, as well as degenerative changes in odontoblasts until their death will contribute to the development of insufficient mineralization of hard tooth tissues. The degree of mineralization is also affected by endocrine factors - *mumps* and *1,25-dioxo-cholecalciferol* ( *calcitriol* ). Therefore, their insufficiency also contributes to the development of the carious process.

### **IV. Increased solubility of mineral components of hard tissues of the tooth**

The increased solubility of the mineral components of hard tooth tissues depends primarily on the presence of *fluorine* in their composition . The concentration of fluoride entering the body should be sufficient already in early childhood. It is known that teeth with caries fluorosis are not affected, since the solubility of mineral substances in hard tissues is sharply reduced.

### **V. Immunodeficiency**

Immunodeficiency conditions in which the overall effectiveness of antimicrobial mechanisms is reduced contribute to the development or progression of the carious process. These include, in particular, prolonged use of glucocorticoids, treatment with cytostatic drugs, severe infectious and somatic diseases (especially diabetes mellitus).

### **Pathogenesis of caries**

#### **Pathogenesis of caries of enamel and cement**

The development of the carious process in enamel and cement proceeds in two phases:

1. *Tissue demineralization* with the help of acids formed by microorganisms - pyruvate, lactate, acetate, malate, etc. (critical pH level is 4.5-5.0).
2. *The destruction of the organic basis* of these tissues by hydrolytic microflora enzymes. Among the enzymes, the leading role is played by *proteinases* (*proteases*), which destroy proteins, and *hyaluronidase*, the substrate of which is hyaluronic acid.

At the earliest stages of the development of the carious process, demineralization proceeds most actively not in the surface of the enamel, but in the deeper, subsurface zones.

#### **Pathogenesis of dentin caries**

The pathogenesis of dentin caries is somewhat different from the development mechanism of enamel and cement caries. This is due to the structural features of dentin, namely the presence of *dentin tubules*, providing its high permeability, significantly exceeding the permeability of enamel and cement.

Caries of dentin proceeds in three stages:

1. The penetration of microorganisms into the dentinal tubules and the destruction of their organic "filling", especially processes of odontoblasts and nerve fibers.
2. Demineralization of first peritubular and then intertubular dentin under the influence of acids formed by microorganisms.
3. Destruction of the demineralized organic matrix of peri- and intertubular dentin due to exposure to hydrolytic microflora enzymes.

#### **Precarious teeth**

At present, it is customary to distinguish between people who are *caries-resistant* and *caries-prone*, depending on the severity of the complex of factors that determine the carious process. To identify a high risk of caries, along with an assessment of the hygienic condition of the teeth, the rate of salivation and the viscosity of saliva, the titer of lactobacilli of the oral cavity, acid resistance of enamel and its ability to remineralize are determined.

To determine the **acid resistance of enamel**, 1 drop of a normal solution of hydrochloric acid with a diameter of about 2 mm is applied to the **enamel** washed with distilled water and the dried surface of the upper central incisor. After 5 sec. the acid is washed off with distilled water and the tooth surface is dried. The enamel microdefect depth is estimated by the intensity of its staining with a 1% aqueous solution of methylene blue using a reference printing scale. The degree of coloring reflects the depth of damage to the enamel. The more intense the etched area is stained, the lower the acid resistance of the enamel.

The **enamel remineralization rate** is estimated using an acid buffer with a pH of 0.3-0.6 and a 2% aqueous solution of methylene blue, which are sequentially applied for 1 min. on the surface of the enamel. Over the next few days, the etched area is stained with methylene blue daily. Depending on the day on which the studied area ceases to stain, the ability of the enamel to remineralize is judged.

Caries-resistant people are characterized by low flexibility of tooth enamel to acid (stainability below 40%) and high ability to remineralize (enamel ceases to stain for 1-3 days). Persons exposed to caries have a high compliance of the tooth enamel with acid (stainability of 40% or more) and delayed remineralization (the enamel perceives the dye for 4 days or more).

Pathological anatomy of caries in the spot stage (macula cariosa)

To assess the morphological changes in tooth tissue during caries, there are a large number of different methods.

The most sensitive method for studying caries in the spot stage is polarization microscopy, in which a 50-60 micron thick tooth section is examined. A lesion is detected in the form of a triangle, the base of which is facing the outer surface of the enamel. The nature of the changes in the lesion depends on the size of the spot. If the lesion area is not more than 1 mm, 2 zones are revealed on the thin sections: transparent and dark.

With an increase in the size of the carious spot, 3 zones are determined: the lesion body, light and transparent. In the outer layer of enamel, enamel-dentin compound and dentin, no changes are detected. The greatest changes are determined in the subsurface layer. With increasing size of the carious spot, the degree of enamel demineralization increases. It is proved that the surface layer of enamel does not undergo changes due to the presence of a pellicle, a constant process of remineralization in the oral cavity, and also the structural features of the outer layer of tooth enamel. S.P. Onishchenko A968) and V.P. Zenovsky A976) identified 5 layers in a white carious spot:

- 1) superficial, characterized by the greatest stability, the number of hydroxyl groups in the hydroxyapatite crystal increases, the fluorine content decreases, the volume of microspaces is 1.75-3% at a rate of 1%. In this zone there are sites of demineralization and remineralization;
- 2) subsurface; in this zone there is a decrease in calcium content compared with the norm, the volume of microspaces increases to 14%. Enamel permeability sharply increases;
- 3) central, this is the zone of maximum changes, the calcium content is even more reduced, the volume of microspaces is 20-25%. The zone is characterized by a high level of permeability;
- 4) intermediate, in this zone the volume of microspaces is 15-17%;
- 5) the inner layer or zone of shiny enamel, this is the zone of relative prosperity, the volume of microspaces is 0.75-1.5%.

In all zones, hydroxyapatite crystals undergo certain changes;

- violation of the orientation of the crystals in the structure of hydroxyapatites;
- change in the shape of crystals and their sizes;
- weakening of intercrystalline bonds;
- the appearance of crystals atypical for normal enamel;
- a decrease in the microhardness of enamel in the area of the white and pigmented spots, and the microhardness of the outer layer changes less than the microhardness of the subsurface layer;

- an increase in interprismatic spaces and their filling with amorphous matter.

It should be noted that changes in the pulp, in particular, in the structure and condition of odontoblasts, in vessels and nerve fibers during caries in the spot stage were not detected. So, the focus of demineralization during initial caries has three main features:

- 1) a sharp increase in the permeability of tooth tissue for high molecular weight substances, dyes, isotopes;
- 2) hypercalcification of the surface layer of tooth enamel due to the mineralizing effect of saliva, constantly washing the surface of the teeth, and more diffuse processes occurring on the surface of the enamel;
- 3) the presence of the integrity of the organic enamel matrix, which is a prerequisite for remineralization.

L. Meri (1960) identified four types of carious lesions, taking into account the degree of demineralization:

- 1) progressive (with a predominance of demineralization and reconstruction processes);
- 2) intermittent (at the same time - processes of hyper- and demineralization);
- 3) regressive (with a predominance of demineralization processes);
- 4) stopped (with a predominance of the process of remineralization).

In the studies of Kostian (1962) and A.V. Granin (1966) and Meri, it was noted that the 1st and 3rd types of carious lesions are characteristic of caries in the stage of a white spot, and the 2nd and 4th - for pigmented carious lesions.

Mannenberg (1964) found that with initial caries, a white spot appears in cases where subsurface demineralization reaches a depth of not more than 300 microns.

G.M. Pakhomov highlighted 5 groups of carious spots in color:

- white
- gray
- light brown
- brown
- black

3 groups of carious spots are distinguished depending on the safety of enamel perikimat:

- 1) subsurface spots - on the surface of which perikimat is preserved;
- 2) superficial - on the surface of which there is no perikimat;
- 3) mixed - on the surface of which the perikimat is interrupted.

#### **Stage Spot (macula cariosa)**

Focal demineralization of enamel, depending on the nature of the flow, is divided into slow and fast flowing. A differential diagnosis between these forms can be made on the basis of an anamnesis, clinical picture (color, size, form of lesion), data on staining of teeth with a solution of methylene blue.

The clinical picture indicates that the demineralization of tooth enamel goes through at least three stages. The early stage is a white spot 1-3 mm in size. In the 2nd, developed stage, there are distinctive signs of slow and rapid demineralization of enamel.

Slow-flowing demineralization is characterized by uniformity of enamel surface changes: one of the stages of the development of focal enamel demineralization predominates on several teeth, which suggests the possibility of the occurrence of demineralization foci simultaneously.

The rapid demineralization of enamel in the 2nd stage is characterized by the activity of the process. The foci of demineralization lose clear boundaries, their edges become blurry. The surface of the enamel is rough, matte. The probe easily gets stuck in the demineralization site. Enamel loses density, easily scraped off by an excavator. The intensity of staining an average of 60 points. The increase in staining is associated with an increase in the porosity of enamel.

Quick demineralization goes into the 3rd stage - the stage of the defect. At this stage, characteristic signs for both forms of damage are also noted. Summarizing the above, G. N. Pakhomov et al. offer the following classification of dental lesions with focal demineralization.

The enamel is a hard, wear-resistant, mineralized fabric of white or slightly yellowish color that covers the outside of the tooth crown and gives it hardness.

Enamel hardness is caused by a high (95%) content of mineral salts in it, 90% of which is hydroxyapatite (calcium phosphate). In addition to it, enamel contains a small amount of calcium carbonate (about 40%), calcium fluoride and magnesium phosphate.

Enamel density decreases from the surface of the crown to the dentin-enamel border and from the cutting edge to the neck. Its hardness is maximum at the cutting edges. The color of the enamel depends on the thickness and transparency of its layer.

The enamel does not contain cells and is not capable of regeneration when damaged, but it constantly exchanges substances that enter it both from the side of the underlying dental tissues (dentin, pulp) and from saliva. Simultaneously with the arrival of ions (remineralization), they are removed from the enamel (demineralization). These processes are in a state of dynamic equilibrium. Its shift in one direction or another depends on many factors, including the content of micro and macro elements in saliva, pH in the oral cavity and on the surface of the tooth. It decreases in the following sequence: enamel of an uncut tooth - enamel of a temporary tooth - enamel of a permanent tooth of a young individual - enamel of a permanent tooth of an elderly person.

Tooth enamel consists of enamel prisms collected in bunches, and interprismatic substance sticking them together.

On enamel sections, among other formations, lamellae, bunches and spindles are found. These histological elements are an accumulation of organic matter. Often, lamellae contain saliva protein, rarely degenerated cells or calcified segments of prisms. Such lamellae can end deep in the dentin. Enamel bunches extend from the enamel-dentin border and continue to 1/3 of the enamel thickness. Odontoblastic processes, somewhat thickened, sometimes penetrate dentin enamel. These formations are called enamel spindles.

Submicroscopic formations of enamel are crystals of apatite-like origin. Each prism rotates helically from the surface of the enamel to the dentin around the axis of the main direction of the prisms. The crystals are located parallel to the course of the prisms, tightly fitting to each other.

The most distinct sign of age-related changes in enamel is the abrasion on occlusal surfaces and at the contact points of adjacent teeth due to chewing. This abrasion is manifested by a decrease in the vertical size of the crown and a flattening of the contact boundaries.

Before teething and immediately after it, the enamel surface contains the ends of the prisms and pericomat, which subsequently begin to wear off and are only partially preserved at the age of 20-40. Enamel permeability decreases with age, its crystal lattice becomes denser, and microspaces between crystals decrease. The water content, located mainly between the crystals, decreases.

Enamel mineralization increases with age, which leads to the accumulation of fluorapatite in its thickness.

The age-related increase in mineralization also leads to microscopic changes in the enamel surface: pericomats disappear, the enamel surface becomes smooth, pronounced erosion of the teeth along the vertical axis and grinding of the side surfaces are observed.

The mineral base of the teeth consists of isomorphous crystals of apatite: hydroxyapatite, carbonapatite, fluorapatite, chlorapatite.

**Caries** is a pathological infectious process that occurs after teething, in which **demineralization and softening of the hard tissues of the tooth** occur, followed by the formation of a carious cavity. This disease is very common - **22% among 6-year-old children** and **99% among people aged 65 years**. According to WHO, 60-90% of schoolchildren worldwide suffer from dental caries.

To prevent this disease, most of us regularly **brush our teeth** (morning and evening), **floss** (floss) and **rinse** (water, special solutions, dental elixirs, solutions that prevent the formation of plaque, for example, Amway Glister elixir), in general, holds standard **hygiene** of the oral cavity. But in the modern world this is no longer enough. In order to feel safe before caries, the most advanced patients in the city of Yekaterinburg have already visited the Ruzana dentistry and have performed **fissure sealing** - the most effective means of protection against caries of the 1st class.

**Fissures** (lat. **Crevice**, crack) are **grooves and grooves on the chewing surface** of large and small molars.

*Black tooth decay classes:*

*Grade I - cavities in the area of fissures and natural cavities.*

*Grade II - cavities on the contact (interdental) surfaces of large and small molars.*

*Grade III - cavities on the contact surfaces of incisors and canines without breaking the cutting edge.*

*IV class - cavities on the contact surfaces of incisors and canines with violation of the cutting edge and crown angles.*

*V class - cavities on the labial, buccal, lingual surfaces located in the gingival part of the tooth crown.*

*Grade VI - cavities located on the tops of the tubercles of the large and small molars, as well as on the cutting edges of incisors and canines.*

Billions of bacteria live in each person's mouth. These are mainly **streptococci**, which comprise 30-60% of the entire microflora of the oropharynx. For example, on the surface of the teeth they found a habitat for *Streptococcus sanguis* and *Streptococcus mutans*, this is the **main cariogenic microflora** that is part of the dental plaque; she is able to cause caries. But microorganisms are constantly affected by **saliva**, which mechanically flushes bacteria and contains antimicrobial substances (for example, lysozyme). In addition, we constantly brush our teeth and use floss. If saliva ceases to cope with plaque, acidifies (after eating and during the pathological process) and if hygiene is not followed, then favorable conditions begin for microorganisms, they begin to multiply and "eat" tooth tissue, then tooth decay occurs. The remains of carbohydrates on the teeth with the help of microbes are decomposed to lactic and other acids, which immediately begin to destroy the tooth enamel. The most active is the fermentation of sugar, slightly less intensively - glucose and fructose. **Sweeteners** (sorbitol, xylitol) are almost not dangerous, and starch does not penetrate plaque at all due to the large size of the molecules.

**Caries** can begin almost anywhere on the tooth, but the **most caries-sensitive areas** are the **proximal** (contact, between adjacent teeth in the dental arch) surface, **lingual** surface, **buccal** surface, **fissures** and root surface. Of these zones, fissures are most often affected. Due to the shape and size of the fissures, it is very difficult to clean the bacteria from there, and the enamel thickness in these places is less than on the mounds. That is why **fissures are the most common source of primary and secondary caries**.

In order to prevent the multiplication of cariogenic microflora in these depressions and grooves, **it is recommended that they be sealed**. This procedure will protect your teeth from fissure caries for a long time (Black class I).

**Fissure sealants** (silants) (Fig. 1) are unfilled and filled with low-viscosity **composite resins of** chemical or light curing. By their nature, they are hydrophobic (poorly wetted by water). Sealing blind fossae and fissures on the chewing surface of small and large molars is an effective measure to prevent dental caries. This prevention method is based on the **principle of eliminating the contact of carbohydrates and microorganisms of the** oral cavity with enamel fissures. **The sealing composition is quite strong**, for example, the strength of FISSURIT (transparent) is 98 kg / cm<sup>2</sup> and the strength of FISSURIT (white) is 77 kg / cm<sup>2</sup> (or 984 m water column and 773 m water column, respectively; for comparison: atmospheric pressure is approximately 10 m water column). Studies have shown that a year after the fissure was sealed, the total loss of Helioseal sealant was determined in 15.5% of children, and Pit Fissure Sealant - in 12.2%. The prevalence of caries was **9.09% versus 57.58% in the control group**, and the intensity, respectively, was 0.12 versus 0.78. The authors concluded that these sealants have a fairly good retention (fixation, delay) and a pronounced carioprophylactic effect.

### **Fissure sealant .**

**The procedure for sealing fissures** (Fig. 2) begins with a thorough **cleaning of the tooth** from plaque with a brush and paste and subsequent drying with air. Then the fissures are treated with 32% - **phosphoric acid H<sub>3</sub>PO<sub>4</sub>** for 30-40 seconds for etching (Fig. 3) for etching (the process by which the core or the shell of the enamel constituent parts - enamel prisms is destroyed by acid), washed with distilled water and again **are dried**. Then they **are filled with the liquid phase of the** composite filling material. Under the action of a **special lamp**, hardening of the material occurs after 40-45 seconds, after which the **excess is eliminated with a** solid carborundum head **and the** material is ground on the chewing surface. Fissure sealing is believed to be effective for **5-8 years**.

Fissure **sealing** using FissSila: higher - caries fissure; below - closing fissures with sealant.

#### **What does such a procedure give?**

1. Reliable protection of teeth from caries: food and bacteria are excluded from the sealing compound.
2. Stopping caries in the initial stages ("white spot stage"): the sealing compound blocks the access of substances necessary for microflora, bacteria stop multiplying, and the pathological process stops.
3. Tooth protection against secondary caries.
4. If the tooth has already been treated and there is a seal, then the sealant is an additional means of mechanically fixing the seal, thereby extending its service life.

#### **When can fissures be sealed?**

1. With the **natural (normal) mineralization of the** fissures, it is possible to carry out the sealing immediately after teething.
2. With **medium mineralization**, fluoride coating is first used in combination with the use of calcium and fluoride preparations for a month, and only then do fissures be sealed.
3. With **low mineralization, it is** not recommended to use composite (i.e. polymeric, consisting of a large number of monomers, units) sealants using 32% orthophosphoric acid as an etching agent. In this case, glass ionomer sealants or invasive sealing with a composite sealant are used, or, according to indications, the method of preventive filling.
4. With a **high mineralization of the** fissures, their sealing is not necessary.

#### **Contraindications :**

1. The presence of intact (intact) wide, well-communicating fissures.
2. Teeth with healthy fossae and fissures, but with carious lesions on the proximal (interdental) surfaces.
3. Pits and fissures that remain healthy for 4 years or more do not require sealing.

4. Poor oral hygiene.

The sealing composition is not only a physical barrier to the development of pathogenic bacteria, but also **saturates tooth tissues with fluorine**, strengthening tooth enamel. According to a number of authors, this method provides a reduction in the growth of caries by 90-95%! After sealing, you can and should use floss threads. Sealants are just the **first big step in protecting your teeth from tooth decay**. Brushing teeth, using dental floss, eating right and, most importantly, visiting the dentist regularly are necessary preventative measures with and without sealants.

Fissure sealing **can be carried out for people of any age** - both children and adults. Adults, engaged in timely prevention, can significantly save on the subsequent treatment of caries and its many complications (pulpitis, periodontitis). The cost of sealing fissures per tooth is about **2-3 times cheaper** than the **treatment of caries**! If we compare the prices with the treatment of pulpitis and periodontitis, then the savings will be even more substantial! Therefore, it is better to prevent than to treat. And for children, this is a chance to never know what a dental bur is. It is also recommended **to seal fissures on milk teeth**: during this period, caries and its complications are more dangerous, because milk teeth, due to the low mineralization of enamel and dentin, are more susceptible to caries than permanent teeth.

It is important to know that although fissure sealing is effective for 5-8 years, it should not be considered as a permanent procedure. For maximum effectiveness, **regular visits to the dentist** are necessary for a **routine** examination, which will allow you to monitor the condition of sealed teeth.

## 14 - Practice

### Subject: Psychological preparation for the prevention of pain in childhood

#### 1.1. Technological model of the formation

Lesson time 3 hours	Number of students
Type of activity	Introduction of practice news
Plan	Explain, give a complete correct answer to questions on a given topic.
The objective of the training session	To study the psychology of childhood and prepare children for examination of the oral cavity.
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook, practical material, computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

#### Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (10 minutes)	1. The purpose of the lesson 2. Preparation of slides for lecture material 3. Related literature • N.V. Kuryakina - "Therapeutic dentistry children's age "N. Novgorod 2001	Record a subject and listen

	T.F. Vinogradova - "Dentistry for children" 1987 <ul style="list-style-type: none"> <li>• N.G. Pakhomov- "Primary prevention in dentistry"</li> <li>• E.V. Borovsky - "Therapeutic dentistry" 1997.</li> </ul> Yu.I.Vorobov-X-ray of the teeth and jaws - 1990 city of K. Georgieva - "Emergency care in dentistry" 1983.	
2. Leading a topic (10 minutes)	1. Keeping the audience clean 2. Checking students for a practical lesson 3. Check student attendance.	Are listening
3. The main stage (90 minutes )	1. The division of students into 2 small subgroups , asks questions on the topic ; 2. Use of slides and multimedia; 3. conducts therapeutic work; 4. Combines all the information on a given topic, actively participate ni their students encourages and assesses the general.	Divided into small groups , watching , participating , listening. Student expresses his opinion complements and asks questions
4. The final stage (10 minutes )	1. Conclusion . 2. Independent work . 3. Homework .	Listen to Record Conclusion

#### Text

When a child visits a dentist, the greatest fear is a drill. Dental interventions are more than others associated with pain and other unpleasant sensations. Therefore, the problem of premedication is especially relevant in pediatric dental practice. Psychological and pharmacotherapeutic effects on restless children with an increased emotional reaction relieve excessive stress.

In the broad sense of the word, premedication is understood as the introduction of any drug within the framework of dental treatment. It would be wrong to assume that the sole purpose of drug preparation is to alleviate the fear of treatment. This task, although important, is by no means the only one. The field of premedication is much wider. In some cases, it is used to lower the state of tension and fear, in other cases, to lower the threshold of susceptibility to pain, and then also to ensure the undisturbed course of treatment, which suppresses the vomiting reflex or decreases salivation (premedication). Ensuring a smooth postoperative course, the possibility of a quiet sleep, eating, etc., should be considered the same important task of premedication. (post-medication). Premedication in the predominant number of cases is aimed at covering several disturbing influences simultaneously.

In the fight against fear, premedication, on the contrary, always plays only an auxiliary role, and the main means here and in the future are psychoprophylaxis and psychotherapy. Even the best medical preparation cannot compensate for the lack of psychological knowledge and sparing treatment of the child.

Medical preparation in pediatric dentistry is based on two main indications: firstly, it is used to ensure a calm course of treatment with long and serious interventions, and secondly, to improve the conditions for treating children who do not cooperate with a doctor. For sedation, small tranquilizers are prescribed - sibazon and mebicar in an age dosage for 30-40 minutes. before starting treatment. For young children, it is preferable to use sibazon, and to achieve a stronger tranquilizing effect, a combination of sibazon with mebicar.

Premedication is carried out taking into account the type and severity of the psychoemotional reaction. In a clinic, the use of a tranquilizer of 0.05 seduxen, 0.3 g of trioxazine, diazepam 0.3 g, of a non-narcotic analgesic — analgin, is effective; antispasmodic - baralgin in combination with 0.02 g relanium (in solution) - for 15 minutes before starting treatment; anticholinergic atropine (v / m); corvalol, valocardin C 0 drops); Valerian drops, motherwort D 0 drops).

It can be used in 20-25 minutes. before medical manipulations, 1% diphenhydramine, suprastin, tavegil, pipolfen (in solution).

The use of these funds eliminates the emotional and vegetative components of pain (reducing anxiety, fear, anxiety, eliminating psycho-vegetative complications manifested by tachycardia, hypertension, hyperglycemia, an asthmatic attack, fainting or collapse), as well as reducing the frequency of general complications that more associated with the patient's psycho-emotional stress, significantly improve the effect of pain relief and potentiate local anesthesia.

For anesthesia of the pulp, various methods of anesthesia are used: infiltration, conduction, application, intraligamentary, reflexo-analgesia, electrical pain relief, as well as anesthesia: mask, intubation, intravenous.

What to do to keep the child's teeth healthy?

**Firstly** , it is necessary to examine the oral cavity by a pediatric dentist who will check the baby's oral cavity, identify the initial processes of tooth decay, carry out preventive and necessary medical procedures, give advice, and teach you how to properly care for your teeth. You should go to the dentist at least 2 times a year!

**Secondly**, follow the recommendations written in the memo below and then your child's teeth will remain healthy for a long time.

To have healthy teeth, you must:

1. Thoroughly clean them 2 times a day: in the morning after breakfast, in the evening after dinner - before bedtime.

Very often, parents ask the question: at what age do you need to start caring for your teeth? The answer is simple - from the moment the first tooth appears in the child, i.e. from about **6 months** . For this purpose it is necessary to use sterile gauze napkins moistened with water or special disposable napkins for brushing your teeth, which can be purchased at a pharmacy (for example, Spiffes). The napkin should be wound on the index finger and gently wipe the teeth, as well as the gums, palate and tongue from all sides. In addition, you can use a special silicone fingertip, which is also worn on the index finger and moistened with water.

When the child gets used to carrying out any manipulations in the oral cavity ( **from a year** ), it is necessary to purchase a toothbrush. It should be selected by age. The working part of the toothbrush should not be large, but small so that it can reach the farthest teeth. A toothbrush should be changed at least 1 time in 3 months, or more often, depending on its quality. We recommend using toothpaste from year on, you should also choose it by age, you need to apply the paste on the toothbrush with a small pea. Toothpaste should be bought at a pharmacy of well-known companies (ROCS, Elmex, Colgate, Blend-a-med, Lacalut, etc.).

**From 1.5 to 2 years, teach your child to rinse his mouth.**

**Children under two years old** should use fluoride-free toothpastes (First teeth, ROCS baby) or children's fluoride-free toothpastes (Elmex Kinder-Zahn pasta, Colgate for children, and Children's pearls complex).

**Children over two years of age** are recommended to use children's toothpastes containing fluorides ("Stages Oral B", "ROCS kids", "Carimed children").

When all 20 deciduous teeth erupt (by **about 2.5 years**) and tight interdental contacts appear between them, the toothbrush will not be able to completely clean out food debris and plaque between the teeth, so start using flosses (flosses) or irrigators. This procedure should be carried out by parents until the child himself has learned how to use dental floss.

**Teeth brushing should last from 3 to 5 minutes, depending on the number of teeth and the bite of the child.**

First you need to brush your teeth on the upper, then on the lower jaw, sequentially, from right to left, or left to right, sweeping movements from the gum to the edge of the tooth ("from pink to white") - on the front (labial) surfaces and back (palatine and lingual) surfaces, and reciprocating movements ("back and forth") - on chewing surfaces. In conclusion, it is necessary to massage the gums with the help of circular movements of the brush with the capture of teeth and gums with closed jaws. And do not forget to clean your tongue using the brush bristles or a special surface on the back of the brush, as on the back of the tongue there is a large number of filiform papillae, between which a significant amount of plaque accumulates.

It is believed that before school age, parents must help children brush their teeth, due to poorly developed fine motor skills of their hands, and sometimes parental assistance is also needed at an older age.

If necessary, check the brushing. To do this, use special tablets or solutions that stain plaque (for example, "Dinal", "President").

2. Rinse your mouth after each meal with water or special solutions, dental elixirs, rinses that prevent the formation of plaque. In addition, at home once a week, you can rinse with 2% soda solution (alkalizing effect, neutralizing acids) and 2% sodium chloride solution (reduces the pathogenicity of the microflora of the oral cavity and increases the enamel resistance to carious factors).

Chewing gum with calcium ("Orbits for children with calcium") is used in children from 4 years old within 10-15 minutes after eating, but not as a replacement for a toothbrush and toothpaste.

3. Limit the number of snacks during the day. Frequent biting can cause active plaque formation. If you can't refuse snacks, eat fruits and vegetables, cheese, cottage cheese, nuts, and drink water or unsweetened tea.

4. Limit the intake of sweet, flour, starchy, soft and sticky foods (cookies, crackers, dryers, chips, popcorn, rolls, chocolate, cakes, ice cream, sugary sweets, toffee, sweets, caramel, dried fruits, honey), canned and refined food, acidic foods (lemon), marinades, as well as sweetened carbonated drinks (soft drinks, kvass, Coca-Cola), juices, including freshly squeezed, especially consumed through a straw (apple, citrus, grape, etc.), etc. to. they contain fruit acids and sugar, albeit natural; compotes, etc. Remember - the main thing - not the amount of carbohydrates, but the frequency and duration of their use! For example, it's better to eat a whole bar of chocolate at a time (and then go and brush your teeth or eat alkalizing foods) than eat this bar a bit every day, or better to eat a piece of chocolate than hold a lollipop for a long time on your cheek! Feel the difference?

5. Eat healthy foods: fruits (apples, pears), vegetables (carrots, cabbage, Jerusalem artichoke), dairy products (milk, cottage cheese, hard cheese), dairy products without sugar (kefir), buckwheat and oatmeal (without sugar), seafood (squid, shrimp, crab, fish), meat, eggs, greens (parsley, dill, spinach, green onions), garlic, nuts (hazelnuts, almonds, walnuts), poppy seeds, sesame, legumes (beans, peas), dark bread with a crust (peeled, rye). The harmful drinks listed above are best replaced with plain water or green tea.

6. And of course, do not forget to go for a routine examination to your dentist 2 times a year! He will clean your child's teeth with a special brush with paste, cover with special preparations to make the teeth strong, and seal new chewing teeth - cover their recesses with protective material.

Without fail, the doctor will draw the attention of the parents to the peculiarities of the formation of the occlusion in the child, i.e. closing of upper and lower teeth. Bite anomalies are important to identify and correct in a timely manner. In particular, bad habits should be excluded - long sucking of the nipples, finger, sucking the tongue, cheeks, etc. It is also important to notice breathing difficulties. This happens with diseases of the nose and paranasal sinuses.

Thus, a preventive measure is a complex of measures.

Many years of experience in carrying out preventive measures for children shows that a child whose parents began to monitor the health of his oral cavity on time and carry out preventive procedures does not know pain, trusts a dentist with confidence and is happy to undergo preventive examinations.

## 1 5 - Practical lesson

**Topic: Non-carious lesions of hard tissues. Mineral preparations containing calcium and phosphorus used in the prevention of caries. Calcium gluconate and glycerophosphate.**

### 1.1. Technological model of the formation

Lesson time 3 hours	Number of students
Type of activity	Introduction of practice news
Plan	Give the full correct answer to questions about Mineral preparations containing calcium, used in the prevention of caries. Calcium Gluconate, Phytin
The objective of the training session	Explore Calcium Mineral Preparations Used in Caries Prevention. Calcium Gluconate, Phytin
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

### Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (10 minutes )	1. The purpose of the lesson 2. Preparation of slides for lecture material 3. Related literature <ul style="list-style-type: none"> <li>• N.V. Kuryakina - "Therapeutic dentistry children's age "N. Novgorod 2001</li> <li>T.F. Vinogradova - "Dentistry for children" 1987               <ul style="list-style-type: none"> <li>• N.G. Pakhomov- "Primary prevention in dentistry"</li> <li>• E.V. Borovsky - "Therapeutic dentistry" 1997.</li> </ul> </li> <li>Yu.I.Vorobov-X-ray of the teeth and jaws - 1990 city of K. Georgieva - "Emergency care in dentistry" 1983.</li> </ul>	Record a subject and listen
2. Leading a topic (10 minutes)	1. Keeping the audience clean 2. Checking students for a practical lesson 3. Check student attendance.	Are listening

3. The main stage (90 minutes )	<ol style="list-style-type: none"> <li>1. The division of students into 2 small subgroups , asks questions on the topic ;</li> <li>2. Use of slides and multimedia;</li> <li>3. conducts therapeutic work;</li> <li>4. Combines all the information on a given topic, actively participate ni their students encourages and assesses the general.</li> </ol>	Divided into small groups ,  watching , participating , listening.  Student expresses his opinion complements and asks questions
4. The final stage (10 minutes )	<ol style="list-style-type: none"> <li>1. Conclusion .</li> <li>2. Independent work .</li> <li>3. Homework .</li> </ol>	Listen to Record Conclusion

### Text

**Calcium** is one of the vital minerals involved in more than 300 biologically important reactions, including:

- the formation of bones, dentin, tooth enamel;
- ensuring the processes of muscle contraction, nervous and neuromuscular conduction;
- participation in blood coagulation;
- decrease in vascular permeability;
- regulation of the acid-base state of the body;
- activation of enzymes and endocrine glands;
- anti-inflammatory, anti-stress, desensitizing, anti-allergic effect;
- participation in the formation of short-term memory and learning skills.

The adult body contains approximately 1000–1300 mg of Ca. Depending on gender, race, physique, approximately 99% is contained in the skeleton in the form of hydroxyapatite, 1% - in other tissues (muscles, skin). In the body, **calcium** exists in two forms - ionized (free) and bound to proteins (mainly albumin). Ionized **calcium** accounts for 50% of its total amount in the blood, has physiological activity and is the most informative indicator of **calcium** metabolism. It is a decrease in the concentration of ionized **calcium that** causes the symptoms of **hypocalcemia** . Most functions involving **calcium** occur at the intracellular level, therefore, the level of calcium in serum is closely related to the amount in the membrane and organelles of the cell.

The main amount of calcium enters the body with milk and dairy products, a smaller amount of this mineral is found in fish, meat, vegetables, fruits and herbs (table. 1).

The daily requirement for calcium according to WHO recommendations and standards adopted in the Russian Federation is presented in tables 2 and 3.

It is well known that, when ingested, only 20–40% of calcium is absorbed in the small intestine, the remaining amount passes through the intestine. Loss of calcium through the intestines is approximately 150 mg / day. It is contained in the secret of the mucosa, bile and desquamated cells of the intestine. Suction is carried out both by active transport, and by diffusion. Active transport occurs in the proximal part of the duodenum 12, depends on the **content of** vitamin D and is saturated. In addition, a large amount of calcium is absorbed

by facilitated diffusion throughout the small intestine. When taking vitamin D, the absorption efficiency reaches 80%. With a decrease in calcium intake, the efficiency of absorption dependent on vitamin D increases, absorption increases due to passive diffusion in the distal intestines. This allows a person to adapt to fluctuations in calcium intake in the body.

The absorption of calcium is inversely proportional to its intake: with a low **content** in food, the proportion of absorbed calcium increases (due to the activation of vitamin D). Excessive amounts of phytic acid, phosphates, fats, oxalic acid, which bind calcium ions to form insoluble compounds, affect calcium absorption. absorbed in the intestines. In diseases accompanied by diarrhea, malabsorption, steatorrhea, as well as while taking some medicinal **drugs**, e.g., phenytoin, glucocorticoids also reduced calcium absorption.

In the kidneys, filtration and reabsorption of calcium ions occurs. About 9–11 g of calcium is filtered in them per day, while about 98% is returned to the bloodstream. Calcium reabsorption is regulated by parathyroid hormone (GH), the amount of filtered sodium, the presence of non-absorbable anions and diuretics also influence. The work of Lemann et al. showed that loop diuretics enhance calcium excretion, while thiazide diuretics disrupt the relationship between sodium and calcium excretion, leading to a decrease in calcium excretion. Protein intake also affects calcium excretion through the action of sulfur-containing amino acids on tubule function.

Calcium, absorbed in the small intestine, enters the blood through a calcium-binding protein, then it is transferred to the blood and fixed in the bones of the skeleton. If necessary, calcium is released from the bone into the bloodstream, performs its functions, then enters the intestines and is excreted in the feces. In the body, there is a constant exchange of minerals between the bones and extracellular fluid, thus providing mineral homeostasis. The most metabolically active is the trabecular bone tissue, the less active is cortical. There are three types of bone tissue cells: osteoblasts (produce a matrix of bones), osteocytes (metabolically inactive cells), osteoclasts (participate in matrix resorption). Bone tissue is constantly updated and at the same time, the process of resorption - bone remodeling. In **childhood**, remodeling processes are especially active.

Phosphorus metabolism is closely related to calcium metabolism. An adult's body contains about 670 g of phosphorus (about 1% of body weight), 90% of phosphorus, like calcium, is in the skeleton - bones and teeth. Together with calcium, they form the basis of bone solid. In bones, phosphorus is represented by sparingly soluble calcium phosphate (2/3) and soluble compounds (1/3). Most of the remaining phosphorus is located inside the cells, 1% - in the extracellular fluid. Phosphorus Functions:

- phosphates are structural elements of bone tissue, participate in energy transfer in the form of macroergic bonds (ATP, ADP, creatine phosphate, guanine phosphate and others).
- With the participation of phosphoric acid, glycolysis, glycogenesis, and fat metabolism are carried out.
- Phosphorus is part of the structure of DNA, RNA, providing protein synthesis. It is involved in oxidative phosphorylation, as a result of which ATP is formed, phosphorylation of certain vitamins (thiamine, pyridoxine and others).
- Phosphorus is also important for the functioning of muscle tissue (skeletal muscle and heart muscle).
- Inorganic phosphates are part of the buffer systems of plasma and tissue fluid.
- Phosphorus activates the absorption of calcium ions in the intestine.

The daily phosphorus requirement is 30 mmol (900 mg), in pregnant women it increases by 30–40%, during lactation - twice [M.A. Bazarnova et al., 1986]. According to V. I. Smolyar (1991), the need for phosphorus in adults is 1600 mg per day, in **children** - 1500–1800 mg per day (Table 4).

Phosphorus is absorbed from the digestive tract by active transport, which is influenced by many factors, for example, vitamin D stimulates absorption. A large amount of calcium and aluminum leads to the

formation of insoluble salts with phosphate, reducing the absorption of phosphorus. Thus, only two-thirds of the incoming phosphorus is absorbed.

In the kidneys, phosphorus is filtered, with 80% of it being reabsorbed in the proximal tubules. GHG increases phosphorus excretion by blocking reabsorption. Vitamin D stimulates phosphate reabsorption.

Regulate calcium metabolism, maintaining a constant concentration in the blood, vitamin D, parathyroid hormone and calcitonin, etc.

Recently, it has become known that vitamin D is a hormone that plays an important role in the regulation of calcium-phosphorus metabolism. Vitamin D is called two fat-soluble compounds: cholecalciferol and ergocalciferol.

This is the only vitamin that is synthesized by the body itself under the influence of ultraviolet radiation. Vitamin D<sub>3</sub> (cholecalciferol) formed in the skin is deposited in the muscles, liver, adipose tissue, being the main source of vitamin D. Vitamin D<sub>3</sub> is inactive, it needs to undergo a series of transformations in the liver and kidneys to activate, as a result of which active forms of vitamin D<sub>3</sub> are formed - calcidiol and calcitriol.

The biological effect of the active metabolites of vitamin D<sub>3</sub> is:

- stimulation of intestinal absorption of calcium and phosphorus,
- activation of bone metabolism
- increased urinary calcium excretion.

Another source of vitamin D is herbal products, mainly cereals, fish oil, butter, egg yolk.

The daily requirement for vitamin D is approximately 10 mg (400 IU / day).

Parathyroid hormone (PG) is produced by the main cells of the parathyroid glands. Its main function is to ensure a constant concentration of calcium in the blood. GHG affects the absorption of calcium in the intestines, the mobilization of calcium from bones, the excretion of calcium in urine, feces. Stimulating the secretion of parathyroid hormone reduces the level of ionized calcium in the blood through a feedback mechanism. PG is an antagonist of calcitonin.

Calcitonin – hormone is produced in the parafollicular C-cells of the thyroid gland. Its synthesis and secretion is regulated by the concentration of ionized calcium in plasma. At a high concentration, calcitonin secretion increases, at a low concentration it decreases. Calcitonin reduces the concentration of calcium and phosphorus in the blood due to the inhibitory effect on osteoclasts, and accordingly on bone resorption, the suppression of which leads to a decrease in the excretion of calcium and phosphorus in the kidneys.

An unbalanced diet, insufficient consumption of products **containing** phosphorus and calcium, inevitably leads to a deficiency of these substances in the body. Sources of calcium for **children** at different stages are different. The intake of calcium to the fetus depends on the saturation of the mother's body with calcium, vitamin D. In the last trimester of pregnancy, the rate of incorporation of calcium into the fetus increases, so the state of bone mineralization will also depend on gestational age. After birth, the source of calcium is breast milk, and for **children** who are breast-fed, an adapted milk mixture. With breast milk, the child receives up to 300 mg of calcium, and in the composition of the mixtures, an average of 400 mg of calcium. According to the Institute of Nutrition RAMS, over the past 5 years, the number of **children** who do not receive the required age-related amount of calcium has increased. Domestic and foreign researchers assessed calcium intake by children of different ages (Table 5) [10].

Abroad and in Russia, violations of calcium metabolism in children older than 3 years are usually denoted by the terms: "osteopenia", "osteomalacia", "osteoporosis". Osteopenia - a decrease in bone mass.

Osteomalacia is an osteopenic condition associated with impaired bone mineralization. Osteoporosis is a systemic skeletal disease characterized by a decrease in bone mass and microstructural remodeling of bone tissue, leading to increased fragility of bones and the risk of fractures.

According to a study conducted in 1992–1995. A.N. Martinchik et al., In Moscow, in children aged 10-15 years, the average level of calcium, vitamins B6, C and some others was below the recommended values. Depending on the age of the child, a lack of calcium leads to lower indicators of the length and weight of the child at birth, signs of rickets in the first half of life, adversely affects the quality of the bones of the skeleton of young children, the level of psychomotor development, the intensity of morphofunctional maturation of internal organs. In childhood, there is an accumulation of peak bone mass, which is about 80% of the adult bone mass and determines the strength of bone tissue throughout life. A lack of calcium during the period of active growth leads to growth retardation, sometimes to the formation of osteopenic syndrome.

Many authors, domestic and foreign, point to the relationship of somatic pathology with impaired calcium metabolism. There are works indicating a relationship between calcium deficiency and caries, impaired posture, a change in the shape of the chest, X and O-shaped deformities of the lower extremities, and a decrease in muscle tone. The spectrum of chronic somatic conditions leading to an imbalance of calcium is great. The leading ones are the pathology of endocrine organs (thyroid diseases, diabetes mellitus), kidneys (chronic renal failure, idiopathic hypercalciuria) and the digestive system (malabsorption syndrome in various diseases, gastroduodenitis, duodenal ulcer). There are works devoted to the effect of bronchial asthma, Crohn's disease on the state of calcium metabolism. However, we must not forget that in practically healthy children metabolic disorders are detected. In 2003-2004 An epidemiological study was conducted on healthy Russian children aged 5–16 years, which revealed the presence of osteopenia or osteoporosis in 10–30% of them, depending on age. The following symptoms will help to suspect it in practically healthy children: general weakness, increased fatigue, decreased performance, dry skin, brittle nails and hair, progressive dental diseases (caries and periodontitis), paresthesia and muscle twitching. Such children are prone to the development of curvature of the spine, impaired posture, and other deformations of the skeletal system. It is possible to slow the growth of the child, and sometimes - to reduce the already achieved body length. In the most severe cases of **hypocalcemia**, osteoporosis develops, the clinical manifestations of which are bone fractures.

Timely selection of children at risk for the development of osteopenia, osteoporosis will help to suspect trouble. A thorough medical history, examination, including a general and biochemical blood test, biochemical analysis of urine, urinalysis for markers of osteoporosis, densitometry (x-ray or ultrasound), and, if necessary, x-ray of bones are necessary. Some help to the doctor can be provided by questionnaires, calculators for assessing the provision of a child with calcium. If necessary, attract specialist nephrologists, endocrinologists, etc.

**Prevention** and treatment of **hypocalcemic** conditions is complex, prolonged. It is necessary to optimize the regime of the day, be sure to do what is possible in sports, abandon bad habits, maintain a balanced diet rich in foods **containing** calcium and phosphorus.

If there is a suspicion of a lack of sufficient minerals and vitamins in the diet or in the presence of diseases leading to **hypocalcemia**, calcium **subsidies are** necessary with the help of pharmaceuticals. In recent years, work has intensified on the synthesis of **drugs** for the **prevention** and treatment of **hypocalcemia**, osteoporosis.

All groups of **drugs** can be divided into:

- **drugs** that inhibit bone resorption, these include salmon calcitonin, bisphosphonates, calcium, estrogens;
- **drugs** that stimulate bone formation (fluorides, parathyroid hormone, growth hormone, androgens, anabolic steroids);

- preparations of multifaceted action on the bone (active metabolites of vitamin D, ossein – hydroxyapatite complex, etc.).

Among antiresorptive drugs in pediatrics, calcium preparations are widely used.

Distinguish:

- calcium preparations for oral administration: calcium chloride, calcium gluconate, calcium carbonate, calcium lactate, calcium phosphate, calcium citrate;

- calcium preparations for intramuscular administration: calcium gluconate and calcium gluceptate;

- preparations for intravenous administration: calcium chloride, calcium gluconate, calcium gluceptate.

Parenteral calcium preparations are used to treat parathyroid insufficiency, allergic diseases, to reduce vascular permeability, hypocalcemia, hypermagnesemia.

Preparations for oral administration differ in the **content of** elemental calcium (table. 6).

Based on the content of elemental calcium, it is recommended to take calcium carbonate, triphosphate and calcium citrate, and the use of calcium gluconate is impractical. It is believed that calcium citrate is not contraindicated in patients with urolithiasis.

All calcium preparations can be divided into 3 groups:

- monopreparations

- calcium and vitamin D preparations

- combined vitamin – mineral complexes containing calcium.

Calcium monopreparations are inexpensive and generally available, but their use is limited due to the fact that vitamin D, as an important factor in maintaining calcium homeostasis, is also an important link in the pathogenesis of most forms of osteopenic conditions, and when it is deficient, monopreparations are insufficient for either therapeutic or prophylactic purposes. Taking drugs simultaneously containing calcium and vitamin D is pathogenetically substantiated. However, the use of these drugs requires a balanced approach with respect to the duration of administration. It is well known that fat-soluble vitamins, including vitamin D, with prolonged use tend to accumulate in the body. The higher the vitamin D content in the preparation, the higher the risk of cumulation and the development of hypervitaminosis. With prolonged use of such funds, regular monitoring of the level of Ca in the blood and urine is mandatory.

It must be remembered that calcium disrupts the absorption of tetracycline antibiotics, iron and fluoride preparations, which must be taken into account when prescribing it. When ingested, adverse events sometimes occur: pain in the epigastric region, heartburn, constipation, and sometimes diarrhea. Contraindications for taking calcium preparations are: hypersensitivity to the components of the drug, increased content of calcium salts in urine and blood.

The choice of the drug is determined by the indications for use (prophylaxis, treatment), its composition (single drug, combined or vitamin-mineral complex), the characteristics of its administration (tablet, chewable tablet, effervescent tablet), taste preferences, and most importantly, the price of the drug.

The combined calcium preparation is Kaltsinova preparation of KRKA company (Slovenia). The composition of the drug includes calcium phosphate, vitamin D<sub>3</sub>, which increases the absorption of calcium, vitamins A, B<sub>6</sub> and C. The drug is approved for use from 2 years of age. The addition of phosphorus and vitamins to the preparation expands the indications for use. The drug "Kaltsinova" can be used to strengthen

and protect bones and teeth, children who do not consume milk, as well as during intensive growth and development.

The research conducted by Shcheplyagina L.A. et al. (2001), showed that taking the vitamin-mineral complex “Kaltsinova” for children, 1 tablet 3 times a day for 3 months. leads to a significant improvement in bone metabolism. During the study, levels of calcium, phosphorus, alkaline phosphatase, C-terminal telopeptides, and osteocalcin were analyzed. The results of the study showed that the drug "Kaltsinova" can be considered the drug of choice for the treatment of mild disorders of bone metabolism in preschool children.

In 2004, a study of the drug “Kaltsinova” in children with identified enamel demineralization was conducted at the Moscow State Medical and Dental University. The drug was prescribed 1 tablet 3 times a day. The study evaluated:

- dimensions of the lesion of enamel;
- the depth of enamel damage (by staining the foci of demineralization with a 2% solution of methylene blue and subsequent comparison with a standard 10-point scale);
- biochemical parameters of saliva (concentration of calcium, phosphorus, magnesium, total protein, alkaline phosphatase activity) before and after taking the drug.

It is established that when applying the vitamin – mineral complex of Kaltsinov:

- enamel structure is restored in early forms of caries;
- the remineralizing potential of saliva increases due to its saturation with mineral components;
- there is a significant improvement in the hygiene of the oral cavity (by 16.8%) and the condition of periodontal tissues (by 33.4%).

Thus, the vitamin-mineral complex “Kaltsinova” can be used to **prevent the** development of calcium metabolism disorders during a period of intensive growth in children, starting from the age of two.

Remineralizing solutions are preparations containing macro- and microelements necessary for the mineralization process. The mineralizing components that make up the solutions for exogenous prevention of caries are represented by compounds of fluorine, calcium, phosphorus and other trace elements. Such solutions can be used in the form of rinses and oral baths by the patient himself at home or in children's organized groups (fluorine-containing mouth rinses are presented above). However, their use in the form of applications, electrophoresis and phonophoresis on the surface of the teeth is more effective.

A significant number of formulations of remineralizing solutions have been proposed. Without dwelling on their review in detail, we will present the most widely used at present.

Fluorine-containing solutions for applications, electrophoresis and phonophoresis, as a rule, contain such fluorine compounds as sodium fluoride (0.2%, 1-2%), tin fluoride (8-10%), sodium monofluorophosphate, potassium fluoride, aminofluorides.

Of the calcium preparations for applications and electrophoresis, calcium gluconate (10% solution), calcium glycerophosphate (2.5%), calcium chloride (10%) are used.

Phosphorus containing preparations are sodium monofluorophosphate and sodium hexaphosphoric acid.

Calcium ions and phosphate ions should be introduced into the composition of remineralizing solutions in such a concentration that the saliva is a supersaturated solution. The optimal ratio of calcium and phosphate in solution is 1: 1.6 and higher. Complex remineralizing solutions include remodent and profocar.

Remodent was developed at the Riga Medical Institute in 1975 by G. N. Pakhomov, E. V. Borovsky, A. Ya. Luste and is currently registered in 11 countries. Remodent powder is a highly purified bone meal from the jaw bones of young cattle, obtained by lyophilization or vacuum drying.

**The composition of the remodent:** calcium - 4.35%, phosphorus - 1.36%, magnesium - 0.15%, potassium - 0.20%, sodium - 16.0%, chlorine - 30.0%, organic substances - 44, 0%, manganese, iron, zinc, copper and other trace elements - up to 100%.

The drug is available in the form of powder, tablets and I wounds, is part of [tooth powders, pastes, gels, solutions](#) . A 3% solution of Remodent powder is used - for applications and oral rinses (15-25 ml of solution for one rinse) 1-2 times a week for 10 months and a year.

**Profocar** is a multicomponent remineralizing agent with the optimal content and ratio of the main chemical elements needed to build a crystal lattice of enamel apatites. Contains calcium, phosphorus, fluorine, magnesium, iron, zinc, potassium, mafia, chlorine, copper, lead. The material for its preparation is the demineralizate of the cattle tubular bones. Unlike Remodent, it contains fluoride. It is a clear liquid with a barely noticeable whitish precipitate, brackish in taste. It can be used for mouth rinses and applications.

**Calcium glycerophosphate** ( [lat.](#) *Calcii glycerophosphas* ) is a calcium salt of 1,2,3-propanetriol monohydrogen phosphate or dihydrogen phosphate.

**Gross formula:**  $C_3H_7CaO_6P$

**Characteristic:** odorless white crystalline powder, bitter taste. Soluble in dilute hydrochloric acid.

**Pharmacological action:** replenishes calcium deficiency, restorative. Restores the level of calcium in the body, stimulates anabolic processes.

**Indications:** hypocalcemia, decreased general resistance and tone in case of [malnutrition](#) , overwork, exhaustion of the nervous system, [rickets](#) .

**Contraindications:** hypersensitivity; hypercalcemia; thrombosis; thrombophlebitis; children under 2 years old.

**Special instructions:** it is recommended to combine with iron preparations.

**Dosage and administration:** by mouth, for adults - 0.2-0.5 g, for children - 0.05-0.2 g 2-3 times a day.

## 16 - Practice

**Subject: Prevention of diseases of the oral mucosa. Mineral preparations containing calcium, used in the prevention of caries. Calcium gluconate**

### 1.1. Technological model of the formation

Lesson time 3 hours	Number of students
Type of activity	Introduction of practice news
Plan	Give the full correct answer to questions about the fluid of the mucous membrane of the saliva, composition, properties, value
The objective of the training session	Examine the oral mucosa. Teach you how to make a diagnosis.
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (10 minutes )	1. The purpose of the lesson 2. Preparation of slides for lecture material 3. Related literature <ul style="list-style-type: none"> <li>• N.V. Kuryakina - "Therapeutic dentistry children's age "N. Novgorod 2001</li> <li>T.F. Vinogradova - "Dentistry for children" 1987</li> <li>• N.G. Pakhomov- "Primary prevention in dentistry"</li> <li>• EV Borovsky - " T erapevticheskaya Dentistry" 1997.</li> <li>Yu.I.Vorobov-X-ray of the teeth and jaws - 1990 city of K. Georgieva - "Emergency care in dentistry" 1983.</li> </ul>	Record a subject and listen
2. Leading a topic (10 minutes)	1. Keeping the audience clean 2. Checking students for a practical lesson 3. Check student attendance.	Are listening
2 Milestone (90 minutes )	1. The division of students into 2 small subgroups , asks questions on the topic ; 2. Use of slides and multimedia; 3. conducts therapeutic work; 4. Combines all the information on a given topic, actively participate ni their students encourages and assesses the general.	Divided into small groups , watching , participating , listening. Student expresses his opinion complements and asks questions

The final stage (10 minutes )	1. Conclusion . 2. Independent work . 3. Homework .	Listen to Record Conclusion
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### Text

**Calcium** is one of the vital minerals involved in more than 300 biologically important reactions, including:

- the formation of bones, dentin, tooth enamel;
- ensuring the processes of muscle contraction, nervous and neuromuscular conduction;
- participation in blood coagulation;
- decrease in vascular permeability;
- regulation of the acid-base state of the body;
- activation of enzymes and endocrine glands;
- anti-inflammatory, anti-stress, desensitizing, anti-allergic effect;
- participation in the formation of short-term memory and learning skills.

The adult body contains approximately 1000–1300 mg of Ca. Depending on gender, race, physique, approximately 99% is contained in the skeleton in the form of hydroxyapatite, 1% - in other tissues (muscles, skin). In the body, **calcium** exists in two forms - ionized (free) and bound to proteins (mainly albumin). Ionized **calcium** accounts for 50% of its total amount in the blood, has physiological activity and is the most informative indicator of **calcium** metabolism. It is a decrease in the concentration of ionized **calcium** that causes the symptoms of **hypocalcemia** . Most functions involving **calcium** occur at the intracellular level, therefore, the level of calcium in serum is closely related to the amount in the membrane and organelles of the cell.

The main amount of calcium enters the body with milk and dairy products, a smaller amount of this mineral is found in fish, meat, vegetables, fruits and herbs (table. 1).

The daily requirement for calcium according to WHO recommendations and standards adopted in the Russian Federation is presented in tables 2 and 3.

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Many authors, domestic and foreign, point to the relationship of somatic pathology with impaired calcium metabolism. There are works indicating a relationship between calcium deficiency and caries, impaired posture, a change in the shape of the chest, X and O-shaped deformities of the lower extremities, and a decrease in muscle tone. The spectrum of chronic somatic conditions leading to an imbalance of calcium is great. The leading ones are the pathology of endocrine organs (thyroid diseases, diabetes mellitus), kidneys (chronic renal

failure, idiopathic hypercalciuria) and the digestive system (malabsorption syndrome in various diseases, gastroduodenitis, duodenal ulcer). There are works devoted to the effect of bronchial asthma, Crohn's disease on the state of calcium metabolism. However, we must not forget that in practically healthy children metabolic disorders are detected. In 2003-2004 An epidemiological study was conducted on healthy Russian children aged 5–16 years, which revealed the presence of osteopenia or osteoporosis in 10–30% of them, depending on age. The following symptoms will help to suspect it in practically healthy children: general weakness, increased fatigue, decreased performance, dry skin, brittle nails and hair, progressive dental diseases (caries and periodontitis), paresthesia and muscle twitching. Such children are prone to the development of curvature of the spine, impaired posture, and other deformations of the skeletal system. It is possible to slow the growth of the child, and sometimes - to reduce the already achieved body length. In the most severe cases of **hypocalcemia** , osteoporosis develops, the clinical manifestations of which are bone fractures.

Timely selection of children at risk for the development of osteopenia, osteoporosis will help to suspect trouble. A thorough medical history, examination, including a general and biochemical blood test, biochemical analysis of urine, urinalysis for markers of osteoporosis, densitometry (x-ray or ultrasound), and, if necessary, x-ray of bones are necessary. Some help to the doctor can be provided by questionnaires, calculators for assessing the provision of a child with calcium. If necessary, attract specialist nephrologists, endocrinologists, etc.

**Prevention** and treatment of **hypocalcemic** conditions is complex, prolonged. It is necessary to optimize the regime of the day, be sure to do what is possible in sports, abandon bad habits, maintain a balanced diet rich in foods **containing** calcium and phosphorus.

If there is a suspicion of a lack of sufficient minerals and vitamins in the diet or in the presence of diseases leading to **hypocalcemia** , calcium **subsidies are** necessary with the help of pharmaceuticals. In recent years, work has intensified on the synthesis of **drugs** for the **prevention** and treatment of **hypocalcemia** , osteoporosis.

All groups of **drugs** can be divided into:

- **drugs** that inhibit bone resorption, these include salmon calcitonin, bisphosphonates, calcium, estrogens;
- **drugs** that stimulate bone formation (fluorides, parathyroid hormone, growth hormone, androgens, anabolic steroids);
- preparations of multifaceted action on the bone (active metabolites of vitamin D, ossein – hydroxyapatite complex, etc.).

Among antiresorptive drugs in pediatrics, calcium preparations are widely used.

Distinguish:

- calcium preparations for oral administration: calcium chloride, calcium gluconate, calcium carbonate, calcium lactate, calcium phosphate, calcium citrate;
- calcium preparations for intramuscular administration: calcium gluconate and calcium gluceptate;
- preparations for intravenous administration: calcium chloride, calcium gluconate, calcium gluceptate.

Parenteral calcium preparations are used to treat parathyroid insufficiency, allergic diseases, to reduce vascular permeability, hypocalcemia, hypermagnesemia.

Preparations for oral administration differ in the **content of** elemental calcium (table. 6).

Based on the content of elemental calcium, it is recommended to take calcium carbonate, triphosphate and calcium citrate, and the use of calcium gluconate is impractical. It is believed that calcium citrate is not contraindicated in patients with urolithiasis.

All calcium preparations can be divided into 3 groups:

- monopreparations
- calcium and vitamin D preparations
- combined vitamin – mineral complexes containing calcium.

Calcium monopreparations are inexpensive and generally available, but their use is limited due to the fact that vitamin D, as an important factor in maintaining calcium homeostasis, is also an important link in the pathogenesis of most forms of osteopenic conditions, and when it is deficient, monopreparations are insufficient for either therapeutic or prophylactic purposes. Taking drugs simultaneously containing calcium and vitamin D is pathogenetically substantiated. However, the use of these drugs requires a balanced approach with respect to the duration of administration. It is well known that fat-soluble vitamins, including vitamin D, with prolonged use tend to accumulate in the body. The higher the vitamin D content in the preparation, the higher the risk of cumulation and the development of hypervitaminosis. With prolonged use of such funds, regular monitoring of the level of Ca in the blood and urine is mandatory.

It must be remembered that calcium disrupts the absorption of tetracycline antibiotics, iron and fluoride preparations, which must be taken into account when prescribing it. When ingested, adverse events sometimes occur: pain in the epigastric region, heartburn, constipation, and sometimes diarrhea. Contraindications for taking calcium preparations are: hypersensitivity to the components of the drug, increased content of calcium salts in urine and blood.

The choice of the drug is determined by the indications for use (prophylaxis, treatment), its composition (single drug, combined or vitamin-mineral complex), the characteristics of its administration (tablet, chewable tablet, effervescent tablet), taste preferences, and most importantly, the price of the drug.

The combined calcium preparation is Kaltsinova preparation of KRKA company (Slovenia). The composition of the drug includes calcium phosphate, vitamin D<sub>3</sub>, which increases the absorption of calcium, vitamins A, B<sub>6</sub> and C. The drug is approved for use from 2 years of age. The addition of phosphorus and vitamins to the preparation expands the indications for use. The drug "Kaltsinova" can be used to strengthen and protect bones and teeth, children who do not consume milk, as well as during intensive growth and development.

The research conducted by Shcheplyagina L.A. et al. (2001), showed that taking the vitamin-mineral complex "Kaltsinova" for children, 1 tablet 3 times a day for 3 months, leads to a significant improvement in bone metabolism. During the study, levels of calcium, phosphorus, alkaline phosphatase, C-terminal telopeptides, and osteocalcin were analyzed. The results of the study showed that the drug "Kaltsinova" can be considered the drug of choice for the treatment of mild disorders of bone metabolism in preschool children.

In 2004, a study of the drug "Kaltsinova" in children with identified enamel demineralization was conducted at the Moscow State Medical and Dental University. The drug was prescribed 1 tablet 3 times a day. The study evaluated:

- dimensions of the lesion of enamel;
- the depth of enamel damage (by staining the foci of demineralization with a 2% solution of methylene blue and subsequent comparison with a standard 10-point scale);
- biochemical parameters of saliva (concentration of calcium, phosphorus, magnesium, total protein, alkaline phosphatase activity) before and after taking the drug.

It is established that when applying the vitamin – mineral complex of Kaltsinov:

- enamel structure is restored in early forms of caries;
- the remineralizing potential of saliva increases due to its saturation with mineral components;
- there is a significant improvement in the hygiene of the oral cavity (by 16.8%) and the condition of periodontal tissues (by 33.4%).

Thus, the vitamin-mineral complex “Kaltsinova” can be used to **prevent the** development of calcium metabolism disorders during a period of intensive growth in children, starting from the age of two.

## 17 - Practice

**Subject: Prevention of anomalies and deformations of the dentofacial system.**

### 1.1. Technological model of the formation

Lesson time 3 hours	Number of students
Type of activity	Introduction of practice news
Plan	Explain the complete correct answer to questions about general and local methods of treating superficial caries.

The objective of the training session	Examine general and local treatments for superficial caries.
Teaching methods	Conversation, visual aids on practice
Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

#### Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (5 minutes )	1. The purpose of the lesson 2. Preparation of slides for lecture material 3. Related literature <ul style="list-style-type: none"> <li>• N.V. Kuryakina - "Therapeutic dentistry children's age "N. Novgorod 2001</li> <li>T.F. Vinogradova - "Dentistry for children" 1987</li> <li>• N.G. Pakhomov- "Primary prevention in dentistry"</li> <li>• E.V. Borovsky - "Therapeutic dentistry" 1997.</li> <li>Yu.I.Vorobov-X-ray of the teeth and jaws - 1990 city of K. Georgieva - "Emergency care in dentistry" 1983.</li> </ul>	Record a subject and listen
2. Keeping the subject (15 minutes)	1. Keeping the audience clean 2. Checking students for a practical lesson 3. Check student attendance.	Are listening
3. The main stage (50 minutes )	1. The division of students into 2 small subgroups , asks questions on the topic ; 2. Use of slides and multimedia; 3. conducts therapeutic work; 4. Combines all the information on a given topic, actively participate ni their students encourages and assesses the general.	Divided into small groups , watching , participating , listening. Student expresses his opinion complements and asks questions
4. The final stage (10 minutes )	1. Conclusion . 2. Independent work . 3. Homework .	Listen to Record Conclusion

## Text

Prevention of dentoalveolar anomalies is one of the most important tasks of orthodontics. It is a complex of medical, hygienic and social measures, the main task of which is to prevent pathogenic and etiological factors contributing to their occurrence.

Maxillofacial abnormalities are the presence of deviations from the norm in the development of dentitions, their ratios in different planes and bone tissues of the jaws. They can have both congenital and acquired character. A 2004 study (conducted by Larionov S.N. and Obraztsov Yu.L.) showed that dento-maxillary abnormalities were found in 33.7–37% of citizens of the Russian Federation who underwent routine examinations (given by the Ministry of Health) and in 58-75% of patients having dental diseases [4, p. 57].

Over the entire history of the existence of orthodontics, several dozen classifications of dentofacial anomalies have been created. One of the most famous is proposed by Edward Engel in 1986. He believed that occlusion pathologies depend solely on the position of the lower jaw and divided them into neutral, distal and mesial. In addition to the above classification, Engle identified seven types of occlusal anomalies of individual teeth.

There are two types of preventive measures of deviations in the development of the dentition and jaw bones - prenatal and postnatal [2, p. 249]. In the first case, a number of procedures are carried out aimed at the comprehensive rehabilitation of a pregnant woman. The tasks of prevention of dentoalveolar anomalies during this period are the elimination of various occupational hazards, the restoration of the rational regime of the day of a pregnant woman, the fight against all kinds of infectious diseases and toxicosis, the sanitation of the oral cavity and the conduct of conversations affecting dental education. During this period, it is imperative to identify hereditary factors that can affect the development of anomalies in this area.

Postnatal work includes a wider range of activities that take place after childbirth. Below they will be considered in relation to age:

1. From zero to six months. At this time, the presence of congenital disorders in the maxillofacial region is detected. The emphasis is on choosing the right position when feeding and the importance of using a good nipple, conducting preventive measures for acute purulent diseases of a newborn, dissecting a shortened frenum of the tongue, identifying prematurely erupted teeth and removing them according to indications.

2. From six months to three years. Caries are prevented, airway sanitation is carried out, tongue movement is monitored during swallowing (with closed dentition, the tip of the tongue should be located in the region of the upper front teeth on the palatine side) [1, p. 120]. The attention of parents is focused on getting rid of sucking habits (if any) and observing teething (namely: timing and sequence of teething, pairing, symmetry, quantity, shape and position, as well as type of closure). Plastic surgery of a shortened frenulum of the tongue is carried out, the development of

various somatic diseases is prevented, a balanced nutrition of the child is maintained, and hard foods are used for chewing.

3. From three to six years. Hard foods should be present in the diet. Specialists need to monitor the growth of the jaw bones and identify the presence of speech articulation disturbances, provide prevention of dentition deformities in case of defects in the dentition by rational prosthetics, selectively grind the unstressed tubercles of milk teeth (usually in canines), observe the ratio of dentitions and the shape of the dental arches, identify and remove erupted supernumerary teeth [3, p. 5]. During this period, fairly good results are shown by the regular use of myogymnastics complexes to normalize the position of the lower jaw and tongue at rest and during function, to normalize the closing of the lips.

4. Six to twelve years. Shown for

## 1 8 - Practice

### Topic: Prevention of caries in the antenatal and postnatal period.

#### 1.1. Technological model of the formation

Lesson time 3 hours	Number of students
Type of activity	Introduction of practice news
Plan	Give the full correct answer to questions about the Roles in the Prevention of Fluoride Caries
The objective of the training session	To study the role in the prevention of fluoride caries
Teaching methods	Conversation, visual aids on practice

Type of activity	general - collective
Related Visual Aids	Textbook , practical material , computer
Classroom Activities	Metodi Cesky equipped audience
Monitoring and evaluation criteria	Oral survey

#### Technological chart of a practical lesson

Work stages	Teacher	Student
1. Stages of preparation (10 minutes )	1. The purpose of the lesson 2. Preparation of slides for lecture material 3. Related literature <ul style="list-style-type: none"> <li>• N.V. Kuryakina - "Therapeutic dentistry children's age "N. Novgorod 2001</li> <li>T.F. Vinogradova - "Dentistry for children" 1987               <ul style="list-style-type: none"> <li>• N.G. Pakhomov- "Primary prevention in dentistry"</li> <li>• E.V. Borovsky - "Therapeutic dentistry" 1997.</li> </ul> </li> <li>Yu.I.Vorobov-X-ray of the teeth and jaws - 1990 city of K. Georgieva - "Emergency care in dentistry" 1983.</li> </ul>	Record a subject and listen
2. Leading a topic (10 minutes)	1. Keeping the audience clean 2. Checking students for a practical lesson 3. Check student attendance.	Are listening
3. The main stage (9 0 minutes )	1. The division of students into 2 small subgroups , asks questions on the topic ; 2. Use of slides and multimedia; 3. conducts therapeutic work; 4. Combines all the information on a given topic, actively participate ni their students encourages and assesses the general.	Divided into small groups , watching , participating , listening. Student expresses his opinion complements and asks questions
4. The final stage (10 minutes )	1. Conclusion . 2. Independent work . 3. Homework .	Listen to Record Conclusion

In our country, the most common method of caries prevention was the planned rehabilitation of the oral cavity, primarily in children, adolescents, and other high-risk groups. However, oral cavity sanitation is one of the most important methods for the prevention of complicated forms of caries,

periodontal diseases and body health, but, carried out in isolation from primary prevention, it does not entail a decrease in the intensity of caries (P.A. Leus, 1988).

The persistent medium and high levels of dental caries intensity in most regions of the country indicate the need for dentists to focus on caries prevention and improve preventive care for the population (E.V. Borovsky, E.M. Kuzmina, S.A. Vasina, 1987; A.V. Alimsky, 1983).

The modern methodology of epidemiological studies allows you to accurately determine measurable goals in achieving the preventive effect of the implementation of certain measures. In this regard, the main components of prevention programs are based on the analysis of the situation in a particular region, planning measures for the sanitary-hygienic education of the population and the introduction of special methods for the prevention of dental caries (G.N. Pakhomov, P.A. Leus, 1987).

Caries prophylaxis is most effective in the growth period of temporary and permanent tooth in . However, in the antenatal and early period of the child's development, the problem of primary prevention has been least studied (V.G. Artemov et al., 1987; V.G.Sunts et al., 1988; O.N. Tumshevits, 1990).

Prevention methods based on rinsing and applications of remineralizing and vomiting solutions, it is dangerous to use in children under three years old due to the possibility of swallowing and aspiration of drugs. At this age, thorough brushing is still not possible (V.K. Drummond, 1985; SM Levy, 1993; P. Nouijah, 1994; G. Whitford et. Al., 1987).

In this regard, research is becoming urgent aimed at further studying the issue of mass primary prevention of caries in antenatal and early childhood.

**Caries** (Latin Caries dentiis) is a pathological process that manifests itself after teething, in which demineralization and softening of hard tissues occurs, followed by the formation of a cavity.

**The term "caries"** in exact translation means decay. This term refers to an inflammatory disease of the bone marrow substance (osteomyelitis). Without serious etiological, morphological and clinical similarity of processes, this term was called a disease of hard tooth tissues, the external manifestation of which is the destruction of tooth enamel and dentin.

#### **What triggers / Causes of Caries:**

Currently, the occurrence of dental caries is associated with a local change in pH on the tooth surface under plaque due to fermentation (glycolysis) of carbohydrates by microorganisms and the formation of organic acids.

When considering the mechanisms of tooth decay, a variety of different factors attracts attention, the interaction of which determines the occurrence of the focus of demineralization: microorganisms of the oral cavity, nutrition pattern (amount of carbohydrates), diet, amount and quality of salivation (remineralizing potential of saliva, buffering properties, non-specific and specific saliva protection factors), shifts in the functional state of the body, the amount of fluorine entering the body, environmental influences, etc. e. However, the main factors for tooth decay are as follows: caries on the surface of the tooth, cariogenic bacteria, fermentable carbohydrates, and time.

#### **Tooth surface caries**

Tooth enamel is the hardest tissue of the human body. In hardness, it is only slightly inferior to diamond (250-800 Vickers units). It consists of 96% minerals, mainly hydroxyapatites, which are very susceptible to acids, so the destruction of enamel begins even at pH 4.5. Carious sensitivity of the tooth surface depends on many factors:

- The property of the anatomical surface of the tooth: in natural fissures and in between the teeth there are favorable conditions for long-term fixation of plaque.
- Saturation of tooth enamel with fluorine: the resulting fluoroapatites are more resistant to acids.
- Oral hygiene: timely removal of plaque prevents the further development of caries.
- Diet Factor: Soft, carbohydrate-rich foods contribute to plaque formation. The amount of vitamins and minerals also affects the general condition of the body, and especially saliva.
- The quality and quantity of saliva: a small amount of viscous saliva promotes the attachment of bacteria to the "pellicle" and the formation of plaque. The buffering properties of saliva (which neutralize acids) and the amount of immunoglobulins and other protective factors in saliva have a very important effect on caries resistance of enamel.
- Genetic factor.
- The general condition of the body.

#### Superficial caries treatment

Treatment of superficial caries in children and adolescents in most cases does not require surgical treatment. In such cases, it is enough to grind rough surface and carry out its processing by means of reinforcing remineralization (Leus P.A., 1979). In cases of acute caries with damage to the proximal surfaces after preliminary remineralization of the walls and the bottom of the defect, it is necessary to form a cavity and restore the shape of the tooth. Caution must be exercised in superficial fissure caries of permanent teeth in children with incomplete mineralization.

It is enough to use the remineralizing therapy method to accelerate the mineralization process.

**Superficial caries (caries superficialis)** . It is characterized by softening of the affected enamel, which with a little effort is removed by an excavator. Most children have no complaints at this stage. Some of them indicate pain from sweet, sour, and children 1-3 years old refuse sour fruits.

On examination, an enamel defect is found, usually round in shape. In the chronic course of the process, its edges are gentle, and in acute, sheer. Exposure to cold and chemical irritants is often painful.



## **4. Independent tasks**

### **Independent work number 1**

#### **Anatomical, histological and chemical structure of hard tissues of primary teeth.**

**Independent forms for preparation for work:** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation, stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

### **Independent work number 2**

#### **The importance of fluorine-containing compounds in the prevention of dental diseases**

**Independent forms for preparation for work :** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation, stand and other views.

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### **Independent work number 3**

#### **Fluoride Prophylaxis**

**Independent forms for preparation for work :** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation, stand and other views.

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### **Independent work number 4**

#### **Prevention methods with fluoride-free drugs.**

**Independent forms for preparation for work:** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation, stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

### **Independent work number 5**

#### **Medical pads and sealants for children.**

**Independent forms for preparation for work:** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

### **Independent work number 6 Sealants for children**

**Independent forms for preparation for work:** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

### **Independent work number 7 Modern permanent filling materials**

**Independent forms for preparation for work:** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

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### **Independent work number 8 Instruments and their requirements for professional oral hygiene**

**Independent forms for preparation for work:** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

### **Independent work number 9 Mental stabilization and anesthetic management in childhood**

**Independent forms for preparation for work:** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

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**Independent work number 10**  
**Methods and means of local and general anesthesia in children.**

**Independent forms for preparation for work** : presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

**Independent work number 11**  
**Dental incidence rates**

**Independent forms for preparation for work:** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

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**Independent work number 12**  
**Special products for oral hygiene**

**Independent forms for preparation for work** : presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

**Independent work number 13**  
**Organization of a dental disease prevention system.**

**Independent forms for preparation for work** : presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

**Independent work number 14**  
**The role of fluoride and fluorine compounds in the prevention of caries**

**Independent forms for preparation for work:** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

### **Independent work number 15** **The exchange of mineral salts in hard tissues**

**Independent forms for preparation for work:** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

### **Independent work number 16** **Composition, properties, methods of using Remodent .**

**Independent forms for preparation for work :** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

### **Independent work number 17** **Calcium-containing mineral preparations (calcium gluconate, fit in )**

**Independent forms for preparation for work :** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

### **Independent work number 18** **Phosphoric mineral preparation (calcium glycerophosphate)**

**Independent forms for preparation for work:** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

**Independent work number 19**  
**Vitamins (Vitamin D2, Vitamin D3, Vitamin A)**

**Independent forms for preparation for work :** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

**Independent work number 20**  
**Vitamin-containing preparations (vitamin B group)**

**Independent forms for preparation for work:** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

**Independent work number 21**  
**The structure of plaque, the mechanism of its formation.**

**Independent forms for preparation for work:** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

**Independent work number 22**  
**Properties of a white diet and food residues.**

**Independent forms for preparation for work:** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

**Independent work number 23**

**Dairy stones, structural structure, processes and their significance.**

**Independent forms for preparation for work :** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

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**Independent work number 24**

**Milk tartar, structure and structure, mechanisms of formation and impact on surrounding tissues.**

**Independent forms for preparation for work:** presentation (using MS PowerPoint, PromoSHOU, Impress, Kingsoft Presentation, ProShow Producer, SmartDraw, Prezi Classic Desktop, VideoScribe, Wink, SlideDog, Adobe Presenter, Hippani Animator), referrer, video, flash animation , stand and other views.

The following sources are recommended for independent work: Internet resources, Dental Practice magazine and other foreign magazines, basic (1,2,3,4,5) and additional (1,2,3,4,12,14). , 17) Publications.

## GLOSSARY

**Antenatal** is the antenatal period.

**Plaque** - filling with the remnants of food teeth, pellicle

**Vestibulo-occlusion** is a mixture of the lower or upper dentition in the direction of the cheek.

*Hygiene* - *Hygiene* (Greek *hygienos* - healing, bringing health) is a branch of medical science that studies the influence of environmental factors on humans and develops optimal requirements for the conditions of human life.

**Gingivitis** is an inflammatory process of the gums.

**Calcium glycerophosphate** - ( [lat.](#) *Calcii glycerophosphas* ) - calcium salt of 1,2,3-propanetriol monohydrogen phosphate or dihydrogen phosphate.

**G And** - Hygienic Index.

**Demineralization** is the loss of minerals.

**Plaque** is a dense formation that consists of bacteria located inside the matrix.

**Tartar** - causing calcification of plaque

**PMA** - papillo-marginal-alveolar index used for periodontal inflammation ..

**Remineralization** - mineral processing

**The prevalence of caries** is the ratio of the number of people with at least one of the signs of dental caries (cariou, filled or extracted teeth) to the total number examined, expressed as a percentage

**Remodent** - made from bones and teeth of cattle, proposed by G.N. Pakhomov Y. (1974) together with E.V. Borovsky.

**Index Fedor Volodkina** - Hygiene Index

**Caries intensity** is the sum of the clinical signs of a carious lesion (cariou, filled, and extracted teeth), calculated individually for one or a group of patients.

**Index Green Vermillona** -

**Irrigator** - personal hygiene for brushing your teeth

**Mineralization** -

**Charter Method** - Standard Dental Brushing

**Phones Method** - Standard Dental Brushing

**Stillman Method** - Standard Dental Brushing

**Reite Method** - Standard Dental Brushing

**Bass Method** - Standard Dental Brushing

**Caries** is a pathological process that occurs after teething, in which demineralization and softening of the hard tissues of the tooth occur, followed by the formation of a cavity.

**Calcium Gluconate** - used for remineralization.

**Fluorosis** is an endemic disease caused by fluoride intoxication , resulting from the consumption of drinking water with a high content of fluoride.

**Flosses** - a hygienic thread used for brushing teeth.

**Postnatal** - after the birth period

**Prevention** - Greek. *prophylaktikos* is a fuse, in medicine a set of measures aimed at preventing the occurrence of diseases and injuries, eliminating risk factors for their development.

**Pellicle** - soft plaque

**Periodontal Index** - Determination of Gum Bleeding

**RMA** - Papillary Marginal Alveolar Index .

**Endogen** - ( endogenous ; [Greek.](#) Endogens ; [endo](#) - genes generated, arising) - arising, developing in the body of internal causes.

**Exogen** - occurring or formed under the influence of external forces





**MINISTRY OF HIGHER AND SECONDARY SPECIAL EDUCATION**

**MINISTRY OF HEALTH OF THE REPUBLIC OF UZBEKISTAN  
BUKHARA STATE MEDICAL INSTITUTE  
NAMED AFTER ABU ALI IBN SINO  
CHAIR OF CHILDREN'S DENTISTRY**

Registered No. \_\_\_\_\_  
Training department  
" \_\_\_\_\_ " \_\_\_\_\_ 201 7 th.

“I affirm”  
Vice Rector for Academic Affairs  
Ph.D., \_\_\_\_\_ G.Zh. Zharylkasinova  
“ \_\_\_\_\_ ” \_\_\_\_\_ 2019

**WORKING PROGRAMM  
on subject  
PREVENTION OF DENTAL DISEASES**

**Field of expertise: 500000 “Health and social welfare”**

**Field of education: 510000 "Health"**

**Field of education: 5510400 - "Dentistry"**

Course - 3

The complexity of the hours - 106

Including:

Lectures - 6

Practical classes - 30

Clinical classes - 36

Independent work - 34

Bukhara - 2019

The working curriculum of the subject is compiled on the basis of the curriculum and working curriculum.

Compiled by:

**Rakhmatova** - assistant of the Department of Pediatric Dentistry: - \_\_\_\_\_

**Reviewers:**

**Khabibova N.N.** - candidate of medical sciences, head of the department of therapeutic dentistry

**Idiev.G.E.** - candidate of medical sciences, head of the department of orthopedics and orthodontics

The work program drawn up on the basis of the curriculum and the curriculum in the direction of 5510400 - dental surgery, discussed and approved at the meeting of the cathedral.

Protocol No. \_\_\_\_\_ “ \_\_\_\_\_ ” \_\_\_\_\_ 2018

Head of the Department, Ph.D. Kamalova F.R. \_\_\_\_\_  
(signature)

Chairman of the FMC, Head Department of Therapeutic  
Dentistry, Ph.D. Khabibova N.N. : \_\_\_\_\_  
(signature)

The work program drawn up on the basis of the curriculum and the curriculum in the direction of 5510400 - dental surgery, discussed and approved at the scientific methodical Council Bukhara State Medical Institute .

Protocol No. \_\_\_\_\_ " \_\_\_\_\_ " \_\_\_\_\_ 2018

Methodist: Zhumaeva Sh.B. \_\_\_\_\_  
(signature)

## Introduction

This program teaches students at the current level basic dental diseases (dental caries and its complications, periodontal disease, diseases of the oral mucosa), the causes of their occurrence, epidemiology, as well as methods of preventing these diseases. The program is aimed at teaching students functional examination methods.

### Goals and objectives of the discipline

This subject teaches students and prepares general dentists for patients in SVP, outpatient clinics and outpatient clinics. Teaches you how to examine the oral cavity, correctly and timely diagnose, carry out preventive measures, plan treatment, conduct clinical, outpatient and epidemiological studies: if necessary, carry out consultative and therapeutic measures together with specialists of a different profile.

### . Requirements for knowledge, skills

In accordance with the stated goals and objectives, after completing the study of the discipline for the prevention of dental diseases, the student should **know**:

The technique of conducting dental preventive examinations of the oral cavity, to determine the areas of demineralization of the teeth, to carry out preventive remineralizing therapy.

- Recommend preventive and personal hygiene products.
- Conduct comprehensive prevention.

#### 1.2.2. *The student must be able to:*

- Inspect the oral cavity in children.
- Write down the dental formula.
- Conduct epidemiological studies.
- Determine hygiene indices and clinical indicators (KPU, CP, KPI, RMA, RI, GI, etc.).

#### 1.2.3. The student must have the skills:

- Conduct remineralizing therapy.
- Carry out professional hygiene.
- Seal the fissures.

Treat and fill carious cavities

### 3. The volume of the training load

Semester	Total hours	Lecture	Practical classes	Self Work
5-6	1 06	12	60	34

#### 4. Thematic plans of lecture classes

No. lectures	Lecture Topic Title	Number of hours
1.	The basics of caries and periodontal disease prevention.	2 h
2.	Oral hygiene, means hygiene . M Methods for oral hygiene	2 h
3.	Methods of general prevention of periodontal and caries diseases	2 h
4.	The rules of the protective-barrier complex of the oral cavity. Oral saliva	2 h
5.	General and local (exogen, endogen) methods for treating caries in the spot and superficial caries stages	2 h
6.	Psychological preparation for the prevention of pain in childhood	2 h

**TOTAL: 12 HOURS**

#### 5. Thematic plans for practical exercises

No.	Topic Title	Total
1.	Prophylactic examination of the oral cavity in children	
2.	Duration of teething, root formation and resorption of the roots of milk teeth	
3.	Terms of formation of the roots of permanent teeth.	
4.	Indexes of dental examinations of organs and tissues of the oral cavity	
5	Gingivitis Index Studying the definition of the PMA index.	
6.	Methods for stoma prophylaxis. diseases.	
7.	The role of good nutrition in caries prevention	
8.	Rules for personal hygiene of the oral cavity. Methods and tools.	
9.	Teeth Brushing Methods	
10.	Oral hygiene products	
eleven.	Properties and chemical composition of toothpastes	
12.	The role of fluoride in caries prevention	
thirteen.	Prevention of caries in the antinatal and postnatal period.	
14.	Mineral fluoride-free preparations used in caries prophylaxis. Remodent	
fifteen.	Mineral preparations containing calcium, used in the prevention of caries. Calcium gluconate	
16.	Mineral preparations containing phosphorus used in the prevention of caries. Calcium Glycephosphate	
17.	Importance in the prevention of caries closure of blind fossae and fissures	
18.	Soft plaque.	
19.	The importance of tartar in the development of caries and periodontal disease.	
20.	The rules of the protective-barrier complex of the oral cavity. Saliva	

21.	Saliva, composition, properties, value	
22.	Professional oral hygiene	
23.	Mineralization and alteration of tooth enamel during life	
24.	Demineralization. Remineralization of tooth enamel during life	
25.	General and local (exogen, endogen) methods for the treatment of caries in the spot stage	
26.	General and local (exogen, endogen) methods of treating superficial caries	
27.	Enamel focal demineralization	
28.	Clinical methods for determining soft plaque	
29.	The significance of changes in the composition of saliva in the development of caries	
thirty.	Psychological preparation for the prevention of pain in childhood	
	Total	

1400 g 1 mm2 mm3 mm3 mm 1400 g 1 mm2 mm3 mm3 mm

### 6. Thematic plans for independent work of students

No.	Themes of independent work	h and s
1	Features of the structure of primary teeth. Anatomical, histological, chemical structure	1
2	The effect of fluoride-containing drugs on caries prophylaxis.	1
3	The use of fluoride-containing drugs for prevention.	1
4	The use of fluoride-free drugs for prevention.	1
5	Lining medical materials and sealants used for children.	1
6	Sealants used for children.	1
7	Modern permanent filling materials.	1
8	Tools used for professional brushing and requirements for them.	2
9	Methods of anesthesia and the use of tranquilizing agents in children	2
10	Means and methods of general and local anesthesia in childhood.	2
eleven	Dental Disease Indicators	1
12	Individual oral hygiene products	2
thirteen	Organization of a dental disease prevention system.	1
14	The importance of fluoride and fluoride-containing drugs in the prevention of caries	2
fifteen	Exchange of mineral salts in hard tissues of teeth	1
16	Mineral drug Remodent. Its composition and application	2
17	Calcium-containing preparations (calcium gluconate, phytin)	1
18	Phosphorus-containing preparations (calcium glycerophosphate)	1
19	Vitamin preparations (vitamins D <sub>2</sub> , D <sub>3</sub> , C, A).	1
20	Vitamin preparations (B vitamins)	1
21	Dental pellicle, its formation, effect on the development of caries	2
22	White plaque, food residues, their effect on the development of caries	2
23		2
24		2

**Total: -34 h**

Gingival calculus. The structure of the mechanism of occurrence, the impression on the tissue surrounding the tooth

**Subgingival calculus. The structure of the mechanism of occurrence, the impression on the tissue surrounding the tooth**

1400 g

## **7. List of practical skills**

1. Are individual hygiene measures carried out?
2. Examination of the teeth is carried out using.
3. What kind of shape are of ubnye ranks in the bite of dairy zu BOV
4. Which milk tooth erupts first
5. At what age does complete teething of deciduous teeth end .
6. How the fourth and fifth milk teeth differ from the fourth and fifth permanent teeth?
7. Due to what substance of inflammation of the gum acquires a brown color with staining them with Schiller-Pisarev solution?
8. What methods of examination include determining the hygiene index
9. Using the PMA index determine
10. What is not stained with the PMA index
11. Why starting palpation.
12. Percussion happens
13. Carbohydrates that have the greatest cariogenic effect?
14. What does not contribute to the occurrence and progression of dental caries in children.
15. What hygiene products should be recommended for children 4 years old
16. A child 3 years old helps to brush their teeth
17. What is the most important role in the development of caries?
18. It is recommended to store a toothbrush
19. Does oral hygiene involve brushing your teeth at least?
20. Who carries out individual oral hygiene?
21. What are the main means of oral hygiene?
22. What does not apply to the stages of brushing according to the FONES method .
23. When a pellicle forms on the tooth surface
24. How can a pellicle be detected?
25. Saliva consists of
26. Saliva reduction is called
27. The Green Vermillion Index is used to determine
28. In children of 3 years old, the hygienic condition of the oral cavity is evaluated using the index:
29. The main source of fluoride in the human body is
30. For what diseases are Vitofluor prescribed?
31. In enamel cells are not restored
32. For the diagnosis of focal enamel demineralization used pa target
33. According to the location of the lesion distinguish
34. Why does the surface layer of enamel undergo changes during caries in the spot stage
35. When does demineralization occur?
36. Which substance is not used for remineralizing therapy .
37. The amount of calcium salts in saliva
38. Where is the salivation center located?
39. What trace element actively affects the metabolism of oral fluid?
40. Saliva with caries increases activity

## 8. Rating control and criteria for assessing knowledge, skills and discipline

The main criterion for the quality of a student's preparedness is his rating, which is composed of the current assessment, the assessment of the intermediate control and the assessment of the final control.

100 points in the **whole discipline are** distributed as follows:

No.	Type of control	Maximum score	Coefficient	Passing score
1.	Current control taking into account the CDS	50	0.5	27,5
2.	Intermediate control	20	0.2	11.0
3.	Final control	thirty	0.3	16.5
	TOTAL	100	1	55.0

For semesters, points are distributed depending on the duration of the study of the subject.

The evaluation criterion for practical classes is the current assessment, consisting of monitoring the student's preparedness for the lesson and assessing the quality of the assignment.

TC assessment criteria

CPC Evaluation Criteria  
PC assessment criteria  
IR assessment criteria  
Practice Assessment Criteria

## Tests

1

**0.05% sodium fluoride solution is used to rinse 1 time in:**

day

a week

2 weeks

six months

**1% and 2% sodium fluoride solutions for the prevention of caries are preferably used in the form of:**

applications

rinse

for oral administration

oral baths

**The following drugs are prescribed for a 10 year old child for sedation:**

all answers are correct

miprotal 2 t

Amisin 0.5 tablets

diprozin 0.5 tablets, amidopyrine 0.5 tab.

**GPITN is it?**

treatment need index

bleeding index

stone index

hard tissue index

**Oxy Jet irrigator allows you to work in modes**

constant jet, 3 D effect

3 D effects

microturbines

no correct answer

**absolute isolation of the tooth from saliva is achieved when using**

cofferdam (raberdam);

cotton rolls;

rollers and saliva ejector;

mini-lady, rollers, saliva ejector

**An absolute contraindication to the method of sealing fissures is:**

medium or deep caries

narrow and deep fissures

incomplete teething

high fluoride content in drinking water

**Autoclaving sterilized:**

gauze swabs, tips

mirrors

disposable syringe

plastic spatula

**The author created the top anatomical areas of the teeth affected by caries.**

Black

Borovsky

Evdokimov

Lukomsky

**Does chewing actively contribute?**

all answers are correct

saliva washes teeth

fast teething

the formation of functional chewing apparatus

**Active growth of the jaws of the child**

**during the preparation for the change of teeth occurs**

in the posterior molar region and anterior

in the front

in the postmolar region

in the body of the lower jaw

**active components of anti-inflammatory toothpastes are**

triclosan, chlorhexidine

methiparaben

sodium benzoate

no correct answer

**apl and sia is this?**

complete lack of enamel

tooth color changes

enamel stripes

all answers are correct

**Maxillary basal arch**

less alveolar arch

more alveolar arch

equal to the alveolar arch

equal to the alveolar arch of the lower jaw

**Basal arch of the lower jaw**

more alveolar arch

less alveolar arch

equal to the alveolar arch

equal to the alveolar arch of the lower jaw

**without laying with average caries can not be used (exclude unnecessary):**

primer containing light polymers

glass ionomers

compomers

phosphate cement

**a favorable condition in the oral cavity for the rapid reproduction of many varieties of microbes?**

all listed

optimum temperature, moisture

food leftovers

thickened mucosal epithelium

**painful percussion occurs with:**

acute focal periodontitis

medium caries in teeth with unformed roots

acute diffuse pulpitis in teeth with unformed roots

exacerbation of chronic periodontitis

**Most mouthwashes are recommended for use:**

after brushing your teeth

before brushing your teeth

instead of brushing your teeth

before bedtime

**Upper canine tubercle is normally located**

between lower teeth 3 and 4

at the level of the tubercle of the lower tooth 3

between teeth 3 and 2

in the inter-tubercular fissure of the lower molar

**mounds of temporary fangs are usually ground for:**

prevention of dentofacial anomalies;  
cosmetic purposes;  
manufacturing of orthodontic appliances;  
uniform abrasion of hard tooth tissues.

**In the newborn's toothless mouth, the gingival ridges are shaped**

semicircle  
half ellipse  
parabolas  
circle

**in the occurrence of caries an important role is played by the property of microorganisms:**

All answers are correct.  
antibiotic resistance;  
the formation of organic acids;  
ability to cause dysbiosis

**In the occurrence of caries, an important role is played by the property of microorganisms:**

formation of organic acids  
ability to cause dysbiosis  
antibiotic resistance  
colonization ability on tooth surface

**In the occurrence of dental caries, the leading role belongs to microorganisms:**

streptococcus  
viruses  
actinomycetes  
vibionellam

**In the glass-sterilized sterilizer are processed:**

endodontic instrumentation  
trays  
suture material  
mirrors  
tips

**In the glass-sterilized sterilizer, instrument sterilization is carried out:**

heated sterile balls  
hot steam  
dry heat  
glutaraldehyde solution

**In the glass-sterilized sterilizer sterilize:**

burs, endodontic instruments  
cotton wool  
dental mirrors  
prints

**in which cases it is advisable to use superfloss**

with large interdental spaces, braces  
in the presence of a large number of fillings on the proximal surfaces of the teeth  
if it is not possible to insert a dental tape into the interdental space  
if there are bracket systems in the oral cavity

**At what age does the upper permanent canine complete its formation?**

to 15 years  
10-12 years old  
7-8 years old  
12-13 years old

**at what age does complete teething of milk teeth end :**

2.5 years

on the 1st year of life

1,5 years

2 years

**at what age and in what teeth pulpitis is observed.**

3-6 years old with roots

10-12 years unformed by roots

5-7 years old

1 year with unformed roots

**in which case we can talk about the inefficiency of remineralization.**

Low PMA Index

The disappearance of white spots on enamel.

Stabilization of white spots on enamel.

Decreased caries growth

**in which case we can talk about the effectiveness of remineralization:**

the disappearance of white spots on enamel

enamel white spots stabilization

low RMA index

Decreased caries growth

**In decay of deciduous teeth are often affected:**

Contact s

Vestibular

Labial

Lingual

**In carious cavities of class III , a contraindication to the creation of an additional site is:**

good cavity approach

labial lesion

difficult cavity approach

damage to the oral wall

**as abrasive components in toothpastes you can use:**

chemically precipitated chalk

glycerol

soap

bromelain

**as an active ingredient in the composition of anti-caries toothpastes are administered**

sodium monofluorophosphate

silica

sodium lauryl sulfate

calcium carbonate

**as a foaming component in the composition of toothpastes is introduced:**

sodium lauryl sulfate;

dicalcium phosphate;

polyethylene glycol;

hydrocolloids.

**as sweeteners in chewing gum use**

sorbitol

thymol

cresol

chlorhexidine

**As an anti-inflammatory component in the composition of mouth rinses are introduced:**

chlorhexidine

sodium monofluorophosphate

ethanol

tin fluoride

**As fluoride-containing components in the composition of therapeutic and preventive toothpastes include:**

sodium fluoride, monofluorophosphate, tin fluoride, aminofluoride

sodium fluoride, tin fluoride, calcium fluoride

sodium fluoride, monofluorophosphate, tin fluoride, calcium fluoride

tin fluoride, aminofluoride, calcium fluoride

**In the chalky-changed enamel, extensive and deep defects – erosion are formed?**

erosive form

spotty form

destructive form

line form

**in an area with a temperate climate, where the fluoride content in drinking water is 0.8 mg / l, the following will be most suitable for caries prevention:**

tooth brushing with fluoride-containing toothpastes;

the use of fluorinated milk;

fluoridation of drinking water in schools;

rinsing the oral cavity with fluorine-containing elixirs.

**at the beginning of machining of a deep carious cavity of a permanently formed tooth, in order to prevent complications - bottom perforations must be taken:**

to start processing the bottom only after removing the overhanging edges and expanding the inlet of the cavity;

choose large spherical burs for necrotomy in the bottom;

set a low boron rotation speed (3000 rpm);

do not exert a lot of pressure on boron during preparation;

**normal amount of fluoride in salt:**

200 mg

400 mg

250 mg

300 mg

**in one area it is recommended to examine groups of the same age in the number of people no less than:**

fifty;

20;

thirty;

100.

**The classification of carious cavities according to Black is based on the following signs:**

anatomical topographic

topographic

clinical topographic

histological

**In the oral cavity of a patient who has lived since birth in an area with a high fluoride content in drinking water, you can see:**

multiple chalky spots on the teeth

adentia

multiple caries

generalized periodontitis

**In cavities of class II, the maximum size of the additional area is from the length of the chewing surface:**

2/3

1/4

1/2

1/3

**In an area with a high fluoride content in drinking water, it is not recommended to use toothpastes:**

fluoride-containing

hygienic

with herbal supplements

calcium containing

**In an area where the fluoride content in drinking water is less than half the optimal dose, the most effective method for the prevention of dental caries in children will be the use of:**

sodium fluoride tablets

fluoride rinses

fluoride-containing toothpastes

fluoride or fluoride gel

**In an area where the fluoride content in drinking water is suboptimal, the following will be most suitable for caries prevention:**

toothbrushing fluoride-containing toothpastes

fluoride salt intake

fluoridation of drinking water in schools

taking sodium fluoride tablets

**resulting in fluorosis**

high fluoride content in drinking water

low fluoride content in drinking water

protein metabolism disorder

increased carbohydrate intake

**does toothbrushing occur?**

mechanical removal

chemical removal

physical removal

not practical

**is included in the composition of therapeutic toothpastes?**

all listed

vitamins

extracts of medicinal plants

mineral salts

**The composition of anti-caries toothpastes, in addition to the main components, includes:**

mineral salts and trace elements

perfumes

antiseptics

dyes

**in the composition of therapeutic and prophylactic pastes, unlike hygienic ones?**

biological additives

perfumes

foaming

binder diluent

**as a part of a dental plaque there is no:**

water

macrophage

salivary proteins

white blood cells, microorganisms

**In dental practice, for the initial examination, the following tools are used:**

mirror probe

mirror iron

mirror tweezers  
probe, plugger

**In a dry oven, instruments are sterilized:**

tweezers probe  
mirror tweezers  
probe, syringe  
mirror syringe

**In ultrasonic devices for removing mineralized dental deposits, the oscillation frequency is (kHz):**

45  
10  
6  
100

**The physiological act of teething does not include:**

sequence  
teething pair  
symmetry  
in time

**in school age daily requirement:**

85 g of protein, 100 g of fat, 350-450 g of carbohydrates  
30-50g of protein, 45-50g of fat, 160-180g of carbohydrates  
65 g of protein, 50-55 g of fat, up to 275 g of carbohydrates  
30-40 g of protein, 70-100 g of fat, 200-300 g of carbohydrates

**in enamel cells are not restored:**

lost surface  
enamel cells are restored due to odontoblasts;  
enamel cells are restored due to mesenchymal cells;  
enamel cells are restored due to histiocytes

**plays a crucial role in the development of caries?**

poor hygiene  
endocrine disorders  
nervous system disorders  
all answers are correct

**the introduction of active ingredients in toothpastes has the following objectives:**

increased exposure period of active ingredients  
increasing consumer appeal  
improved deodorizing properties  
improve the taste of toothpaste

**The vertical gap between the gingival ridges normally reaches**

2.5 mm  
5 mm  
1.5 mm  
4 mm

**The upper 8 | 8 teeth are normal in**

one antagonist  
two antagonists  
three antagonists  
no antagonists

**vestibular eruption of 23 teeth is usually found with:**

lack of space in the upper dentition;  
bad habits;  
carious destruction of adjacent teeth;  
shortened frenum of the upper lip.

**Vitamins A and E are introduced into the composition of toothpastes for:**

accelerate the regeneration of the oral mucosa

reduce dental deposits

improving the general condition of the body

decrease the sensitivity of hard tooth tissue

**the effect of the dental office environment on the child:**

all answers are correct

the design of the office is pleasant for the child

not intrusive situation in the office of the dentist

first of all, the waiting room is a business card field for a child

**during demineralization in enamel occurs:**

enamel permeability increases than normal

secondary dentin appears

watching a pulp polyp

denticles formed

**WHO recommends a national epidemiological dental examination once every:**

5 years

1 year

2 years

3 years

**possible pathological changes with local enamel hypoplasia:**

pigmented stain on enamel

change in the shape and color of the tooth crown

death of the growth zone, changing the shape and color of the tooth crown

enamel damage of all molars and anterior teeth

**the occurrence of effective microfoam when brushing your teeth is ensured by the use of a toothbrush**

Braun-Oral-B - 3D

Advantage

Vision

Advantage Plus

**Is the child's age at risk for choosing toothpastes?**

up to 6 years

up to 4 years

up to 10 years

under 12 years old

**raising a child to a positive attitude towards dental treatment:**

a positive attitude towards dental treatment should flow from the whole upbringing as a whole;

as encouragement in children of any age, use praise, but not resort to remuneration or punishment;

one of the important tasks of education is to protect the child from the adverse effects of environmental communication;

all answers are correct

**Duration of the certificate of a specialist dentist:**

5 years;

7 years;

9 years.

3 years

**brushing time with a standard toothbrush should be at least**

3 min

1 minute

2 minutes

5 minutes

**the time during which it is advisable to use chewing gum after eating is (minutes):**

1-5;

10-15;

20-30.

30-60;

**The time during which it is advisable to use chewing gum after eating is (minutes):**

5-10

1-5

20-30

more than 1 hour

**Select material that belongs to the double-cured mat group.**

Time Line;

Silux Plus;

Vitremer;

Revolution ;

**choose the right characteristic of gel pastes:**

all answers are incorrect

high foaming ability

taste good

have different colors

**high mineralization of enamel is observed in its layer**

superficial

subsurface

deep

subsurface and deep

**A high-carb diet is one of the main risk factors for development:**

tooth decay

maxillofacial abnormalities

inflammatory diseases of the maxillofacial region

diseases of the oral mucosa

**The ceiling height in the dental office must be at least (m):**

3.0

4,5

2,8

2.0

**dried surface of carious white spot**

loses its luster

does not change color

remains unchanged

no correct answer

**whether caries in the spot stage are detected radiologically.**

no, not detected

yes, come to light

only if

all answers are incorrect

**Where is the salivation center located?**

medulla

midbrain

cerebellum

spinal cord

**Sealing fissures of the second permanent molars is recommended at the age of (years):**

12-14

5 - 6

anytime after teething

6 - 8

**Fissure sealing of the first permanent molars is indicated at the age of (years):**

6 - 8

9-12

12-14

anytime after teething

**Sealing fissures of permanent teeth (molars and premolars) is recommended after eruption:**

right away

in 2-3 years

after 4-6 years

in 10-12 years

**Sealing fissures of premolar is recommended at the age of (years):**

9-12

12-14

anytime after teething

16-18

**does oral hygiene include brushing your teeth at least?**

2 times in the morning and in the evening

Once a day

3 times a day

4 times a day

**hygienic toothpastes do not contain**

therapeutic additives

abrasive components

foaming components

flavorings

**hygienic toothpastes have a deodorizing effect**

Yes

not

not always

in the presence of additives

**Do you use hygienic toothpastes?**

for mechanical cleaning of teeth from fine plaque

for the prevention of gingival mucosa

for calculus

no correct answer

**Hygienic toothpastes contain:**

salt additives;

extracts of medicinal plants;

fluorides.

There is no right answer.

**Hygienic toothpastes contain:**

abrasive components;

salt additives;

extracts of medicinal plants;

fluorides

**Hygiene measures necessary before the fissure sealing method:**

cleaning the chewing surface of the tooth with a rotating brush and polishing paste

floss cleansing of contact surfaces

determination of oral hygiene

rinsing the mouth with water

**hygiene index is:**

Fedorova - Volodkina

CPU

RMA

CPITN

**hygiene of the oral cavity in adult patients is determined using the indices:**

Green Vermillion;

CPU;

Fedorov-Volodkina;

kpu;

**Hyperodontics occur when**

oversized teeth

lack of tooth rudiments

tooth retention

adentia

**hyperplasia is .....**

excessive processing of enamel in the form of enamel drops

enamel color and tooth structure changes

lack of tooth, its part or all enamel

teeth without enamel

**Hypodontics associated with the presence of**

lack of tooth rudiments

oversized teeth

teething delay

adentia

**hypoplasia is this.**

lack of hard tooth tissue

excessive soft tissue formation

hard tooth tissue defect

lack of hard tooth

**hypoplasia occurs.**

before teething

the consequence is a decrease in the mineral metabolism of the material

during follicular development

characterized by discolouration of enamel

**enamel hypoplasia is in the form of?**

all answers are correct

spots

pit

broodstock

**Enamel hypoplasia is characterized?**

chalky strips on the enamel of the crowns of the anterior teeth

tooth discoloration

lack of incisors

the presence of symmetrical defects on groups of teeth developing at the same time

**enamel hypoplasia, tetracycline teeth, fluorosis?**

hereditary violation of the hard tissues of the tooth

stanton-candepon syndrome

soft tissue pathology

no correct answer

**The main indicator for assessing the effectiveness of the work of the doctor conducting individual prophylaxis is:**

the level of dental health of the child.

a decrease in the average intensity of caries;

increased coverage of rehabilitation;  
reduction in the number of complications;

**The depth of the gingival groove is (mm):**

0.1-0.2

0.5-1

2-3

3-4

**The depth of the incisal overlap**

**normally does not exceed**

1/2 the height of the crown of the incisors of the lower jaw

1/3 of the height of the crown of the incisors of the lower jaw

1/4 of the height of the crown of the incisors of the lower jaw

does not overlap

**gravimetric method ...**

determination of plaque mass in a patient;

determination of the surface area covered with plaque using photographs;

determination of the state of the gums;

determining the depth of periodontal pocket;

**groups of teeth that are most often affected by systemic enamel hypoplasia:**

frontal

premolars

first molars

all groups of teeth

**the action of non-specific defense mechanisms in the oral cavity is manifested:**

Immediately upon contact with a protein substance or other substance;

every other day;

after 1-2 weeks;

time is needed for the synthesis of immunoglobulins

**enamel demineralization begins in its layer**

subsurface

superficial

deep

superficial and deep

**Enamel demineralization begins in its layer:**

subsurface

average

superficial

deep

**children 2 years old are recommended to brush their teeth with**

gel toothpastes

tooth powder

chalk-based toothpastes

tooth powder and pastes

**For children 2 years old, it is recommended to use for brushing:**

gel-based children's toothpastes

toothpaste without paste

hygienic chalk-based toothpastes

fluoride-containing toothpastes

**children aged 4 years should be advised to use brushes of what stiffness:**

soft

medium hardness

hard

very soft

**children under 3 years old are recommended to use a toothbrush for brushing:**

very soft;

soft;

medium hardness;

tough.

**Preschool children are recommended to use a toothbrush:**

soft

very soft

medium hardness

tough

**children are recommended to use toothbrushes**

soft

very soft

tough

medium hardness

**medical examination refers to the following prophylaxis:**

to primary

to secondary

to tertiary

to all

**The distal surfaces of the second milk molars of a 3-year-old child are**

**normally located**

in one plane

with mesial step

with distal stage

with medial distal stage

**The distal surfaces of the second**

**milk molars of a 6-year-old child are located**

with mesial step

with a distal step

in one vertical plane

with mesiodistal step

**differential diagnosis of caries in the spot stage is not carried out**

hypoplasia

with local

with fluorosis

with systemic hypoplasia

**the length of the working part of the toothbrush for children should be within**

18-25 mm

20-25 mm

23-30 mm

25-30 mm

**For a more thorough cleaning of all surfaces and tooth sections, it is most effective to use a toothbrush with the shape of a clipping of the fibers of the working part:**

with different heights and directions of bristle bushes

straight

V- shaped

with active recess

**To combat plaque, how many groups are medications divided into?**

5;

3;

2;

10;

**To make an amalgam into the cavity, you need a tool:**

amalgamotreger

plugger

putty knife

finisher

**is used to identify initial caries?**

2% methylene blue solution

1% brilliant green solution

5% iodine solution

2% sodium fluoride solution

**To seal the fissure of the teeth, it is better to use materials:**

silants;

glass ionomer cements;

phosphate cements;

compomers;

**To seal the fissure of the teeth do not use materials:**

phosphate cement;

silants;

glass ionomer cements;

compomers.

**for the diagnosis of periodontal disease using methods:**

determination of the CPITN index .

determination of the Fedorov-Volodkina index;

determination of the PHP index;

all answers are correct;

**for the diagnosis of focal demineralization of enamel, a solution is used :**

2% solution of methylene blue;

Schiller-Pisarev; erythrosine;

5% alcohol solution of iodine.

all answers are incorrect

**to diagnose the condition of periodontal tissues, use the following indices:**

PMA;

CPU;

IGR-U;

PHP

**for differential diagnosis of initial caries, the following methods are used:**

sounding

EDI

definition of hygiene indices

thermometry

**For differential diagnosis of initial caries, the following methods are not used :**

radiological;

sounding;

vital staining of enamel with r-rum methylene blue;

EDI;

**use a toothbrush for daily brushing**

medium hardness

very tough

tough

soft

**for decay of deciduous teeth is not peculiar:**

defeat only fissure teeth  
rapid deepening of the carious process  
pictorial space distribution of the enamel of the tooth  
defeated only prishyeyki teeth

**for a wedge-shaped defect is characteristic:**

all of the above.

appearance after teething;  
localization in the cervical region;  
characteristic shape of the wedge;

**for the treatment of hyperesthesia of hard tissues of teeth, apply: 1) 3% solution of dicaine, Platonic liquid; 2) deep fluorination; 3) silver preparations; 4) desensitizers (seal and protect, gluma desensitizer); 5) fluoride varnish. select the correct answer according to the scheme:**

2,4

1,2,5

3,5

1,5

**for the treatment of initial forms of caries of temporary teeth used:**

silver fluoride and nitrate;  
antiseptics  
hemostatics;  
biologically active substances;

**For the treatment of superficial caries of milk incisors is used?**

amalgam  
silidont  
silicin  
phosphate cement

**for the treatment of secondary caries of temporary teeth is used:**

preparation of the cavity, restoration of the anatomical shape of the tooth with a filling of glass ionomer cement;  
gentle preparation of the cavity, delayed filling with zinc oxide eugenol paste for a period of 6-8 weeks;  
preparation of the cavity, calcium-containing gasket, restoration of the anatomical shape of the tooth;  
silvering of the bottom and walls of the cavity without subsequent filling.

**tools are used for mechanical tartar removal**

excavators, sickles, cures  
mirror, probe, excavators  
cures, probe, smoothing  
brushes

**for mechanical removal of tartar use:**

dental instruments  
Ultrasound devices;  
medications;  
all answers are correct;

**To start the formation of acid by a bacterial plaque, eating sugary foods requires:**

Few seconds;  
10 minutes;

15 minutes;

20 minutes;

**To determine the hygienic condition of the oral cavity, all dyes are used except:**

Lugol's solution

erythrosine solution

potassium iodide solution

fuchsin solution

**To determine the quality of the preparation of the cavity using dental tools:**

probe mirror

ironing probe

plugger probe

tweezers mirror

**most important for evaluating patient brushing performance**

the patient's ability to remove plaque from all surfaces of the teeth

time required to brush all teeth

the method by which the movement from tooth to tooth occurs

brush quality

**To assess the effectiveness of patient brushing, the most important:**

the patient's ability to remove plaque from all surfaces of the teeth

time required to brush all teeth

the method by which the movement from tooth to tooth occurs

oral hygiene products that the patient uses

**movements are used to clean the chewing surface of premolars and molars**

reciprocating

circular

sweeping

scraping

**To clean the teeth of a child under the age of 1 year, it is most appropriate to use:**

soft rubber fingertip brush

cotton swab

baby toothbrush and gel toothpaste

baby toothbrush and baby fluoride toothpaste

**To clean the contact surfaces of teeth from plaque, it is most advisable to use:**

flosses

toothpicks

rotating brush and polishing paste

toothbrush and toothpaste

**To clean removable orthodontic and orthopedic structures, it is recommended to use:**

disinfectant tablets

erythrosine tablets

hydrogen peroxide solution 3%

chlorhexidine solution 0.06%

**For planning a dental disease prevention program, information about:**

dental morbidity of the population.

the dynamics of demographic processes in the region;

state of the environment;

available staff and material resources;

**to enhance the enamel remineralization processes are shown:**

fluorine;

preparations containing dextranase

hormones;

trace elements.

**to prevent caries, it is more appropriate to carry out:**

all answers are correct

primary prevention

secondary prevention

tertiary prevention

**for the prevention and treatment of caries and non-carious lesions of the teeth are used:**

calcium glycerophosphate

Calcium hydroxide

Hydroxyapatite

Sodium Fluoride

**For the prevention of dental caries among children in organized groups, sodium fluoride solutions are most often used to rinse in concentration**

0.1%

0.2%

0.5%

1%

**for the prevention of caries, tooth coating with fluoride varnish is usually carried out:**

4 times (2 procedures in a week) per year;

Once a year;

4 times a year (1 time in 3 month;

6 times a year (1 time in 2 month

**for the prevention of caries rinsing with a 0.05% sodium fluoride solution is carried out for children from 3 to 7 years**

Once every six months

Once a week

1 time in 2 weeks

All answers are correct.

**for the prevention of caries, rinsing with a 0.1% sodium fluoride solution is carried out for children from 7 to 10 years old**

1 time in 2 weeks

Once every six months

daily

Once a week

**To prevent caries, rinse with a 0.2% sodium fluoride solution:**

1 time in 2 weeks

Once every six months

Once a year

Once a week

**for the prevention of caries, phosphorus-containing drugs are prescribed:**

after eruption of the first permanent tooth

Month

6 months

One year

**for remineralization of tooth enamel, the drug "remodent" is not used**

for oral administration

for applications

for rinsing

for electrophoresis

**for remineralizing therapy using a solution of "remodent" in a concentration of:**

3%;

5%;

10%;  
thirty%.

**For remineralizing therapy using a solution of "Remodent" in a concentration (%):**

3  
20  
10  
1

**for remineralizing therapy, combinations of solutions are used:**

calcium gluconate and sodium fluoride;  
"Remodent" and calcium gluconate;  
sodium fluoride and tin fluoride.  
all answers are incorrect

**For remineralizing therapy, a solution is used:**

Borovsky-Volkov  
Schiller-Pisarev  
methylene blue  
chlorhexidine

**systemic hypoplasia is characterized by:**

symmetrical tooth damage  
simultaneous tooth damage  
change in enamel after infectious diseases  
asymmetric damage to teeth

**to remove tartar use. select the wrong answer:**

probe;  
excavator;  
hooks;  
curettes

**To remove tartar use:**

sickle-shaped scalers, curettes  
drills, pulp extractors  
excavator, plugger  
probe, mirror, tweezers

**To remove tartar use:**

sickle-shaped scalers, curettes  
probe, mirror, tweezers  
drills, pulp extractors  
excavator, plugger, iron

**ultrasound is used to remove tartar**

scalers  
dental instruments  
medications  
burs

**To remove tartar using ultrasound, use the device:**

"Piezon-Master"  
"Diagnodent"  
"Pluraflex"  
apex locator

**to remove tartar using ultrasound:**

medications  
dental instruments;  
scalers;  
all answers are correct;

**to remove plaque from the equator area of the approximate surfaces of the teeth using**

toothbrushes  
flosses  
mono-beam toothbrushes  
toothbrushes  
preventive

**to remove food debris from the interdental spaces, it is advisable to use**

floss and toothpick  
hygienic toothbrush  
therapeutic toothbrush  
chewing gum

**To remove subgingival tartar use:**

curettes  
ironer  
tweezers  
periodontal probe

**To remove subgingival tartar use:**

curettes  
dental probe  
periodontal probe  
tweezers

**To reduce inflammation in periodontal tissues, patients are recommended to use toothpastes:**

with herbal supplements;  
fluoride-containing;  
calcium-containing;  
hygienic;

**To reduce bleeding gums, patients should be advised to use toothpaste containing:**

extracts of medicinal plants;  
sodium fluoride;  
calcium carbonate;  
urea.

**To reduce bleeding gums, patients should be advised to use toothpaste containing:**

extracts of medicinal plants  
calcium carbonate  
sodium fluoride  
strontium chloride

**To reduce bleeding gums, patients should be advised to use toothpaste containing:**

extracts of medicinal plants  
calcium carbonate  
urea  
strontium chloride

**To reduce the formation of dental deposits in the composition of the toothpastes are:**

triclosan  
extracts of medicinal plants  
hydroxyapatite  
sodium fluoride

**to eliminate the symptoms of traumatic apical periodontitis, which arose as a complication as a result of treatment of secondary caries of a permanent molar in a child of 12 years old, it is enough to carry out:**

eliminate excess fillings that prevent occlusion;  
perform endodontic treatment;  
replace the seal;  
remove the tooth;

**why do polyhydric alcohols be included in toothpaste?**

all answers are correct

to obtain a homogeneous mass

contribute to the preservation of moisture in the paste during storage

increases freezing temperature

**what is lactodont intended for:**

for filling carious cavities of primary teeth

for filling the front teeth in children

for filling premolar in children

for filling carious cavities of permanent teeth

**what is eugecent-in in pediatric dentistry intended for:**

for permanent dental filling and canal filling

It is used as a medical and insulating gasket for all types of fillings, canal filling

for filling carious cavities of primary teeth

for temporary filling of teeth and canals

**what is evgentsent-p intended for:**

It is used as a medical and insulating gasket for all types of fillings, canal filling

for permanent dental filling and canal filling

for filling carious cavities of primary teeth

for temporary filling of teeth and canals

**what is the removal of calcified deposits in dental practice:**

prevention of periodontal tissue inflammation

fluorosis prevention

prevention of local hypoplasia

periodontitis prevention

**A brush is recommended for brushing your teeth.**

with artificial bristles

with natural bristles

irrelevant

tough

**To brush your teeth, toothbrushes with:**

short working part

long working part

curved handle

straight handle

**The document for the registration of epidemiological dental examination data according to the WHO**

**methodology is:**

Dental Status Assessment Card (WHO)

dental patient record

patient history

preventive measures registration sheet

**An additional platform in the cavities of class II in depth should be:**

2 mm lower than enamel-dentin junction

within the enamel

5 mm lower than enamel-dentin junction

4 mm lower than enamel-dentin junction

**additionally use for cleaning interdental spaces?**

flosses - interdental floss

chlorhexidine solution

special brushes

not used

**if the value of the ar1 index is 25%, then this ...**

optimal level of oral hygiene;

a sufficient level of oral hygiene;

satisfactory hygiene of the oral cavity;

poor hygiene of the oral cavity;

**if the value of the ar1 index is 25% -30%, then this ...**

an adequate level of oral hygiene;

optimal level of oral hygiene;

satisfactory hygiene of the oral cavity;

poor hygiene of the oral cavity;

**if the ar1 index value is 40% -69%, then this ...**

satisfactory hygiene of the oral cavity;

optimal level of oral hygiene;

a sufficient level of oral hygiene;

poor hygiene of the oral cavity;

**if the value of the index ar1 is 70% -100%, then this ...**

poor hygiene of the oral cavity;

optimal level of oral hygiene;

a sufficient level of oral hygiene;

satisfactory hygiene of the oral cavity;

**patient complaints with local enamel hypoplasia:**

cosmetic flaw

percussion pain

pain from hot irritation

sensing pain

**Chewing gum is recommended to use:**

after eating

before bedtime

Anytime

before brushing your teeth

**Does hard food provide?**

all answers are correct

saliva washes teeth

physiological abrasion of teeth which is an incentive for the formation of protective replacement dentin and increased mineralization

the formation of functional chewing apparatus

**Responsible for daily brushing in a preschool child:**

parents

dentist

hygienist

pediatrician

**for one visit with fluoride varnish you can cover:**

teeth of one jaw

1-2 teeth

all teeth

3-4 teeth

**due to what substance of inflammation of the gum acquires a brown color when stained with a solution of schiller-pisarev?**

glycogen

Fats

squirrels

toxic substances

**due to which the child has a cool attitude towards the dentist:**

this type includes parents who ignore the interests of the child up to the open denial of requests and appeals.

In addition, to attract attention, the child will be able to behave stubbornly and aggressively;

excessive custody;

condescending behavior;

all answers are correct

**a disease in which one tooth of an altered form erupts:**

in place of chronic periodontitis

systemic hypoplasia

local hypoplasia

tetracycline teeth

**hereditary diseases:**

all answers are correct

systemic hypoplasia

local hypoplasia

imperfect dentinogenesis

**rounding the ends of the toothbrush bristles**

reduced likelihood of injury to the gums with bristles

reduction in the likelihood of contamination of the toothbrush with microorganisms

reduction of abrasive effects on teeth

no correct answer

**Is the indicator function incorporated in the design of the working part of the braun - oral - b 3 d toothbrush ?**

Yes

not

yes, but in special nozzles

not always

**delayed resorption in milk teeth is detected with?**

chronic inflammation of processes in the apex of the root of primary teeth

metabolic disease

lack of rudiments of permanent teeth

all answers are correct

**Is replacement dentin taken?**

produces tooth dentin

produces tooth pulp

produces tooth enamel

all tooth tissues are produced

**the rudiment of permanent teeth is not injured in the treatment of:**

periodontitis teeth

amputation of pulpitis teeth

pulpitis teeth by biological method

extirpation method

**Does the healthy oral mucosa have a color?**

from gently pink gums to more red on the transitional fold

red

dark pink

white

**twisting the node is:**

formed central pulp site

unformed follicular node

unformed periodontal root node

near the mucous circular node

**the pH of plaque, assessed as critical, is**

5.5

7.0

6.5

8.0

**Plaque pH, assessed as critical, is:**

5.5-5.7

3.5-4.0

6.5-7.0

7.0-7.5

**sounding enables**

all answers are correct

determine the depth of periodontal pocket

detect the carious cavity and reveal the message of the carious cavity with the tooth cavity

assess the condition of the apical periodontal

**sounding allows to reveal?**

defects, changes on the enamel surface, density of the bottom and walls of the cavity, pain sensitivity, depth of the cavity;

carious cavity amount , tooth color, chewing surface quantity;

carious cavity depth, tooth color and contact surfaces;

pain sensitivity of the carious cavity;

**sounding allows to reveal?**

defects, changes on the enamel surface, density of the bottom and walls of the cavity, pain sensitivity, depth of the cavity;

carious cavity amount , tooth color, chewing surface quantity;

carious cavity depth, tooth color and contact surfaces;

pain sensitivity of the carious cavity;

**advantage plus toothbrush is structurally different from advantage toothbrush by the presence of**

shortened tufts of bristles of the middle part of the brush

indicator

power protrusion

elongated lateral setae angled

**Toothbrush to be replaced on average 1 time**

at 3 months

in 1 month

at 6 months

at 12 months

**Toothbrush to be replaced on average 1 time in:**

2 months

a week

6 months

12 months

**A toothbrush with a V- shaped recess is designed for:**

oral care for patients with braces

cleansing the distal surface of the last tooth in the dentition

oral care for patients with periodontal disease

daily oral care for children under 6 years old

**does the toothbrush consist of?**

all answers are correct

pens

brushes

heads

**Dental deposition, located above the gingival margin, usually white or whitish-yellow in color, solid or clay-like consistency is:**

supragingival tartar

soft plaque

smoker's raid

subgingival tartar

**Dental deposition, located under the marginal gum, invisible during visual examination, dense and hard, dark brown or green-black, tightly attached to the surface of the tooth is:**

subgingival tartar

supragingival tartar

cuticle

pellicle

**Plaque accumulates faster on the vestibular surfaces of teeth:**

upper molars

upper incisors

lower incisors

equally in all areas of the oral cavity

**plaque accumulates faster on the buccal surfaces of chewing teeth:**

upper

lower

upper and lower

There is no right answer.

**Maxillary dentition**

more alveolar arch

less alveolar arch

equal to the alveolar arch

equal to the alveolar arch of the lower jaw

**Dentition of the lower jaw**

less alveolar arch

more alveolar arch

equal to the alveolar arch

equal to the alveolar arch of the lower jaw

**It is recommended to use toothpaste for caring for the oral cavity of children, starting from the age of:**

2 years

4 years

1 year

6 months

**is it recommended to store a toothbrush?**

in case

in a glass head down

in a glass head top

in antiseptic solution

**a hard-bristled toothbrush should be used by people.**

at increased plaque formation rate

wedge-shaped defects

malocclusion

with disturbance of the nervous system

**a soft-bristled toothbrush should be used by people.**

all answers are correct

malocclusion

with disturbance of the nervous system

with increased abrasion of enamel, prone to the formation of erosion of wedge-shaped defects

**Toothpastes are divided by type?**

all listed

preventive

hygienic

whitening

**Toothpastes are divided by?**

all answers are correct

hygienic

whitening

preventive

**High abrasive toothpastes are intended for use:**

smokers

patients with periodontal disease

patients with increased sensitivity of hard tooth tissue

preschool children

**High abrasive toothpastes should be used:**

1-2 times a week

2-3 times a month

every day in the morning

every day morning and evening

**Low abrasive toothpastes are intended for use with:**

patients with increased sensitivity of hard tooth tissue

patients with inflammatory periodontal diseases

smokers

patients with braces

**In the bite of milk teeth, the dentition is shaped**

semicircle

half ellipse

parabolas

There is no right answer.

**The dentition in the bite of milk teeth has the form**

semicircle

half ellipse

parabolas

circle

**The gingival pocket is**

slit-like space with a depth of more than 2-3 mm between the tooth and the adjacent free gingival margin; epithelial attachment integrity

slit-like space between the tooth surface and the adjacent free edge

slit-like space 2-3 mm deep between the tooth and the free edge of the gums; epithelial attachment integrity not compromised

the space between the root of the tooth and the wall of the alveoli, resulting from bone resorption

**toothpicks are made from**

wood and plastic

plastics

gutta-percha

made of silicone

**Toothpicks are most appropriate to use to remove:**

food debris from the interdental spaces;

plaque from the contact surfaces of the teeth;

supragingival tartar;

subgingival tartar.

**Toothpicks are most appropriate to use to remove:**

food residues from the interdental spaces

tartar

smoker's stain

plaque from the contact surfaces of the teeth

**Teeth 2.5 and 2.4 are in close contact. The carious cavity on the front contact surface in the cervical region of 2.5 teeth is formed according to the class:**

II - with an additional platform

I - no additional site

I - with an additional platform

II - no additional site

**teeth isolated from saliva in how many minutes to change their color?**

thirty;

45;

fifteen;

25

**Turner's teeth are:**

systemic hypoplasia

autosomal disease

sex chromosome disease

permanent tooth aplasia

**What is the pellicle formed from?**

salivary glycoproteins

keratin

collagen

protein

**changes with fluorosis observed?**

all answers are correct

on crowns in the form of strips and spots

on the mucous membrane

observed

**immunity is:**

ability (mechanism) of the body is protected from living bodies and substances that carry signs of genetically alien information;

the ability of the immune system to produce antibodies;

the ability of immunocompetent cells to recognize foreign proteins;

the ability of some cells to destroy bacterial cells from the environment;

**An invasive method of sealing fissures of the teeth involves coating the fissure with a silant after:**

fissure opening with a diamond bur

fissure coating with fluoride varnish

professional cleansing fissure

controlled brushing

**plaque index Ma ny determines?**

plaque state

color intensity

the presence of stone

presence of plaque

**index (Green-Vermilion determined?**

plaque presence

intensity of damage to primary teeth

intensity of damage to permanent teeth

not determined

**Index CPITN determined using a probe:**

bell-shaped;

Dental

bayonet-shaped;

does not require the use of a tool.

**Index CPITN adults registers the following features:**

bleeding, tartar, periodontal pocket.

plaque, tartar;  
bleeding, tartar;  
tartar, periodontal pocket;

**does the GPITN index determine?**

periodontal condition in the area of interdental spaces of molars and the center of the incisors of the upper and lower jaw

hard tissue condition

pulp condition

mucosal condition

**index in dentistry determines?**

evaluation, oral hygiene

types of bite

teething time

does not define

**Green Vermilion index is used to determine:**

tartar.

caries intensity;

bleeding gums;

There is no right answer.

**Green Vermilion index is used to determine:**

plaque

bleeding gums;

prevalence of caries;

depth of periodontal pocket.

**J. Coton's index determines?**

interdental bleeding index

the presence of stone

color intensity

hard tissue damage rate

**GAME index gives information on availability**

plaque

tooth mobility

chalk spots

bleeding gums

**does the IZK index determine?**

the presence of stone

presence of plaque

does not exist

intensity of damage to all teeth

**Does the IND index determine?**

presence of plaque

color intensity of the tooth surface

intensity of damage to permanent teeth

intensity of damage to primary teeth

**does the IR index determine?**

sign of bleeding gums

the presence of stone

presence of plaque

does not exist

**KPU index determines?**

intensity of decay of permanent teeth caries

intensity of damage to primary teeth

the color intensity of the labial surface of the six lower frontal teeth

determines the surface area of the tooth with plaque or stone

**does the PI index determine?**

periodontal tissue lesion intensity

degree of gum disease

degree of damage to hard tissues

sign of bleeding gums

**PI index is used for the purpose of**

determining the degree of inflammatory periodontal changes

determine the depth of the gingival canals

determination of oral hygiene

determination of vascular wall permeability

**PI index determines severity**

all answers are correct

gingivitis

periodontitis

periodontal disease

**The PMA Index is used to**

determination of inflammatory changes in various zones of the gums

determining the degree of inflammatory periodontal changes

determining bleeding gums

no answer

**does the PMA index determine?**

degree of gum disease

degree of damage to hard tissues

the presence of stone and plaque

color intensity

**PMA index is expressed in:**

%;

absolute units;

relative units.

all answers are correct;

**PMA index determines severity**

all answers are correct

gingivitis

periodontitis

periodontal disease

**SILKNES-LOW index determines?**

plaque thickness in the gingival region on 4 sections of the tooth surface

the presence of stone

color intensity

hard tissue damage rate

**The Fedorov-Volodkina index is used to determine the hygienic condition of the oral cavity in:**

preschool children

schoolchildren

teenagers

patients with braces

**index that is not used to assess the intensity of dental caries**

assessment of caries intensity among adolescents;

intensity of caries of temporary teeth;

intensity of decay of permanent teeth;

assessment of caries intensity among populations;

**Fedorova - Volodkina index is estimated?**

on a 5 point scale

on a 7th scale  
on a 10-point scale  
on a 3-point scale

**Individual oral hygiene is carried out:**

patient  
dentist  
dental hygienist  
dental assistant

**carries out individual prophylaxis?**

the patient himself  
doctor  
parents  
all right

**Are individual hygiene measures carried out?**

independently  
dentist  
the parent  
no correct answer

**Indicator bristles are available on toothbrushes for:**

determine the expiration date of the brush  
aesthetic enhancements  
most effective cleansing of the interdental spaces  
most effective teething during teething

**the intensity of caries during the period of the change of teeth is estimated using the index:**

KPU (s) and kn (s);  
kpu (s);  
CPU (h);  
IGR-U.

**The intensity of tooth decay of the patient is expressed:**

the sum of carious, filled and removed due to complications of dental caries in an individual  
sum of carious and filled teeth in an individual  
the ratio of the amount of carious, filled and removed due to complications of dental caries to the age of the individual  
the ratio of the amount of carious, filled and removed due to complications of dental caries to the total number of teeth in an individual

**the intensity of dental caries in children under 3 years of age is estimated using the index:**

kpu (s);  
KPU (s) and kn (s);  
CPU (h);  
IGR-U.

**is caries intensity determined?**

CPU + CP CP CPU  
RMA  
KPI  
SRITN

**the intensity of caries damage is determined by calculating the indices**

KPU and KP  
CPU and RMA  
KPU and KI  
KP and RMA

**information on the presence of tartar gives the index**

IGR-U

Fedorov – Volodkina

PHP

CPU

**artificially injected fluorine by adding? exclude unnecessary**

into water, salt, blood

in edible salt, in water, in milk

toothpastes

all answers are correct

**The use of chewing gum after eating primarily contributes to:**

an increase in the rate and amount of salivation

plaque removal from contact surfaces of teeth

reduced sensitivity of tooth enamel

increase plaque formation rate

**The use of chewing gum after eating primarily contributes to:**

an increase in the rate and amount of salivation

plaque removal from contact surfaces of teeth

increase plaque formation rate

reduce inflammation in the gum tissue

**the use of chewing gum after eating helps:**

plaque removal from contact surfaces of teeth;

an increase in the speed and amount of saliva secreted;

neutralization of plaque acids;

reduced sensitivity of tooth enamel;

**the use of flosses is recommended for plaque removal from tooth surfaces**

approximate

vestibular

occlusal

oral

**The use of flosses is recommended for removing plaque from tooth surfaces:**

approximate

oral

from all surfaces

vestibular

**The use of flosses is recommended for removing plaque from tooth surfaces:**

approximate

vestibular

occlusal

oral

**The use of floss is recommended from the age of (years)**

9-12

15-16

6-8

4-5

**The use of floss is recommended from the age of (years):**

9-12

6-8

4-5

15-16

**The source of minerals for supragingival tartar is mainly:**

saliva

gingival fluid

blood serum

lymph

**treatment outcome for initial caries is considered successful:**

any of these.

spot pigmentation;

reduction in spot size;

weakening of staining of the stain;

**carious cavities belong to the 4th class in fading (exclude unnecessary):**

on the contact surfaces of incisors and fangs without violating the integrity of the cutting edge;

in the blind fossa of the incisors;

on the contact surfaces of incisors and canines with violation of the integrity of the cutting edge;

All answers are incorrect;

**For I class by Black classification refers carious cavity:**

in fissure on the chewing surface of premolars

in the cervical region of premolars

in the cervical region on the contact surface of the molars

on the front contact surface of the premolar

**For I class by Black classification refers carious cavity:**

in the blind fossa of the lateral incisors

on the contact surface of the fangs

on the lateral surface of the incisors

in the cervical region of the fangs

**For I class by Black's classification are cavities:**

in fissures of molars

on the contact surface of the molars

in the cervical region of the molars

on the contact surface of the fangs

**By III class classification Black refers carious cavity on the surface:**

contact cutters

contact premolars

vestibular incisors

chewing molars

**inflammatory diseases of periodontal tissues include:**

gingivitis;

stomatitis;

periodontal disease;

periodontal

**The following indices are hygienic.**

Fedorova - Volodkina, Green - Barmillon

Schiller - Pisarev

PI, PMA, CPITN

PI

**additional hygiene items**

toothbrushes

toothpastes

tooth powders

toothbrushes

**What methods of examination include determining the hygiene index:**

additional

the main

objective

subjective

**What type of supragingival stone is it?**

salivary type  
serum type  
supragingival type  
subgingival type

**What type of subgingival stone is it?**

serum type  
salivary type  
supragingival type  
subgingival type

**Compomers include:**

Dyract AR  
Evicrol;  
Herculite XRV;  
Revolution ;

**mineralized dental deposits**

tartar  
food leftovers  
pellicle  
soft plaque

**mineralized dental deposits include:**

supragingival tartar;  
food residues;  
soft plaque;  
smoker's raid.

**mineralized deposits include:**

subgingival tartar;  
smoker;  
food residues;  
soft plaque;  
raid

**by the time of birth, the lower jaw is normal :**

less top  
more top  
equal to the top  
There is no right answer.

**By the time of birth, the lower jaw is normal:**

less top  
more top  
equal to the top  
has the shape of a circle

**by the time of the birth of the baby, the lower jaw is normal in relation to the upper position:**

neutral  
mesial;  
distal.  
all answers are correct;

**hereditary diseases do not include:**

diastema  
marble disease  
imperfect odontogenesis  
Getchenson's teeth, Turner's teeth

**hereditary diseases of hard tissues of the tooth do not include:**

focal demineralization

fluorosis

tetracycline teeth

imperfect structure of enamel and dentin

**Non-carious diseases of hard tissues of teeth do not include:**

periodontitis

fluorosis

imperfect dentin development

all answers are correct

**to non-carious lesions of hard tissues of teeth?**

oversized teeth

adentia, hypercementosis

ankylosis, crooked teeth

pathological resorption hypercementosis

**Non-carious lesions that occur before teething include:**

fluorosis

acid necrosis

wedge-shaped defect

enamel erosion

**Non-carious lesions that occur after teething include:**

wedge-shaped defect

systemic hypoplasia

fluorosis

imperfect amelo- and dentinogenesis

**non-mineralized dental deposits**

plaque

cuticle

supragingival tartar

subgingival tartar

**The main examination methods include:**

survey, inspection

EDI, radiography

survey, radiography

inspection, EDI

**pathology of hard tissues of teeth?**

all answers are correct

hypoplasia, hyperplasia

tetracycline teeth

fluorosis

**The first stage of the preparation of the cavity includes:**

carious opening

curettage

antiseptic treatment

necroectomy

**anti-inflammatory toothpastes?**

"FOREST"

Extra

"Zodiac"

"Satellite"

**Remineralizing agents include a solution of:**

sodium fluoride 2%

aminophylline 2.4%

hydrogen peroxide 10%

methylene blue 2%

**fluid composites include: 1.filtekflow; 2.sure fill; 3.flow line; 4.tetric ceram; 5.durafil. choose the correct answer according to the scheme:**

1.3

2,4,5

3.4

1,5

**How can a pellicle be detected?**

instrumental

visually

staining

x-ray

**how do the fourth and fifth deciduous teeth differ from the fourth and fifth permanent teeth?**

by color

to size

by location

by the number of mounds

**How does a 2-year-old child respond when visiting a dentist?**

the child during this period exacerbated physical intellectual and spiritual development. A child of this age should be in the dentist's office with his parents;

a child of this age should be in the dentist's office alone;

a child of 2 years of age has no fear when visiting a dentist;

all answers are correct

**what diseases can be the cause of hypoplasia.**

all answers are correct

acute infectious diseases

hereditary diseases

vitamin deficiency hypoplasia

**which teeth are not examined to determine the green vermilion index.**

Palatine surface 23.

Labial surface 11.

Buccal surface 26.

Labial surface 31.

**which teeth are most often affected by caries in children.**

second molars

fangs

incisors

first molars

**Which of the following toothbrushes do not have an indicator in their design?**

orthodontic

advantage

advantage plus

eXceed

**Which of the following components provide the main function of toothpastes with enhanced cleansing effect?**

silica

sodium fluoride

sodium monofluorophosphate

sodium pyrophosphate

**which of the following diseases are not included in the group of hereditary non-carious diseases:**

fluorosis  
Stainton-Capdepon syndrome  
imperfect amelogenesis  
imperfect dentinogenesis

**What medications are recommended for preventive purposes for caries in the spot stage:**

calcium containing drugs  
vitamins  
antibiotics  
iodine-containing preparations

**What medical pastes can not be used in the treatment of caries?**

resorcinol formalin  
calmecin  
calcium hydroxide  
eugenol paste

**what medications for plaque control are included in group i?**

desorbents, drugs that disrupt the adsorption of bacteria on the surface of the tooth;  
surfactants, drugs with a bactericidal effect;  
special films that prevent the attachment of dental plaque and plaque;  
enzymatic and non-enzymatic agents;

**What medications for plaque control are included in the n group?**

surfactants, drugs with a bactericidal effect;  
solvents, preparations that destroy tartar;  
special films that prevent the attachment of dental plaque and plaque;  
enzymatic and non-enzymatic agents;

**What medications for plaque control are included in group w?**

solvents, preparations that destroy tartar;  
desorbents, drugs that disrupt the adsorption of bacteria on the surface of the tooth;  
surfactants, drugs with a bactericidal effect;  
special films that prevent the attachment of dental plaque and plaque;

**What medications for plaque control are included in group iv?**

special films that prevent the attachment of dental plaque and plaque;  
desorbents, drugs that disrupt the adsorption of bacteria on the surface of the tooth;  
surfactants, drugs with a bactericidal effect;  
enzymatic and non-enzymatic agents;

**what medications for plaque control are included in group v?**

enzymatic and non-enzymatic agents;  
desorbents, drugs that disrupt the adsorption of bacteria on the surface of the tooth;  
surfactants, drugs with a bactericidal effect;  
solvents, preparations that destroy tartar;

**What measures should be taken to prevent pulp damage during caries treatment?**

a combination of all of the above with the use of non-toxic and non-irritating medicines and filling materials.

avoid excessive removal of hard tooth tissues;  
dissect the cavity using air or water cooling

Do not over-polish fillings;

**what drugs are used as a medical pad:**

calceite  
life  
daikal  
ketocet

**What preparations contain phosphorus:**

hydroxylopathite, calcium hydroxide,

algiportiamine, tinogen  
Methyluracil, potassium orotate  
Ethamylate, ferrocryl

**what hygiene products should be recommended for children 4 years old:**

gel baby toothpastes  
dentifrice  
fluoride-containing toothpastes  
saline toothpastes

**What conditions are needed for an effective dental treatment at a dentist?**

respect for the personality of the child, the creation of a positive attitude to treatment, sedation of various types of pain relief;

cool attitude to the child, up to the refusal of treatment

condescending behavior

all answers are correct

**what factors can affect the color of the tooth during its development:**

rubella  
viral hepatitis  
chickenpox  
cholera

**what chemical compounds disappear from the subsurface enamel areas upon demineralization.**

All answers are correct.

Mg

Ca

CO<sup>2</sup>

**What colorant plaque turns red?**

erythrosine;  
methylene blue;  
potassium iodide;  
methylene green;

**What colorant plaque turns blue?**

methylene blue;  
potassium iodide;  
methylene green;  
erythrosine;

**How does tartar cause and support gum disease?**

is a constant source of toxic products

impairs blood supply to the gums

erodes tooth surface

injures the gums

**How is capdepon dysplasia transmitted:**

hereditary

non-hereditary

alimentary

infectious

**what property does not have fluorine.**

Increases the activity of lactate dehydrogenase.

Contributes to disruption of acid formation in the Krebs cycle

Inhibits phosphoenolpyruvate kinase.

Contributes to disruption of glycolysis processes

**What is the degree of discoloration of the indicator bristle tufts, indicating the need to replace the toothbrush?**

1/2

3/4

on 2/3

1/3

**which substance is not used for remineralizing therapy.**

40% sodium fluoride solution.

10% calcium gluconate.

2-10% acidified calcium phosphate.

3% Remodent solution

**What substance shows the antimicrobial effect that is part of saliva?**

lysozyme

peptide

lipoid

lipid

**what is the meaning of kpi interpreted correctly:**

0.1- 1- risk of periodontal disease

1-5 moderate periodontal lesions

0.1-1 high resistance to caries.

1-0 mild severity of periodontal lesion

**what is the meaning of kpi interpreted incorrectly.**

0.1-1 high resistance to caries.

1-5 moderate periodontal lesions

0.1- 1- risk of periodontal disease

1-0 mild severity of periodontal lesion

**which of the dental plaque is not included in the section of non-mineralized dental plaque?**

food leftovers

Pellicle, dental plaque

supragingival tartar

soft plaque

**How much fluoride is there in a liter of water?**

0.8-1.2 mg / l

0.6-0.5 mg / l

1.0-2.0 mg / l

0.4-1.0 mg / l

**which statement is not true.**

In molar fissures, the fluoride content is higher than in the chewing surface area.

The concentration of fluorides in the surface layers of enamel is higher than in the deep ones.

In temporary teeth, the concentration of fluoride is lower than in permanent.

With age, the concentration of fluoride in the teeth decreases.

**which milk tooth erupts first:**

6th teeth of the lower jaw

maxillary central incisor

6th teeth of the upper jaw

central mandibular incisor

**which dye is not used for staining teeth**

potassium permanganate solution;

magenta;

iodine solution;

methylene blue;

**What trace element actively affects the metabolism of oral fluid?**

fluorine

Magnesium

Calcium

Hydrogen

**which phosphorus-containing drug stimulates remineralization and formation of a spongy substance in osteoporosis**

tridine

Thymogen

Timalin

Prodigiosone

**what process is observed when organic acids are exposed to enamel:**

resizing of hydroxyapatite crystals

increased accumulation of calcium ions in the surface layer of enamel.

change in the shape of crystals of hydroxyapatites

demineralization

**what enzyme breaks down the polysaccharides that make up saliva?**

mucin

lipoid

lipid

amylase

**What stage is performed with non-invasive fissure sealing technique?**

All answers are correct.

Etching of tooth enamel with 35-37% phosphoric acid

repeated isolation of the tooth from saliva with cotton rolls and saliva ejector

drying the etched surface with air

**What color does the gum acquire when determining the PM index?**

brown;

blue;

green;

red;

**Calibration of specialists during an epidemiological dental examination is carried out in the period:**

preparatory;

surveys;

summarizing.

There is no right answer.

**calcium glycerophosphate:**

enhances anabolic processes has a restorative and tonic effect;

reduces anabolic processes;

stimulates phagocytic activity;

activates the truth of lymphocytes

**decay in milk teeth is often affected:**

Contact s

Vestibular

Labial

Lingual

**Caries in the spot stage is diagnosed (exclude unnecessary):**

5% iodine solution

Schiller-Pisarev solution

2% solution of methylene green

5% brilliant green solution

**Caries in the spot stage are diagnosed:**

All answers are incorrect.

5% iodine solution

Schiller-Pisarev solution

5% brilliant green solution

**Caries in the spot stage are diagnosed:**

2% solution of methylene green

5% iodine solution

Schiller-Pisarev solution

5% brilliant green solution

**Caries in the spot stage are differentiated with:**

fluorosis

wedge-shaped defect

medium caries

pathological abrasion of hard tooth tissues

**Caries in the spot stage do not differentiate with:**

medium caries;

systemic hypoplasia of enamel;

local enamel hypoplasia;

fluorosis.

**Is caries less common in children living?**

no correct answer

at home

abroad

in boarding schools

**caries in children is usually divided into.**

all answers are correct

initial, superficial

average

deep

**Caries resistance increases:**

b + the correct answer

Remineralization process is proceeding normally

Normal phosphorus-containing mineral preparations

It has a negative effect on the microflora of the oral cavity

**The carious cavity in the natural fossa on the buccal surface of the 3.7 tooth is classified according to**

**Black's classification to the class:**

I

II

V

VI

**The carious cavity in the cervical region on the vestibular surface of the 1.6 tooth belongs according to**

**Black's classification to the class:**

V

II

III

IV

**The carious cavity in the blind fossa of the 1.2 tooth belongs according to Black's classification to the**

**class:**

I

II

III

IV

**The carious cavity in the fissure on the chewing surface of 1.8 tooth is classified according to Black's classification to the class:**

I

II

III

IV

**The carious cavity above the equator on the front contact surface of the 1.8 tooth is formed according to the class:**

II - no additional site

II - with an additional platform

III - no additional site

I - with an additional platform

**the carious cavity of the milk tooth with middle caries without filling is sealed**

phosphate cement

silicin

Composite materials

silidont

**The carious cavity on the back contact surface of the 1.5 tooth is classified according to Black's classification to the class:**

II

III

IV

V

**The carious cavity on the posterior contact surface of the 3.6 tooth belongs to the Black classification according to the classification:**

II

I

III

IV

**The carious cavity on the contact surface in the cervical region of 1.1 tooth is classified according to Black's classification to the class:**

III

II

I

V

**The carious cavity on the contact surface in the cervical region of the 2.6 tooth belongs according to Black's classification to the class:**

II

III

IV

V

**The carious cavity on the lateral contact surface of 1.1 tooth with lesions of the cutting edge belongs to the Black class:**

IV

III

II

I

**The carious cavity on the front contact surface of the 1.6 tooth is classified according to Black's classification to the class:**

II

I

III

VI

**The carious cavity on the anterior surface of the 1.4 tooth belongs according to Black's classification to the class:**

II

V

IV

III

**The carious cavity on the median contact surface of 1.2 tooth is classified according to Black's classification to the class:**

III

V

IV

I

**the carious cavity of the second class does not lead to blackout on the chewing surface with (exclude unnecessary):**

dentition integrity

the absence of a adjacent tooth

narrow interdental space

All answers are incorrect.

**Carious cavities on the anterior contact surface and the posterior contact surface of a 1.7 tooth are classified according to Black's classification to the class:**

II

III

IV

VI

**is the carious process covering the entire tooth around his neck called?**

circular caries

superficial caries

heel caries

All answers are incorrect.

**picture of the lesion in superficial caries**

defect within the enamel is dirty gray;

a white spot on enamel;

a cavity within the enamel and dentin with a softened bottom and walls;

All answers are incorrect;

**picture of the lesion with superficial caries (exclude unnecessary):**

a cavity within the enamel and dentin with a softened bottom and walls;

a white spot on enamel;

defect within the enamel is dirty gray;

brown enamel on enamel;

**classification of caries on the etiological basis:**

Miller's class

Lukomsky class

Behcet's class

capdepon class

**pulpitis classification T.F. Grape**

acute pulpitis of primary teeth, chronic pulpitis of primary teeth, complicated by periodontitis pulpitis

acute pulpitis, chronic pulpitis, chronic pulpitis in the acute stage

acute pulpitis, chronic pulpitis

all answers are correct

**clinical manifestations of acute secondary caries:**

white spots around the cavity

carious cavity filled with soft dentin

hard dentin carious cavity

overhanging edges of the cavity

**clinical forms of fluorosis:**

all answers are correct

bowl-shaped

chalky-mottled

furrowed, spotty

**tooth filling wedges are not used for**

the formation of the edge of the seal without the position of the material on the gingival papilla

improve condensation fillings

pressure polymerization

improve durability and color fastness of the seal

**The key age group for assessing the state of permanent teeth in a population is age (years):**

12

6

fifteen

35-44

**Co II class by Black classification refers carious cavity:**

on the contact surface of the molars

on the contact surface of the fangs

on the buccal surface of molars

on the middle surface of the incisors

**when does demineralization occur?**

in violation of the ratio of calcium and phosphorus

Oral Hygiene

In violation of phagocytosis

Differentiated Mesenchymal Cells

**when the mineralization of the permanent tooth follicles begins**

in year

at 2 years

at 3 years

9 months in utero

**when a pellicle forms on the surface of the tooth:**

during teething

before teething

during tooth mineralization

after teething

**When is it recommended that a child contain phosphorus?**

all answers are correct

In violation of good nutrition

Dyspepsia rickets

For caries prevention

**when the pH of the oral fluid decreases:**

reduced calcium

Ca calcium hydroxide

Calcium fluoride

Sodium Fluoride

**the number and size of elements in fluorosis determine?**

all answers are correct

severity of disease

cause of disease

patient age

**the number of milk teeth?**

20

32

18

9

**the amount of saliva that is excreted in children per day**

1500-2000 ml

500-1000 ml

1000-1500 ml

1200-1400 ml

**the amount of calcium salts in saliva:**

1.2-2.7 mmol / L

6-23 mmol / l

0.1-0.5 mmol / L

5-31 mmol / l

**the amount of fluorine is normal in water.**

0.5-0.6 mg / l

0.1 mg / l

1.0-2.0 mg / l

2.5-3.0 mg / l

**the amount of fluoride-containing solution per prophylactic rinse should not exceed**

5 ml

10 ml

20 ml

50 ml

**The final product of sugar metabolism is:**

organic acid

dextran

Levans

glycans

**can carious spots be treated conservatively ?**

white

light brown

brown

black

**Controlled brushing, professional removal of dental plaque, the elimination of factors contributing to the accumulation of dental plaque, training in the rules of oral care and individual selection of hygiene means the concept of:**

professional oral hygiene

professional brushing

dental disease prevention

dental education

**Controlled brushing, professional removal of dental plaque, the elimination of factors contributing to the accumulation of dental plaque, training in the rules of oral care and individual selection of hygiene means the concept of:**

professional oral hygiene

dental disease prevention

professional brushing

personal hygiene

**concentration or amount of fluorinated water?**

0.5-1.2 mg / l

0.7-1.2 mg / l

0.7-1.5 mg / l

0.5-1.5 mg / l

**The concentration of minerals in tooth enamel is higher in the field of:**

tubercles and incisal edges

cervical

fissure and fossa

contact surfaces

**fluoride concentration in water causing fluorosis:**

1-4 mg / l

3-7 mg / l

15-20 mg / l

50-70 mg / l

**does fluoride concentration increase?**

all answers are correct

in the surface layer of enamel

in the surface layer of enamel during teething

in the surface layer of enamel before teething

**corticosteroids are used in endodontic practice to reduce:**

inflammation of the pulp and periodontal

pulp infection

pulp petrification

pulp mechanical injury

**The coefficient of reflection of light from wall surfaces in the dental office should not be lower (%):**

**40**

thirty

10

fifty

**kpu (h) is the index**

tooth decay intensity

intensity of decay of permanent teeth

surface caries intensity

bleeding gums.

**who carries out individual oral hygiene?**

the patient himself

dentist

parents

educators

**who conducts professional oral hygiene?**

dentist

the patient himself

parents

educators

**cuticle is:**

reduced cells of the epithelium of the enamel organ;

the accumulation of microorganisms and carbohydrates;

a set of microorganisms containing chlorophyll;

the accumulation of microorganisms with organic components.

**Sodium lauryl sulfate is a component of toothpastes as a component:**

foaming

abrasive

flavoring

moisturizing

**sodium lauryl sulfate may be part of toothpastes**

hygienic, therapeutic

hygienic

preventive

no correct answer

**Medicated Pads from kalmetsina in the treatment of deep caries is imposed?**

2 weeks  
5 days  
7-10 days  
2 days

**therapeutic toothpastes abrasive substances**

contain

do not contain

not always

in the presence of additives

**Do therapeutic and prophylactic pastes be used?**

for the prevention of gingival mucosa

for mechanical cleaning of teeth from fine plaque

for calculus

no correct answer

**enamel hypoplasia treatment?**

all answers are correct

filling hypoplastic areas by material

significant defects show artificial crowns

subject to treatment

**treatment for initial forms of fluorosis?**

symptomatic treatment

not subject to treatment

aesthetic filling of defects

making artificial crowns

**treatment for severe forms of fluorosis?**

aesthetic filling or manufacturing of artificial crowns

symptomatic treatment

not subject to treatment

deletion

**treatment for stage caries:**

30% silver nitrate solution, 75% fluoride paste

boron

fill with silidont

fluoride coating

**it is best to relieve the pain that occurred immediately after filling the canal:**

diadynamic current;

transitional fold lidocaine blockade;

antibiotic injection;

the introduction of hydrocortisone in the transition fold;

**the best material for filling milk teeth is that.**

amalgam

dentine

water dentin

fasfat cement

**the maximum anticariogenic effect of the use of sodium fluoride tablets is observed on the teeth:**

permanent;

temporary;

temporary and permanent.

all answers are incorrect

**The maximum radius of contamination of the dental office from the patient's treatment site is at least (meters):**

3.0

0.5

4.0

5.0

**The Dean International Classification is used to determine the severity of:**

fluorosis

systemic hypoplasia

caries

maxillofacial abnormalities

**Local fluoride prophylactics should be used in areas with a fluoride content in drinking water of more than 1.5 mg / l:**

not allowed

possible in children under 12 years old

can be combined with system tools

possible with poor oral hygiene in the patient

**the local risk factor for caries is**

poor oral hygiene

high fluoride content in drinking water

low fluoride in drinking water

the presence of concomitant somatic diseases

**The local risk factor for caries is:**

poor oral hygiene

high fluoride content in drinking water

concomitant somatic diseases

low fluoride in drinking water

**the location of a large number of microorganisms in the oral cavity?**

all listed

in carious cavities

in frontal teeth

in the interdental spaces

**methylene blue is used:**

for the diagnosis of focal demineralization

CPU

KPI

RMA

**X-ray diagnostic method that provides comprehensive information about the condition of the tissues of the jaw periodontal:**

dental radiography;

panoramic radiography

orthopantomography;

teleroentgenography

**X-ray diagnostic method is the most informative for identifying the morphology of the elements of the temporomandibular joint:**

tomography

tele-roentgenography;

dental radiography;

panoramic radiography

**X-ray diagnostic method is the most informative when identifying the correspondence of the sizes of the upper and lower jaw:**

tele-roentgenography;

dental radiography;

panoramic radiography

orthopantomography;

**it is advisable to use the X-ray diagnostic method to identify the possibility of passage of the root canal of the right upper sixth tooth:**

dental radiography;  
panoramic radiography  
orthopantomography;  
teleroentgenography

**thermometry method should be used:**

for differential diagnosis of caries and pulpitis;  
for the diagnosis of periodontitis;  
for the differential diagnosis of periodontitis and trigeminal neuralgia;  
during perforation in the bifurcation area

**The tunnel preparation method is used to treat cavities:**

Black class 2;  
Black class 3;  
Black class 4;  
Grade 5 in Black.

**the method of brushing, which involves dividing the dentition into segments and sequentially cleansing the teeth of each segment, starting with the upper right chewing teeth, is called the method:**

standard G.N. Pakhomov.  
circular Fones ;  
Stillman ;  
Bass ;

**The method of brushing, which involves dividing the dentition into segments and sequentially cleansing the teeth of each segment, starting with the upper right chewing teeth, is called the method:**

Leonard  
circular fones  
Stillman  
Bass

**The method of brushing, in which the cleansing of the vestibular surface of the teeth is carried out in a circular motion, is called:**

circular fones  
standard G.N. Pakhomova  
Leonard  
Stillman

**The methodology of the epidemiological dental examination according to WHO provides for the examination of children in age (years):**

6, 12, 15  
3, 6, 9  
6, 9, 12  
9, 12, 15

**The method of chemical (cold) sterilization process:**

mirrors, glass products  
tips  
burs  
disposable syringes  
dressing

**spot-based caries diagnostic methods based**

on increasing enamel permeability  
on the stability of enamel  
on reducing enamel permeability  
no correct answer

**methods of caries prevention?**

all listed

plaque removal

reduced sugar in food

elimination of fluoride deficiency

**psychological preparation methods:**

the most important thing here is the personal impact of the doctor on the mental, volitional and especially emotional processes in the child;

cool behavior up to refusal of treatment

condescending behavior

all answers are correct

**does mechanical brushing include?**

toothbrushes

toothpicks, threads (flosses)

brushes, masseurs

all answers are correct

**trace elements contained?**

all answers are correct

in meat

in sea fish

in fruits, vegetables

**Mineralization ("maturing") of enamel after teething proceeds most actively during (years):**

2

5

10

fifteen

**mineralization of fissures of permanent molars ends after teething:**

in 2-3 years

in 6 months;

after 5-6 years;

in 10-12 years.

**mineral components contained?**

all listed

in goat milk, apples, carrots

in radish, beans, in vegetable fats

in pumpkin, cabbage, apricot, cherry

**polyhydric alcohols are introduced into toothpastes to obtain ...**

moisture storage during storage

increase the freezing temperature, improve the taste of the paste

improve the stability of foam

all answers are correct

**multiple caries of deciduous teeth observed in children?**

all answers are correct

in the history of which there is artificial feeding

maternal disease during pregnancy

acute and chronic infections suffered by a child, nasopharyngeal disease

**multiple caries of deciduous teeth observed in children?**

all answers are correct

in the history of which there is artificial feeding

maternal disease during pregnancy

acute and chronic infections suffered by a child, nasopharyngeal disease

**Is it possible to prescribe Naf tablets at this age , if possible, then what is the daily norm for a child of 8 years old?**

1 mg  
0.35 mg.  
0.5 mg  
0.25 mg

**Is it possible to use chlorophyll-containing toothpastes when performing gum self-massage?**

Yes  
not  
etiology unknown  
no correct answer

**Is it possible to fill well-passable channels with resorcinol-formalin paste (without reaction catalyst)?**

impossible, because it irritates periodontium and stains the tooth;  
possible, because it gives a good hermetic seal of the channel;  
it is possible, because it has an antiseptic and mummifying effect;  
it is possible, because it will aggravate the process, which will end in recovery;

**baby teeth develop from:**

mesenchyme  
connective tissue  
muscle tissue  
epithelial tissue

**the molar ratio ca / p in enamel is on average**

1.37  
1.47  
1,67  
1.87

**the molar ratio of ca / p in enamel averages**

1,67  
1.37  
1.47  
1.87

**Sodium monofluorophosphate in the composition of therapeutic and preventive toothpastes determines their effect:**

anti-cariosis  
anti-inflammatory  
whitening  
promotes salivation

**on which chewing teeth does plaque accumulate most rapidly?**

lower  
upper and lower  
upper left  
upper

**in a limited area of enamel, chalk-like spots that have lost their luster inherent in non-affected enamel are**

hypoplasia stage  
spot stage  
removal stage  
superficial caries stage

**in a limited area of enamel, chalk-like spots that have lost their luster inherent in non-affected enamel are .....**

spot stage  
superficial caries stage  
hypoplasia stage

removal stage

**How many groups are the enzymes that make up mixed saliva divided?**

5

4

3

6

**what is the basis for the classification of caries by tf grape?**

caries intensity

localization

depth of defeat

process emergence

**supragingival tartar does not contain:**

white blood cells

salivary proteins

organic matter

inorganic substances

**call the end of saliva:**

xerostomia

Hyposolation

Adentia

Hypersolation

**What are the processing times of the amalgam after its application:**

1-7 days

14 days

2 days

15 days

**What are the forms of clinical manifestation of enamel hypoplasia .**

erosive;

spotty;

dashed, cup-shaped;

furrowed

**the most active accumulation of ca and p in enamel occurs**

during teething

in the first year after teething

two years after teething

All answers are correct.

**most important in the development of dental caries is:**

tooth plaque

tartar

white coating

increased saliva pH

**the highest mineralization of enamel is observed in its layer**

superficial

subsurface

deep

All answers are correct.

**the most informative for assessing the quality of filling the root canals of the teeth of the upper and lower jaw:**

dental radiography;

panoramic radiography;

orthopantomography;

tele-roentgenography;

**the most informative for determining the hygienic state of the oral cavity in adults is the index:**

Fedorov-Volodkina;

Green Vermillion;

PHP

CPU (p).

**the most informative for determining the hygienic state of the oral cavity in adults is the index:**

Green Vermillion;

PHP

kpu (p);

CPITN.

**The most common available measure for caries prevention is:**

water fluoridation

daily regime

balanced diet

balanced diet

**the most numerous group of periodontal cells are:**

fibroblasts;

macrophages;

plasma cells;

osteoblasts;

**the most caries-resistant enamel areas in the area**

contact surfaces

fissure and natural fossa

cutting edge and tubercles

necks

**the most caries-resistant enamel areas in the area**

cutting edge and tubercles

fissure and natural fossa

contact surfaces

necks

**the most resistant to caries enamel areas in the area:**

contact surfaces;

cervix;

tubercles;

cutting edge;

**the most resistant to caries enamel areas in the area:**

fissure.

contact surfaces;

tubercles;

cutting edge;

**the most resistant to caries enamel areas in the area:**

tubercles, incisal edges;

contact surfaces

vestibular surfaces;

fissure.

**The hardest tooth tissue is:**

enamel

cement

dentine

pulp

**most resistant to boiling at 100 ° c for 10 min:**

hepatitis virus;

staphylococcus

gonococcus.

Proteus

**The most valuable quality of flowable composites is:**

high elasticity, thixotropy

high strength;

excellent esthetic characteristics;

no right answer

**the most common tooth pathology of non-carious lesions.**

hypoplasia

wedge-shaped defect

marble disease

Fluorosis

the most commonly used salivary gland examination for salivary stone disease

radiological with a gland

radiological without gland

cytological examination

CT scan

**Most often, the supragingival tartar is localized in the area:**

lingual surface of lower incisors

vestibular surface of the upper incisors

palatal surface of the upper incisors

equally often on all surfaces of the teeth

**most often foci of demineralization of enamel are localized on the crown of the tooth in the area**

knolls

cervical

cutting edge

equator tooth

**most often foci of demineralization of enamel are localized on the crown of the tooth in the**

**area**

cervical

knolls

cutting edge

equator tooth

**Most often, foci of enamel demineralization are localized on the tooth crown in the area of:**

cervical area

cutting edge

masticatory bumps

lingual surface

**Most often, systemic hypoplasia affects teeth:**

permanent incisors, fangs and first molars

temporary molars and incisors

temporary incisors and fangs

temporary and permanent molars

**Most effective in cleaning approximate tooth surfaces**

thread (floss)

Toothbrush

water jet

toothpick

**In children, the most effective method in the treatment of secondary caries with a third degree of its activity is the technique:**

a delayed method of treatment, consisting in the application of eugenol paste, for a period of 1-1.5 months;

the use in the first visit of a solution of antibiotics under a temporary dressing, and on the second visit - calcium-containing drugs in the form of a medical pad;

the use of a medicated strip made of phosphate cement containing silver;

the use of calcium-containing drugs in the form of a medical pad before the elimination of the defect with permanent filling material;

**most effective in children in the treatment of secondary caries in children with a third degree of its activity is:**

a delayed method of treatment, consisting in the application of zinc oxide eugenol paste for a period of 6-8 weeks;

the use of calcium-containing drugs in the form of a medical pad before the elimination of the defect with permanent filling material;

the use of a phosphate cement medical pad containing silver;

the use in the first visit of a solution of antibiotics under a temporary dressing, and in the second - calcium-containing drugs in the form of a medical pad;

**The highest permeability of enamel is noted:**

in the cervical region, fossa, fissures

in the area of tubercles, incisal edges

on contact surfaces

on the vestibular and lingual surfaces

**the greatest influence on the maturation of enamel has**

fluorine

vanadium

molybdenum

strontium

**the greatest preventive effect from the use of sodium fluoride solutions in low concentrations is observed on the surfaces of the teeth:**

smooth;

permanent;

all answers are incorrect

occlusal.

**carbohydrate has the greatest cariogenic effect**

sucrose

maltose

galactose

glycogen

**carbohydrate has the greatest cariogenic effect:**

maltose;

galactose;

sucrose;

glycogen.

**Carbohydrate has the greatest cariogenic effect:**

sucrose

maltose

galactose

glycogen

**the most information about the hygiene of the oral cavity in adults can be obtained using the index**  
Fedorov – Volodkina  
Green Vermillion  
PHP  
CPU (p)

**the most information about the state of periapical tissues of the teeth of the upper and lower jaw gives:**

orthopantomography;  
panoramic radiography;  
tele-roentgenography;  
cinematography

**the best cleansing effect is achieved when introduced into the composition of toothpastes as an abrasive component**

silica  
calcium carbonate  
chemically precipitated chalk  
dicalcium phosphate

**the presence of which diseases is a contraindication to the use of tooth powders?**

increased tooth abrasion  
tooth decay  
pulpitis  
hypoplasia

**the presence of plaque on the teeth can be determined using indices**

KPI and PHP  
CPU  
USP  
CPITN

**the presence of three between the teeth in the front of the dentition of a 5-year-old child is a sign:**

has no diagnostic value.  
pathology;  
physiology;  
all answers are correct;

**The presence of three between the teeth in the anterior part of the dentition of a 5-year-old child**

sign of normal development  
sign of anomaly  
has no diagnostic value  
sign of deformation

**sodium carboxymethyl cellulose is part of toothpastes**

hygienic, therapeutic  
hygienic  
preventive  
no correct answer

**the initial stages of caries (stain) differentiates with:**

fluorosis, hypoplasia  
tetracycline teeth and imperfect amelogenesis  
imperfect odontogenesis, imperfect dentinogenesis  
all answers are correct

**it's not always possible to remove stuck food from the interdental space with a brush and rinse, is it better to use self-help?**

dental floss  
toothpicks

brushes

all answers are correct

**Palatine hillocks upper lateral teeth in normal contact with**

longitudinal fissures of the lower

lingual tubercles of the lower

vestibular tubercles of the lower

with longitudinal fissures of the upper

**The palatine tubercles of the upper milk molars of a 3-year-old child are located**

in the longitudinal fissure of the lower molars

vestibular to the buccal tubercles of the lower molars

on par with the lingual tubercles of the lower molars

distal to the buccal tubercles of the lower molars

**The lack of composite materials is the most significant:**

polymerization shrinkage.

color change;

inconvenience when introduced into the cavity;

violation of the marginal fit;

**insufficient amount of fluoride in the body increases?**

number of decayed teeth

development of fluorosis

clouding of enamel

mucosal disease

**Non-carious lesions of hard tooth tissue, wherein one tooth cut through a modified form - is:**

local hypoplasia

fluorosis

systemic hypoplasia

abrasion of hard tooth tissues (wedge-shaped defect)

**the incorrect mesio-distal ratio of the first constant molars can be due to:**

the presence of a delayed second temporary molar;

decreased occlusal height;

violation of chewing in the presence of gaps between the teeth.

no correct answer

**The lower 1 | 1 teeth are normal in**

one antagonist

two antagonists

three antagonists

don't have antagonists

**the lower jaw of the newborn is located distal to the upper in the distance**

up to 14 mm

up to 5 mm

up to 10 mm

up to 8 mm

**The lower jaw of the newborn is located distal to the upper in the distance**

up to 14 mm

up to 5 mm

up to 10 mm

up to 1 mm

**Rinse a new toothbrush several times and empty it in a 2% solution of chloramine or in 70-90% wine alcohol for several minutes recommends?**

A.N. Evdokimov

I. B. Belyaev

V.N.Trezubov

M.M.Soloviev

**what kind of caries is involved: when most of the dentin is destroyed and a thin layer of sometimes softened dentin remains over the pulp.**

deep caries

medium caries

superficial caries

in the spot stage

**The effectiveness of remineralization can be judged by:**

stabilization or disappearance of white spots of enamel, a decrease in the growth of caries

increased salivation

reduce gum tissue inflammation

increased caries growth

**The reversibility of the process of focal demineralization is associated with:**

preserving the organic basis of enamel

loss of calcium ions from the damaged area

Enamel permeability

the formation of pellicles on the surface of the enamel

**Examination of the patient begins with the use of methods:**

major

laboratory

cytological

radiological

**parents should start teaching oral hygiene at the age of:**

3 years

5 years

10 years

2 years

**public health is characterized by indicators:**

labor activity of the population;

incidence;

disability;

demographic indicators;

**Mandatory components of all toothpastes are:**

binders

fluorine compounds

extracts of medicinal plants

vitamins

**are one of the human nutritional deficiencies?**

diet

masticatory deficiency

rejection of flour

no correct answer

**one of the main nutritional deficiencies in a child that has a negative effect on teeth and the body as a whole?**

intake of excess easily digestible carbohydrates

B vitamins

dairy

no correct answer

**the simultaneous use of two endogenous methods of fluoride for the prevention of dental caries:**

impossible;

perhaps;

it is possible if the fluoride content in drinking water is less than half the optimal dose.

it is possible if the fluoride content in drinking water is less than half the minimum dose.

**simultaneous use of two endogenous methods for the prevention of dental caries for children**

contraindicated

shown

possible if the fluoride content in drinking water

less than half the optimal dose

**The simultaneous use of two endogenous methods of fluoride prevention of dental caries:**

impossible

possible if the fluoride content in drinking water is optimal

possible if the fluoride content in drinking water is less than half the optimal dose

possible if the fluoride content in drinking water is more than optimal

**drugs have a odontotropic effect:**

calcium hydroxide preparations;

antibiotics and antiseptics

corticosteroid;

eugenol

**Occlusion - a closing of dental**

**rows**

with the usual static position of the lower jaw

in a state of physiological rest

when the lower jaw is shifted forward by half the width of the crowns of molars

when the lower jaw is shifted forward to the full width of the crowns of molars

**Windows in the dental office focus on:**

north

south

East

southwest

**staining of the focus of demineralization of enamel with a solution of methylene blue occurs**

**due to**

Enamel permeability in the affected area

lower plaque pH

violations of Ca / P ratio in enamel

increase plaque pH

**Staining of the focus of demineralization of enamel with a solution of methylene blue occurs due to:**

Enamel permeability in the affected area

Ca / P violation of the enamel ratio

lower plaque pH

destruction of the surface layer of enamel

**Staining of enamel lesions with a 2% solution of methylene blue is typical for:**

caries in the spot stage

fluorosis

systemic hypoplasia

local hypoplasia

**is gi determination carried out?**

to determine the quantity and quality of plaque

for determining gingival inflammation

to determine caries

to improve nutrition of tooth enamel

**Determination of the hygienic condition of the oral cavity, teaching the patient the correct method of brushing and**

**independent brushing of the teeth by the patient under the supervision of a doctor implies the concept**

controlled brushing

professional brushing  
professional oral hygiene  
personal hygiene

**Determination of the hygienic condition of the oral cavity, teaching the patient the correct method of brushing and independent brushing of the teeth by the patient under the supervision of a doctor implies the concept**

controlled brushing  
professional oral hygiene  
personal hygiene  
professional oral hygiene

**determining the amount of saliva is called**

irrigoscopy  
scintigraphy  
sialometry  
dopplerometry

**determine the tartar and plaque index.**

KPU, UIG  
Izk, Izn  
RMA, KP  
UIG, IZK, OUT

**determine the nasaria that meets modern requirements in the event of tooth decay:**

Nazarov Borovsky  
Limberg's Nazaria  
bacterial  
chemical parasitic

**determine the correct sequence for using the floss: 1. introduce a stretched thread along the contact surface of the tooth; 2. sequentially clean the contact surfaces on all sides of each tooth; 3. thread 35-40 cm long is wound around the first phalanx of the middle fingers of both hands; 4. with several movements threads remove all soft deposits**

3,1,4,2  
3,4,1,2  
3,1,2,4  
1,3,2,4

**determine the correct sequence for treating teeth with fluoride varnish: 1. the tooth surface is wiped with a cotton swab; 2. the excess of varnish that has fallen on the mucous membrane of the oral cavity is removed; 3. after 4-5 minutes the varnish dries; 4. apply the preparation on the teeth with a thin layer of cotton ball or brush**

1,4,2,3  
4,1,2,3  
1,4,3,2  
4,2,1,3

**determine the correct sequence of steps for sealing the fissures: 1. Etching of tooth enamel with 35-37% phosphoric acid for 15-20 seconds; 2. drying the etched surface with air; 3 repeated isolation of the tooth from saliva with cotton rolls and saliva ejector; 4 washing off the acid from the tooth surface with a water-air jet; 5. application of sealant**

3,1,2,4,5  
3,4,1,2,5  
3,4,2,1,5  
1,2,3,4,5

**you can determine the presence of tartar using the indices:**

KPI  
CPU  
PHP

RMA

**The patient survey begins with the clarification:**

complaints

life stories

allergic history

past diseases

**the optimal concentration of fluoride in drinking water in areas with a temperate climate is mg / l:**

1.0;

0.5;

0.8;

1,2;

**The optimal concentration of fluoride in drinking water in areas with a temperate climate is (mg / l):**

1,0

0.8

1,2

2.0

**The optimal concentration of fluoride in drinking water in areas with a cold climate is (mg / l):**

1,2

0.8

1,0

1,2

**the optimal fluoride content in drinking water in temperate regions is**

0.8 mg / l

0.5 mg / l

1,0 mg / l

1.2 mg / l

**organizational forms of dental education. exclude unnecessary.**

single;

group

mass;

individual;

**the organization of measures to reduce the time spent by patients on visiting the clinic includes:**

rationing the activities of doctors;

proper organization of a schedule for appointing doctors;

accurate work of the registry;

staff discipline.

**to examine a young child with a healthy oral cavity and “risk factors” for the occurrence of dental diseases should:**

according to indications, but at least 2 times a year;

3 times a year;

4 times a year.

Once a year

**dental examination in a certain sequence?**

from the upper jaw from right to left, starting from the first upper molars, then the teeth of the lower jaw from the left lower molars;

starting with molars of the lower jaw on the left, passing to the upper jaw;

starting from the fangs of the upper jaw passing to the lower jaw;

starting with incisors of the lower jaw;

**teeth inspection carried out using?**

mirror and probe

mirror and excavator  
probe and spatula  
mirror and putty knife

**examination of the person and the adjacent areas are carried out to determine?**

its forms, general condition of a patient skin color, condition of sclera, features of articulation, condition of lymphatic nodes

bite  
condition sclera  
skin condition

**Examination of the patient begins with:**

external inspection  
filling in the dental formula  
dentition examination  
bite definitions

**oral examination - is this?**

one of the main methods for diagnosing dental diseases  
method for determining the state of tooth pulp  
method for determining the state of the tooth root  
method for determining the state of fluoride in the body

**Is there an oral examination?**

external, and examination of the oral cavity and teeth  
outside  
side

do not distinguish

**examination of the oral cavity begin with?**

open mouth  
closed jaws and teeth  
chewing  
during a conversation

**the main source of fluoride in the human body is**

drinking water  
food products  
air  
medicines

**The main source of fluoride in the human body is:**

drinking water  
food products  
medicines  
vitamins

**The main source of fluoride in the human body - is:**

drinking water  
food products  
air  
medicines

**The main method for diagnosing caries in the spot stage**

vital staining  
EDI and radiography  
radiography and thermodiagnosics  
thermodiagnosics and transillumination method

**main tasks of premedication. exclude unnecessary**

Decreased anesthesia.  
Removing fear of treatment.  
Lowering the voltage state.

Lowering the threshold for susceptibility to pain.

**The main tools used for filling cavities:**

spatula and corkscrew

probe

ironer

mirror and probe

**main clinical manifestations of imperfect odontogenesis:**

pathological destruction

pathological tooth mobility

condition of polycystic

wedge-shaped defect

**main clinical manifestations of imperfect odontogenesis:**

pathological destruction

pathological tooth mobility

condition of polycystic

wedge-shaped defect

**the main differences between the surface layer of enamel from the deep layers. exclude unnecessary**

It has accumulated harmful substances from the environment.

Large mineralization of the surface layer of enamel.

Microhardness.

Resistance to caries.

**basic rules of good nutrition.**

all listed

caloric value

diversity in composition

moderation in quantity

**basic requirements for toothbrushes:**

natural bristles;

artificial fiber;

the presence of indicator bristles;

the size of the working part is 2-2.5 teeth;

**basic requirements for root canal filling materials**

biological tolerance;

good hermetic sealing;

good inputability, radiopacity;

antimicrobial and stimulating tissue regeneration of periodontal action;

**the main for the restoration of periodontal tissue is**

thorough instrumental processing of the channel;

antimicrobial treatment of root canals;

transcanal administration of drugs that promote tissue regeneration;

the creation of the outflow of exudate;

**the main method of treating caries in the stage of a white spot is**

All answers are incorrect.

preparation and filling

grinding of modified enamel

filling without preparation

**the main structural element of enamel is**

All answers are correct.

hydroxyapatite crystal

enamel prism

organic component

**The main risk factor for caries is:**

poor oral hygiene;  
accompanying illnesses  
social factor;  
poor nutrition.

**The main tasks of the clinic are:**

organization of work to promote a healthy lifestyle;  
preventive work;  
examination of temporary disability.

medical care for patients at home;

**The main risk factors for caries are:**

the use of large amounts of carbohydrates.

high fluoride content in drinking water;

poor oral hygiene;

low fluoride content in drinking water;

**features of primary teeth to exclude unnecessary.**

fibrous tissue predominates in the pulp of the tooth;

the dentinal tubules are wider and shorter;

cell elements prevail in the pulp of the tooth;

the roots are shorter and more widely diverging to the sides;

**features of primary teeth. exclude unnecessary.**

enamel and dentin are thicker in thickness than in constant;

in size less than constant;

have a bluish tint;

enamel and dentin are thinner in thickness than in constant;

**features of the pulp chamber of primary teeth.**

wider

narrower

same than compacted

no correct answer

**Of particular importance in reducing the solubility of enamel is saliva removed?**

fluoride

Phosphorus

Calcium

Magnesium

**acute deep caries is treated in (exclude unnecessary):**

one visit

2 visits

3 visits

All answers are incorrect.

**different forms of pulpitis should be differentiated from secondary caries in milk teeth:**

sharp focal

acute diffuse

chronic fibrous

chronic gangrenous

**what dental health depends on. exclude unnecessary.**

from work;

from human habits;

from the general condition of the body;

from human behavior;

**what dental health depends on. exclude unnecessary:**

from the general condition of the body

from human habits

from human behavior

from work

**apply whitening pastes?**

for improving the color of tooth enamel

for the prevention of gingival mucosa

for mechanical cleaning of teeth from fine plaque

for calculus

**where do calcium ions appear in the "dentin bridge" when healing the pulp under a coating of calcium hydroxide?**

from pulp blood flow

directly from calcium hydroxide

from surrounding dentin due to redeposition

due to alkaline phosphatase present in the pulp

**a distinctive feature of satinfloss dental floss is**

combination of nylon core and polymer shell

the presence of menthol fragrance

the ability to break when introduced into the interdental space

tape availability

**breaking of the crown part in the treatment of caries occurs when:**

thinning of the walls of the cavity

wrong choice of filling material

improper formation of the enamel edge

all of the above

**note the features of the course of decay of deciduous teeth:**

fast flow of the process

slow process

flat lesion

localized only in the fissures of the teeth

**note the size of the carious spot at which conservative treatment is effective:**

up to 3 mm

up to 4 mm

up to 5 mm

up to 6mm

**relative saliva density**

1.001-1.017-1.1017

1-5

0.5-0.1

5.8-7.3

**attitude of the dentist to the psychological state of the child:**

first of all, knowledge is required so that dentists get deeper and deeper acquainted with psychology;

the dentist must always adhere to psychological principles regarding the child;

Before starting treatment, the dentist must examine the psychological state of the child

all answers are correct

**the negative effect of sweets on the teeth.**

all listed

affects tooth pulp

deposited in plaque followed by fermentation by microorganisms and the release of acids;

containing low-calorie carbohydrates do not help cleanse the teeth, does not provide a functional chewing

load on the tooth and surrounding tissues;

**the negative effect of carbohydrates on the body of the child?**

they lead to rapid saturation with calories and prevent the intake of essential amino acids, vitamins, trace elements;

leads to resorption;

affects the mucous membrane;

no correct answer

**negative properties of microhybrid composites are:**

all of the above.

not perfect surface quality (worse than microfiles)

the complexity of clinical use;

insufficient strength and spatial stability when filling extensive defects of classes 2 and 4;

**Estimated criteria for oral hygiene by the Green Vermilion Index group index 0.7-1.6?**

good hygiene

poor hygiene

average hygiene level

the level of hygiene is very poor

**Estimated criteria for oral hygiene by the Green Vermilion Index Group Index 2.6?**

poor hygiene, high index

good hygiene, low index

hygiene level is average, index level is low

hygiene is very poor, index level is very high

**focal demineralization of enamel is found on the teeth:**

temporary and permanent.

temporary;

permanent;

all answers are incorrect

**cleaning, processing and sterilization of dental tips should be carried out:**

sterilization with preliminary pre-sterilization preparation.

mandatory sterilization

enough disinfection

pre-sterilization preparation is required followed by disinfection

**the cleaning power of gelled toothpastes compared to chalk-based toothpastes**

below

higher

the same

independent of the basis

**cleaning action of toothpaste is provided with members of their becoming components:**

binding agents;

abrasive

blowing agents;

flavoring.

**the cleansing effect of toothpastes is provided by the constituent components**

abrasive

binders

flavoring

Biologically active substance

**palpation is performed starting with?**

on the opposite side of the pathological process, gradually moving to the diseased focus

from the pathological process

start with gums

from the upper jaw

**pathological tooth mobility in children occurs with:**

imperfect odontogenesis

Getchinson's disease

Fournier disease

imperfect dentinogenesis

**For patients with bracket systems for the most effective cleansing of the space between the arch and the teeth, it is recommended to use:**

toothbrushes

toothpicks

chewing gum

electric toothbrush

**For patients with bracket systems for the most effective cleansing of the space between the arch and the teeth, it is recommended to use:**

toothbrushes

a toothbrush with a smooth clipping of the bristles

electric toothbrush

chewing gum

**For patients with bracket systems for the most effective cleansing of the space between the arch and the teeth, it is recommended to use:**

superflosses

manual toothbrush

electric toothbrush

toothpicks

**Patients with wedge-shaped defects of hard tissues of teeth are recommended to use a toothbrush:**

soft

medium hardness

degree of rigidity does not matter

tough

**Dental pellicle formed by:**

salivary glycoproteins;

keratin;

reduced cells of the epithelium of the enamel organ;

the accumulation of microorganisms.

**Pellicle of the tooth is formed:**

saliva glycoproteins

collagen

keratin

organic acids

**tooth pellicle ...**

acquired thin transparent organic film from 1.5 to 50 microns;

sticky soiled mass of yellow or grayish-yellow color;

whitish-yellow solid formation;

component of tooth enamel;

**the pellicle forms on the surface of the tooth**

after teething

before teething

during teething

All answers are correct.

**the pellicle forms on the surface of the tooth**

after teething

before teething

before and after teething

no correct answer

**the foaming component in the composition of the toothpaste is:**

sodium lauryl sulfate;

polyethylene glycol;

hydrocolloids;  
urea.

**the initially formed plaque mainly contains microorganisms:**

anaerobic  
anaerobic and aerobic  
mushrooms  
aerobic

**The first stage of controlled brushing is:**

determination of the patient's oral hygiene  
individual selection of oral hygiene products for the patient  
removal of supra- and subgingival mineralized dental deposits  
patient self-brushing

**The first stage of controlled brushing is:**

determination of the patient's oral hygiene  
teaching patient to brush teeth on models  
individual selection of oral hygiene products for the patient  
removal of supra- and subgingival mineralized dental deposits

**The front teeth of a 3-year-old child are normally located**

without three  
with trans  
with diastema only  
with diastema and three

**The anterior buccal tubercle of the upper molar normally contacts**

intermuscular fissure of the lower molar  
posterior buccal tubercle of the lower molar  
contact point between lower teeth 6 and 5  
contact point between lower teeth 5 and 4

**The period of preparation for the change of primary teeth to permanent continues**

from 4 to 6 years  
from 5 to 8 years  
from 3 to 4 years  
from 10 to 14 years

**tooth development periods**

development after birth  
differentiation of dental primordia  
histogenesis of hard tissues of the tooth  
laying and processing of dental primordia

**percement is:**

connective ligament holding the root of the tooth in the alveolus of the jaw;  
dense fibrous connective tissue, consisting of inelastic fibers;  
of cancellous bone, which plates are located, about the horizontal crest therebetween filled with yellow bone marrow;

stratified squamous epithelium usually non-keratinized epithelium;

**tooth percussion assessed condition**

periodontal  
pulp  
gums

all answers are correct

**percussion happens**

horizontal and vertical  
Horizontal

Vertical  
transverse

**Pyrophosphates are part of toothpastes as components:**

preventing tartar formation

caries

anti-inflammatory

whitening

**the plasticity and uniformity of the consistency of toothpastes is ensured by their constituent components**

binders

abrasive

blowing

flavoring

**filling materials that do not emit toxic substances and are used in the treatment of caries in molars of 2 year old children.**

adhesive

phosphate cement

silidont

silicin

**The area of the dental office should be at least one chair (m):**

14

18

fifteen

9

**according to the location of the lesion, they distinguish:**

chewing surface caries, cervical, contact

lingual, cervical, caries of a chewing surface

cervical pin

fissure, vestibular

**According to WHO recommendations, the concentration of fluoride in adult toothpastes should be at least (ppm):**

1000

500

2000

5000

**According to WHO recommendations, the daily intake of sugar by preschool children should be (g):**

20

10

40

100

**over the course. hard tissue erosion happens?**

all answers are correct

slow flowing

fast flowing

paused

**by the nature of the course, the following forms of caries are distinguished**

acute, chronic

spot stage, surface, medium, deep

fissure, cervical, circular

enamel, dentin, cement

**superficial loss of hard tissues of teeth due to their dissolution by acids without involvement of bacteria in this process?**

physiological abrasion

pathological abrasion  
pathological resorption  
hard tissue erosion

**superficial caries occurs in place (exclude unnecessary):**

unchanged plot  
white spot  
erosion

All answers are incorrect.

**superficial caries occurs in place (exclude unnecessary):**

erosion  
white spot  
unchanged plot  
hypoplasia

**superficial caries occurs in place (exclude unnecessary):**

unchanged plot  
white spot  
erosion

All answers are incorrect.

**superficial caries occurs in place (exclude unnecessary):**

erosion  
white spot  
unchanged plot  
hypoplasia

**The surface of the dental unit is treated with a disinfectant solution:**

after taking each patient  
once a day  
twice a day  
three times a day

**an increase in fluoride causes the disease:**

fluorosis  
Gingivitis  
Periodontitis  
Periodontitis

**hyperplasia means:**

excessive enamel formation in the form of enamel drops  
insufficient enamel formation  
violation of the development of enamel and dentin  
no correct answer

**under which nervous system is salivation controlled?**

autonomic nervous system  
somatic nervous system  
CNS  
PNS

**mobility of 71, 81 teeth in a child of 6 years - a sign:**

physiology;  
pathology;  
has no diagnostic value.  
all answers are correct;

**Tooth mobility is determined using a tool:**

tweezers  
mirrors  
angle probe  
excavator

**Does maintaining a good oral hygiene provide?**

all answers are correct

chewing

digestion

self-hygiene, mineralization

**late teething is due**

rickets, acute infections, congenital metabolic diseases;

heart defects

nervous system disorders

heredity

**an indication for the appointment of systemic methods for the prevention of caries fluoride is the level of caries intensity in 12-year-olds**

moderate, tall, very tall

very low, low, medium

low, medium, high

All answers are correct.

**An indication for the appointment of systemic methods of fluoride prevention of caries is the level of intensity of caries in 12-year-old children:**

medium, high, very high

low medium

low, medium, high

very low, medium, very high

**an indication for the use of systemic methods for the prevention of caries fluoride is the content of fluoride in drinking water**

optimal

less than half the optimal

suboptimal

more than optimal

**An indication for the use of systemic methods of fluoride prevention of caries is the fluoride content in drinking water:**

less than half the optimal

optimal

suboptimal

more than optimal

**An indication for the creation of an additional site in the cavities of class III is:**

difficult cavity approach

the location of the cavity on the palatal surface

location of the cavity on the lingual surface

the presence of a deep cavity

**indications for the sealing method. exclude unnecessary.**

high level of patient hygiene

age indications

deep fissures

tooth position in a state of incomplete occlusion

**Is saline toothpaste used for caries prophylaxis?**

not

Yes

yes, but during teething

no correct answer

**caries intensity indicators in children aged 15-18 years are interpreted as the first degree of its activity:**

CPU + CP up to 6;

CPU + CP up to 4;

CPU + CP up to 5;

KPU + kp 6-8;

**indicators of caries intensity in children aged 15-18 years are interpreted as the second degree of its activity?**

KPU + kp 7-9;

CPU + CP up to 5;

CPU + CP up to 6;

KPU + kp 6-8;

**indicators of caries intensity in children aged 15-18 years are interpreted as the third degree of its activity?**

more than 9;

CPU + CP up to 5;

CPU + CP up to 6;

KPU + kp 6-8;

**caries intensity indicators in children aged 7-10 years, with the first degree of caries activity:**

CPU + CP up to 5;

CPU + CP up to 6;

KPU + kp 6-8;

KPU + kp 7-9.

**Tooth coating with fluoride in order to prevent caries is most effective in the age period:**

from 3 to 15 years

from 2 to 12 years old

from 4 to 10 years

from 12 to 18 years old

**complete staining of the crown according to Fedorov-Volodkina is determined by the following score:**

5

3

10

6

**positive properties of microfiles are:**

all of the above.

good polishability and gloss finish

high color stability;

elasticity;

**The positive properties of silver amalgam are:**

high strength and hardness, ductility;

lack of adhesion to hard tissues of the tooth;

volume change during hardening;

high thermal conductivity;

**positive properties of sills are:**

all of the above

high biocompatibility;

chemical adhesion to hard tissues of the tooth;

minimal shrinkage;

**for 1 of Scans sol of ra m and f m of sodium chloride with the objective of th etc. Of ilaktiki caries recommended at age**

10 years

3 years

6 years

12 years

**Rinsing with fluoride-containing solutions for the prevention of caries is recommended from the age (years):**

6

3

10

fifteen

**the oral cavity of children should not be treated:**

coneston solution

antibiotics

iodinol

iodine wool

**the incidence of dental caries of hard tooth tissues is evaluated using the index:**

CPU (h);

IGR-U;

PHP

PMA;

**the incidence of caries of hard tissues of teeth is estimated using indices:**

KPU (s) and KPU (p)

PHP

PMA;

CPITN

**Damage to symmetrical teeth is characteristic for:**

systemic hypoplasia

fluorosis

local hypoplasia

focal demineralization of enamel

**lesions that occur during the prenatal period of development and calcification of dental tissues:**

dental tissue hypoplasia

wedge-shaped defects

dental hyperesthesia

hard tissue necrosis

**lesions that occur during the prenatal period of development and calcification of dental tissues:**

fluorosis

wedge-shaped defects

hard tissue erosion

pathological abrasion of enamel and dentin

**lesions that occur after teething:**

dental hyperesthesia

dental hyperplasia

dental tissue hypoplasia

marble disease

**lesions that occur after teething:**

Hard tissue erosion

Stepton-Capdepon dysplasia

marble disease

fluorosis

**order of eruption of primary memory BOV**

I—II—IV—III—V

I—II—III—IV—V

II—I—III—IV—V

III—IV—V—II—I

**Teething Procedure**

I - II - IV - III - V

I — II — III — IV — V

II — I — III — IV — V

III - IV - V - II - I

**Teething procedure for permanent teeth**

6-1-2-4-3-5-7

6-1-2-3-4-5-7

1-2-4-5-3-6

5-3-6-1-2-3

**After use, the burs are placed in:**

disinfectant solution

dry heat cabinet

glasperlen sterilizer

autoclave

**after treatment of dental caries, the following can occur: 1 complications, inflammation and necrosis of the pulp; 2 secondary caries; 3 papillitis; 4 traumatic apical periodontitis; 5 impaired occlusion. choose the correct answer according to the scheme:**

1,2,3,4,5

1.4

1.3

3.4

**After ingestion of sugars, their increased concentration in the oral cavity persists for (minutes):**

20-40

10-15

more than 2 hours

during the day

**After sealing the fissures, the first control examination of the patient is carried out through:**

1 week

1 month

6 months

1 year

**do teething occur?**

trauma, erosion of teeth, wedge-shaped defect;

tooth fluorosis;

enamel hypoplasia;

enamel hyperplasia;

**After professional removal of dental plaque, it is most advisable to carry out**

fluoride varnishing of teeth; staining of teeth with iodine-containing solutions

controlled brushing

examination of the patient's oral cavity

fissure sealing

**After professional removal of dental plaque, it is most advisable to carry out:**

fluoride coating of teeth

fissure sealing

staining of teeth with iodine-containing solutions

controlled brushing

**gradual and regular wear of tooth substance as a result of chewing?**

physiological abrasion

pathological abrasion

excessive abrasion

all answers are correct

**fluoride intake in the body?**

with water

through porridge

through blood

not coming

**why should a pediatric dentist know the age-related psychoemotional state of children?**

all answers are correct

properly treat

treat well

prevention of stoma complications

**Why the surface layer of enamel does not undergo changes during caries in the spot stage:**

due to the presence of pellicles.

the surface layer of enamel as a filter passes microorganisms into the deeper layers.

due to constantly occurring processes of remineralization.

due to the structural features of the outer layer of enamel.

**why the surface layer of enamel undergoes changes during caries in the spot stage.**

The surface layer of enamel as a filter passes microorganisms into the deeper layers.

Due to the presence of pellicles.

Due to the constantly occurring processes of remineralization.

Due to the structural features of the outer layer of enamel.

**rules for using toothpicks: eliminate unnecessary**

toothpick placed at an angle of 30 ° to the tooth

toothpick placed at 45 ° to the tooth

the end of the toothpick is in the gingival groove

the tip of the toothpick is advanced along the tooth, following from the base of the groove to the contact point of the teeth

**rules for brushing your teeth.**

all answers are correct

dividing the jaw into fragments of 2-3 teeth and move on to the next fragment

cavity of the upper jaw on the left, then, go to the front section and to the right jaw

cleaning time 2.5-3 min

**practical recommendations for reducing sugar in the diet?**

all listed

decrease in the amount of sugar intake

rinse or brush your teeth after eating sweets

the use of sweets no more than 2-3 times a day during main meals

**mainly what microorganisms does mature plaque contain:**

aerobic

anaerobic and aerobic

mushrooms

anaerobic

**drug for the correction of psychoemotional state:**

tranquilizers

antispasmodics;

analgesics

antihistamines

**do calcium hydroxide preparations have?**

Bactericidal action

Annoying effect

Devitalizing action

stimulating dentinogenesis

**drugs used to treat the carious cavity in children:**

hydrogen peroxide 3%

potassium permanganate solution

chloramine solution 4%

calcium gluconate solution

**drugs used to treat the carious cavity in children:**

hydrogen peroxide 3%

potassium permanganate solution

chloramine solution 4%

calcium gluconate solution

**oral fluoride preparations for the general treatment of caries are not prescribed for:**

high fluorine content in water

low fluorine content in water

optimal fluoride content in water

irrelevant

**During an external examination of the patient's face, the doctor notes:**

face symmetry, nasolabial folds, skin color

dentition integrity

age spots, hair color

nose shape, eye color

**during an external examination pay attention to?**

general view of the patient, his activity

on his communication

on his food

on his dream

**with a high-carb diet observed:**

hypersalivation;

hyposalivation;

Enhancement of acid resistant enamel <sup>TM</sup>;

decrease in Ca / P ratio;

**with a high-carb diet observed:**

increase in Ca / P ratio;

hypersalivation;

increased enamel resistance to acid;

hyposalivation;

**with deep caries, the carious cavity is not treated:**

chloramine 1-2%, air drying

hydrogen peroxide, air drying

hydrogen peroxide, alcohol, ether

chlorhexidine 01-0.2%, air drying

**with deep caries, the carious cavity is not treated:**

chloramine 1-2%, air drying

hydrogen peroxide, air drying

hydrogen peroxide, alcohol, ether

chlorhexidine 01-0.2%, air drying

**with deep caries, the patient complains of short-term pain from (exclude unnecessary):**

cold and hot

sour and sweet

cold and mechanical irritants

All answers are incorrect.

**with deep caries, cushioning materials are most rational:**

odontotropic;

glucocortex-based;

antimicrobial action;

indifferent

**for periodontal diseases, a toothpaste containing**

extracts of medicinal plants, enzymes

fluorine compounds

enzymes

calcium compounds

**When swallowing a solution of sodium fluoride during the rinse, drink 1 tablespoon of the solution:**

calcium gluconate 10%

chlorhexidine 0.06%

hydrogen peroxide 3%

magnesium sulfate 10%

**when probing the carious cavity with an average caries of pain:**

along the walls of the cavity

there is no pain

sharp pain

at the bottom of the cavity

**what diseases do we prescribe vitofluor for?**

multiple caries

Stomatitis

Gingivitis

Periodontitis

**What diseases do not use toothpastes containing dietary supplements?**

caries

Gingivitis

Periodontitis

Oral mucosal diseases

**With caries in the stain stage, from the damaged subsurface enamel layer, mainly the loss of ions**

**occurs:**

calcium

fluoride

carbonates

sodium

**with mild severity of gingivitis, an evaluation criterion for the PM index?**

30% or less;

31% -60%;

61% -70%;

61% and above;

**with a microscopic study of 1 milligram of plaque taken from a person who does not care for the oral cavity is found?**

700-900 million different microbes

300-600 mil. micr

100 million dec. Mikr

All answers are correct.

**with initial caries in enamel occurs:**

demineralization and remineralization

enamel demineralization;

violation of the relationship between the protein and mineral components of enamel;

enamel resorption.

**If it is impossible to reliably isolate the tooth from saliva during the fissure sealing method, the**

**material of choice is:**

glass ionomer cement

light curing sealant

chemically curable sealant

compomer

**with imperfect amelogenesis are not violated in the structure:**

pulp

dentin

enamel

enamel and dentin

**with poor oral hygiene of the pH of the oral fluid**

declining

is increasing

does not change

becomes neutral

**with poor oral hygiene of the pH of the oral fluid:**

increases;

decreases;

does not change

There is no right answer.

**When examining the lymph nodes, the method is used:**

palpation

percussion

radiography

sounding

**When teaching a patient oral hygiene, it must be emphasized that plaque growth resumes: how many hours after thorough brushing, does it begin to grow and affect the teeth and gums?**

after 6 hours

after 3 hours

after 1 hours

after 12 hours

**in the general treatment of caries, fish oil is combined with**

All answers are correct.

sodium fluoride and vitamin D2

B vitamin

vitamins A, E, D2

**with the general treatment of caries, fish oil is combined with a reception (exclude unnecessary):**

sodium fluoride and vitamin D2

B vitamin

calcium glycerophosphate and vitamin C

vitamins A, E, D2

**in the general treatment of post-radiation necrosis of hard tooth tissues, apply: 1)**

**antioxidants; 2) calcium and multivitamins; 3) hormones; 4) anesthetics; 5) desensitizing**

**drugs. choose the correct answer according to the scheme:**

1,3

2,4

1,2,5

3,5

**when determining the hygienic condition of the oral cavity using the Fedorov – Volodkina index, they are painted**

vestibular surfaces of the upper and lower incisors

vestibular surfaces of 6 upper anterior teeth

vestibular surfaces of 6 lower anterior teeth

lingual surfaces of the first permanent molars

**when determining the hygienic condition of the oral cavity, a solution is used to stain dental plaque**

Schiller – Pisarev solution

2% methylene blue

1% brilliant green

5% alcohol solution of iodine

**when determining the hygienic state of the oral cavity for staining plaque, which solutions do not use:**

methylene blue;

fuchsin;

Schiller-Pisarev solution;

erythrosine.

**when determining the hygienic condition of the oral cavity using the Fedorov-Volodkina index, the following are painted:**

vestibular surfaces of 6 lower anterior teeth;

lingual surfaces of the first permanent molars;

vestibular surfaces of the upper and lower incisors;

vestibular surfaces of all groups of teeth of the upper and lower jaw.

**When determining the PHR hygiene index, plaque is evaluated by:**

localization

thickness;

color.

intensity

**when determining the green vermilion index, teeth are examined**

16, 11, 26, 36, 31, 46

16, 26, 36, 46

43, 42, 41, 31, 32, 33

16, 12, 24, 36, 32, 44

**when determining the PM index, the vestibular gum is stained in the area of:**

all teeth of the upper and lower jaw.

front teeth of the lower jaw;

front teeth of the upper jaw;

all upper teeth;

**when determining the pH index, the lingual surfaces of the teeth are stained:**

36, 46

16, 26

16, 36

16, 46

**when examining teeth thoroughly examined?**

figures, chewing surface, natural fossa, cervical region of the tooth, contact surfaces;

tooth color, chewing surface amount;

number of teeth and their condition;

tooth color and contact surfaces;

**When examining the oral cavity, dental probing is carried out:**

on all surfaces

in fissures

in the cervical region

in the area of contact surfaces

**When cleaning the vestibular and oral surfaces of the teeth with the standard method of brushing teeth, the movements of the head of the toothbrush are made in the direction:**

vertical (from the gum to the cutting edge or chewing surface)

horizontal (right-left, back and forth, parallel to the gum)

vertical (from the cutting edge or chewing surface to the gum)

the head of the toothbrush rotates counterclockwise

**On palpation of the submandibular lymph nodes, the patient's head should be:**

leaning forward

leaned back

tilted left

tilted back and left

**when filling a deep carious cavity of class 1, the basic gasket is placed:**

hybrid SIC triple hardening.

from phosphate cement;

polycarboxylate cement;

silico-phosphate cement;

**when filling with composite materials, the enamel bevel is formed with the aim of:**

increased adhesion area;

chemical bonding of the composite material with enamel;

uniform distribution of load on tooth tissue;

improved polishing of the composite;

**when filling cavities of classes 3-4, a linear gasket is placed:**

hybrid double hardening SIC;

from phosphate cement;

compomer;

traditional SIC;

**with superficial caries, pain occurs from:**

sweet

hot

no reason

cold

**with superficial caries, children complain:**

for short-term pain from chemical irritants

pain arising periodically without exposure to an external stimulus

pain arising while eating

children do not make complaints

**with superficial caries, children complain:**

for short-term pain from chemical irritants

pain arising periodically without exposure to an external stimulus

pain arising while eating

children do not make complaints

**when postoperative sensitivity appears, it is necessary:**

wait 2 weeks and, in the absence of positive dynamics, re-fill the tooth using a spacer from the SIC;

carefully polish the seal;

treat the restoration with a fluorine-containing preparation;

remove the tooth.

**When preparing a tooth, the most painful area is :**

enamel-dentin compound

enamel  
dentin cement compound  
cement

**When preparing the cavity, carry out:**

carious opening  
pickling  
electroodont  
diagnostics  
matrix overlay

**during the preparation of the carious cavity, an enamel bevel (seam) is formed:**

not formed on the occlusal surface.

is always;

not formed in cavities of class 3;

not formed in class 5 cavities

**When taking soft foods containing a large amount of easily fermentable carbohydrates, it is observed:**

hyposalivation

decreased saliva viscosity

hypersalivation

increase in the concentration of mineral elements

**When using local fluoridation plants in schools, the concentration of fluoride in water is (mg / l):**

4-5

0.5-1

8-10

12-15

**when using one- and two-component adhesive systems, it is necessary:**

etch the enamel for 30 seconds, and dentin - 15 seconds;

etch enamel and dentin 15 sec.

etch the enamel for 30-60 seconds;

irrelevant.

**during professional hygiene, smooth tooth surfaces should be cleaned from plaque with**

rubber caps and polishing pastes

brushes and polishing pastes

floss

strips

**When conducting professional hygiene, it is more advisable to clean smooth surfaces of teeth from plaque using:**

rubber caps and polishing pastes

brushes and polishing pastes

floss

toothbrushes and pastes

**When conducting professional hygiene, it is more advisable to clean smooth surfaces of teeth from plaque using:**

rubber caps and polishing pastes

brushes and polishing pastes

toothbrushes and pastes

ultrasonic scalers

**during professional hygiene, it is advisable to clean the chewing surface of the teeth with plaque**

brushes and polishing pastes

rubber caps

floss

strips

**When conducting professional hygiene, it is advisable to clean the chewing surface of the teeth from plaque using:**

brushes and polishing pastes  
floss  
toothbrushes and pastes  
ultrasonic scalers

**When conducting professional hygiene, it is advisable to clean the chewing surface of the teeth from plaque using:**

brushes and polishing pastes  
floss  
rubber caps and polishing pastes  
ultrasonic scalers

**When conducting professional hygiene, it is more advisable to clean the contact surfaces of the teeth from plaque using:**

floss  
toothbrushes and pastes  
toothpicks  
brushes and polishing pastes

**When conducting professional hygiene, it is more advisable to clean the contact surfaces of the teeth from plaque using:**

floss  
toothbrushes and pastes  
rubber caps and polishing pastes  
brushes and polishing pastes

**during professional hygiene, the removal of soft plaque residues from tooth surfaces is performed using: (select the wrong answer):**

a toothbrush and toothpaste;  
rubber caps and polishing pastes;  
brushes and polishing pastes;  
floss.

**When carrying out the procedure for coating teeth with fluoride varnish, the first is the manipulation:**

dental cleansing  
fluoride application  
tooth drying  
saliva isolation

**when carrying out remineralizing therapy, a 10% calcium gluconate solution is used in combination with a solution**

3% "Remodent"  
2% sodium fluoride  
1% chlorhexidine  
10% calcium nitrate

**when conducting an electroodontodiagnosis of a diseased tooth, it is advisable to start measuring:**

from the same tooth on the opposite side of the dental arch; b) b)  
with a similar tooth on the opposite jaw;  
from the antagonist;  
from any other tooth.

**when conducting an epidemiological dental examination of the child population, children aged (years) are examined:**

6, 12, 15;  
6, 9, 12;  
9, 12, 15.  
65 years and more

**When conducting an epidemiological dental examination of the population according to the WHO methodology, the condition of periodontal tissues is assessed using the index:**

CPI  
OHI - S  
CPU  
RMA

**during a routine examination, the presence of subgingival stone can be determined using**

sounding  
visual inspection  
staining with iodine-containing solution  
X-ray examination

**during a routine examination in a 7-year-old child, a sealing method was identified on permanent first molars. What sealants are clearly visible during the inspection?**

opaque  
transparent  
filled with  
unfilled

**during a routine examination in a 7-year-old child, a sealing method was identified on permanent first molars. specify chemical curing sealants**

Consensus ZM  
Geoseal  
Fissurid  
Denspley

**during a routine examination in a 7-year-old child, a sealing method was identified on permanent first molars. What sealants can be used in wet conditions?**

glass ionomer cements  
light curing silicates  
compomers  
no correct answer

**with early removal of temporary teeth, it is necessary to carry out:**

stimulation of teething of permanent teeth;  
removable prosthetics;  
grinding of unfinished mounds of temporary molars.  
all answers are correct;

**when restoring defects of class 5, it is preferable to use:**

fluid composites and compomers, microfiles;  
amalgams;  
traditional microhybrids;  
glass ionomer cements;

**with a decrease in saliva secretion, what trace elements do not penetrate the enamel layer?**

phosphorus and calcium  
Phosphorus and fluorine  
Calcium Apatite and Hydrogen  
Fluorine apatite and phosphorus apatite

**with a decrease in the secretion of saliva:**

the entry of phosphorus and calcium into the enamel decreases or stops altogether;  
worse oral hygiene;  
hygiene index is normal  
the ratio of calcium and phosphorus is violated

**when the content of calcium and phosphorus ions in the toothpaste is 2% to the enamel-dentin border during toothbrushing, they penetrate into the volume**

0.8-0.9%  
0.1-0.2%  
0.4-0.5%

1.1-1.2%

**When erasing the cutting edge of the tooth 2.2 in the cavities of class IV , an additional area is formed:**

at the cutting edge

in a blind hole

on the palatine surface

in the cervical region

**with an increase in the amount of soft plaque in the oral cavity - pH of saliva**

shifted to the acidic side

moves to the alkaline side

remains unchanged

all answers are correct

**with an increase in the amount of soft plaque in the oral cavity, the saliva reaction shifts to the side:**

alkaline

sour

neutral

does not shift

**With an increase in the amount of soft plaque in the oral cavity, the saliva reaction shifts to the side:**

alkaline

sour

neutral

does not change

**with an increase in the phosphorus of the hard tissue of the tooth occurs:**

the distance of the crystal lattice state decreases

Diastema observed

Tremor is determined

supercomplex tooth

**When removing dental deposits from the surface of the implants using tools:**

plastic

no special tools

carbide

titanium

**When removing dental deposits from the surface of the implants using tools:**

plastic

steel

titanium

carbide

**with a decrease in phosphorus in the composition of the hard tissue of the tooth occurs:**

the carious process itself activates multiple caries

Fluorosis

Hypoplasia

Hyperplasia

**when consuming carbohydrates, the most important factor that determines the creation of a cariogenic situation in the oral cavity is:**

frequency of sugar intake.

type of sugar taken;

the amount of sugar taken;

form of sugar intake;

**when consuming carbohydrates, the most significant factor determining the creation of a cariogenic situation in the oral cavity is**

sugar intake

type of sugar taken

amount of sugar taken

sugar form

**with increased friction with a toothbrush can occur?**

enamel abrasions in the cervical region

enamel in all teeth

no correct answer

enamel fissure

**With fluorosis, spots are localized on the surface of the tooth:**

on all surfaces

contact

chewing

vestibular

**when forming the bottom of the carious cavity of class i in children, it is dangerous to use**

**boron:**

globular;

fissure;

flame-shaped

back-

conical

**When forming a carious cavity of class II , an additional platform serves to:**

improve fixation of the seal

aesthetics

tooth strengthening

prophylactic excision

**when brushing teeth, the toothbrush should cover the teeth**

2-2.5 standing nearby

1-1.5 standing nearby

one segment

no correct answer

**When brushing your teeth, the toothbrush should cover the teeth:**

2-2.5 standing nearby

1-1.5 standing nearby

one segment

half of the dentition

**when brushing your teeth give preference?**

fluoride pastes

irrelevant

calcium pastes

no correct answer

**signs characteristic of Stainton-capdepon syndrome:**

hereditary disease

acquired disease

untimely teething

teeth erupt on time

**signs characteristic of Stainton-capdepon syndrome:**

hereditary disease

acquired disease

untimely teething

teeth erupt on time

**signs identified during the examination of the patient (loss of consciousness; pale, moist skin; hypotension; rare, shallow breathing) are characteristic of:**

fainting  
anaphylactic shock;  
hypoglycemia  
collapse.

**a sign of proper teething?**

pair of teething symmetrical teeth in a certain sequence  
unpaired teething  
late teething  
early teething

**A sign indicating the highest severity of inflammation is**

spontaneous bleeding  
swelling  
turgor violation  
gum retraction

**the use of caries prophylactic action of fluoride-containing toothpastes reduces the growth of caries in children by?**

15-35%  
15-25%  
15-45%  
100%

**the use of medical pads containing calcium hydroxide in case of deep caries is based on (exclude unnecessary):**

antibacterial effect  
odontotropic action  
desensitizing effect  
all of the above

**The use of sodium fluoride tablets for the prevention of decay of permanent teeth is most effective from the age of (years):**

2  
5  
6  
10

**the use of fluoride-containing varnish helps to prevent dental caries for children from 3 to 7 years**

All answers are incorrect.

temporary  
of permanent  
temporary and permanent

**The causes of local enamel hypoplasia are not:**

maternal illness during pregnancy  
illness after birth  
traumatic injury tooth germ  
milk tooth periodontitis

**The reasons for the formation of a gingival pocket are**

violation of the integrity of the bottom of the gingival sulcus and the germination of the epithelium along the cement of the tooth root  
neighboring tooth extraction result  
gum atrophy with exposure of the root of the tooth  
proliferation of gingival tissue

**The cause of pathological abrasion of hard tooth tissues is:**

continuous use of highly abrasive oral hygiene products  
low fluoride in drinking water

high fluoride content in drinking water  
eating hard foods

**The cause of endemic fluorosis is:**

high fluoride content in drinking water  
lack of calcium in the body of the child  
lack of fluoride in the body of a child  
systemic diseases of the mother during pregnancy

**reasons for the imperfect development and structure of enamel and dentin:**

mother's diseases in the second half of pregnancy  
mother's diseases in the first half of pregnancy  
diseases of the child in the first years of life  
genetic factors

**cervical cavities on premolar upper jaw fill:**

composites  
compomers  
glass ionomers  
amalgam

**Kulazhenko test determines the condition**

capillary gums  
non-specific resistance  
gum disease  
all answers are correct

**Yasinovsky test determines the condition**

gum disease  
non-specific resistance  
capillary gums  
all answers are correct

**Fissure sealing method for superficial caries:**

possibly with invasive techniques;  
impossible;  
all answers are incorrect  
possible with a non-invasive technique.

**teething is an act?**

physiological, indicator of correct development  
pathological, indicator of the correctness of development  
pathological, an indicator of incorrect development  
physiological, an indicator of incorrect development

**teething of permanent teeth begins?**

from the first molar at 6 years of age  
from the first incisor at 6 months  
from the first molar from 1 year  
from the first fang at the age of 6

**Sterilized products in a non-combined packaging bag remain sterile for (days):**

3  
2  
5  
8

**the anti-cariogenic effect of toothpastes is not due to the inclusion in their composition:**

sodium bicarbonate;  
sodium fluoride;  
sodium monofluorophosphate;  
aminofluoride;

**anti-cariogenic effect of toothpastes due to the inclusion in their composition:**

sodium fluoride;  
sodium monofluorophosphate;  
sodium bicarbonate;  
aminofluoride;

**The anti-cariou effect of toothpastes is mainly due to the introduction of:**

calcium compounds  
pyrophosphates  
extracts of medicinal plants  
chlorhexidine

**anti-cariou action does not have:**

chamomile  
calcium gluconate  
potassium phosphate  
glycerophosphate

**anticariogenic effect due to the presence in toothpastes:**

sodium alginate  
bicarbonate of soda;  
xylitol;  
triclosan

**a contraindication to the use of fluoride-containing toothpastes is**

high fluoride content in drinking water  
poor oral hygiene  
the patient has a large number of fillings  
gum bleeding

**A contraindication to the use of fluoride-containing toothpastes is:**

high fluoride content in drinking water  
systemic enamel hypoplasia  
the patient has a large number of fillings  
gum bleeding

**A contraindication to the use of fluoride-containing toothpastes is:**

high fluoride content in drinking water  
the patient has a large number of fillings  
poor oral hygiene  
gum bleeding

**Occupational hygiene includes the following activities controlled brushing. select the wrong answer:**

polishing fillings;  
removal of mineralized dental deposits;  
Removing soft plaque residues with brushes, rubber caps and polishing pastes;  
fissure sealing;

**Professional oral hygiene includes:**

professional dental extraction  
rinsing the oral cavity with fluoride-containing solutions  
fissure sealing  
filling carious cavities

**Professional oral hygiene includes:**

professional dental extraction  
rinsing the oral cavity with fluoride-containing solutions  
fissure sealing  
filling carious cavities

**professional oral hygiene does not include the event**

filling carious cavities  
controlled brushing

removal of supra and subgingival tartar  
no correct answer

**professional oral hygiene is it?**

hygiene by a dentist  
teeth cleaning  
carbohydrate restriction  
no correct answer

**occupational hygiene must be carried out**

2 times per year  
Once a year  
1 time in 3 months  
1 time in 2 years

**Professional hygiene must be carried out not less than:**

1 time in 6 months  
Once a year  
1 time per month  
Once a week

**Professional hygiene must be carried out not less than:**

1 time in 6 months  
Once a year  
1 time in 2 years  
1 time per week

**Prevention of fluorosis in the endemic focus is:**

water source replacement  
taking fluoride-containing tablets  
good oral hygiene  
prevention of diseases of the mother during pregnancy

**Tooth decay should be carried out:**

throughout a person's life.  
in adolescents;  
in pregnant women;  
in adults;

**Prevention of decay of deciduous teeth.**

in the second half of pregnancy  
in the postnatal period  
after the manifestation of initial caries  
from 5 years after birth

**Do you need to start caries prevention?**

in pregnant  
from preschool age  
from 6 months  
from 1 year

**preventive procedure for coating teeth with fluoride varnish: 1) drying the surface of the teeth with air; fluoride coating of teeth; cleansing teeth from plaque; isolation from saliva; drying teeth after coating with fluoride varnish for 4-5 minutes. establish the correct sequence.**

3, 4, 1, 2, 5  
1, 2, 3, 4, 5  
2, 4, 5, 1, 3  
5, 4, 3, 2, 1

**prophylactic effectiveness of endogenous fluoride prevention methods compared with exogenous methods**

More

The same ;

Less ;

All answers are correct.

**The percentage of people with a dental disease to the total number examined is called:**

prevalence of dental disease

dental disease intensity

dental morbidity

level of dental care for the population

**The process of resorption of the root of primary teeth begins with?**

resorption of the bone plate separating the rudiment of a permanent tooth from the socket of a milk tooth

rudiment of a permanent tooth

primordium of primary tooth

holes of a permanent tooth

**processes of ion exchange, mineralization, remineralization provide the property of enamel**

permeability

microhardness

solubility

microhardness and solubility

**The processes of mineralization and remineralization of enamel are ensured by the intake of oral fluid:**

calcium, phosphate, fluoride

proteins, vitamins

oxygen hydrogen

organic acids

**psychological effects in the treatment of teeth in children:**

within the framework of treatment itself, the child is prepared for each subsequent separate attention;

condescending behavior;

cool attitude to the child

all answers are correct

**psychological impact of a dentist on a child during tooth treatment:**

when filling cavities, it is necessary to warn the child about the occurrence of small and large troubles;

personal impact of the doctor mental, volitional, especially emotional processes;

condescending attitude towards the child;

all answers are correct

**psycho-emotional state of a 6 year old child:**

starting school is a turning point in a child's behavior

a sense of uncertainty can lead to loss of independence and dignity

in a stressful situation, a return to the behavior characteristic of early childhood is possible;

all answers are correct

**tooth pulp with average caries reacts to current strength (select the correct answer):**

5-6  $\mu$ A

1-8  $\mu$ A

100  $\mu$ A

10-20mkA

**tooth pulp with average caries reacts to current strength (select the correct answer):**

5-6  $\mu$ A

1-8  $\mu$ A

100  $\mu$ A

10-20mkA

**tooth pulp with average caries reacts to amperage (exclude unnecessary):**

1-8  $\mu$ A

10  $\mu$ A

6  $\mu$ A

10-20mkA

**tooth pulp with average caries reacts to amperage (exclude unnecessary):**

1-8  $\mu\text{A}$

10  $\mu\text{A}$

6  $\mu\text{A}$

10-20mA

**Toothbrush bristle tufts exceed , tilted forward**

raise plaque

sweep plaque

clean distal teeth

clean interdental spaces

**the spotted form of systemic hypoplasia should be differentiated:**

with spotted form of fluorosis and local hypoplasia, caries in the spot stage;

superficial caries;

dashed form of hypoplasia;

dashed form of fluorosis;

**fifth fifth tooth erupts?**

20-30 months

16-20 months

6-8 months

10-12 months

**distinguish palpation?**

all answers are correct

superficial, deep

outside and inside the mouth

side

**the size of the working part of the toothbrush for adults should not exceed (mm):**

10;

20;

thirty;

40

**The size of the working part of the toothbrush for adults should not exceed (mm):**

thirty

10

40

fifty

**early teething can occur with?**

heredity

Albright Syndrome

endocrine disorders

rachite

**An early tooth plaque forms after a tooth brushing.**

4-5 hours;

2 hours

7-8 hours;

12 hours;

**Opening of the carious cavity is :**

enamel overhang removal

necrotic dentin removal

carious cavity formation

finishing the edges of the cavity

**The opening of the carious cavity of the tooth is carried out by boron:**

cylindrical

spherical  
back conical  
wheeled

**The spread of caries deep into the tissues can lead to?**

all answers are correct

pulp irritation  
to tooth loss  
fracture of a tooth crown

**the prevalence of dental caries is expressed in:**

percent;  
absolute units;  
relative units.

all answers are incorrect

**fuchsin solution is used to determine the index**

all answers are correct

hygiene

RMA

CPITN

**Schiller – Pisarev solution is used to determine the index**

RMA

hygiene

CPITN

all answers are correct

**a preschool child with a healthy oral cavity should be examined annually:**

1 time

2 times

3 times

4 times

**a child of preschool age, having a malformation of hard tooth tissues, complicated and combined with caries should be examined annually:**

3 times;

According to individual indications;

taking into account the form of caries activity.

2 times;

**a child of 8 years old came to the dentist with complaints of multiple caries during a medical history revealed that the child lives in an area with a fluorine content in water of 0.3-0.4 mg / l. What is the normal fluoride content in water?**

.0.7-0.8 mg / l

0.6-0.7 mg / l

0.3-0.5 mg / l

0.9-1.0 mg / l

**region with kpu = 3.0 in children 12 years of age, according to WHO, can be attributed to the intensity of dental caries:**

moderate

high;

very high.

very low

**Upper jaw incisors contact with jaw incisors**

palatine surface

cutting edge

vestibular surface

lingual surface

**The incisors of the lower jaw normally contact with the incisors of the upper jaw**

cutting edge

lingual surface

vestibular surface

palatine surface

**Remineralization is:**

partial restoration of the density of damaged enamel

loss of calcium, phosphorus, magnesium from damaged subsurface enamel

destruction of the structure of enamel under the action of organic acids

increased frequency of carbohydrate intake

**Remineralizing therapy is recommended when:**

decay caries

medium caries

deep caries

complicated caries

**remineralizing therapy is recommended**

with caries in the spot stage

with average caries

with complicated caries

with deep caries

**Remtherapy of initial caries is carried out:**

10% calcium gluconate solution

water r-rom remodel

oil r-rom remodel

alcohol r-rom of a remodel

**radiography allows you to determine**

all answers are correct

hidden carious cavities

tooth pulp condition

the position of the teeth and their relationship with the tissues of the jaw

**crucial in the differential diagnosis of caries of the stage of the spot and fluorosis is:**

systematic defeat.

process localization;

symmetry of the lesion;

consistency of the spot surface;

**parents should start brushing their children's teeth**

after eruption of the first temporary tooth

from 1 year

from 2 years

from 3 years

**Parents should start brushing their children with age:**

immediately after eruption of the first temporary tooth

1 year

2 years

3 years

**the role of nutrition in the prevention of dental diseases. exclude unnecessary**

nutrition is necessary for tooth growth;

nutrition is important for the formation of teeth that are resistant to adverse factors;

with rationalization of nutrition, the cariogenic effect of easily digestible carbohydrates is reduced;

nutrition is a factor in increasing self-cleaning of the oral cavity;

**with children under 4 years of age, the quality of work of a dentist depends on:**

all answers are correct

from the qualifications of a dentist  
on the degree of contact with children

Before starting treatment, the dentist must study the psychological state of the child;

**with which group of teeth does the examination of the dentition begin?**

from the right chewing teeth of the lower jaw

from the left chewing teeth of the lower jaw

from the right chewing teeth of the upper jaw

from the left chewing teeth of the upper jaw

**Using amidopyrine test determine:**

blood residues on instruments

detergent residue

sterility tools

the presence of fat

the presence of carbohydrates

**using iodine-containing solutions, it is possible to detect the presence on the teeth :**

plaque;

pellicles;

tartar;

food residues.

**Using iodine-containing solutions, you can detect the presence on the teeth:**

plaque

cuticles

pellicles

tartar

**What index determines the presence of plaque?**

Green vermillion

Fedorova-Volodkina

Index R.M.A

KPU index

**using your fingers to determine?**

consistency, mobility of tissues and organs, to pain response, fluctuation, size and boundaries of the focus  
pain reaction

mobility of tissues and organs

mobility consistency

**using percussion determine**

periodontal condition

pathological mobility

pulp condition

enamel hardness

**for the purpose of delayed filling, in the treatment of deep caries, the following should be used:**

artificial dentin, zinc oxide with water, vinoxil;

phosphate cement;

silvering method;

zinc-eugevole paste, paste with calcium hydroxide;

**for the prevention of caries, rinses with solutions of sodium fluoride in concentrations are used**

0.01; 0.02%

0.02; 0.05; 0.1%

0.05; 0.1; 0.2%

0.5; 1.0; 1.5%

**in order to reduce bleeding gums, patients should be advised to use a toothpaste containing:**

extracts of medicinal plants;

the use of fluorinated milk

urea;

formaldehyde.

**where does the oral examination begin?**

from the vestibule of the oral cavity

from the dentition

from the tongue

from the sky

**The most important thing in maintaining oral hygiene**

thoroughly brush your teeth and use flosses at least 1 time per day

visit a dental hygienist regularly

drink plenty of water and rinse your mouth thoroughly

use antiseptic rinses

**The most painless area during tooth preparation is:**

enamel

dentine

enamel-cement compound

enamel-dentin compound

**properties of calcium containing toothpastes?**

all answers are correct

restoration of the gingival collagen

stops gingival bleeding

increases pH in saliva and enhances antibacterial effects

**the properties of resins preventing their use when filling cavities of class 2:**

fragility;

the ability to release fluoride ions in the surrounding tissue;

low polymerization shrinkage;

chemical adhesion to hard tissues of the tooth.

**properties of salt toothpastes?**

all answers are correct

favorably affects the mucous membrane of the gums, improves blood circulation, metabolism

prevents the formation of soft plaque

causes increased outflow of fluid from the inflamed gum, which has some analgesic effect

**properties of fluoride in the oral cavity?**

presence of saliva and plaque in enamel helps to restore early carious lesions

inhibits sugar metabolism by bacteria

bactericidal effect on cariogenic bacteria

all answers are correct

**grayish-white, soft and sticky deposits, loosely adjacent to the surface of the tooth, is**

plaque

tartar

pellicle

cuticle

**Silants are materials for:**

fissure sealing

filling carious cavities

root canal filling

insulating gaskets

**Toothbrushes have a power (active) protrusion for:**

cleansing the distal surface of the last tooth in the dentition

aesthetic enhancements

most effective cleansing of the interdental spaces

determine the expiration date of the brush

**power protrusion in the design of toothbrushes advantage , exceed serves to**

brushing the distal surfaces of the chewing group of teeth

gum massage

more effective cleaning of the chewing surface

determine brush life

**power bristles on the braun 3 d electric brushes - oral - b are for**

deeper penetration into the interdental spaces

foaming toothpaste

gum massage

providing 3 D effects

**symptoms of stepton-captedon syndrome lack of enamel; color; pathological abrasion; crown reduced;**

**dentin is marked by lack of teeth**

1, 2, 3, 4, 5

3, 4, 6

6, 5, 4, 1

1, 2, 3, 4, 6

**fluoristat system includes**

tin fluoride and pyrophosphate

sodium fluoride

calcium

sodium monofluorophosphate

**The systemic nature of tooth damage is observed with:**

fluorosis

local enamel hypoplasia

wedge-shaped defect

enamel erosion

**how many functions of saliva in the development of demineralization of tooth enamel?**

3

4

1

2

**how many teeth count in milk prik.**

20 teeth

30 teeth

32 teeth

22 teeth

**How many categories of fundamentally important moments of a child's behavior are distinguished?**

1

2

3

4

**how many degrees of fluorosis are there according to the muller classification?**

5

3

4

7

**how many degrees of fluorosis are there according to the muller classification?**

5

3

4

7

**The following rules for calculus removal should be followed: all instruments must be sterile; isolate the treated teeth from saliva; lever formation and scraping; moving teeth are fixed with the fingers of the right hand;**

A B C;

G, B, A;

B, D, C;

A, G, B

**Impressions are disinfected in patients:**

HIV and hepatitis

all patients

HIV infected

hepatitis infected

with syphilis disease

**Impressions made of silicone materials are disinfected with sodium hypochlorite solution:**

0.5% -20 minutes

0.5% - 5-10 minutes

0.3% -5-10 minutes

0.3% - 20 minutes

**the mucous membrane is normal.**

rough

pale pink;

wet

smooth;

**The mucous membrane of the oral cavity is normal:**

pale pink, evenly moistened

pale dry

pale pink, dry

bright red, plentifully moistened

**saliva has a pH from:**

5.6 to 7.6

7.9 to 8.3

3.6 to 5.9

1.7 to 2.8

**saliva forms a protective organic film:**

pellicle

Follicle

Cyst

Cuff shell

**saliva consists of:**

99.42%

76.50%

88.42%

79.42%

**saliva with caries increases activity**

acid and alkaline phosphatases

Alkaline only

Acid only

Environment does not change

**do the salivary glands perform and maintain homeostasis, perform digestive, endocrine excretory and protective functions?**

digestive function

Endocrine Excretory Function

Protective function

All answers are correct.

**does the change in milk bite begin?**

from 6 years old

from 12 years old

from 1 year

from 6 months

**A decrease in the concentration of mineral elements in saliva contributes to:**

reduce enamel resistance to acid

changes in saliva viscosity

enamel remineralization

Enamel resistance to acid

**The decrease in caries growth with the use of fluoride is (%):**

30-40

10-20

50-60

90-100

**The following nutrition features contribute to reducing the risk of caries and the natural self-cleaning of the oral cavity:**

eating raw vegetables and fruits, solid dry food

increased frequency of food intake

high sugar content in food

eating predominantly soft foods that do not require intense chewing

**actually the oral cavity is examined with?**

putty knife

excavator

mirror and putty knife

the probe

**fluoride content in the body per 1 kg of soft tissue?**

0.5-1 ml of fluorine

1-2 ml of fluoride

1-3 ml of fluorine

1-4 ml fluoride

**The content of sodium fluoride (mg) in 1 liter of fluorinated milk is:**

2,5

1,5

0.5

5,0

**the content of fluorides in pastes entering the free market should not exceed**

1500 ppm

500 ppm

1000 ppm

2000 ppm

**Tooth plaque composition**

dental plaque is represented by an intercellular matrix consisting of polysaccharides, proteins, lipids, inorganic components, which include microorganisms, epithelial cells, white blood cells, macrophages

tooth plaque consists of carbohydrates and lipids

tooth plaque is represented by an accumulation of microorganisms

tooth plaque is represented by organic components

**specific reaction of the body to the antigen:**

production of antibodies (specific immunoglobulins);

the development of hypersensitivity of an immediate or delayed type;

immunological memory;

immunological tolerance

**specific protection mechanisms are:**

synthesis of immunoglobulins acting on a specific antigen;  
the presence of phagocytes;  
the action of enzymes on foreign cells;  
macrophage action

**among streptococci, caries is of the greatest importance**

Str. Mutans

Str. Mitis

Str. Salivarius

Str. Sangvis

**Does average caries not differentiate?**

acute pulpitis

chronic fibrous pulpitis

chronic periodontitis

deep caries

**secondary caries of a milk tooth differentiates:**

superficial caries

periodontitis (chronic)

fluorosis

chronic pulpitis

**secondary caries of a milk tooth differentiates:**

deep caries

acute focal pulpitis

fluorosis

chronic fibrous pulpitis

**secondary caries of a milk tooth differentiates:**

superficial caries

periodontitis (chronic)

fluorosis

chronic pulpitis

**secondary caries of a milk tooth does not differentiate with:**

hypoplasia

superficial caries

chronic periodontitis

all answers are correct

**average caries is ... ..**

when the cavity is localized within the dentin

when most dentin is destroyed and a thin layer remains under the pulp

a tissue defect that is localized only in enamel

there are chalky spots

**average caries is ... ..**

when the cavity is localized within the dentin

when most dentin is destroyed and a thin layer remains under the pulp

a tissue defect that is localized only in enamel

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**average caries is ... ..**

when the cavity is localized within the dentin

there are chalky spots

when most dentin is destroyed and a thin layer remains under the pulp

a tissue defect that is localized only in enamel

**the average length of a fully formed upper permanent central incisor is**

22 mm

25 mm

20 mm

24 mm

**The average prophylactic effectiveness from the use of systemic methods of caries prophylaxis is (%):**

50-60

10-20

30-40

70-80

**agents affecting titanium exchange:**

alipor, hydroxylapatite, calcium gluconate

Sea buckthorn oil

Carotoline, polymineral

Sunseryl nisadol

**Means used for cold sterilization of dental mirrors:**

6% hydrogen peroxide solution

2% novocaine

1 % hydrogen peroxide solution

0.5% chloramine solution

**teething period of 1 permanent molar of the tooth.**

5-6 years old

9-10 years

12-13 years old

20-25 years

**Timing of eruption of permanent teeth**

6 - 6-7 years, 1 - 7-8 years, 2 -8-9 years, 4-9-11 years, 3-9-10 years, 5 - 10-11 years, 7 - 11-12 years

6-6-7 years, 1-7-8 years, 2-8-9 years; 4 - 9-11 years old, 3-10-12 years old

1 - 6-7 years, 2 - 7-8 years, 3-8-9 years, 4-10-12 and 5 - 11-13 years

2 - 7-8 years old, 3-8-9 years old, 4-10-12 and 5-11-11-13 years old

**the timing and sequence of teething of permanent teeth play an important role in recognition?**

adentia

hypoplasia

hepatitis

don't play a role

**Teething terms**

1-6-8 months, 2-8-12 months, 4-12-16 months, 3-16-20 months, 5-20-30 months

2-1 - 4-6 months, 3-6-8 months, 4-8-10 months, 5-10-12 months

1-6-8 months, 2-8-12 months, 3-12-16 months, 4-16-20 months

1 - 9-10 months, 2 - 8-12 months, 3 - 12-16 months, 4 - 16-20 months

**teething terms?**

in the second half of the first year

3 months

8 months

1 year

**stage of the formation of the root of primary teeth?**

shaped tip

unformed tip

closed top

unformed apex, unclosed apex

**The walls in the dental office, according to existing standards, cover:**

ceramic tiles

wallpaper

whitewashing

tapestry

**the degree of activity of the carious process in children is determined on the basis of:**

based on the totality of all of the above.

the number of carious cavities;

growth of carious cavities;

number of carious teeth;

**The degree of stiffness of the toothbrush bristles is usually indicated by:**

packaging

pen

working part

in the manufacturer's instructions

**Sterilization of instruments in a dry oven is carried out at a temperature of:**

180 ° C-60 min

125 ° C - 45 min

160 ° C-40 min

180 ° C-45 min

**Sterility of instruments after chemical sterilization is preserved in solution:**

day

1 hour

2 hours

3 hours

**The sterile table remains sterile for (hours):**

3-6

1-2

4-10

10-12

**Dental morbidity in the region's population is assessed when:**

epidemiological dental examination

medical examination of the population

planned rehabilitation of the oral cavity

routine examinations

**Dental mirrors are sterilized by chemical sterilization in time (hours):**

1-2

2-3

3-4

4-5

**the structure of supragingival tartar belongs to the type:**

salivary

serum

mineral

calcium-containing

**the structure of subgingival tartar belongs to the type:**

serum

salivary

mineral

calcium-containing

**Superflosses are dental flosses:**

with thickening

impregnated with fluoride solution

flavored

waxed

**daily doses of calcium glycephosphate:**

children under 3 years old

½ teaspoon

2/3 teaspoon

1 teaspoon each

**Dry heat sterilization is intended for:**

full metal tools

dressing material

linen

cotton rolls

**Sodium fluoride tablets are recommended for children to use:**

everyday

in one day

Once a week

1 time per month

**tactics in the treatment of caries of a temporary molar, having a deep carious cavity, sensitive, after conducting a gentle necrotomy, when probing in the bottom area, responding to temperature stimuli, in a 4-year-old child, with an index of CP = 8:**

applying a diagnostic dressing with calcium hydroxide under a temporary seal; in the absence of painful symptoms, permanent filling.

cavity preparation and cement filling in one visit;

delayed filling with zinc oxide eugenol paste; after sealing the bottom, permanent filling of the SIC;

opening the tooth cavity and the application of a devitalizing agent;

**tactics for accidental perforation of the carious cavity bottom of a temporary molar in a 5-year-old child with a low level of caries intensity:**

treatment with devital amputation;

biological treatment - applying a calcium-containing pad and filling;

treatment with vital amputation;

removal of a tooth;

**texturing the ends of the toothbrush bristles**

increased cleansing ability

reduction in the likelihood of contamination of the toothbrush with microorganisms

reduced likelihood of injury to the gums with bristles

toothbrush

**The temperature regime maintained in the dental office in the cold season (degrees):**

18-23

15-16

23-28

28-30

**theories explaining teething?**

no theories

hormonal, pulpal, siphon

growing root, pushing a tooth with a developing loupe

all answers are correct

**Theory of etiology of caries:**

Entin

Shergen

Miller

Behit

**type of supragingival tartar structure formation**

salivary

whey

etiology unknown

no correct answer

**topographic classification of caries.**

spot stage, surface, medium, deep  
acute, chronic  
fissure, cervical, circular  
enamel, dentin, cement

**brush head requirements?**

size 22-28 mm, width 8-11 mm, should provide optimal access to molars, compact, smooth, with rounded corners

size 30 mm, smooth with a right angle

size 15 surrounded by a corner

irrelevant

**requirements for the neck of the toothbrush.**

thin, rounded and at a slight angle to the handle  
curve

straight

all answers are correct

**tuberculosis infection can be obtained:**

all of the above is true.

inhale aerosol when coughing;

contact with infected instruments;

contact with infected people;

**a 7-year-old child in the oral cavity should normally have:**

8 molars

12 molars

6 molars

10 molars

**the girl complains of bleeding gums when brushing her teeth. what solution color the gums when determining the index r.m.a?**

Schiller-Pisarev solution

fuchsin solution

erythrosine solution

methylene blue

**the girl complains of bleeding gums when brushing her teeth. what index assess the condition of the gums?**

R.M.A. index

KPZ index

Fedorov-Volodkina index

KPU index

**the girl complains of bleeding gums when brushing her teeth. brushes with what degree of fiber stiffness do you recommend in this case?**

very soft

soft

average

tough

**in children of 3 years old, the hygienic condition of the oral cavity is evaluated using the index:**

Fedorov-Volodkina;

Green Vermillion;

PHP

kpu (p)

**in children during the period of the tooth change is determined by the index?**

KPU, KP

RMA

KP, RMA

UIG

**in children under 5-6 years old, the hygiene of the oral cavity is assessed using the index**

Fedorov – Volodkina

Green Vermillion

PHP

kpu (p)

**y toothbrush exceed role indicator operate tufts**

of blue color

green color

white color

no correct answer

**in a child of 5 years old, a carious cavity of class II in 75 teeth, which method of treatment do you prefer:**

restoration of a chemical hardening composite material with a glass ionomer cement gasket;

glass ionomer cement filling;

filling with silidont with a lining of zinc phosphate cement;

filling with glass ionomer cement, then cover the tooth

**In a child 5-6 years old, the hygienic condition of the oral cavity is assessed using the index:**

Fedorova-Volodkina

PHP

Green Vermillion

RMA

**in a child with artificial feeding, can a mother's illness during pregnancy, acute or chronic infections be observed?**

rickets

late teething of permanent teeth

early teething

multiple caries

**carbohydrates are of great importance in nutrition, how is an energy source contained?**

in natural plant foods

in beef

in cereals

all listed

**carbohydrates that have the greatest cariogenic effect?**

fructose

sucrose

fructose

lactose

**Removal of dental plaque in dental practice is carried out for the prevention of:**

inflammatory periodontal disease

maxillofacial abnormalities

diseases of the oral mucosa

local hypoplasia

**Removal of dental plaque in dental practice is carried out for the prevention of:**

inflammatory periodontal disease

local hypoplasia

fluorosis

maxillofacial abnormalities

**removal of mineralized dental plaque in dental practice is carried out for: (select the wrong answer):**

prevention of local hypoplasia;

creating smooth root surfaces;

reduction of adhesion of microbial plaque;

prevention of inflammatory periodontal diseases;

**removal of mineralized dental plaque in dental practice is carried out for prevention**

inflammatory periodontal disease

fluorosis

local hypoplasia

maxillofacial abnormalities

**Removal of mineralized dental deposits is carried out during:**

professional oral hygiene

remineralizing therapy

controlled brushing

fissure sealing

**Removal of mineralized dental deposits is carried out during:**

professional oral hygiene

personal hygiene

controlled brushing

remineralizing therapy

**soft plaque removal**

Helps reduce gum bleeding

reduces the risk of AFL

reduces the risk of fluorosis

reduces the risk of enamel hypoplasia

**Removal of necrotic dentin is performed:**

excavator and spherical boron

excavator

fissure boron

excavator and wheel boron

**remove all carious dentin from the bottom of the carious cavity in the temporary teeth:**

should not be, because possible remineralization of softened dentin under the influence of therapeutic odontotropic drugs applied for a certain period;

it follows, because the remnants of softened infected dentin will contribute to the development of pulpitis;

follows, because the adhesion of filling materials to softened dentin remaining at the bottom will be poor, which will lead to the loss of a seal;

should not be, because formation of replacement dentin in temporary teeth does not occur. Perhaps the development of complications;

**indicate the types of hard tissue hypoplasia of the tooth**

All answers are correct.

Focal

Local

System

**indicate complaints of caries lesion in the spot stage**

no complaints

sharp pains

throbbing pain

all answers are correct

**indicate the clinical signs that are not characteristic of the rapid caries of temporary teeth:**

carious brown dentin, dry, hardly removed by an excavator.

the spread of the demineralization process is faster on the tooth surface than in depth;

dentin is light, moist, easily removed by an excavator;

the enamel in the center of the lesion is destroyed, along the edges of the defect brittle, undermined;

**Indicate the consumption rate below the specified substances for a child from 1 to 4 years old.**

30-50 gr, 45-50 gr, 160-180 gr

40-100 gr, 160-180 gr, 40-30 gr

150-200 gr, 30-50 gr, 100-100 gr

30-50 gr, 160-180 gr, 40-30 gr

**Indicate the features characteristic of a child with negative behavior.**

All answers are correct.

In an armchair sits tensely

The teeth are tightly clenched.

Does not look the doctor in the eye

**indicate the pathology of the hard tissues of the tooth, the period of their development: 1) tooth erosion; 2) hypoplasia, enamel hyperplasia, fluorosis; 3) acid necrosis; 4) wedge-shaped defect; 5) hereditary disorders of tooth development. choose the correct answer according to the scheme:**

2 and 5;

1,2 and 3;

1 and 3;

4;

**indicate the correct sequence of the development stage of caries. Stage 1 stains 2 superficial caries 3 medium caries 4 deep caries**

1, 2, 3, 4

2, 4, 1, 3

4, 1, 2, 3

3, 2, 4, 1

**indicate a rational method for the treatment of deep carious cavities of temporary molars in young children:**

gentle preparation, delayed filling;

gentle preparation, filling of the JRC;

manual or machine preparation of the cavity, the application of a calcium-containing gasket, filling the SIC;

mechanical treatment of the cavity, application of a medical pad, filling with silicone phosphate cements.

**indicate the top anatomical shape of the crown of primary teeth.**

lower and wider

taller and wider

lower and shorter

all answers are correct

**specify the forms of fluorosis**

all answers are correct

Dashed, Spotted

chalky-mottled

erosive, destructive

**shortened tufts of bristles in toothbrush designs advantage , exceed serves to**

more effective cleaning of the chewing surface

brushing the distal surfaces of the chewing group of teeth

gum massage

determine brush life

**saliva reduction is called:**

hyposalivation

Hypersolation

xerostomia

Metrogenia

**moderate: strips and spots occupy less than 50% of the surface of the crown - is this?**

II - degree of fluorosis

IV - degree of fluorosis

III - degree of fluorosis

V - degree of fluorosis

**the level of oral hygiene according to the Fedorov-Volodkin index on a scale of 2.6-3.4?**

satisfactory

bad

very bad

good

**the level of oral hygiene according to the Fedorov-Volodkin index on a scale of 2.1-2.5?**

good

bad

satisfactory

unsatisfactory

**enamel permeability level with age:**

decreases;

increases;

does not change

all answers are incorrect

**the body's resistance to the carious process is reduced:**

various common diseases associated with dysregulation of metabolic processes in the body;

carbohydrates food;

insufficient fluoride content in drinking water;

all of the above.

**acceleration of teething of hereditary teeth can be caused**

nervous system disorders

anatomical features of primary teeth

premature loss of primary teeth

associated with the endocrine system

**accelerated resorption in baby teeth more often observed?**

in the presence of a tumor as a result of pressure exerted by adjacent teeth

depends on the constitution of the child

with dead pulp, after chronic injury

all answers are correct

**conditions for reducing the contact time of carbohydrates with teeth?**

all listed

sweet food should not be the last in the diet

foods used at the end of a meal should clean teeth well

you need to artificially brush your teeth after taking sweets, if the second requirement is not met

**set the correct sequence. stages of fissure sealing: 1. drying the tooth surface with air; 2. isolation from saliva; 3. cleansing the tooth from plaque; 4. enamel etching with phosphoric acid; 5. applying sealant; 6. removal of phosphoric acid with a stream of water; 7. repeated drying of the tooth surface with air.**

3, 2, 1, 4, 6, 7, 5

1, 2, 3, 4, 5, 6, 7

7, 6, 5, 4, 3, 2, 1

3, 7, 4, 1, 6, 2, 5

**set the correct sequence: removal of mineralized dental deposits. 1. polishing the surfaces of the teeth; 2. Tartar removal; 3. application remineralizing solution; 4. antiseptic treatment of gums.**

4, 2, 1, 3.

1, 2, 3, 4

3, 4, 2, 1

2, 1, 4, 3

**resistant to carious process low mineralized hard tissues wide dentinal tubules is it?**

teeth of a child living in an area of little fluorinated water

permanent teeth

baby teeth

teeth in a child with a weak body

**factor contributing to the accumulation of soft plaque:**

poor oral hygiene;

solid foods;

the presence of orthodontic structures;

low fluoride content in drinking water.

**non-specific protection factors are:**

complex (physiological, chemical) effect on the microorganism;

production of antibodies to a specific antigen;

physiological effects on the bacterial cell;

chemical effect on the microorganism;

**risk factors for prof. tooth roots?**

all listed

sugar food

plaque microorganisms

environmental fluoride deficiency

**factors that play an important role in teething.**

all answers are correct

nervous, endocrine system

metabolism, various diseases, development of teeth and alveolar bone

heredity, geographical conditions

**factors contributing to the accumulation of soft plaque:**

poor oral hygiene;

excessive intake of carbohydrates;

solid foods;

the presence of orthodontic structures;

**The physiological abrasion of the milk teeth of a 5-year-old child normally occurs**

in the front and side sections

in the front

in the side sections

in the back

**physiological abrasion of temporary teeth is characteristic for occlusion:**

mixed;

temporal;

constant.

There is no right answer.

**Fitin is:**

all answers are correct

Complex Organic Phosphorus Compound

The composition contains salts of magnesium and potassium

It has a positive effect on tooth growth, improves the central nervous system

**flosses are used for**

for fixing floss;

plaque removal:

to remove food debris from the interdental spaces.

to remove tartar

**Flosses are recommended for plaque removal from tooth surfaces:**

occlusal;  
approximate;  
oral;  
the entire surface of the tooth.

**Fluorosis occurs when drinking water containing fluoride:**

above optimal  
in the absence of fluoride in water  
suboptimal  
less than half the optimal

**fluorosis appears on the teeth in the form of?**

all answers are correct  
enamel color change  
enamel becomes opaque  
turns yellowish brown

**does fluorosis manifest on teeth?**

after teething  
after injury  
before teething  
no correct answer

**The shape of the upper dentition of an adult is normal**

half ellipse  
semicircle  
parabola  
a circle

**the shape of the dental arches at the age of 5 corresponds to:**

semi-ellipse;  
parabola;  
a semicircle;  
trapezoid.

**teeth shape in violation of dentinogenesis:**

tetracycline teeth  
Getchinson's teeth  
fournier teeth  
imperfect odontogenesis

**caries form is most common in temporary teeth:**

medium caries;  
deep caries;  
caries in the spot stage;  
superficial caries;

**the form of carious lesion belongs to class 1 according to the classification of Mr. Black:**

all cavities covering the oral, chewing and 2/3 of the vestibular surfaces of the molars and premolars, as well as the oral front teeth;

all cavities on the proximal surfaces of molars and pre-

all cavities on the proximal surfaces of the anterior teeth;

all cavities on the proximal surfaces and corners of the anterior teeth

**the form of carious lesion belongs to class 3 according to the classification of Mr. Black if it has cavities:**

on the proximal surfaces of the front teeth;

on the proximal surfaces of molars and premolars;

on the proximal surfaces and corners of the front teeth;

in the cervical zone of the vestibular surface of all teeth.

**the form of carious lesion belongs to class 4 according to the classification of Mr. Black if it has cavities:**

on the proximal surfaces and corners of the front teeth;

covering the oral, chewing and 2/3 of the vestibular surfaces of the molars and premolars, as well as the oral side of the front teeth;

on the proximal surfaces of molars and premolars;

on the proximal surfaces of the front teeth;

**the form of carious lesion belongs to class 5 according to the classification of Mr. Black if it has cavities:**

in the cervical zone of the vestibular surface of all teeth;

on the proximal surfaces of molars and premolars;

on the proximal surfaces of the front teeth;

on the proximal surfaces and corners of the front teeth;

**the form of carious lesion belongs to class 2 according to the classification of Mr. Black:**

all cavities on the proximal surfaces of molars and premolars.

all cavities on the proximal surfaces of the anterior teeth;

all cavities on the proximal surfaces and corners of the front teeth;

all cavities in the cervical area of the vestibular surface

**Does root formation of permanent teeth occur at an age?**

from 10-20 years

from 6-10 years

from 6 months to 6 years

from 10-15 years

**forms of fluorosis according to the classification of K. Patriceyev?**

all answers are correct

dashed, spotted

chalky-cropped

erosive-destructive

**fluoride-containing toothpastes are recommended for children of age**

10-12 years old

1.5-2 years

3-4 years

5-6 years old

**fluoride-containing toothpastes are recommended for children from the age of (years):**

5-6;

1.5-2;

10-12;

There is no right answer.

**for the prevention of caries, fluorinated milk is most appropriate for children aged (years):**

from 3 to 12;

from 3 to 9;

from 6 to 15;

from 7 to 16.

**saliva function**

digestive

plastic

sensitive

mineralizing

**nature of pain with moderate caries:**

causal

from sweet and sour

from bitter

long

**the characteristic intersection of the tufts of the bristles of the toothbrush exceed is called**

Crisscross

Crown down

Step back

Step down

**a characteristic feature of the oral - orthodontic oral - b toothbrush is**

V- shaped bristle tufts

indicator

power protrusion

intersecting tufts of bristles

**does dry brushing include?**

toothpastes, gels

tooth powders

elixirs, solutions

all answers are correct

**keep a toothbrush at home should**

in a glass with the working part up

in a glass with the working part down

into the case

in disinfectant solution

**Toothbrush recommended**

in hypertonic salt solution

with soap bristles

in case

without case

**the integrity of the enamel-dentin compound is damaged when:**

medium caries

superficial caries

deep caries

All answers are incorrect.

**The purpose of using the "Assistin" apparatus is:**

pre-sterilization cleaning and lubrication of tips

tip sterilization

hog disinfection

endodontic instrument disinfection

**The purpose of a necroectomy during the preparation of the carious cavity is:**

exclusion of caries recurrence

contact point creation

tooth restoration

cavity fining

**The purpose of the preparation of the cavity is:**

creating a cavity shape for filling

dentin remineralization

restoration of the anatomical shape of the tooth

restoration of tooth function

**The purpose of the formation of the cavity is:**

creation of conditions for fixing the seal

restoration of tooth function

restoration of the anatomical shape of the tooth

necrotic dentin removal

**oral - b cylindrical brushes are used to clean interdental spaces**

narrow

broad

in the presence of a bracket system

no correct answer

**does circular decay of deciduous teeth begin?**

2-3 years

6 years

6 months

12 years

**frequency and duration of fluorinated water use?**

throughout life

from 6 months to 6 years

up to 40 years old

under 12 years old

**most often caries affects children under the age of two and a half years:**

any area of enamel.

smooth surfaces of the incisors of the upper and lower jaw;

chewing surfaces of molars;

vestibular surfaces of fangs;

**more often demineralized areas of teeth in the area:**

fissure necks ;

tubercles;

contact surfaces;

cutting edge.

**more often demineralized areas of teeth in the area:**

fissure;

tubercles;

contact surfaces;

cutting edge.

**What is the difference between an invasive method of sealing and non-invasive?**

fissure

applying a thin layer of sealant over the entire surface of the fissure-pit network

washing the acid off the tooth surface with a water-air jet

no different

**What is the protective function of saliva related to?**

mechanical immunological and antibacterial

Dissolves enamel

Enamel regeneration

dentinal form

**what binds the formation of the main substance and fibrous structures in the norm:**

with fibroblast function;

regeneration of fibrous structures;

blood vessels;

with osteoblast function;

**what is the normal index rm.a?**

0

1

2

3

**which does not contribute to the intake of solid food:**

gingivitis prevention

enhance oral self-cleaning

increase enamel abrasion

improving metabolic processes in periodontal

**how many minutes does relaxation begin in a child after sedation?**

45 m -1 h

5 minutes

15 minutes

30 minutes

**3 years old child helps to brush his teeth:**

parents

child

hygienist

dentist

**does brushing happen?**

mechanical

physical

chemical

no correct answer

**What is included in the first set of tools for mechanical removal of tartar?**

excavator;

double-sided knives;

rasp;

scraper;

**What is part of anti-inflammatory toothpastes besides the main components?**

medicinal plant extracts

perfumes

antiseptics

diluent

**what may be the reason for the development of local hypoplasia:**

Violation of the intrauterine period

bad habits

cross bites

permanent follicle injuries

**what is called circular caries.**

caries process covering the tooth around the neck

tooth decay process covering all teeth

contact tooth decay process

caries chewing process

**what is not included in the group of hereditary non-carious lesions:**

systemic hypoplasia, fluorosis

marble teeth

Stainton-Capdepon syndrome

imperfect amelogenesis

**what is not included in the group of hereditary non-carious lesions:**

systemic hypoplasia, fluorosis

marble teeth

Stainton-Capdepon syndrome

imperfect amelogenesis

**which is not included in the list of examinations when determining the CPI index.**

Gum staining with Schiller-Pisarev solution

Identification of hard dental deposits.

Detection of soft plaque

Determination of bleeding from the gingival groove

**that does not stain at the rm index**

tooth;

alveolar gum;

gingival papilla;

marginal gum;

**What does not apply to additional oral hygiene products?**

Toothbrushes

Dental floss

Toothpicks

Special toothbrushes

**what does not apply to dental education methods:**

skill

workshops

conversations

health lessons.

**What does not apply to the main components of toothpastes?**

Sodium fluoride

Gelling agents

Abrasive substances

Dyes

**that does not apply to the stages of standard brushing of the groin:**

chewing surfaces are cleaned with reciprocating movements;

start cleaning from the area in the upper right chewing teeth;

make sweeping movements from the gum to the tooth

start cleaning from the area in the upper left chewing teeth

**that does not apply to the steps of brushing the teeth according to the fones method :**

rotate to clean oral surfaces

cleansing of the vestibular surfaces of closed teeth in circular motions

start from the area in the upper right chewing teeth

horizontal movements clean occlusal surfaces

**that does not contribute to the occurrence and progression of dental caries in children:**

increased frequency of food intake

reduced frequency of food intake

decrease in chewy foods

high in food easily fermentable foods

**which does not increase the effectiveness of remineralizing solutions**

The increased concentration of remineralizing solution

Surface treatment with weak acids or enzymes

Removal of dental plaque before rem. therapy.

Thoroughly dry the surface before rem. therapy.

**What provides the bactericidal properties of saliva?**

lysozyme

maltase

amylase

mucin

**What stains iodine in plaque?**

carbohydrate derivatives

epithelial cells

microorganisms

derivative proteins

**What determines the simplified gingival sulcus hemorrhage index?**

the presence or absence of bleeding gingival sulcus;

the presence or absence of bleeding of the gingival papillae;

the presence or absence of saliva in the oral cavity;

the presence or absence of dentition;

**What are the disadvantages of tooth powders?**

All answers are correct.

quickly contaminated with microorganisms

deodorizing and refreshing properties appear only at the beginning of brushing

abrasive properties do not allow regular use

**What is the main means of oral hygiene?**

Toothpaste

flosses

elixirs

toothpicks

**What is tertiary prevention?**

preparations of calcium, fluorine, phosphorus for oral administration

early diagnosis of caries

fluoridation of drinking water

applications of calcium gluconate, applications of sodium fluoride

**What precedes the change of milk bite to a permanent one?**

the growth of the rudiments of the set teeth and the physiological resorption of the roots of milk teeth;

general condition of the body

child development

late growth of the rudiments of permanent teeth

**what is hyperplasia.**

excessive enamel formation

dentin maldevelopment

underdevelopment of enamel

excess fluoride

**What is a prerequisite for carrying out remterapiya?**

medical treatment of teeth

tooth drying

tooth brushing with hygienic paste

fresh solution

**the width of the head of the toothbrush for children should be within**

7-9 mm

5-6 mm

5-7 mm

6-8 mm

**dashed form of fluorosis?**

subtle chalky strips on the enamel of the crowns of the anterior teeth

extensive and deep erosion defects are formed in the chalk-like enamel

change in the enamel of incisors, fangs, molars and, less commonly, molars in various parts of the tooth crown

no correct answer

**The buccal tubercles of the lower posterior teeth normally contact**

with longitudinal fissures of the upper

with palatine tubercles of the upper

with buccal tubercles of the upper

vestibular tubercles of the lower

**The buccal tubercles of the lower milk**

**molars of a 3-year-old child are located**

in the longitudinal fissure of the upper molars

vestibular to the buccal tubercles of the upper molars

flush with the buccal tubercles of the upper molars  
distal to the buccal tubercles of the upper molars

**the exogenous method of caries prevention fluoride is**

All answers are correct.  
fluoride coating of teeth  
fluoridation of drinking water  
milk fluoridation

**The exogenous method of caries fluoride prophylaxis is:**

fluoride coating of teeth  
milk fluoridation  
fluoridation of drinking water  
salt fluoridation

**Electroodontometry is used:**

to determine the condition of the nerve endings of the pulp  
to determine the condition of blood vessels;  
to identify denticles;  
to determine the excitability of periodontal nerve endings.

**electroodontodiagnostics most accurately assess the condition**

pulp  
periodontal  
periodontal  
all answers are correct

**the structural element of the protein is most contained?**

in beef, chicken, turkey  
in beets  
in berries  
all listed

**enamel of temporary teeth contains minerals compared to enamel of permanent teeth**

same amount  
smaller  
more  
all answers are correct

**enamel of temporary teeth contains minerals compared to enamel of permanent teeth**

smaller  
more  
same amount  
no differences

**Enamel consists of:**

consists of enamel prisms collected in bundles and interprismatic substance sticking them together;  
enamel is covered with stratified squamous epithelium, consisting of the basal and spine-like layers;  
enamel does not contain water;  
all answers are correct

**enamel is**

hard wear-resistant mineralized tissue of white or yellowish saliva covers the outside of the tooth crown and gives it hardness;  
a complex of tissues surrounding the tooth, having a functional and genetic community;  
a kind of tissue complex located between the compact plate of the alveoli wall and root cement;  
all answers are correct

**endogenous caries prophylaxis is not carried out:**

calcium chloride solution  
calcium gluconate tablets  
sodium fluoride tablets

Vitaftor in jelly

**endogenous use of fluoride preparations refers to prevention methods**

tertiary

primary

secondary

All answers are correct.

**the endogenous method of caries prevention fluoride is**

fluoride coating of teeth

taking sodium fluoride tablets

rinsing with fluoride-containing solutions

the use of fluoride-containing toothpastes

**The endogenous method of caries fluoride prophylaxis is:**

taking sodium fluoride tablets

fluoride applications

fluoride coating of teeth

rinsing with fluoride-containing solutions

**The epidemiological dental examination of the population is carried out by specialists:**

dentists

hygienists

dental nurses

epidemiologists

**the erosive form of hypoplasia should be differentiated: 1) with chalky-mottled and erosive form of fluorosis; 2) superficial and average caries; 3) a wedge-shaped defect; 4) deep caries; 5) pathological abrasion of the teeth. select the correct answer according to the scheme:**

1,2

3,5

3,4

2,4

**hard tissue erosion - is it?**

abnormal wear of hard tissues of teeth

physiological abrasion

superficial loss of hard tissue

all answers are correct

**hard tissue erosion will begin to occur when?**

acid abuse

in persons working in hazardous work

in patients with multiple vomiting

all answers are correct

**etiologial factors of marble disease:**

hereditary diseases

diseases of the retuloendothelial system

nervous system

non-hereditary diseases

**etiologial factors causing acute secondary caries in children:**

imperfect immune system

violation of the mineralization of teeth

mismatch of organic and inorganic substances

increased regeneration process

**the effect of mimicry in the composite depends on:**

from the shape, size and type of filler;

from bonding system

on the composition and time of etching;

from the correct formation and filling of the cavity;

**Effectively acting toothpastes.**

1-3 mg of fluoride in 1 g of paste

5 mg fluoride in 1 g of paste

1-7 mg fluoride in 1 g of paste

1-6 mg fluoride in 1 g of paste

**An effective reduction in tooth decay is observed when rinsing the oral cavity?**

0.2% increase in clorexidine

growth of furatsilin

the growth of hydrogen peroxide

growth of mitelin blue

**The effectiveness of prevention when using the method of sealing fissures is (%):**

98-100

40;

60;

80;

**Is the removal of phosphate cement at the top in the treatment of chronic periodontitis a method of active therapy of them?**

no, for it is a foreign body and interferes with the regeneration of periodontal tissues;

yes, because phosphate cement stimulates bone regeneration;

no, because it does not completely seal the root canals;

no, for it gives an aggravation of the process;



#### 6.4. Criteria for assessing current control.

	<b>Academic performance</b>	<b>Rating</b>	<b>Student knowledge level</b>
1	96-100%	Excellent "5"	<p>The full correct answer to questions on this topic. Summarizes and makes decisions, thinks creatively, independently analyzes.</p> <p>Situational tasks are solved correctly, with a creative approach, with full justification for the answer.</p> <p>Actively participates in interactive games, correctly makes informed decisions and sums up, analyzes.</p>
2	91-95%	Excellent "5"	<p>The full correct answer to questions on this topic. Summarizes and makes decisions, thinks creatively, independently analyzes.</p> <p>Situational tasks are solved correctly with full justification for the answer.</p> <p>Actively participates in interactive games, correctly makes informed decisions and sums up.</p>
3	86-90%	Excellent "5"	<p>The correct answer to questions on this topic, but there are 1-2 inaccuracies. It analyzes independently.</p> <p>Inaccuracies in solving situational problems, but with the right approach, the rationale for the answer.</p> <p>Actively participates in interactive games, correctly makes informed decisions and sums up.</p>
4	81-85%	Good "4"	<p>The questions posed on this topic are fully covered, but there are 2-3 inaccuracies, errors. It applies in practice, understands the essence of the issue, tells confidently, has accurate ideas.</p> <p>Situational problems are solved correctly, but the rationale for the answer is not complete.</p>
5	76-80%	Good "4"	<p>Correct, but not complete coverage of the issue. The student knows this topic. He understands the essence of the issue, talks confidently, has accurate ideas.</p> <p>Actively involved in interactive games. On situational tasks gives incomplete solutions.</p>
6	71-75%	Good "4"	<p>Correct, but not complete coverage of the issue. The student knows this topic. He understands the essence of the issue, has ideas.</p> <p>Participates in interactive games. On situational tasks gives incomplete solutions.</p>
7	66-70%	Satisfactorily "3"	<p>The correct answer to half the questions posed. The student knows, but is not fully</p>

			versed in the topic. He understands the essence of the issue, talks confidently, has accurate representations only on certain issues of the topic. Situational problems are solved correctly, but there is no justification for the answer.
8	61-65%	Satisfactorily "3"	The correct answer to half the questions posed. The student knows, but is not fully versed in the topic. He understands the essence of the issue, speaks uncertainly, has accurate representations only on certain issues of the topic. Situational problems are solved with errors.
9	55-60%	Satisfactorily "3"	The answer with errors on half the questions posed. The student makes mistakes on the topic, poorly versed, confused. He speaks uncertainly, has partial views on the topic. Situational problems are solved incorrectly.
10	50-54%	Unsatisfactory "2"	The correct answer to 1/3 of the questions posed. The student does not know the topic, poorly versed, confused. Situational problems are solved incorrectly, with the wrong approach.
eleven	46-49%	Unsatisfactory "2"	The correct answer to 1/4 of the questions posed. The student does not know the topic, poorly versed, confused. Situational problems are solved incorrectly, with the wrong approach.
12	41-45%	Unsatisfactory "2"	The correct answer to 1/5 of the questions posed. The student does not know the topic, poorly versed, confused. Situational problems are solved incorrectly, with the wrong approach.
thirteen	36-40%	Unsatisfactory "2"	Coverage of 1/10 of the questions with the wrong approach. Virtually unaware of this topic.
14	31-35%	Unsatisfactory "2"	He does not answer the questions. He doesn't know the topic.

## RATING

Criteria and ratings for the subject "Prevention of Dental Diseases" 3 year

No.	Criteria and Grades	Qty	Mah.ball	Coef.	Total score
1	<b>J.B.</b> 1.1. Practical occupation	3 3	100 100	0.45 0.05	45 5

	1.2. T.M.I.	21			
2	<b>HE.</b>	2	100	0.20	20
3	<b>I WOULD.</b>	1			
	3.1. I WOULD.				
	3.1.2. OTKS		100	0.15	fifteen
	3.1.3 test		100	0.15	fifteen
<b>TOTAL :</b>		57	100	1,0	100

## 6.5. literature s

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