

DANYLO HALYTSKYLVIV NATIONAL MEDICAL UNIVERSITY

Pediatric Dentistry Department

**Methodological Recommendations**  
**Prevention of dental diseases**

**for preparing of specialists of the second (master) level  
of higher education**  
*3<sup>rd</sup> year, 6<sup>th</sup> semester*

*( for students and teachers)*

Lviv 2022

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Methodical recommendations were discussed, re-approved and confirmed at the meeting of the Department of Pediatric Dentistry of Lviv National Medical University named after Danylo Halytsky

Protocol №            from «    » \_\_\_\_\_ 202

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## THEMATIC PLAN OF THE PRACTICAL LESSONS

### Prevention of the dental diseases

3<sup>rd</sup> year, 6<sup>th</sup> term

№	Theme	Hours
1.	Microorganisms of the oral cavity. Their role in the dental diseases development. Dental deposits. Debris classification.	2
2.	Oral hygiene products, their composition and properties, indications for use depending on dental status. Oral hygiene items, indications for use depending on dental status.	2
3.	Methods of hygienic care of the oral cavity. Personal hygiene. Learning how to brush your teeth. Controlled tooth brushing. Professional oral hygiene: methods and equipment.	2
4.	Endogenic dental caries prevention. Interaction with pediatrician. Planning, methods of conducting.	2
5.	The role of nutrition in the dental caries prevention in children. Cariogenic food and the ways of reducing its action.	2
6.	Systemic using of fluorides. Mechanism of caries protective action of fluorides. Systemic using of micro- and macroelements, vitamins depending on age of child.	2
7.	Exogenic dental caries prevention in age aspect. Means, indication and methods of using.	2
8.	Practical mastering of different methods of exogenic prevention in children.	2
9.	Fissure sealing. Means, indication and methods of using.	2
10.	Practical mastering of fissure sealing.	2
11.	Prevention of periodontal diseases in children. The main risk factors of periodontal diseases development. Planning, methods of conducting.	2
12.	Individual hygiene of the oral cavity as a basis of periodontal diseases prevention. Prescription of hygienic means depending on periodontal tissues state.	2
13.	Complex system of dental diseases prevention in children. Organized principles. The main steps of introducing. Preparing, forming of program.	2
14.	Criteria of estimation of effectiveness of complex system prevention.	2
15.	Dispensarization as a main method of introduction of primary prevention. Principles, organized forms, steps. Formation of dental dispensary groups.	2
16.	Sanitary education as a method of primary prevention of dental diseases. Organized principles. Form, methods.	2
17.	Hygienic education in the organized collectives. Health lesson.	2
18.	Individual research work: Conversation on prevention of dental diseases.	2
	Whole	36

## THEMATIC PLAN OF THE SELF-WORK

### Prevention of the dental diseases

3<sup>rd</sup> year, 6<sup>th</sup> term

№	Theme	Hours
1.	The role of breastfeeding and early oral care for maintaining the dental health of child.	2
2.	Write down the nutritional recommendations for the pediatric dental patient.	2
3.	Write down the modern medications for endogenic caries prevention (Fluoride, Calcium, vitamins), indications for its use and dosage.	2

4.	Modern means and methods of exogenic caries prevention.	2
5.	Modern materials for fissure sealing of permanent teeth. Write down the steps of fissure sealing.	2
6.	Writing the conversation on prevention of the dental diseases on the theme. 1. Dental diseases in children. 2. Sweets and dental caries. 3. Care of the teeth. 4. In order to haven` t toothache. 5. Nutrition and health. 6. How keep your teeth healthy? 7. Bad habits. 8. The role of teeth for health of child. 9. Fissure sealing 10. Antenatal prevention of dental diseases.	10
	Whole	20

## THEMATIC PLAN OF THE LECTURES

### Prevention of the dental diseases 3<sup>rd</sup> year, 6<sup>th</sup> term

№	Theme	Hours
1	Endogenic and exogenic dental caries prevention. Fluoride, its role in the dental caries prevention. Mechanism of caries preventive action of fluorides. Systemic and local application of fluorides.	2
2	Organization and methods of conducting of primary dental prevention. Antenatal prevention of dental caries. The role of nutrition in the dental caries prevention.	2
3	Theoretical substantiation of periodontal disease prevention. The risk factors of periodontal disease development.	2
4	Superficial deposits on the tooth surfaces. Their role in the development of dental caries and periodontal tissues diseases. Hygiene of the oral cavity, indices, their estimation.	2
5	Professional hygiene of the oral cavity. Means, instruments, methods of using for caries and periodontal tissues prevention.	2
	Whole	10

### Practical Lesson № 1

**Microorganisms of the oral cavity. Their role in the dental diseases development. Dental deposits. Debris classification**

**Aim of the lesson.** To study the content of microflora of oral cavity, classification of deposits.

**Actuality.** To teach students to differentiate different types of dental deposits, to learn the method of determining the surface formations on the teeth, to learn the composition of the microflora of the oral cavity.

**Control of the initial level of knowledge:**

1. What is the composition of enamel?
2. Explain the antibacterial properties of saliva.
3. What is dental plaque?

### Content of the lesson

Enamel is the protective coat found on the visible portions of teeth above the gum line. The function of the enamel is to protect teeth from wear and tear. The enamel coating is constantly damaged due to normal exposure to food and liquids and also as a result of the action of microbes that live on teeth. However it normally does not get depleted owing to regular remineralization processes operating in the oral cavity. There is always a balance between degradation and reformation which maintains the enamel in a healthy individual. Excessive colonization of dental surface due to lack of regular oral hygienic practices can however lead to a condition known as dental caries. In such a situation, the bacterial acid production and thus the rate of destruction of enamel coat is much faster than the natural rate of remineralization.

A large number of bacteria live in the oral cavities of organisms. Most of them colonize teeth surfaces and are facultative anaerobes. They ferment sugars taken by the host and produce acids which dissolve the protective surface of the teeth. Such teeth wear out faster and start decaying as newer species of bacteria prosper. The extent of damage caused by the acid is however dependent on numerous factors like oral hygiene, eating habits, time of contact, teeth and salivary composition etc. Anaerobic growth of microorganisms results in a lowered pH but salivary flow acts as a buffering solution maintaining the oral pH and providing materials for teeth reformation. This report describes the use of the Ludeking- Piret model for acid production and variation of acid concentration contacting teeth enamel and its dissolution with time. It was found that the rate of dissolution slows down initially and then increases exponentially with time. Further the solubility of enamel increases very rapidly when pH drops below 5.

Oral cavity being both a good shelter and a source of nutrition is home to a large variety of microorganisms. The human oral microflora is diverse and is usually predominately composed of Gram-positive bacteria. Oral bacteria include streptococci, lactobacilli, staphylococci and corynebacteria, with a great number of anaerobes, especially bacteroides. *Streptococcal species* — *S. milleri*, *S. mutans*, *S. salivarins*, *S. mitior* and *S. sanguis* are almost always present in plaques and caries, the dominant species being *S. sanguis* and *S. mutans*. *Streptococcus mutans* appears to be important in the initiation of dental caries because its activities lead to colonization of the tooth surfaces, plaque formation, and localized demineralization of tooth enamel. Once enamel is weakened, other bacteria also colonize the damaged region. These include Lactobacilli, *Actinomyces*, and various proteolytic bacteria which eventually enter the interior of teeth.

### Knowledge level control:

1. What is the content of oral cavity microflora?
2. What microorganisms living in oral cavity do you know?
3. What superficial deposits do you know?
4. What is the classification of deposits?

### **Practical Lesson № 2**

**Oral hygiene products, their composition and properties, indications for use depending on dental status. Oral hygiene items, indications for use depending on dental status.**

**Aim of the lesson.** To study with the students the oral hygiene items and their choice depending on dental status.

**Actuality.** Tudents under the control of a teacher conduct a conversation with children about the need to clean teeth and the importance of its proper technique. Teach children the right manual skills on phantom, and then in the oral cavity.

### Control of the initial level of knowledge.

1. What are the risk factors of general importance which cause the periodontal diseases progress?
2. What are the risk factors of local importance which cause the periodontal diseases progress?
3. What are the dental plaque and its structure?
4. What are the dental calculus and its species?

### Content of the lesson

There are many aspects of plaque control and many means and methods of plaque removal. Since all of the activities that are part of plaque removal can be controlled by the individual, and must be his responsibility, they are grouped together under the title personal oral hygiene. There is no right method of plaque removal, and personal oral hygiene must remain personal. Of the many techniques available, the ones selected must be those that are right for the individual patient.

Auxiliary measures are selected to complement toothbrushing. Since plaque on proximal tooth surfaces is not totally accessible to usual brushing, a means for proximal plaque removal is necessary in complete preventive care. The interdental area is generally inaccessible for toothbrushing. It is a protected area when the teeth are in normal position. Because of its shape, it tends to harbor microorganisms. Most gingival disease starts in the interdental areas and the incidence of gingivitis is highest in the interdental gingiva.

For complete plaque and debris removal from proximal tooth surfaces, more than the toothbrush is generally needed. Various materials and devices are described in the sections following.

Removal of all calculus and smoothing of the tooth surface increases the effectiveness of devices. Rough tooth surfaces retain plaque which initiates inflammation. Large deposits of calculus and overhanging restorations interfere with the use of devices; for example, dental floss catches and shreds when applied to overhanging margins of restorations or calculus deposits.

It is not generally recommended that instruments that are used to apply pressure for massage or stimulation be used without first removing subgingival calculus. Rubbing the inflamed gingival wall of the pocket over calculus may aggravate the inflammatory reaction.

When *dental floss* is applied with firm pressure to a flat or convex proximal tooth surface, plaque can be removed. A concave tooth surface would escape contact with the floss.

*Interproximal brushes* are available in a variety of shapes. For best cleaning efficiency, the diameter of the brush should be slightly larger than the gingival embrasure so that the bristles exert pressure on the tooth surfaces.

These small brushes are inserted interproximally and activated with short back-and-forth strokes in a linguofacial direction.

The *Perio-Aid* consists of a *toothpick* with a round, tapered end that is inserted in a handle for convenient application. This device is particularly efficient for cleaning along the gingival margin and within gingival sulci or periodontal pockets. Deposits are removed by using either the side or the end of the tip.

### Knowledge level control

1. What hygienic means do you know?
2. What interdental hygienic means do you know?
3. Coice criteria of the oral cavity hygienic means.
4. Dental flosses and its characteristics.

### **Practical Lesson № 3**

**Methods of hygienic care of the oral cavity. Personal hygiene. Learning how to brush your teeth. Controlled tooth brushing. Professional oral hygiene: methods and equipment.**

**Aim of the lesson** To study with the students the methods of teaching children tooth brushing and techniques of control of brushing of teeth.

**Actuality**: To learn with the students the technique of tooth brushing.

### **Control of the initial level of knowledge**

1. At what age should the child start to clean teeth?
2. What hygienic means are recommended for the children?
3. What is laid in controlled teeth cleaning?
4. Oral cavity hygiene value in the dental diseases prevention.

### **Content of the lesson**

Complete toothbrushing instruction for a patient involves teaching many details related to why, what, when, where, and how. In addition to descriptions of specific toothbrushing methods, the succeeding sections will consider the grasp of the brush, the sequence and amount of brushing, the areas of limited access, supplementary brushing for the occlusal surfaces and the tongue, the possible detrimental effects from improper toothbrushing as well as contraindications, and the care of toothbrushes.

Most toothbrushing methods can be classified into one of seven groups based on the motion applied by the brush. Noted below beside certain categories are names of methods that utilize the designated motion as part or all of their particular procedure. Some of these methods are recorded for descriptive, comparative, or historic purposes only, and are not currently recommended. A few have even been proved detrimental.

**A. Roll:** Rolling stroke, modified Stillman.

**B. Vibratory:** Stillman, Charters, Bass.

**C. Circular:** Fones .

**D. Vertical:** Leonard's.

**E. Horizontal.**

**F. Physiological:** Smith's.

**G. Scrub-brush.**

The most natural brushing methods used by patients uneducated in toothbrushing are a reciprocating **horizontal scrub technique**, (Hones' technique), or a simple **up-and-down** motion over the maxillary and mandibular teeth (Leonard's technique). Patients managing effective toothbrushing with these methods without causing traumatic problems or disease should not alter their brushing methods just for the sake of change.

**HORIZONTAL.** The horizontal scrub technique is probably the most used method. The toothbrush bristles are positioned perpendicular to the tooth crown. The brush is moved back and forth in short horizontal strokes. The bell-shaped anatomy of children's primary teeth is most effectively cleansed by the scrub technique. Over prolonged periods excessive pressure and abrasive dentifrices, however, can result in gingival recession and tooth damage at the cemento-enamel junction.

**FONES.** The Fones technique is similar to the horizontal scrub method except that rotary strokes are used. Fones cautioned about possible gingival damage but encouraged stimulating the gingiva with rotary strokes. In addition, Fones advocated mouth brushing, which included teeth, gingivae, and tongue.

**LEONARD.** In Leonard's method, an up-and-down brushing motion is used over the facial surfaces of the clenched posterior teeth to provide both tooth cleaning and gingival stimulation.

Often all three natural motions are used by the same individual during brushing, and it is impossible to determine a dominant motion in removing debris and stains from the smooth tooth surfaces; all stimulate and sometimes harm the gingiva.



**STILLMAN.** Stillman's method was originally developed to provide gingival stimulation. The toothbrush is positioned with the bristles inclined at a 45-degree angle to the apex of the tooth, with part of the brush resting on the gingiva and the other part on the tooth. A vibratory motion is used with a slight pressure to stimulate the gingiva. In this technique, the bristles are mainly pulsed.

**CHARTERS.** Charters advocated a pressure-vibratory technique to clean interproximal areas. Charters' original intent was to reduce the incidence of interproximal caries. The toothbrush should be placed at a 90-degree angle to the long axis of the teeth so that the bristles are gently forced between the teeth but do not rest on the gums. The brush is moved in several small rotary motions so that the sides of the bristles are in contact with the gum margin. After two or three such motions the brush is removed and replaced in the same area and the motions repeated. According to Charters these movements crowd the sides of the bristles into the V-shaped spaces between the teeth so that the gingivae are massaged. This method is useful in cleaning the abutting surfaces or fixed bridges, around fixed orthodontic appliances, and when interproximal tissues are missing. When normal papillae are present, other methods are easier to use and are equally effective in cleaning interproximal areas.

**BASS.** It is important to note that the Bass technique was the first to focus on the removal of plaque and debris from the gingival sulcus by the combined use of a soft toothbrush and unwaxed dental floss. The method is effective for removing plaque adjacent to and directly beneath the gingival margins as part of the self-care regimen for controlling periodontal disease and caries. In the Bass technique the toothbrush is positioned in the gingival sulcus at a 45-degree angle to the tooth apex. The bristles are then gently pressed to enter the sulcus. A vibratory action, described as a back-and-forth horizontal jiggle, causes a pulsing of the bristles to clean the sulci. Modified Brushing Methods. In attempts to enhance brushing of the entire facial and lingual tooth surfaces, the original techniques of Stillman, Charters, and Bass have been modified to include the rolling stroke method.

In the modified Stillman and Charters methods, the toothbrush bristles are placed in approximately the same position as advocated in the original method, and a pulsing action is started. Then the toothbrush is slowly press-rolled coronally. A continued vibratory motion is used during this rolling stroke.

In the modified Bass technique, sulcular brushing is done either before or after the use of the rolling method. The Bass sulcular brushing and the rolling stroke should not be combined into one continuous movement, because this may result in an inadequate amount of pulsing or the brush not being positioned correctly in the sulci and lead to injuries. Lingual surfaces are cleaned in the same manner by using small, circular, vibratory motions.

#### **Knowledge level control**

1. Teeth cleaning sequence, cleaning duration, direction of motions.
2. Sequence of operations during the study of children to clean teeth.
3. Hygienic care for the toothbrush and its keeping.
4. Usage of toothpicks and dental flosses.

### **Practical Lesson № 4**

#### **Endogenic dental caries prevention. Interaction with pediatrician. Planning, methods of conducting**

**Aim of the lesson.** To acquaint students with facilities of endogenic dental caries prevention.

#### **Control of the initial level of knowledge**

1. Terms of initiation and calcification of primary teeth.
2. Terms of initiation and calcification of permanent teeth.

3. What age the application of preventive preparations is the most effective?
4. What is the order of ripening of enamel of different parts of teeth?

### **Content of the lesson**

At the beginning of the lesson teacher marks that the high level of defeat of teeth by the caries, especially among children, stimulated the development of the special facilities and methods of the prevention of this disease. Depending on the ways of influence on the hard tissues of tooth, the prevention is divided into endogenic, that influence through an organism, and exogenic, that influence directly on hard tissues of tooth, and also distinguish medicinal and unmedicinal prevention. The endogenic unmedicinal prevention of teeth decay includes strengthening of the somatic health of a child, the treatment of chronic diseases of internals and systems, rational feed with the limited use of carbohydrates.

The medicinal endogenic prevention is based on the reception of the preparations of fluoride, calcium, phosphorus, microelements, vitamins A,C,D, preparations which influence on the immunological reactivity.

The insufficient receipt of the mineral components, especially calcium and fluoride with the meal results in teeth decay. These preparations of calcium and phosphorus have substantial anticariogenic action:

- Calciogluconatis (it is produced in pills for 0,25g, and 0,5g, in ampoules for 10 ml a 10% solution. Appoint depending on age, course of treatment – 1 month with repetition in 3 months);
- Calciolactatis (it is produced in powder and pills for 0,5g and in a 5-10% solution);
- Calcioglycerophosphatis (it is produced in pills for 0,2-0,5g, in powder, appoint for 0,05-0,2g during 1 month). Day's necessity of organism in phosphorus 1,5g.

The exchange of calcium is closely associated with the exchange of phosphorus, BiotritDenta (stimulate mineralization of teeth and bones, to the children to 7 about 1 pill on a day.

Calcium is one of the basic components of apatites crystals which make mineral basis of hard tissues of teeth and bones of the skeleton. In addition the ions of calcium regulate the processes of growth and activity of mews of all types of tissues, influence on the metabolism, provide the normal hemopexis, promote firmness of organism to the unfavorable factors and infections, regulate tone of the muscular and nervous systems, take part in the secretion of hormones, activating of enzymes, in functioning of kidney. The common maintenance of calcium in an organism constitute 2% of the body's mass.

The necessity of calcium is multiplied at the physical loadings, in the second part of pregnancy, lactation, in the period of the development of child, in senium, when hormonal alteration takes place. The preparations of fluoride are important means of the prevention of caries.

### **Knowledge level control:**

1. What preparations of calcium of common action do you know?
2. What methods of the use of preparations of fluoride of common action?
3. What is included in an endogenic medicinal prophylaxis of caries?
4. What is included in an endogenic unmedicinal prophylaxis of caries?
5. Complex of what vitamins is it drawn on with the purpose of prophylaxis of caries?

## **Practical Lesson № 5**

**The role of nutrition in the dental caries prevention in children. Cariogenic food and the ways of reducing its action**

**Aim of the lesson** To present the meaning of the notion – “rational nutrition” and discuss its importance.

### **Control of the initial level of knowledge**

1. Terms of initiation and calcification of primary teeth.
2. Terms of initiation and calcification of permanent teeth.
3. Describe factors that influence on the forming and calcification of teeth before their eruption.
4. Describe factors that influence on the forming and calcification of teeth after their eruption.
5. What is rational nutrition?

### **Content of the lesson**

Rational nutrition plays important part in the forming of dental hard tissues (including mineral salts and vitamins) between all woman during their pregnancy and children before and after their teeth eruption.

Rational nutrition is the use of all necessary products like protein, fats, carbohydrates, microelements, vitamins and water for healthy body.

By the proper food ration it is possible to attain the increase of the concentration of mineral salts and microelements, vitamins in saliva, to change buffer properties of saliva in relation to acids which influence badly on the enamel of a tooth. One of the terms of valuable odontogenesis of a child is the rational feed of future mother in the period of her pregnancy. Mother's ration must contain the products, rich by mineral salts, vitamins, protein, fats, carbohydrates. It is necessary to pay attention to the fact that milk and milk products is the best source of mineral matters. There is much calcium in such products as rye bread, cheese, nuts.

The balance mineral composition of meal is instrumental in assimilation of mineral salts. It consists in clearly defined correlation of calcium and phosphorus – from 4:5 to 1:1, magnesium and calcium 1:3. Such balance is in milk and his products, green-stuffs, fish, fruit, mineral water.

There is much phosphorus in milk, cheese, fish, nuts. Optimum correlation of calcium and magnesium is in different milk porridge, a number of elements – in the products of sea.

As concerns microelements it is important to provide the sufficient receipt of fluor (tea, saltwater fish, bobs, meat), zinc (hard cheeses, eggs, fruit, sea products), Mn (berries, groats), magnesium (hard cheese, vegetable, meal).

Green-stuffs, berries, fruit, are the source of vitamin C. They contain a cellulose necessary for the best digestion, as well as mineral salts. Meat, eggs, liver, buckwheat and avenaceous groats, bread from the flour of rough grade contain the vitamins of the group B.

We can find vitamin D in butter, liver.

Carrot and sea-buckthorn contain vitamin A.

It is necessary to remember, that caffeine, alcohol, smoking are instrumental in the decline of bone mass, and going in for sports, the additional reception of fluoride, vitamin D – is instrumental in its increase.

Ration must be well-balanced and must foresee a limited use of carbohydrates (especially sugar) and enough amount of hard meal. To eruption of teeth the role of feed in their development and calcification shows up only by humoral way, and after eruption - also through saliva and direct contact with the tooth surface. The role of feed in caries prevention is shown in some aspects:

- feed as a forming factor of caries resistance organs and tissues
- feed as a way of diminishing of cariogenicity of carbohydrates
- feed as the factor of increasing of self-cleaning of oral cavity

Except for prenatal existence, the period of most rapid growth in humans occurs during the first 6 months of life. Breast-feeding continues to be the best overall method of infant feeding, and breast milk could well be the infant's only food source for the first 4 to 6 months. Primary risk factors for early childhood caries include putting a child to sleep at naptime or bedtime with a bottle containing a liquid other than plain water, allowing an infant to breast feed at-will during the night, and extended use of the nursing bottle beyond one year of age.

### **Knowledge level control:**

1. The role of fluoride in the forming of full structure of enamel.
2. What is a rational, valuable (full), well-balanced nutrition?
3. The role of separate components of meal in the forming of caries resistance tooth hard tissues.
4. Name the basic list of products for a daily ration: - for newborn babies; -for preschool children; - for children of school age.

## **Practical Lesson № 6**

### **Systemic using of fluorides. Mechanism of caries protective action of fluorides. Systemic using of micro- and macroelements, vitamins depending on age of child**

**Aim of the lesson.** To learn with students the mechanism of action of fluoride, its role in dental caries prevention.

### **Control of the initial level of knowledge**

1. Terms of initiation and calcification of primary and permanent teeth.
2. What is the order of ripening of enamel of different parts of teeth?
3. What is the mechanism of action of fluoride?
4. What concentration of fluoride in water is norm?

### **Content of the lesson**

#### *The mechanism of action of fluoride:*

- it has an effect during tooth formation making the enamel crystals larger and more stable;
- it inhibits plaque bacteria by blocking the enzyme enolase during glycolysis;
- it inhibits demineralization when in solution;
- it enhances remineralization by forming fluorapatite when in solution.
- it affects the crown morphology making the pits and fissures shallower and hence less likely to create stagnation areas.

*Water fluoridation* is systemic method of providing fluoride on the community basis. 1 ppm fluoride was shown by Dean to be the optimum level in 1942 – dental caries is reduced by 50%. Other systemic method of providing fluoride are: salt – 50% caries is reduction in Switzerland and Hungary; milk – 15-65% caries is reductions; mineral water – 46% caries is reduction in Bulgaria.

The principal requirement for community water fluoridation is a centralized piped water supply. Other requirements are that it be economically feasible and politically acceptable.

Other public health methods of obtaining fluoride coverage, especially for children, include: (1) fluoridated salt, (2) fluoridated milk, (3) fluoridation of an individual school's water supply, (4) school-based fluoride supplement programs, (5) school-based fluoride mouth rinse programs.

*Salt Fluoridation.* Fluoridated table salt has been mark in Switzerland since 1955. Salt fluoride programs have been introduced in Colombia, Ecuador, Peru, Venezuela, Mexico, and Jamaica. Usually, is fluoridated at a rational of 250 mg/kg .

*Milk Fluoridation.* It has been proposed as another alternative water fluoridation.

*Fluoride supplements* are in the form of tablets and drops. Caries reductions vary from 20% to 80%. The fluoride supplements doses depend on the age of the patient and the level of fluoride in the drinking water. No supplements should be prescribed if the water fluoride level is greater than 0.7 ppm. Such supplementation is only maximally effective if given long term and regularly (from 3-4 to 12 year 200-250 days per year). Unfortunately, studies have shown that long-term compliance with daily fluoride supplement protocols is poor. Parental motivation and regular reinforcement are essential for such measures to be effective.

The amount of fluoride in an organism depends on his maintenance in water and food products, and in general – from the amount of water which drink, from tradition and habits which influence on the use of water and products. For the general prevention of caries appoint a fluoride inward as the pills of NaF (appointing preparations of fluor it is necessary to remember, that a child for a day with a meal consumes to a 0,3-0,5mg fluorine. The optimum daily receipt of this element must be within the limits of 1,2-2,6mg depending on age):

- Fluorid (it is produced as pills which contain to a 0,05mg fluorine or 0,5mg fluorine, in packing for 100 pills. Pills accept 1 time per days, in the morning after breakfast. Duration of course 200-250 days on a year to the children from 3 to 14 years.
- Fluoretten Forte
- Vitaforum - contains the vitamins A,D,F.

#### **Knowledge level control:**

1. What factors do we take into account appointing preparations of fluoride to the children?
2. What complications develop at the surplus receipt of fluoride in an organism?
3. The role of fluoride in forming of valuable structure of enamel.
4. The role of separate components of meal in forming of caries resistance hard tissues of tooth.
5. What preparations of fluoride of common action do you know?

### **Practical Lesson № 7**

#### **Exogenic dental caries prevention in age aspect. Means, indication and methods of using**

**Aim of the lesson** To acquaint the students with facilities of topical dental caries prevention.

#### **Control of the initial level of knowledge**

1. Terms of initiation and calcification of the primary teeth.
2. Terms of initiation and calcification of the permanent teeth.
3. To what age the application of preventive preparations is the most effective?
4. Name fluoride preparations of local action.
5. What is the method of their use?
6. What is the mechanism of fluoride action?

#### **Content of the lesson**

At the beginning of the lesson the teacher pays attention to that caries prevention should be started in the period of the organic matrix of the permanent and temporary teeth forming, their mineralization and to be continued after eruption to the complete ripening of enamel. The removal of cariogenic situation is the purpose of local prevention of the teeth decay, adjusting of uncompleted, after eruption of teeth mineralization, focus on initial caries. The term “topical fluoride prevention” refers to the use of systems containing relatively large concentrations of fluoride that are applied locally, or topically, to the erupted tooth surfaces in order to prevent the formations of dental caries. This term encompasses the use of fluoride rinses, dentifrices, pastes, gels, and solution that are applied in various manners.

The local prevention is divided into medicinal and unmedicinal. An unmedicinal local prevention includes intensive mastication of the hard products, rational hygiene of oral cavity, rinse of oral cavity by solutions of natriumhydrocarbonate, xylite, mineral water, tea, slow drinking of the milk, tea. A medicinal local prevention includes local application of preparations of Ca, P, F (application, rinses).

A lifetime protection against dental caries results from the continuous use of the low-concentration fluoride. In addition to their use in caries prevention, topical fluorides may be used to control initial carious lesions and those lesions occurred around existing restorations. This is effective for both adults and children.

*Factors that should be considered before committing to fluoride regimen include:*

- Caries risk: high, medium, low
- Cariogenicity of the diet oral clearance rate
- Patient age and compliance
- Community water fluoridation levels
- Existing medical conditions

The use of fluoride toothpastes is the most feasible way of maintaining elevated fluoride concentrations at plaque-enamel interfaces.

*Fluoride toothpastes.* The use of fluoride toothpastes has led to a 25% reduction in the prevalence of caries in industrialized countries, with the greatest effect being observed on interproximal and smooth surfaces as well as newly erupted teeth.

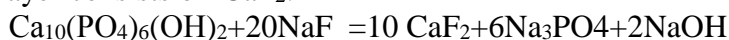
*Traditional toothpastes:* contain approximately 1000-1100 ppm of fluoride- added as sodium fluoride: sodium monofluorophosphate (MFP) or stannous fluoride

Low fluoride toothpastes are available for the children. It contains 250,400 or 500 ppm fluoride.

*The main of fluorine components which are used in toothpastes are the following:*

- Natriifluorid (NaF) – Crest, Colgate total
- Natriifluorophosphat ( $\text{Na}_2\text{PO}_3\text{F}$ ) – Aqua fresh, Macleans
- Natriimonofluorophosphat (NaMFP)
- Aminofluorid (AmF) – Elmex, Lacalut, Meridol

NaF and NaMFP are inorganic connections, AmF – organic. Dental pastes that contain AmF are most effective in the caries prevention. Basic anticariogenic action of fluorochemicals consists in diminishing of permeability of enamel due to formation of superficial protective layer on a tooth. This layer consists of  $\text{CaF}_2$ .



Size of crystals  $\text{CaF}_2$  greater than the diameter of entrance in the pores of enamel at 100 times that is why they cannot penetrate inward. Crystals lie loosely on the enamel surface like sand not having interaction with enamel. At the mechanical action crystals come off the tooth surface.

There is strong evidence that the establishment of effective toothbrushing twice per day with the fluoride toothpastes before 2 years of age will have significant effect on reducing an individual's caries experience.

*Fluoride mouth rinses.* Studies show that supervised fluoride-rinse programmes reduce caries by 20-50%. Weekly 0.2% NaF and daily 0.05% NaF rinses are considered to be ideal public health measures. The use of such rinses is now recommended, principally for those individuals with high caries risk or during times of increased caries susceptibility.

Daily rinses:

- 0.02% acidulated phosphofluoride (APF)
- partly acidulated solution of 0.04% NaF (200ppm)

Weekly or fortnightly rinses:

- 0.2% NaF (100 ppm)

Indications:

- patients who are undergoing orthodontic treatment
- postirradiation xerostomia sufferers
- children unable to perform adequate toothbrushing
- children at high risk of dental caries

Contraindications:

- not recommended for preschool-aged children, less than 6 years of age, because of the risk of excessive ingestion.

*Fluoride varnishes.* Fluoride varnishes were originally developed to prolong contact times between fluoride and enamel with a view to increasing the formation of fluorapatite. Fluoride varnishes bind fluoride firmly in enamel better than other topical fluoride preparations. However, the reduction of caries has been of the same order (approximately 30%)

Indications:

- hypersensitive areas
- newly erupted teeth
- arresting of early caries

*Duraphat* (Colgate Oral Care) is an alcoholic solution of natural varnishes containing 50 mg NaF/ml (2.5% - approximately 25 000 ppm fluoride). This varnish remains on the teeth for up to 12 hours. However, fluoride fixation remains evident up to 48 hours after application.

*Fluor Protector* (Ivoclar) is a silane fluoride varnish with a lower concentration of fluoride (0.8%) in a polyurethane lacquer. With such highly concentrated fluoride products, great care must be taken to avoid overuse and ingestion. These products should not be used before the eruption of the permanent incisors.

The sodium fluoride varnish is particularly recommended for use in preschool-age children because of its ease of application. Before application of the varnish, the teeth receive prophylaxis or are brushed with a dentifrice to remove plaque and oral debris. The varnish is then applied with a soft brush, with reapplication recommended at 4-to 6-month intervals.

*Concentrated fluoride gels and solutions.* APF gels (acidulated phosphate fluoride gels), containing 1.23% fluoride (12 300 ppm) are used for professional applications and consist of a mixture of NaF, HF and orthophosphoric acid.

- such highly concentrated fluoride gels should be limited to professional use and should not be dispensed for home use in children
- the incorporation of a water-soluble polymer (sodium carboxymethyl cellulose) into aqueous APF produces a viscous solution that improves the ease of application using custom-made trays
- Thixotropic gels in trays flow under pressure, so facilitating the penetration of the gel between teeth.
- APF gels are mainly used for the prevention of caries development

The 4-minute treatment time has been typically recommended for professionally applied topical fluoride solutions, gels. If gel is applied with a tray technique, use of an ample amount will force the substance into the proximal areas. The trays should be about one third to one half full for gel. Usually both upper and lower trays are inserted at once to complete the topical fluoride treatment in one 4-minute application. The patient sits in an upright position with head tipped slightly forwards to allow excess saliva and fluoride to flow toward the lips. Patients who follow instructions well may be provided with the high-velocity evacuator tip to help control the drooling themselves, or they may be given a plastic drool bag.

*Neutral 2.2% NaF* is preferred in cases of enamel erosion, exposed dentine, carious dentine or where enamel surfaces are very porous. It is chemically very stable, has an acceptable taste and is non-irritating to the gingiva. It does not discolour teeth, composite resin or porcelain restorations (in contrast to APF or stannous fluoride, which may cause discoloration).

*Stannous fluoride (SnF<sub>2</sub>)* 10% SnF<sub>2</sub> is used to target local at-risk surfaces of teeth such as deep fissures and pits or white spot lesions on accessible proximal surfaces. Rapid penetration of tin and fluoride into enamel and the formation of a highly insoluble tin-fluorophosphate complex coating on the enamel are the main mechanisms of action. However, the stannous ion may cause discoloration of teeth and staining on margins of restorations, particularly in hypocalcified areas. 0.4% SnF<sub>2</sub> gel in a methylcellulose and glycerine base has proved effective in arresting root caries and has been incorporated into a synthetic saliva solution to reduce caries in postirradiation cancer patients.

*Chlorhexidine gel.* Clinical research in very young children is limited, but there is substantial agreement that daily professional applications of chlorhexidine followed by applications every few months can be significant in controlling caries. This probably results from chlorhexidine's ability to reduce the levels of mutans streptococci in both saliva and plaque.

10% solution of calcium gluconate and 2.5% solution of calcium glycerophosphate applied as application or ionophoresis. The course of treatment makes 15-20 applications or 10-15 procedures of ionophoresis. At application of remineralization solution it is expedient to heat them to 40-45°C,

taking into account that the increase of temperature of solution on 1°C strengthens account of ions on the enamel surface on 1%. It is necessary to remember, that high concentration of calcium conduces only to mineralization of superficial layer of enamel, while the low concentrated solutions promote mineralization on all depth of enamel. The choice of mineralization facilities and method of their use are individual, depended upon age of child and state of teeth.

### **Knowledge level control**

1. Role of fluoride in forming of valuable structure of enamel.
2. What preparations of calcium of local action do you know?
3. What methods of the use of preparations of calcium of local action?
4. What included in an local medicinal prophylaxis of caries?
5. What included in an local unmedicinalprophylaxis of caries?
6. Which factors that should be considered before committing to and fluoride regimen?

## **Practical Lesson № 8**

### **Practical mastering of different methods of exogenic prevention in children**

**Aim of the lesson.** To teach students to apply and be able to perform various techniques for the use of fluorides and methods of remineralization of enamel in practice.

### **Control of the initial level of knowledge**

1. What is the mechanism of fluoride action?
2. What fluoride compounds do you know?
3. What is the content of fluorine compounds in toothpastes for children.
4. What is the content of fluoride compounds in adult toothpastes.

### **Content of the lesson**

#### *Method of remineralization therapy after Leus-Borovsky:*

Brushing the surface of tooth from the dental plaque, to dry by the stream of warm air, then to impose on her the cotton rollers moistened by and 10% solution of calcium gluconatis on 15-20min; during this time rollers change 3-4 times. After it to impose on the surface of teeth the tampons moistened by and 2% solution of NAF on 2-3min.

Recommendations for the patient: not to use the meal during 2hour after procedure. Course of treatment 10 sessions last.

*Knappwost offered the method of deep fluoridation.* Deep fluoridation takes place as a result of the sequential processing of teeth by two solutions. The first solution of Enamel - sealing liquid – poorly sour Mg-F silicate that contains the Cu ions. Second is Ca(OH)<sub>2</sub>. Arises up as a result CaF<sub>2</sub>, MgF<sub>2</sub>, Cu(OH)F. Nanofluorides interpenetrates in the pores of enamel and long (from 0,5 to 2 years) select the fluorine.

*Method of conduct deep fluoridation.* Before causing of enamel-sealing liquid it is needed to clean demineralization areas of teeth by the tooth brush, interdental intervals - flossing, to isolate teeth from saliva by cotton rollers, to process by antiseptic solution and after to dry by warm air to inflict on demineralization areas liquid № 1, through and 30 sec. - liquid № 2, to rinse the oral cavity.

### **Knowledge level control:**

1. What is exogenic prevention?
2. What types of exogenic prevention do you know?
3. What methods of exogenic prevention do you know?
4. What is mineralization of enamel?



5. The concept of demineralization and remineralization.
6. Name the means and features of electrophoresis in hard tooth tissues.
7. Describe the procedure for mouthwash with NaF solutions.
8. Influence of F preparations on hard dental tissues.
9. What is the criteria for choosing the concentration of remineralizing solutions?
10. Describe the method of using fluorine-containing disks.
11. What is the technique of covering teeth with varnishes?

## **Practical Lesson № 9**

### **Fissure sealing. Means, indication and methods of using**

**Aim of the lesson** To acquaint students with facilities of topical dental caries prevention.

#### **Control of the initial level of knowledge**

1. What is the tooth sealant and how does it work?
2. Name the criteria for selecting teeth for sealant placement.
3. Describe the steps of sealants placement.
4. What types of sealants do you know?
5. What is the preventive dentistry restoration?
6. What methods of sealing do you know?

#### **Content of the lesson**

Fluorides are highly effective in reducing the number of carious lesions occurring on the smooth surfaces of enamel and cementum. Unfortunately fluorides are not equally effective in protecting the occlusal pits and fissures, where 95 percent of all carious lesions occurs. Considering the fact that the occlusal surfaces constitute only 12 percent of the total number of tooth surfaces, it means that the pit and fissures are approximately eight times as vulnerable as the smooth surfaces. The placement of sealants is a highly effective means of preventing pit and fissure caries.

The cariostatic properties of sealants are attributed to the physical obstruction of the pits and grooves. This prevents colonization of the pits and fissures with new bacteria and also prevents the penetration of fermentable carbohydrates to any bacteria remaining in the pits and fissures, so that the remaining bacteria cannot produce acid in cariogenic concentration. Such as occur in many public health programs, and age 3 and 4 years are the most important times for sealing the deciduous teeth, ages 6 to 7 years for the first permanent molars and ages 11 to 13 years for the second permanent molars and premolars.

A sealant is a resin material that is usually applied to the pits and fissures of back teeth (Concise Brand White Sealant (3M), Delton clear and tinted (Johnson& Johnson), Helioseal, white (Vivadent), Ultraseal XT plus, Nuva-seal (L.D. Caulk), Visio-seal (ESPE) Fissurite F (Voco). The sealant resin acts as a barrier, protecting the enamel from bacterial plaque. Sealant materials may be transparent or opaque. Opaque materials are available in tooth color or white. Transparent sealants are clear, pink, or amber. The clear and tooth-colored sealants are esthetic but are difficult to detect at recall examination.

#### **Criteria for selecting teeth for sealant placement** (British Society for Paediatric Dentistry)

A sealant is indicated if: - a deep occlusal fissure, fossa, or lingual pit is present (morphology of tooth)

- only erupted teeth (age)
- children with special needs (who are medically compromised, physically or mentally disabled, or have learning difficulties, or for those from a disadvantaged social background)
- children with extensive caries in their primary teeth should have all permanent molars sealed soon after their eruption

- any child with occlusal caries in one first permanent molar should have the fissures of the sound first permanent molars sealed.

- occlusal caries affecting one or more first permanent molars indicates a need to seal the second permanent molars as soon as they have erupted sufficiently.

A sealant is contraindicated if: - patient behavior does not permit use of adequate dry-field techniques through –out the procedure.

- an open occlusal carious lesion exists.

- caries exist on other surfaces of the same tooth.

- when rampant caries or interproximal lesions are present

- children with carious-free primary dentitions do not need to have first permanent molars sealed routinely, rather these teeth should be reviewed at regular intervals.

Fissure sealing technique:

- cleaning (with rotary dry bristle brush and pastes without fluoride NuPro, Topex) The use of a quarter round bur produced the greatest penetration of the sealant into etched enamel.

- isolate the tooth surface

- etch for 20-30s with 37% phosphoric acid

- wash and dry the surface maintaining isolation

- apply the resin

- cure

- check for occlusal interferences

#### **Knowledge level control:**

1. What is the indication for fissure sealing?
2. What is the contraindication for fissure sealing?
3. Fissure sealing technique.
4. What is the optimal terms for sealing the first permanent molars?

### **Practical Lesson № 10**

#### **Practical mastering of fissure sealing**

**Aim of the lesson.** Teach students the technique of fissure sealing.

#### **Control of the initial level of knowledge**

1. What is the order of maturing of enamel of different parts of teeth?
2. What is the indication for fissure sealing?
3. What is the contraindication for fissure sealing?

#### **Content of the lesson**

Fissure sealing methods:

- Non-invasive fissure sealing.
- Invasive fissure sealing (fissurotomy).
- Preventive restoration.

#### **Non-invasive fissure sealing technique.**

1. Prior to the application of a tooth conditioner, the tooth surface should be cleaned by air polishing, polishing with non-fluoridated pumice paste, hydrogen peroxide. All heavy stains, deposits, debris and plaque should be removed. After cleaning the occlusal surface, dry the area thoroughly for 10 seconds.

2. Increasing the surface area requires a phosphoric acid tooth conditioner/etchant. Since sealants do not directly bond to the teeth, the adhesive force must be improved by tooth conditioner. If any of the tooth surfaces do not receive the tooth conditioner, the sealant will not be retained.

Isolation of the teeth includes cotton rolls, dry-angles, or ideally with a dental dam. Follow manufacturer recommendations for the required to remain on the enamel, as well as rinsing times. The appearance of the enamel by the tooth conditioner/etchant should appear as white, dull, and chalky. If the enamel does not appear white and chalky, tooth conditioner is reapplied according to manufacturer instructions. Dry thoroughly before sealant application.

3. The application of the sealant material requires the pits and fissures to be filled and the material brought to a knife-edge approximately halfway-up the inclined plane of the cusp ridge. Any bubbles must be broken before polymerization to prevent a defect. Polymerize with a curing light. Follow manufacturer directions for time.

4. Check the sealant with an explorer for proper placement and polymerization. Check occlusion with articulating paper and check interproximal contacts with floss. If sealant material is present interproximal, use a scaler to remove excess. If occlusion is high, use a slow-speed rotary bur such as a no. 4 or 8 round bur. Recheck the occlusion again. Sealants should be checked at each dental examination for retention.

#### **Invasive fissure sealing Fissurotomy (ameloplasty)**

- In case of doubtful caries diagnosis minimal enamel removal is required to open the fissure and evaluate the health of the underlying tissues.
- For invasive fissure sealing the ideal choice is the filled sealing material
- Flow composites can be used for sealing, but only with bonding!!!
- During the application of the flow composites we have to be careful to avoid air bubbles enamel dentin removed enamel

#### **Preventive resin restoration**

- In case of small dentin lesions
- Prepare and clean only the lesion, and fill with adhesive material (GIC, compomer, composite), then seal the fissures AND the surface of the filling.

#### **Knowledge level control:**

1. Fissure sealing technique.
2. What is the optimal terms for sealing the first permanent molars?
3. What is the tooth sealant and how does it work?
4. Name the criteria for selecting teeth for sealant placement.
5. Describe the steps of non-invasive fissure sealing.
6. Describe the steps of invasive fissure sealing.
7. Describe the steps of preventive resin restoration.

### **Practical Lesson № 11**

#### **Prevention of periodontal diseases in children. The main risk factors of periodontal diseases development. Planning, methods of conducting**

**Aim of the lesson.** To teach students the main risk factors of periodontal diseases, ways its elimination, basic methods of periodontal diseases prevention.

#### **Control of the initial level of knowledge**

1. What are the risk factors of general importance which cause the periodontal diseases progress?
2. What are the risk factors of local importance which cause the periodontal diseases progress?
3. What are the types of the dental flosses?
4. Choice criteria of the oral cavity hygienic means.

#### **Content of the lesson**

Periodontal diseases are mainly the results of infections and inflammation of the gums and bone that surround and support the teeth. In its early stage, called gingivitis, the gums can become swollen

and red, and they may bleed. In its more serious form, called periodontitis, the gums can pull away from the tooth, bone can be lost, and the teeth may loosen or even fall out. Periodontal disease is mostly seen in adults. Periodontal disease and tooth decay are the two biggest threats to dental health.

Bacteria in the mouth infect tissue surrounding the tooth, causing inflammation around the tooth leading to periodontal disease. When bacteria stay on the teeth long enough, they form a film called plaque, which eventually hardens to tartar, also called calculus. Tartar build-up can spread below the gum line, which makes the teeth harder to clean. Then, only a dental health professional can remove the tartar and stop the periodontal disease process.

The following are warning signs of periodontal disease:

- Bad breath or bad taste that won't go away
- Red or swollen gums
- Tender or bleeding gums
- Painful chewing
- Loose teeth
- Sensitive teeth
- Gums that have pulled away from your teeth
- Any change in the way your teeth fit together when you bite
- Any change in the fit of partial dentures

Risk factors. Certain factors increase the risk for periodontal disease:

- Smoking
- Diabetes
- Poor oral hygiene
- Stress
- Heredity
- Crooked teeth
- Underlying immuno-deficiencies
- Fillings that have become defective
- Taking medications that cause dry mouth
- Bridges that no longer fit properly
- Female hormonal changes, such as with pregnancy or the use of oral contraceptives

**Prevention and treatment.** Gingivitis can be controlled and treated with good oral hygiene and regular professional cleaning. More severe forms of periodontal disease can also be treated successfully but may require more extensive treatment. Such treatment might include deep cleaning of the tooth root surfaces below the gums, medications prescribed to take by mouth or placed directly under the gums, and sometimes corrective surgery.

To help prevent or control periodontal diseases, it is important to:

1. Brush and floss every day to remove the bacteria that cause gum disease.
2. See a dentist at least once a year for checkups, or more frequently if you have any of the warning signs or risk factors mentioned above.

#### **Knowledge level control**

1. Flossing technique.
2. What are the kinds of toothbrushing technique?
3. Teeth cleaning sequence, cleaning duration, direction of motions.
4. Mouthrinses, its characteristics.

#### **Practical Lesson № 12**

**Individual hygiene of the oral cavity as a basis of periodontal diseases prevention. Prescription of hygienic means depending on periodontal tissues state**

**Aim of the lesson** To study the principles of choice of individual hygiene's means and technique of tooth brushing depending on periodontal tissue state.

### **Control of the initial level of knowledge**

1. Types of toothbrushes.
2. Principles of choice of toothbrushes depending on the oral cavity state.
3. Which tooth brushes techniques do you know?
4. Additional means for individual oral hygiene.

### **Content of the lesson**

#### **Bass or Sulcular Technique**

The key to preventing and controlling gum disease is brushing around and under the gumline where bacteria and plaque tend to accumulate. In the Bass method of brushing the toothbrush bristles reach under the gums to scrub off plaque before it hardens into tartar and causes gum disease:

- Place the toothbrush parallel to your teeth with the bristles toward the gums.
- Tilt the brush to a 45 degree angle and move the bristles slightly under the gumline.
- With firm but gentle pressure, and while maintaining the bristles under the gum tissue, wiggle or vibrate the brush back and forth or use a small circular motion 15 to 20 times, before moving to the next area. The brush should cover two to three teeth at a time.
- Brush the entire outer surface of the teeth and then continue the same technique on the tongue side.
- To brush the insides of the front teeth, hold the toothbrush in a vertical position and use the bristles on the toe of the brush, but make sure they are getting under the gum tissue.
- Brush the chewing surface of the molar teeth and don't forget your tongue.

#### **Stillman Technique**

The Stillman method of brushing is similar to the Bass technique; however, it may help clean more debris from between the teeth. To implement this method, follow the Bass technique, but after vibrating the brush under the gum area, move the brush toward the chewing surface of the tooth and use short back-and-forth strokes.

#### **Charter Technique**

If you have spaces between your teeth, see exposed root surfaces or have had periodontal surgery or gum recession, it can be recommended the Charter method of brushing. This technique is also effective for people with orthodontic appliances or fixed partial dentures.

- Place the bristles on the gumline at a 45 degree angle pointing toward the chewing surface or crown of the tooth. This position is the opposite of the Bass and Stillman technique.
- Gently vibrate the brush for 15 to 20 counts, using short circular strokes or small back and forth motions, and then reposition the brush to the next area.
- Move around the mouth in the same pattern, brushing all tooth surfaces, both inner and outer, as well as the chewing surfaces of the molars.

Dental floss is an effective way to remove plaque from proximal tooth surfaces. There are several ways to use dental floss effectively. The following are guidelines that may be modified according to the patient's preference.

1. Cut a piece of floss at least 18 inches long. Wrap the excess floss around the middle or index fingers of both hands leaving a 2-to 3-inch working space exposed.
2. Stretch the floss tightly between the fingers and use the thumb and index finger to guide the floss into place.
3. Gently pass the floss through the contact area with a firm, sideward sawing motion. Do not forcibly snap the floss past the contact area, because this will injure the interdental gingiva.
4. Wrap the floss round the proximal surface of one tooth, at the base of the gingival sulcus. Move the floss firmly along the tooth up to the contact area and gently down into the sulcus again. Repeat this up-and-down stroke five or six times.
5. Carefully move the floss across the interdental gingival, and repeat the procedure on the proximal surface of the adjacent tooth.

6. When the working portion of the floss becomes soiled or begins to shred, move a fresh area into the working position.

7. Continue throughout the entire dentition, including the distal surface of the last tooth in each quadrant.

8. A “bridge threader” may be used to floss under a fixed bridge.

### **Knowledge level control**

1. Bass technique of tooth brushing.
2. Stillman technique of tooth brushing.
3. Charter Technique of tooth brushing.
4. Flossing technique.
5. What are the kinds of toothbrushing technique?
6. Teeth cleaning sequence, cleaning duration, direction of motions.
7. Mouthrinses, its characteristics.

## **Practical Lesson № 13**

**Complex system of dental diseases prevention in children. Organized principles. The main steps of introducing. Preparing, forming of program.**

**Aim of the lesson** To introduce students with complex system prevention programs, the main stages of its introduction.

### **Control of the initial level of knowledge**

1. Give the meaning of “complex system of preventive dentistry”.
2. What does the complex program of prevention includes?
3. What indexes of caries do you know?
4. Name indexes that characterize the state of periodontal tissues and hygiene of the oral cavity.

### **Content of the lesson**

Students must know that a complex system of preventive dentistry is a system of preventive measures that is directed on making healthy organism and organs of the oral cavity in the way of improving their level of resistance and declining intensive influence of some unfavorable factors.

#### **Complex system of preventive dentistry includes:**

- sanitary-educational work among the population
- studies of the main principles of rational nutrition
- studies of hygiene’s rules of the oral cavity
- endogenic use of fluor remedies
- early exposure of dental diseases
- secondary prevention (oral cavity’s treatment)

**Prevention** is a complex of state, social, medical, sanitary-hygienic measures that is directed on the beginning of risk factors of dental diseases and their warning. The problem of preventive dentistry can’t be solved only by a dentist, it is a state problem that should provide some means for solving this problem. Preventive programs are designed by the State Power and established by the organs of Health protection, Education Authority at regional levels (state, region) depending on epidemiological researches.

#### **The complex of prophylactic program includes:**

1. Introductory part (a plan of all measures for power structures, financing of the program, the improvement of social position, fluoridation of water, salt and milk).

2. Medical program (epidemiological inspection, planning the number of doctors, making-up the sanitary-educational programs, having opportunity to choose all possible measures for mass and individual prevention).

3. Sanitary-educational program (includes hygienic studies and educational program for population of all ages. This program should be designed by Educational Authority. Teachers, instructors of Red Cross, medical nurses are working under this program. The lessons like "Health Education" are conducted at schools. Pupils of the 1st form have got 6 hours of this lesson; pupils of the 7th form – 6 hours, pupils of the 9th form – 4 hours).

4. Preventive measures (determine the volume of preventive measures: local and generally fluor medicines, fluor dental pastes, varnishes, gels, fissure sealing).

5. The result of the effectiveness of the program is taken not early than in 2-2.5 years on key groups of 6, 9, 12 years. The final effect of prevention is taken in 5 years.

Teacher pays student's attention to the **basic stages of organization of a complex preventive system** and explains their essence.

1. Making the list of preschool establishments where preventive dentistry will be made.

2. Making agreement between Health protection Service and Authority of Education that foresees mutual duties of two sides.

3. Preparing medical specialists of higher and secondary link for medical care service; sanitary-educative work and preventive measures.

4. Studying geographical features of the climate, features of nutrition, composition of water, the way of life, habits.

5. Children's epidemiological care for discovering of risk level of the basic dental diseases (indexes of DMF, PI, PMA, CPITN).

6. Preparing and equipping places and making working conditions for introduction of preventive measures.

7. Studying the problem, the number and order of preventive measures in different clinical groups.

8. Conducting a sanitary-educative work with teachers, parents and of school medical workers.

9. Conducting practical lessons in "Principles of Health Education" on the topics "hygiene of the oral cavity". Control the state of hygiene and make all measures about the improvement of one's nutrition.

10. Using all preventive measures that have to be chosen according to the notes of epidemiological inspections.

Teacher pays student's attention to the introduction of a complex system of preventive dentistry and foresees previous preparatory measures and programs. There are some places with a complex system of preventive dentistry:

1. women's centre

2. preschool establishments

3. schools

4. secondary special educational establishments

5. universities

6. industrial establishments (factories)

Teacher pays student's attention on preparatory measure that must be conducted at some special equipped places. Some means like toothbrush, toothpaste are necessary for realization of this measures. Leaders of medical centers are dealing with the creation of material and technical base. The main task of regional Health Care Authority is providing medical centers with high-skilled nurses in collective groups with the number of no more than 500 individuals. The leaders of establishments cooperate with medical specialists on the basis of agreement. Cooperation with sanitary-epidemiological service is very important because of its help in determination of maintenance of fluorine in a drinking-water of the region. The agreement notes the terms of providing measures and the duties of two sides.

One of the main tasks of the second preparatory stage is to examine organized groups of the population (expectant mothers, children and adults). Not only a dentist but a throat-specialist and a pediatrician take part in the second stage of a complex medical care. The content of fluorine in biological liquids (mixed saliva and urine) and enamel structure is a very important stage of preparation. The results of inspections are taken to the «Card of effective results of primary preventive dentistry» which consists of 9 sections. Students characterize these sections. The medical inspection is finished by the data processing with the help of statistical methods. Clinical groups are formed on the bases of received data.

The main principle of introduction of preventive system is age method of approach. Students characterize material base and measures which are conducted in all collective groups.

The effectiveness of preventive measures is characterized by the comparison of the proper indexes of caries, periodontal and hygienic indexes. Students revise the notion of prevalence, intensity and activeness of caries of periodontal and hygienic indexes on the bases of a concrete group. The effectiveness of preventive measures is estimated by a test content of fluoride in saliva, urine and enamel.

The tests of medical care and the results of analysis are taken once or twice a year.

#### **Knowledge level control:**

1. Name the order of introduction of a complex preventive program of the basic dental diseases.
2. When do we estimate medical effectiveness of a complex preventive system of the basic dental diseases?
3. On the bases of what establishments do we conduct preventive measures?
4. Name the methods of effectiveness of introduction of a complex preventive system.
5. What preparatory measures does sanitary-epidemiological service conduct?

### **Practical Lesson № 14**

#### **Criteria of estimation of effectiveness of complex system prevention**

**Aim of the lesson.** To study the criteria for evaluation of effectiveness of program of complex system prevention .

#### **Control of the initial level of knowledge**

1. Index DMF.
2. Index CPITN.
3. Index PMA.
4. Index of increasing of caries intensity.

#### **Content of the lesson**

The effectiveness of preventive measures is characterized by the comparison of the proper indexes of caries, periodontal and hygienic indexes. Students revise the notion of prevalence, intensity and activeness of caries of periodontal and hygienic indexes on the bases of a concrete group. The effectiveness of preventive measures is estimated by a test content of fluoride in saliva, urine and enamel.

The tests of medical care and the results of analysis are taken once or twice a year.

At the clinical exam the number of cavities, fillings and missing teeth should be recorded. Such a recording is an estimation of the dental caries history from the time of the eruption of the first permanent molars up to the day of examination. Incipient caries lesions “white spot lesions” are usually not included. These readings provide an indices of caries prevalence and are calculated for 28 (permanent) teeth, excluding the 4 third molars. This index provides:

How many teeth have caries lesions (D).



How many teeth have been extracted (M).

How many teeth have fillings or crowns (F).

The sum of these three factors provide the DMF (T)-value.

DMF(T) and DMF(S) are used as dental caries indices to describe numerically the amount (the prevalence) of dental caries in an individual. This provides the total cumulative caries experience. They are obtained by totaling the number of Decayed (D), Missing (M) and Filled (F) teeth (T) or surfaces (S).

- Currently, we can only measure cavitated lesions.

- Using the tooth "(T)" designation, each tooth can have only one decayed or filled surface maximum. If a tooth has both a carious lesion and a filling, it is calculated as D only.

- The "M" indicator is for missing teeth. Teeth may be missing for reasons other than caries such as trauma or periodontal disease. This is especially true in older individuals where periodontal disease could be a factor.

- A DMF (T) of 28 is maximum, meaning that all teeth are affected. For example (resize new screen so that you will be able to observe both browser windows).

- D=4, M=3, F=9 means that 4 teeth are decayed, 3 teeth are missing and 9 teeth have fillings.

The DMF(T) is the total=16. It also means that 12 teeth are intact, since this index is based on a maximum of 28 teeth.

Index DMF is used for permanent dentition, index df – for primary dentition, index DMF+dmf – for mixed dentition.

**Prevalence** – an indicator of past history.

Prevalence illustrates the balance between resistance factors and caries inducing factors in the past and the present. For an adult patient, the caries prevalence usually is a result of caries activity from six years of age, when the first permanent molars appeared. If the caries prevalence is high, it means that the patient has been susceptible to the disease during a past period of time.

Prevalence is determined by one oral exam using a light, probe and mirror.

The examination is usually without x-rays. Without x-rays proximal caries are not easily found.

Prevalence is depicted in cross-sectional studies. It does not show current state of caries activity.

DMF may not portray changes in oral health. "F" can be high while "D" may be low. Increase in "F" usually means better oral health, while an increase in "D" may indicate poorer oral care.

Teacher explain students how use caries epidemiological indices in practice.

### **Knowledge level control:**

1. Give meaning of "complex system of preventive dentistry".
2. What does the complex program of prevention include?
3. What indexes of caries do you know?
4. Name indexes that characterize the state of periodontal tissues and hygiene of the oral cavity.
5. Name the order of introduction of a complex preventive program of the basic dental diseases.
6. When do we estimate medical effectiveness of a complex preventive system of the basic dental diseases?
7. On the basis of what establishments do we conduct preventive measures?
8. Name the methods of effectiveness of introduction of a complex preventive system.
9. What preparatory measures does sanitary-epidemiological service conduct?

## **Practical Lesson № 15**

**Dispensarization as a main method of introduction of primary prevention. Principles, organized forms, steps. Formation of dental dispensary groups**

**Aim of the lesson.** To teach the student the methodology of formation of dispensary groups, criteria for assessing the quality of clinical examination, principles and organizational forms of medical examination and its stages.

### **Control of the initial level of knowledge**

1. Influence of somatic health on the oral cavity
2. The intensity of the carious process, as determined?
3. Determination of the state of the mucous membrane of the oral cavity.

### **Content of the lesson**

Dispensarization is a method of medical and sanitary care of the population, which includes the necessary complex of health-improving, social-hygienic and therapeutic and prophylactic measures for the purpose of preservation and displacement of health, as well as increasing the capacity of the population, which is subject to medical examination.

Dispensarization (Medical examination) is the only harmonious system that provides a comprehensive, life-long, dynamic monitoring of the health of everyone and the environment in which it is located. It enables to study and evaluate the general state of health of the population, to model and predict it, depending on the impact of the conditions affecting, to develop comprehensive measures.

The purpose of the medical examination is to preserve and strengthen the health of the population, increase the duration of active and biological life, through state, social, collective and individual primary and secondary preventive measures.

#### **Structural elements of the system of medical examination:**

- Ministries, departments, enterprises, public organizations;
- a general network of all medical and preventive institutions with the participation of medical universities, research institutes;
- specialized clinics;
- the attending physician;
- a person subject to medical examination.

#### **Basic principles of the dispensary methodology:**

- active detection of dental diseases in the early stages and account for contingent that is being screened;
- systematic observation of identified patients and provision of their qualified dental care;
- public and individual prevention of major dental diseases, sanitary education and education of social activity.

**Task.** Conduct the formation of dispensary groups based on survey data.

Determine the dispensary group.

Taking into account the classification of diseases and their causes, the following structure of the dental clinic should be considered optimal.

Composition of dispensary groups depending on the somatic and dental status of the child:

I st group - children I-III of health groups without dental pathology have factors of the risk of development of caries, periodontal diseases, anomalies, compensated degree of caries activity, periodontal diseases, as well as children, irrespective of their general state of health, in which any signs of abnormalities of the maxillofacial area were revealed.

II nd group - children of I-III groups of health with the presence of subcompensated caries, gingivitis, periodontitis, as well as children with severe health condition and the absence of dental diseases, the risk of diseases, with compensated form of caries and periodontal.

III rd group - children, regardless of their health status, have decompensated forms of caries and periodontal disease, chronically recurrent lip breaks, malignant tumors in the past or now, children of IV-V groups of health even with a subcompensated form of caries or pathology of periodontal disease.

### Knowledge level control

1. What is the purpose of the despanserization?
2. What stages of medical examination (despanserization) do you know?
3. What are the basic principles of the organization of dispensary observation?
4. What groups do exist for dispensary supervision?

## Practical Lesson № 16

**Sanitary education is a component of the primary prevention of dental diseases. Organization of dental sanitary education, its forms, methods, means.**

Aim of the lesson. To learn with students about the sanitary education as a method of prevention of dental diseases, its forms

### Control of the initial level of knowledge

1. Sanitary education, its structure, purpose, tasks.
2. The role of the nutritional factor in the prevention of dental diseases.
3. The role of oral hygiene in the prevention of dental diseases.
4. What are the criteria for choosing oral hygiene means?

### Content of the lesson

Thus as a result of sanitary propaganda, population has to master the complex of hygienic knowledge and practical skills which allow them to warn the development of basic dental diseases. There are two basic methods of educational work: group (mass) and individual. If sanitary propaganda has for a purpose to implant theoretical knowledge then it's reasonable to use a group method, to carry out studies in preschool group, to make a speech at the paternal meeting. Individual method is preferable in practical skills' study. Both passive and active correlated forms of educational work are used.

**Active forms** are the following:

- lectures for the pregnant women, children, parents
- discussions with pregnant, children, parents
- lessons of hygiene for children
- individual studies of the hygienic care of the teeth and oral cavity
- Studies of the medical staff in women consultation offices, of tutors and teachers

Using active forms there is a contact with audience and it allows taking into account social, individual audience features and primary knowledge level degree, mastering level too.

**Passive form:** oversight agitation - issuing of educational bulletins, placards, brochures, articles, different illustrative material (films, models, moulages), providing exhibitions. Passive form don't need permanent doctor work and operate for a long time.

*Equipment of the hygiene room ( 25-30 sqr.m):*

1. Area of the active studies of the hygienic methods (include 8-10 sinks at height 70cm up the floor, with large mirror over which the brightly illustrated care rules, large demonstrative brushes and models are placed.
2. Active information area (incl. desks with 25-30 places, screen, slide projector).
3. Passive information area (there are exhibition of hygiene facilities, tables, stands, placards, instructions for the different groups of population on the walls.
4. Prophylactic-hygienic area (built-in-closet with hygienic facilities and hygiene control facilities).
5. Inspection and prevention efficiency control area (dental setting).

If there is no separate special room than stands are placed in the corridor, and the studies of hygiene are carried out at washstands in the dining-room.

Educational work with children is the most difficult because of its integrity and it must include 3 stages since the best results could be achieved with the help of educators and parents.

*The stages of active sanitary-educational work are the following:*

1 stage - discussions with educators and medical workers (the purpose – to make them partners).

2 stages - discussions with parents before paternal meetings (the purpose – to draw their attention to the children' oral cavity state, to cause the personal interest in preventive measures) in 20-30 min. To accent on the culture of the carbohydrates usage and hygiene support under home conditions. Delivering leaflets to everybody for the knowledge to be fixed. To call parents to be our partners because success will depend only on joint efforts.

3 stages - discussions and health lessons for children should be differentiated depending on age:

for 2-4 year-old children lessons must have playing character, be emotional, not to be instructive, to last up to 5minutes (game – brush and paste coming to see you).

The health lessons for 3-6 year-old children are divided into 3 parts: first - explaining in which talk or fairy-tale are given, second – children are put into groups by 4-6 persons and they show the method of teeth cleaning on the model of dental rows. The third part includes the studies of cleaning that is checked with the help of hygiene indexes. Length 5-10min. Not quicker than after 2 years of permanent work the children under school age can make the connection between knowledge, oral cavity hygiene level, nutrition habits, dental morbidity decreases.

### **Knowledge level control**

1. Principles of active form of sanitary education.
2. Principles of passive form of sanitary education.
3. Equipment of the hygiene room.

## **Practical Lesson № 17**

### **Hygienic education in the organized collectives. Health lesson**

**Aim of the lesson** To learn with students the methods of hygienic education in the organized collectives.

### **Control of the initial level of knowledge**

1. Hygienic education, structure, purpose, task.
2. The role of nutrition in the dental diseases prevention.
3. The role of the oral cavity hygiene in the dental diseases prevention
4. What method and peculiarities of the health lessons in preschool?
5. What method and peculiarities of the health lessons at school?
6. What illustrative material using for the health lessons in the different age-dependent groups of children?

### **Content of the lesson**

Forming of healthy walks of life is obviously the main link at the analysis of all prophylaxis fields. There are three important directions in the forming of healthy way of life in dentistry: hygienic education of population, rational nutrition, fight against bad habits and unfavorable factors of external environment. Hygienic education includes also studies to the methods of oral cavity hygiene. Sanitary-enlightened work precedes and monitors the studies of the hygiene' methods. A teacher pays attention to that educational-preventive work is carried out not only among the children including preschool junior age (3-5 years), preschool senior age (6-7 years), school junior age (1-3 forms), school medium ages (4-7 forms) and senior age (8-10 forms) but also among the medical workers in preschool buildings, tutors, teachers, parents. Educational work is conducted among pregnant women in the woman consultations offices taking into account the importance of the antenatal prevention. Such educational work is carried out by the dentists, qualified medical workers in preschools and schools, women consultation' staff with pregnant women. As for children not visited preschools

educational work is conducted by the children's dentist, regular pediatricians or trained nurses. In the process of educational work it's important to explain simply for every age group and audience the teeth value in human organism, the reasons of teeth' and other organs and tissues diseases in oral cavity, possible complications and consequences. It is necessary to point out at the role of hygienic care of the teeth and oral cavity for warning of dental diseases, to light up the role of harmful habits and incorrect nutrition in these diseases' origin. Conversations should be purpose- orientated for different audiences. The basic *purpose* of the educational work is to persuade patients in necessity of the healthy walks of life based on the knowledge of the disease' reasons and methods of their prevention. For the aim achievement it's necessary to carry out such basic *tasks*:

- to bring up the steady habits of systematic hygienic care of the teeth and oral cavity at children
- to study children the correct daily time-table and right walks of life
- to persuade the work-conducted contingent in importance of the healthy oral cavity maintenance, permanent supervision and treatment in dentist's.

The lesson of health at school lasts up to 45min. (1<sup>th</sup> lesson – explains the structure, functions, significance of the teeth, reasons of diseases, the role of nutrition, bad habits, hygiene; 2<sup>nd</sup> lesson - is dedicated to the facilities and methods of hygiene, brush structure, its usage, keeping, cleaning methods on models are observed; 3<sup>rd</sup> lesson - practical teeth cleaning).

#### **Knowledge level control**

1. Forms and methods of educational work.
2. Equipment of the hygiene room for the dental diseases prevention.
3. Offer the lectures and discussions' theme for children and their parents.
4. How is the dentist educational work determined?

#### **Practical Lesson № 18**

#### **Protection of conversations on the prevention of dental diseases.**

#### **List of literature**

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