

# Treatment Of Dental Caries In Children And Adolescents

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**Annotations:** Pediatric dentistry is a branch of medicine, designed to take care of children's teeth. The prevention, treatment, including correction of congenital defects (teeth malformations), is a problematic question about which pedodontists know a lot. It is well known, that it is much simpler and easier to prevent the disease than to cure it. Special priority is accorded to the prevention of dental diseases in the life and work of dentists. It is necessary to begin the prevention of dental caries as early as in the prenatal period and to continue throughout life. We aim to prevent the development of dental caries in children, both primary and permanent teeth. The attention is paid to the prevention of dental caries in children of different ages, the searchlight of science on the problem of methods of primary and permanent teeth caries prevention is turned.

**Keywords:** pediatric dentistry, dental caries, the prevention of dental caries.

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Currently, children and adolescents have a high prevalence and intensity of dental caries, there is a tendency to an increase in the increase in complicated forms of caries. In case of untimely treatment of caries, foci of chronic odontogenic infection are formed, which serve as sources of sensitization of the body, hurting the course of many diseases of internal organs and systems. The treatment of dental caries in children and adolescents remains

extremely important and at the same time a difficult task and consists of several general and local activities. The aim is to study the features of the treatment of dental caries in children and adolescents and to improve the results of treatment. Treatment of initial caries in children The treatment of caries in children involves the complex use of oral hygiene which means that increases the resistance of tooth tissues of local action, rational nutrition, filling, the use of methods of exo-endogenous action.

Children with a compensated form of caries practically do not need a full range of therapeutic measures. The child should be able to properly brush his teeth, eat rationally. Their treatment is mainly carried out by filling. The child must be examined by a dentist once a year. If a child falls ill with a serious somatic illness or, due to his general state of health, was transferred to the 2nd or 3rd health group, it is necessary to increase the frequency of examinations at the dentist. Children with decompensated caries are given a full range of therapeutic measures with a mandatory examination by a pediatrician. Treatment of a decompensated form of caries is not only filling carious cavities but also a complex of local and general manipulations carried out in strict sequence and under conditions of maximum painlessness or anesthesia. The child must be examined by a dentist 3-4 times a year. In the intervals between examinations, the child, by the doctor's prescription, takes drugs that stimulate the maturation of tooth tissues and increase their resistance to caries.

Treatment of initial caries consists in carrying out local pathogenetic therapy aimed at increasing the resistance of hard dental tissues, carried out by using remineralizing drugs. The principle of remineralizing therapy is to replace the mineral elements lost by the enamel during the period of partial demineralization while preserving the organic matrix of the enamel.<sup>1</sup> The mechanism of chemotherapy is that the ions of calcium, phosphorus, fluorine, introduced by application or electrophoresis, due to the increased permeability of the enamel in the demineralization focus, diffuse into the enamel and are sorbed in the organic matrix, forming an amorphous crystalline substance or replacing free places in unbroken crystals of enamel apatites. This leads to the normalization of permeability as a result of the formation of hydroxyapatite crystals. As remineralizing agents are used:

- Application of 10% calcium gluconate solution and 2% sodium fluoride solution.
- Application of 10% calcium gluconate solution lasts 15-20 minutes, 2% sodium fluoride solution - 2-3 minutes. The course includes 10-15 procedures 2 times a year.

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<sup>1</sup>Vinogradova T.F. Atlas of dental diseases in children. Study guide.-M.: Med.press-inform. - 2010.-168 p.

- Application of a 3% remodel solution: the session lasts 15-20 minutes. 3-5 procedures are carried out during the year. The time of each procedure is 15-20 minutes.
- Use of calcium-containing gel.
- Electrophoresis of a 10% solution of calcium gluconate on the area of hard teeth for 5 minutes, for a course of 15-20 procedures, followed by the application of sodium fluoride.
- Rubbing fluoride disc "Fluoroglycofoscal": a course of 10 sessions twice a year in six months.

The development of teeth begins in the embryonic period and ends at 18-20 years. The laying and formation of milk teeth in humans begin at 6-8 weeks of embryonic life. During pregnancy, the unborn baby receives all the nutrients it needs for healthy teeth. For children's teeth and bones, calcium is needed, which comes from the food received by the mother and from the stores stored in her bones. A pregnant woman's diet should include a wide range of proteins (primarily of plant origin), carbohydrates, and fats. It should be noted that pregnant women should refrain from treatment with tetracycline, because it binds to calcium and is embedded in the teeth, giving them a green or brown color (the so-called tetracycline teeth).<sup>2</sup>

Prevention of caries in children under 3 years of age With the appearance of the first milk teeth (6 - 8 months of the first year of life), every six months, the child must be shown to the dentist. Thanks to regular visits to the doctor, the baby develops a trusting relationship with the doctor. Pediatric dentistry specialists will be able to recognize the onset of the development of oral diseases in time and take the necessary measures. It is recommended to start caring for the oral cavity already with the appearance of the first milk teeth. Parents do it first. For the care of the baby's oral cavity in the first year of life, there are special toothbrushes, napkins for treating the oral cavity, and foam for cleaning teeth. The toothbrush can be either silicone in the form of a fingertip for a mother, or a regular brush with a massive handle and soft bristles for a baby. Limiting carbohydrates in the diet of infants and older children and replacing sugar with non-cariogenic products (sorbitol, xylitol) in infant formula and confectionery are promising directions in the prevention of caries in preschool and school children.<sup>3</sup>

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<sup>2</sup>Loshakova L. Yu. Identification of ways to improve the quality of dental care for young children using Goldratt's theory of limitations / L. Yu. Loshakova //

<sup>3</sup>Leus P. A. Evaluation of the specificity and information content of subjective indicators in determining the dental health of school-age children / P. A. Leus, L. P. Kiselnikova // Clinical dentistry. -2014. - No. 1. - P. 4-8.

Prevention of caries in children from 6 years of age: In our clinic, great attention is paid to the prevention of caries, including dental fluoridation.

Fissure sealing is an effective protection against caries. Deep fissures of the chewing teeth, both milk and permanent, are especially prone to caries: they are very difficult to clean, and therefore, they are ideal places for bacteria to accumulate. It is advisable to seal the fissures in the first three years after the eruption of milk or a permanent tooth. Then the tooth enamel of the most vulnerable place - fissure - will be formed in ideal conditions - without plaque and cariogenic bacteria.

Fluoridation of teeth This method can be widely used from the age of 3. In our clinic, we use "Enamel-sealing liquid" and "Dentin-sealing liquid" (Humanchemie GmbH, Germany). These drugs can be widely used both for the prevention and treatment of diseases of hard dental tissues: sealing fissures, prevention and treatment of enamel caries, enamel hyperesthesia, caries prevention when using orthodontic structures, treatment of non-cariou enamel lesions (wedge-shaped defect, pathological abrasion, erosion), treatment of medium and deep caries, treatment of a tooth stump during prosthetics, teeth whitening. This drug consists of 2 liquids. Preparation №1 is a fluoride silicate of magnesium, calcium, and copper. Preparation number 2 is a highly dispersed suspension of calcium hydroxide "Enamel-liquid" and "Dentin-liquid" have a pronounced anti-inflammatory, antimicrobial, and desensitizing effect. With the sequential treatment of the cavity and the stump of the tooth with two solutions, an alkaline mineral substance is formed inside the dentinal tubules, which is a silicic acid gel with submicroscopic crystals of calcium fluoride and copper fluoride included in it. This substance is alkaline and sufficiently dense, reliably protects against all agents, especially acids released from cement, or monomers released during the polymerization of various filling materials.<sup>4</sup>

Before the procedure, the teeth are cleaned, washed, dried, and isolated from saliva. Then, cotton swabs moistened with the remineralizing solution are applied to their surface, which are changed 34 times during the application, i.e. every 4-5 minutes. When calcium ions are introduced by electrophoresis, a positive electrode (anode) with a cotton swab moistened with a remineralizing solution is applied to the cleaned, washed, dried and the saliva-insulated surface of the teeth (the swab should not touch the gums). A negative electrode (cathode) is given to the patient's hand. The current strength during the procedure is 3050  $\mu$ A (depends on the individual sensitivity of the patient). The duration of the procedure is 5

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<sup>4</sup>Pediatric therapeutic dentistry. National leadership / ed. V.K. Leontieva, L.P. Kiselnikova. - M.: GEOTAR-Media, 2010 - 896 p.

minutes. The course of treatment is 15-20 procedures. After electrophoresis or application to the treated teeth for 2-3 minutes. apply cotton swabs moistened with 1-2% sodium fluoride solution. This promotes the fixation of calcium salts in the tooth tissues. After the procedure, you should refrain from eating for 2-3 hours.<sup>5</sup> Treatment is carried out daily or every other day. For the prevention and treatment of the initial forms of caries, a helium-neon laser is used, which can activate the enzymatic system of the tooth pulp, increase the effectiveness of anti-cariogenic agents, affect the permeability of the enamel, increase the density of the surface layer of the tooth enamel, and activate all protective mechanisms. GNL is used after professional oral hygiene. The laser beam is directed between the equator and the neck of the tooth separately for 2-3 seconds, sequentially from the vestibular and oral surfaces. Duration of 1 procedure 60-90 sec. With a compensated form of caries, the course - 5 procedures (every day), with a sun compensated form - 2 courses per year for 10 procedures, with a decompensated form of caries - 3 courses per year for 10 procedures.<sup>6</sup>

For initial and superficial caries of a milk tooth, silvering is used. Silvering - treatment of teeth affected by caries with silver preparations, after which a film of reduced silver forms on the surface of the tooth. Silvering is not a method of treating caries, but if the child is too small, negatively attuned or treatment is impossible for some other reason, silvering is used, it helps to slow down the carious process and "delay the moment". Silvering is carried out with a 40% solution of silver nitrate, preparations of silver fluoride "Saforide" or its analogs "Argenta" from VladMiva. Silver plating is recommended for 3 visits every day, 2 times a year. For the prevention and stabilization of the carious process in persons with high enamel resistance, a combined calcium-containing preparation Calcium D3 Nycomed (in 1 tablet 500 mg of elemental calcium and 200 IU of vitamin D3) is recommended at the same time - children from 6 to 11 years old, 1 tablet per day course 20days, 2 times a year; adolescents from 12 to 15 - 1-2 tablets per day, a course of 25 days, 2 times a year.

Over the past decade, the problem of prevention and treatment of chronic diseases of the oral mucosa has received considerable attention from domestic and foreign researchers. This is primarily due to an increase in the number of patients with pathology of the oral mucosa, and also due to an increase in the negative impact of immunosuppressive

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<sup>5</sup>Skorikova L.A., Osadchaya G.N. Preventive measures for multiple dental caries // Dental South. - 2010. - No. 10.-C.30-32.

<sup>6</sup>Melnikova O.A. Experience of planning a child's admission in the clinic using the transillumination technique / O.A. Melnikova // Dentistry of children and prevention. - 2014. - T. 13, No. 1. - S. 58-59.

environmental factors on the human body, wide and not always justified use of medicines with antibacterial properties.<sup>7</sup>

In everyday clinical practice, patients seeking dental care with diseases of the oral mucosa represent one of the most difficult problems in dentistry due to the difficulties in diagnosis and treatment. The problem is compounded by the fact that up to the present time of any measures of communal prevention of pathology of the oral mucosa have not been developed.

Today, it is important to study the level of prevalence of diseases of the oral mucosa, accompanied by erosive-ulcerative and hyperkeratotic lesions, analysis of the provision of diagnostic methods, and treatment-and-prophylactic measures, which determines the relevance of scientific research.<sup>8</sup>

Medicinal pads based on phytopreparations - tinctures of calendula, eucalyptus, juglone, 0.1% solution of tincture of immature walnut fruits, as well as novoimmanin, Salvin, chlorophyll, juniper infusion, a decoction of elecampane high, infusion of mint, eucalyptus oil, St. John's wort and other perforated.<sup>9</sup>

In the treatment of deep caries, it is necessary to take into account the activity of the carious process, the nature of the course of the disease, the thickness of the peri-pulpal dentin, the state of the bottom of the carious cavity, and the state of the pulp. Treatment of deep caries is carried out in one or two visits. Treatment of deep caries with a compensated form of caries is carried out in one visit: a medical pad, an insulating pad is applied, a filling is placed. Treatment of deep caries with a decompensated form of caries is carried out in two visits: at the first visit, a medical pad is applied for 10-14 days under a temporary dressing, at the second visit, a temporary dressing is removed, an insulating pad is applied and a permanent filling is placed. Treatment of caries in children who are easily excitable, with a labile nervous system, in patients with schizophrenia, oligophrenia, epilepsy, is more effective under conditions of general anesthesia. Damaged dentin with deep caries should

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<sup>7</sup>Oral health and oral health-related behaviour in preschool children: evidence for a social gradient / S. van den Branden [et al.] // Eur. J. Pediatr. -2013. - Vol. 172, № 2. - P. 231-237.

<sup>8</sup>Mofidi M. Health of Early Head Start Children: A Qualitative Study of Staff, Parents, and Pregnant Women / M. Mofidi, L. P. Zeldin, R. G. Rozier // Am. J. Public Health. - 2009. - Vol. 99, № 2. - P. 245-251.

<sup>9</sup>Mitrakul K. Prevalence of Streptococcus mutans and Lactobacillus fermentum and their association with caries and dietary habits in preschool Thai children / K. Mitrakul, K. Vongsavan; P. Suratanachaikul // Eur. Arch. Paediatr. Dent - 2013. - Vol. 14, № 2. - P. 83-87.

be considered as a wound surface and in this regard, when choosing a method of treatment, several factors should be taken into account. First of all, it is necessary to neutralize the microflora of the carious cavity, close the dentinal tubules, create conditions for the elimination of inflammation and protect the pulp from the action of various irritants. Avoid the use of potent antiseptics that can worsen the condition of the pulp. Do not use alcohol and ether for drug treatment and drying of the carious cavity. The most important condition for a positive outcome in the treatment of deep caries is the use of odontotropic pastes that stimulate the plastic activity of the pulp and activate the process of remineralization of softened and the formation of replacement dentin. It should be noted that the therapeutic liner is applied only to the area of the projection of the pulp horn since a microscopic amount of material is sufficient to carry out a therapeutic effect on the pulp of the tooth. A thick layer of material should not be applied, since it does not have sufficient adhesion to the tooth tissues, which impairs the fixation of the filling.<sup>10</sup>

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<sup>10</sup>Investigation of status of dental caries in children of primary school in Hangzhou city from 2009 to 2011] / Q.Y. Hu [et al.] // Shanghai J. Stom. - 2013.

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