

Summary of changes made to the Bright Futures/AAP Recommendations for Preventive Pediatric Health Care (Periodicity Schedule)

This Schedule reflects changes approved in October 2015 and published in January 2016. For updates, visit www.aap.org/periodicityschedule.

Changes made October 2015

- **Vision Screening-** The routine screening at age 18 has been changed to a risk assessment.
- Footnote 7 has been updated to read, “A visual acuity screen is recommended at ages 4 and 5 years, as well as in cooperative 3 year olds. Instrument based screening may be used to assess risk at ages 12 and 24 months, in addition to the well visits at 3 through 5 years of age. See 2016 AAP statement, “Visual System Assessment in Infants, Children, and Young Adults by Pediatricians (<http://pediatrics.aappublications.org/content/137/1/1.51>) and “Procedures for Evaluation of the Visual System by Pediatricians” (<http://pediatrics.aappublications.org/content/137/1/1.52>).

Changes made May 2015

- **Oral Health-** A subheading has been added for fluoride varnish, with a recommendation from 6 months through 5 years.
- Footnote 25 wording has been edited and also includes reference to the 2014 clinical report, “Fluoride Use in Caries Prevention in the Primary Care Setting” (<http://pediatrics.aappublications.org/content/134/3/626>) and 2014 policy statement, “Maintaining and Improving the Oral Health of Young Children” (<http://pediatrics.aappublications.org/content/134/6/1224.full>).
- Footnote 26 has been added to the new fluoride varnish subheading: See USPSTF recommendations (<http://www.uspreventiveservicestaskforce.org/uspstf/uspsdnch.htm>). Once teeth are present, fluoride varnish may be applied to all children every 3-6 months in the primary care or dental office. Indications for fluoride use are noted in the 2014 AAP clinical report “Fluoride Use in Caries Prevention in the Primary Care Setting” (<http://pediatrics.aappublications.org/content/134/3/626>).

Changes made March 2014

Changes to Developmental/Behavioral Assessment

- **Alcohol and Drug Use Assessment-** Information regarding a recommended screening tool (CRAFFT) was added.
- **Depression-** Screening for depression at ages 11 through 21 has been added, along with suggested screening tools.

Changes to Procedures

- **Dyslipidemia screening-** An additional screening between 9 and 11 years of age has been added. The reference has been updated to the AAP-endorsed National Heart Blood and Lung Institute policy (http://www.nhlbi.nih.gov/guidelines/cvd_ped/index.htm).
- **Hematocrit or hemoglobin-** A risk assessment has been added at 15 and 30 months. The reference has been updated to the current AAP policy (<http://pediatrics.aappublications.org/content/126/5/1040.full>).
- **STI/HIV screening-** A screen for HIV has been added between 16 and 18 years. Information on screening adolescents for HIV has been added in the footnotes. STI screening now references recommendations made in the AAP Red Book. This category was previously titled “STI Screening.”
- **Cervical dysplasia-** Adolescents should no longer be routinely screened for cervical dysplasia until age 21. Indications for pelvic exams prior to age 21 are noted in the 2010 AAP statement “Gynecologic Examination for Adolescents in the Pediatric Office Setting” (<http://pediatrics.aappublications.org/content/126/3/583.full>).
- **Critical Congenital Heart Disease-** Screening for critical congenital heart disease using pulse oximetry should be performed in newborns, after 24 hours of age, before discharge from the hospital, per the 2011 AAP statement, “Endorsement of Health and Human Services Recommendation for Pulse Oximetry Screening for Critical Congenital Heart Disease” (<http://pediatrics.aappublications.org/content/129/1/190.full>).

See www.aap.org/periodicityschedule for additional updates made to footnotes and references in March 2014.

Key Oral Health Messages

Risk Factor	Recommendation/Message
Drinking non-fluoridated water	<ul style="list-style-type: none"> ▪ Consider water testing and fluoride supplements, or ▪ Use bottled water with added fluoride (e.g. Walmart Nursery Water)
Frequent snacking	<ul style="list-style-type: none"> ▪ Sugar helps to cause cavities ▪ Limit snacking to 3 times per day (healthy snacks) ▪ Choose fruit, vegetables, whole grains, cheese ▪ Read food labels (4 grams sugar = 1 teaspoon sugar) ▪ Between meals offer water only ▪ Juice/milk with meals only
History of decay for parent/sibling	<ul style="list-style-type: none"> ▪ Decay-causing germs are spread from person to person ▪ Avoid sharing eating utensils, toothbrushes
Bottle to bed with milk or juice	<ul style="list-style-type: none"> ▪ Bottle to bed with water only ▪ Juice/milk with meals only
Child does not have dentist	<ul style="list-style-type: none"> ▪ Children need to see a dentist by their first birthday and at least every six months based on dentist's recommendation
Infection/abscess in mouth	<ul style="list-style-type: none"> ▪ Refer to dentist and make the appointment if necessary
Redness, swelling, bleeding of gums	<ul style="list-style-type: none"> ▪ Recommend dental visit, or ▪ Make a dental referral
Visible plaque/poor oral hygiene	<ul style="list-style-type: none"> ▪ Brush child's teeth twice/day with fluoride toothpaste <ul style="list-style-type: none"> *Infants/toddlers use a 'rice-grain' amount *Preschoolers/older use a 'pea-size' amount
Untreated tooth decay	<ul style="list-style-type: none"> ▪ Recommend a dental visit, or ▪ Make a dental referral
Past caries experience (presence of fillings)	<ul style="list-style-type: none"> ▪ Recommend 6 month check ups ▪ Promote importance of baby teeth
White spots on enamel at gumline with no other signs of cavitated lesions	<ul style="list-style-type: none"> ▪ Limit sugar exposure ▪ Brush child's teeth with fluoride toothpaste twice daily ▪ Recommend dental visit
Lack of understanding about importance of oral health/baby teeth	<ul style="list-style-type: none"> ▪ Baby teeth are important for: chewing, speaking, smiling, saving spaces for permanent teeth

Information About Fluoride Varnish

What is fluoride varnish?

Fluoride varnish is a temporary protective coating that is painted on the teeth to help prevent cavities.

Why do we recommend putting fluoride varnish on baby teeth?

Cavities in baby teeth can cause pain and even prevent children from being able to eat, speak, sleep and learn properly. Preventing decay in the baby teeth helps to prevent decay in permanent teeth also.

Is fluoride varnish safe?

Yes. Only a very small amount of fluoride is used. It sticks immediately to the teeth, and can be used on babies as soon as their first teeth come into the mouth (at about 6 – 8 months).

How long does it last?

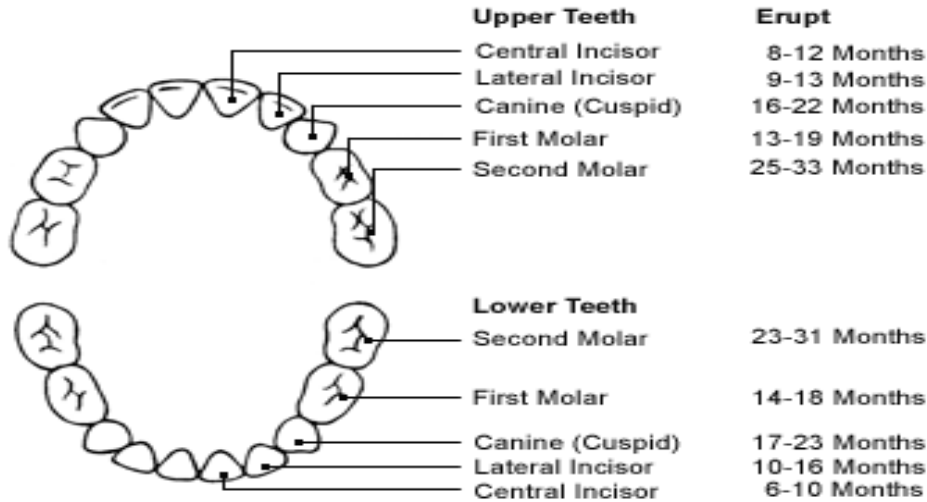
The benefits from fluoride varnish can last several months. It should be re-applied at least every 6 months.



Post-Application Instructions for Parents

- Your child can eat and drink immediately following the fluoride varnish application.
- Your child should eat soft foods for the rest of the day.
- Do not brush your child's teeth until tomorrow morning, to maximize the benefits of the fluoride.
- In the morning, clean the mouth and teeth as usual.
- Your child's teeth may look a little dull until you brush them the day after the application.

BRIGHT SMILES FOR BABIES ORAL HEALTH RISK ASSESSMENT



Non-Clinical Risk Factors: information obtained from parent/caregiver

Low exposure to fluoridated water	Yes	No
Minimal use of fluoride toothpaste	Yes	No
Frequent snacking (3+/day)	Yes	No
History of decay for parent/sibling	Yes	No
Bottle in bed with milk or juice	Yes	No
Minimal access to dental services	Yes	No

Clinical Risk Factors: information obtained from oral screening

Infection/abscess in the mouth	Yes	No
Soft tissue abnormalities (redness, swelling, bleeding)	Yes	No
Visible plaque on tooth surfaces/poor oral hygiene	Yes	No
Untreated tooth decay	Yes	No
Past caries experience (presence of fillings, crowns)	Yes	No
White 'demineralized' spots on enamel (usually at gumline)	Yes	No

General Health Risk Factors:

Special health care needs	Yes	No
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Bright Smiles for Babies

Virginia Oral Health Partnership for Children

Virginia Department of Health, Dental Health Program
109 Governor Street, Richmond, Virginia 23219 804-864-7775

Oral Health Assessment For Infants and Children Up to Three Years of Age

Rationale for Providing an Oral Assessment

Tooth decay is the most common chronic disease in children that is neither amenable to antibiotic treatment nor self-limiting. It can begin in the very young child and progress rapidly to a “cavity” within months of tooth eruption. Most of those affected are from low-income families or are children with special needs; however, it is important to evaluate each child’s individual risk for dental caries. Because pediatricians, family practitioners and other early childhood specialists routinely see infants and very young children, the potential for early recognition of disease and early preventive intervention is excellent. With early disease identification and preventive intervention, we can anticipate a substantial reduction in oral disease rates for our youngest children.

Bright Smiles for Babies Oral Health Risk Assessment Tool

There are several risk assessment tools* available for use. The Virginia Department of Health has developed the “Bright Smiles for Babies Oral Health Risk Assessment” which is included in this section of the manual. This form is very helpful in guiding the identification of non-clinical and clinical risk factors. It is very user-friendly.

- Non-clinical risk factors are identified by questioning the parent.
- Clinical risk factors are identified by performing an oral screening. Risk factors may then be noted in the treatment record.

Please note: Risk assessments are used to determine a patient’s risk for disease at a ‘point in time’, and therefore, should be re-administered periodically to assess any changes in the child’s risk status.

Overview of Screening

The oral screening for infants and young children up to three years of age is a visual screening of the teeth and oral soft tissues. Because of the conditions under which it is conducted, it cannot be a detailed examination as is performed in the dental office. A screening of the mouth can identify abnormalities. The screening is not intended to be diagnostic. Children with suspicious findings should be referred to a dentist for definitive diagnostic and possible early intervention services.

Materials for Oral Screening of the Mouth

- Adequate lighting - Ideally, the screening should be done using a good, direct light source in addition to regular room lighting. A flashlight/penlight, non-dental exam light, or headlamp work well.
- Dental mirror - A dental mirror provides much better visibility than other methods, such as a tongue blade, for visualization of the mouth. This is particularly true for the surfaces of the teeth on the tongue side, and for the upper posterior teeth in older children. Mirrors can be disposable plastic, reusable metal or fiberglass. While disposable mirrors may involve more cost over all, the expense is small and their use is much more convenient.
- Use disposable non-latex gloves and follow standard infection control practices.

*Risk assessment tools:

American Academy of Pediatrics Oral Health Risk Assessment Tool and Guidance
National and Maternal Child Oral Health Resource Center Risk Assessment Checklist

Bright Smiles for Babies Oral Screening and Fluoride Varnish Procedures

1. You will need

- Gauze sponges
- Fluoride varnish
- Small disposable Benda-Brush (included in unit-dosed fluoride varnish)
- Dental mouth mirror
- Non-latex gloves
- Light source

2. Position the infant or small child

- Place the child on the parent's lap facing the parent.
- Position yourself in the knee-to-knee position with the parent and with the child's legs around the parent's waist, place the child's head in your lap.
- Or, place the infant or child on an exam table and work from above the head.
- Or, adapt a method that works for you.

3. Provide the oral screening

- Using a mirror and light to look in the child's mouth, look for the clinical risk factors that are listed on the oral health risk assessment form.

4. Apply the varnish

- Using gentle finger pressure, open the child's mouth.
- Using your fingers or gauze, isolate a few teeth at a time.
- The teeth may be wiped with the gauze as you apply the varnish to absorb excess saliva. However, it is not necessary that the teeth be dry for the varnish to adhere.
- Apply a thin layer of varnish to all surfaces of the teeth.
- Once it is applied, varnish sets quickly.

5. Parent Instructions

- The child should eat a soft non-abrasive diet for the remainder of the day.
- Do not brush or floss the teeth until the next day.
- The teeth may have a dull appearance until the next day.
- Give parent the age appropriate information sheet.

Guideline on Caries-risk Assessment and Management for Infants, Children, and Adolescents

Originating Council

Council on Clinical Affairs

Review Council

Council on Clinical Affairs

Adopted

2002

Revised*

2006, 2010, 2011, 2013, 2014

Purpose

The American Academy of Pediatric Dentistry (AAPD) recognizes that caries-risk assessment and management protocols can assist clinicians with decisions regarding treatment based upon caries risk and patient compliance and are essential elements of contemporary clinical care for infants, children, and adolescents. This guideline is intended to educate health care providers and other interested parties on the assessment of caries risk in contemporary pediatric dentistry and aid in clinical decision making regarding diagnostic, fluoride, dietary, and restorative protocols.

Methods

This guideline is an update of AAPD's Policy on Use of a Caries-risk Assessment Tool (CAT) for Infants, Children, and Adolescents, Revised 2006 that includes the additional concepts of dental caries management protocols. The update used electronic and hand searches of English written articles in the medical and dental literature within the last 10 years using the search terms caries risk assessment, caries management, and caries clinical protocols. From this search, 1,909 articles were evaluated by title or by abstract. Information from 75 articles was used to update this document. When data did not appear sufficient or were inconclusive, recommendations were based upon expert and/or consensus opinion by experienced researchers and clinicians.

Background

Caries-risk assessment

Risk assessment procedures used in medical practice normally have sufficient data to accurately quantitate a person's disease susceptibility and allow for preventive measures.¹ Even though caries-risk data in dentistry still are not sufficient to quanti-

tate the models, the process of determining risk should be a component in the clinical decision-making process.² Risk assessment:

1. Fosters the treatment of the disease process instead of treating the outcome of the disease.
2. Gives an understanding of the disease factors for a specific patient and aids in individualizing preventive discussions.
3. Individualizes, selects, and determines frequency of preventive and restorative treatment for a patient.
4. Anticipates caries progression or stabilization.

Caries-risk assessment models currently involve a combination of factors including diet, fluoride exposure, a susceptible host, and microflora that interplay with a variety of social, cultural, and behavioral factors.³⁻⁶ Caries risk assessment is the determination of the likelihood of the incidence of caries (ie, the number of new cavitated or incipient lesions) during a certain time period⁷ or the likelihood that there will be a change in the size or activity of lesions already present. With the ability to detect caries in its earliest stages (ie, white spot lesions), health care providers can help prevent cavitation.⁸⁻¹⁰

Caries risk indicators are variables that are thought to cause the disease directly (eg, microflora) or have been shown useful in predicting it (eg, socioeconomic status) and include those variables that may be considered protective factors. Currently, there are no caries-risk factors or combinations of factors that have achieved high levels of both positive and negative predictive values.² Although the best tool to predict future caries is past caries experience, it is not particularly useful in young children due to the importance of determining caries risk before the disease is manifest. Children with white spot lesions should be considered at high risk for caries since these are precavitated lesions that are indicative of caries activity.¹¹ Plaque accumulation also is strongly associated with caries development in young children.^{12,13} As a corollary to the presence of plaque,¹⁴ a child's Mutans Streptococci (MS) levels³ and the age at which a child becomes colonized with cariogenic flora^{15,16} are valuable in assessing risk, especially in preschool children.

* The 2013 revision was limited to modification of Table 1. Caries-risk Assessment Form for 0-3 Year Olds (For Physicians and Other Non-Dental Health Care Providers). The 2014 revision was limited to use of toothpaste in young children.

While there is no question that fermentable carbohydrates are a necessary link in the causal chain for dental caries, a systematic study of sugar consumption and caries risk has concluded that the relationship between sugar consumption and caries is much weaker in the modern age of fluoride exposure than previously thought.¹⁷ However, there is evidence that night-time use of the bottle, especially when it is prolonged, may be associated with early childhood caries.¹⁸ Despite the fact that normal salivary flow is an extremely important intrinsic host factor providing protection against caries, there is little data about the prevalence of low salivary flow in children.^{19,20}

Sociodemographic factors have been studied extensively to determine their effect on caries risk. Children with immigrant backgrounds have three times higher caries rates than non-immigrants.²¹ Most consistently, an inverse relationship between socioeconomic status and caries prevalence is found in studies of children less than six years of age.²² Perhaps another type of sociodemographic variable is the parents' history of cavities and abscessed teeth; this has been found to be a predictor of treatment for early childhood caries.^{23,24}

The most studied factors that are protective of dental caries include systemic and topical fluoride, sugar substitutes, and tooth brushing with fluoridated toothpaste. Teeth of children who reside in a fluoridated community have been shown to have higher fluoride content than those of children who reside in suboptimal fluoridated communities.²⁵ Additionally, both pre- and post-eruption fluoride exposure maximize the

caries-preventive effects.^{26,27} For individuals residing in non-fluoridated communities, fluoride supplements have shown a significant caries reduction in primary and permanent teeth.²⁸ With regard to fluoridated toothpaste, studies have shown consistent reduction in caries experience.²⁹ Professional topical fluoride applications performed semiannually also reduce caries,³⁰ and fluoride varnishes generally are equal to that of other professional topical fluoride vehicles.³¹

The effect of sugar substitutes on caries rates have been evaluated in several populations with high caries prevalence.³² Studies indicate that xylitol can decrease MS levels in plaque and saliva and can reduce dental caries in young children and adults, including children via their mothers.³³ With regard to toothbrushing, there only is a weak relationship between frequency of brushing and decreased dental caries, which is confounded because it is difficult to distinguish whether the effect is actually a measure of fluoride application or whether it is a result of mechanical removal of plaque.³⁴ The dental home or regular periodic care by the same practitioner is included in many caries-risk assessment models because of its known benefit for dental health.³⁵

Risk assessment tools can aid in the identification of reliable predictors and allow dental practitioners, physicians, and other nondental health care providers to become more actively involved in identifying and referring high-risk children. Tables 1, 2, and 3 incorporate available evidence into practical tools to assist dental practitioners, physicians, and

Table 1. Caries-risk Assessment Form for 0-3 Year Olds^{59,60}
(For Physicians and Other Non-Dental Health Care Providers)

Factors	High Risk	Low Risk
Biological		
Mother/primary caregiver has active cavities	Yes	
Parent/caregiver has low socioeconomic status	Yes	
Child has >3 between meal sugar-containing snacks or beverages per day	Yes	
Child is put to bed with a bottle containing natural or added sugar	Yes	
Child has special health care needs	Yes	
Child is a recent immigrant	Yes	
Protective		
Child receives optimally-fluoridated drinking water or fluoride supplements		Yes
Child has teeth brushed daily with fluoridated toothpaste		Yes
Child receives topical fluoride from health professional		Yes
Child has dental home/regular dental care		Yes
Clinical Findings		
Child has white spot lesions or enamel defects	Yes	
Child has visible cavities or fillings	Yes	
Child has plaque on teeth	Yes	

Circling those conditions that apply to a specific patient helps the health care worker and parent understand the factors that contribute to or protect from caries. Risk assessment categorization of low or high is based on preponderance of factors for the individual. However, clinical judgment may justify the use of one factor (eg, frequent exposure to sugar containing snacks or beverages, visible cavities) in determining overall risk.

Overall assessment of the child's dental caries risk: High Low

Table 2. Caries-risk Assessment Form for 0-5 Year Olds^{59,60}

(For Dental Providers)

Factors	High Risk	Moderate Risk	Low Risk
Biological			
Mother/primary caregiver has active caries	Yes		
Parent/caregiver has low socioeconomic status	Yes		
Child has >3 between meal sugar-containing snacks or beverages per day	Yes		
Child is put to bed with a bottle containing natural or added sugar	Yes		
Child has special health care needs		Yes	
Child is a recent immigrant		Yes	
Protective			
Child receives optimally-fluoridated drinking water or fluoride supplements			Yes
Child has teeth brushed daily with fluoridated toothpaste			Yes
Child receives topical fluoride from health professional			Yes
Child has dental home/regular dental care			Yes
Clinical Findings			
Child has >1 decayed/missing/filled surfaces	Yes		
Child has active white spot lesions or enamel defects	Yes		
Child has elevated mutans streptococci levels	Yes		
Child has plaque on teeth		Yes	

Circling those conditions that apply to a specific patient helps the practitioner and parent understand the factors that contribute to or protect from caries. Risk assessment categorization of low, moderate, or high is based on preponderance of factors for the individual. However, clinical judgment may justify the use of one factor (eg, frequent exposure to sugar-containing snacks or beverages, more than one dmfs) in determining overall risk.

Overall assessment of the child's dental caries risk: High Moderate Low

Table 3. Caries-risk Assessment Form for ≥6 Years Olds⁶⁰⁻⁶²

(For Dental Providers)

Factors	High Risk	Moderate Risk	Low Risk
Biological			
Patient is of low socioeconomic status	Yes		
Patient has >3 between meal sugar-containing snacks or beverages per day	Yes		
Patient has special health care needs		Yes	
Patient is a recent immigrant		Yes	
Protective			
Patient receives optimally-fluoridated drinking water			Yes
Patient brushes teeth daily with fluoridated toothpaste			Yes
Patient receives topical fluoride from health professional			Yes
Additional home measures (eg, xylitol, MI paste, antimicrobial)			Yes
Patient has dental home/regular dental care			Yes
Clinical Findings			
Patient has ≥1 interproximal lesions	Yes		
Patient has active white spot lesions or enamel defects	Yes		
Patient has low salivary flow	Yes		
Patient has defective restorations		Yes	
Patient wearing an intraoral appliance		Yes	

Circling those conditions that apply to a specific patient helps the practitioner and patient/parent understand the factors that contribute to or protect from caries. Risk assessment categorization of low, moderate, or high is based on preponderance of factors for the individual. However, clinical judgment may justify the use of one factor (eg, ≥1 interproximal lesions, low salivary flow) in determining overall risk.

Overall assessment of the dental caries risk: High Moderate Low

other non-dental health care providers in assessing levels of risk for caries development in infants, children, and adolescents. As new evidence emerges, these tools can be refined to provide greater predictability of caries in children prior to disease initiation. Furthermore, the evolution of caries-risk assessment tools and protocols can assist in providing evidence for and justifying periodicity of services, modification of third-party involvement in the delivery of dental services, and quality of care with outcomes assessment to address limited resources and work-force issues.

Table 4. Example of a Caries Management Protocol for 1-2 Year Olds

Risk Category	Diagnostics	Interventions		Restorative
		Fluoride	Diet	
Low risk	– Recall every six to 12 months – Baseline MS ^α	– Twice daily brushing	Counseling	– Surveillance ^χ
Moderate risk parent engaged	– Recall every six months – Baseline MS ^α	– Twice daily brushing with fluoridated toothpaste ^β – Fluoride supplements ^δ – Professional topical treatment every six months	Counseling	– Active surveillance ^ε of incipient lesions
Moderate risk parent not engaged	– Recall every six months – Baseline MS ^α	– Twice daily brushing with fluoridated toothpaste ^β – Professional topical treatment every six months	Counseling, with limited expectations	– Active surveillance ^ε of incipient lesions
High risk parent engaged	– Recall every three months – Baseline and follow up MS ^α	– Twice daily brushing with fluoridated toothpaste ^β – Fluoride supplements ^δ – Professional topical treatment every three months	Counseling	– Active surveillance ^ε of incipient lesions – Restore cavitated lesions with ITR ^φ or definitive restorations
High risk parent not engaged	– Recall every three months – Baseline and follow up MS ^α	– Twice daily brushing with fluoridated toothpaste ^β – Professional topical treatment every three months	Counseling, with limited expectations	– Active surveillance ^ε of incipient lesions – Restore cavitated lesions with ITR ^φ or definitive restorations

Table 5. Example of a Caries Management Protocol for 3-5 Year Olds

Risk Category	Diagnostics	Interventions			Restorative
		Fluoride	Diet	Sealants ^λ	
Low risk	– Recall every six to 12 months – Radiographs every 12 to 24 months – Baseline MS ^α	– Twice daily brushing with fluoridated toothpaste ^γ	No	Yes	– Surveillance ^χ
Moderate risk parent engaged	– Recall every six months – Radiographs every six to 12 months – Baseline MS ^α	– Twice daily brushing with fluoridated toothpaste ^γ – Fluoride supplements ^δ – Professional topical treatment every six months	Counseling	Yes	– Active surveillance ^ε of incipient lesions – Restoration of cavitated or enlarging lesions
Moderate risk parent not engaged	– Recall every six months – Radiographs every six to 12 months – Baseline MS ^α	– Twice daily brushing with fluoridated toothpaste ^γ – Professional topical treatment every six months	Counseling, with limited expectations	Yes	– Active surveillance ^ε of incipient lesions – Restoration of cavitated or enlarging lesions
High risk parent engaged	– Recall every three months – Radiographs every six months – Baseline and follow up MS ^α	– Brushing with 0.5 percent fluoride (with caution) – Fluoride supplements ^δ – Professional topical treatment every three months	Counseling	Yes	– Active surveillance ^ε of incipient lesions – Restoration of cavitated or enlarging lesions
High risk parent not engaged	– Recall every three months – Radiographs every six months – Baseline and follow up MS ^α	– Brushing with 0.5 percent fluoride (with caution) – Professional topical treatment every three months	Counseling, with limited expectations	Yes	– Restore incipient, cavitated, or enlarging lesions

Table 6. Example of a Caries Management Protocol for ≥6 Year-Olds

Risk Category	Diagnostics	Interventions			Restorative
		Fluoride	Diet	Sealants ^λ	
Low risk	<ul style="list-style-type: none"> – Recall every six to 12 months – Radiographs every 12 to 24 months 	<ul style="list-style-type: none"> – Twice daily brushing with fluoridated toothpaste^μ 	No	Yes	<ul style="list-style-type: none"> – Surveillance^χ
Moderate risk patient/parent engaged	<ul style="list-style-type: none"> – Recall every six months – Radiographs every six to 12 months 	<ul style="list-style-type: none"> – Twice daily brushing with fluoridated toothpaste^μ – Fluoride supplements^δ – Professional topical treatment every six months 	– Counseling	Yes	<ul style="list-style-type: none"> – Active surveillance^ε of incipient lesions – Restoration of cavitated or enlarging lesions
Moderate risk patient/parent not engaged	<ul style="list-style-type: none"> – Recall every six months – Radiographs every six to 12 months 	<ul style="list-style-type: none"> – Twice daily brushing with toothpaste^μ – Professional topical treatment every six months 	– Counseling, with limited expectations	Yes	<ul style="list-style-type: none"> – Active surveillance^ε of incipient lesions – Restoration of cavitated or enlarging lesions
High risk patient/parent engaged	<ul style="list-style-type: none"> – Recall every three months – Radiographs every six months 	<ul style="list-style-type: none"> – Brushing with 0.5 percent fluoride – Fluoride supplements^δ – Professional topical treatment every three months 	<ul style="list-style-type: none"> – Counseling – Xylitol 	Yes	<ul style="list-style-type: none"> – Active surveillance^ε of incipient lesions – Restoration of cavitated or enlarging lesions
High risk patient/parent not engaged	<ul style="list-style-type: none"> – Recall every three months – Radiographs every six months 	<ul style="list-style-type: none"> – Brushing with 0.5 percent fluoride – Professional topical treatment every three months 	<ul style="list-style-type: none"> – Counseling, with limited expectations – Xylitol 	Yes	<ul style="list-style-type: none"> – Restore incipient, cavitated, or enlarging lesions

Legends for Tables 4-6

- α Salivary mutans streptococci bacterial levels.
- χ Periodic monitoring for signs of caries progression.
- β Parental supervision of a “smear” amount of toothpaste.
- δ Need to consider fluoride levels in drinking water.
- ε Careful monitoring of caries progression and prevention program.
- φ Interim therapeutic restoration.⁶³
- γ Parental supervision of a “pea sized” amount of toothpaste.
- λ Indicated for teeth with deep fissure anatomy or developmental defects.
- μ Less concern about the quantity of toothpaste.

Caries management protocols

Clinical management protocols are documents designed to assist in clinical decision-making; they provide criteria regarding diagnosis and treatment and lead to recommended courses of action. The protocols are based on evidence from current peer-reviewed literature and the considered judgment of expert panels, as well as clinical experience of practitioners. The protocols should be updated frequently as new technologies and evidence develop.

Historically, the management of dental caries was based on the notion that it was a progressive disease that eventually destroyed the tooth unless there was surgical/restorative intervention. Decisions for intervention often were learned from unstandardized dental school instruction, and then refined by clinicians over years of practice. Little is known about the criteria dentists use when making decisions involving restoration of carious lesions.³⁶

It is now known that surgical intervention of dental caries alone does not stop the disease process. Additionally, many lesions do not progress, and tooth restorations have a finite longevity. Therefore, modern management of dental caries

should be more conservative and includes early detection of noncavitated lesions, identification of an individual’s risk for caries progression, understanding of the disease process for that individual, and active surveillance to apply preventive measures and monitor carefully for signs of arrestment or progression.

Caries management protocols for children further refine the decisions concerning individualized treatment and treatment thresholds based on a specific patient’s risk levels, age, and compliance with preventive strategies (Tables 4, 5, 6). Such protocols should yield greater probability of success and better cost effectiveness of treatment than less standardized treatment. Additionally, caries management protocols free practitioners of the necessity for repetitive high level treatment decisions, standardize decision making and treatment strategies,³⁶⁻³⁸ eliminate treatment uncertainties, and guarantee more correct strategies.³⁹

Content of the present caries management protocol is based on results of clinical trials, systematic reviews, and expert panel recommendations that give better understanding of and recommendations for diagnostic, preventive, and restorative treatments. The radiographic diagnostic guidelines are based

on the latest guidelines from the American Dental Association (ADA).⁴⁰ Systemic fluoride protocols are based on the Centers for Disease Control and Prevention's (CDC) recommendations for using fluoride.²⁹ Guidelines for the use of topical fluoride treatment are based on the ADA's Council on Scientific Affairs' recommendations for use of fluoride toothpaste in young children⁴¹ and professionally applied and prescription strength home-use topical fluoride,⁴² and the CDC's fluoride guidelines.²⁹ Guidelines for pit and fissure sealants are based on the ADA's Council on Scientific Affairs recommendations for the use of pit-and-fissure sealants.⁴³ Guidelines on diet counseling to prevent caries are based on two review papers.^{44,45} Guidelines for the use of xylitol are based on the AAPD's oral health policy on use of xylitol in caries prevention,³² a well-executed clinical trial on high caries-risk infants and toddlers,⁴⁶ and two evidence-based reviews.^{47,48} Active surveillance (prevention therapies and close monitoring) of enamel lesions is based on the concept that treatment of disease may only be necessary if there is disease progression,⁴⁹ that caries progression has diminished over recent decades,⁵⁰ and that the majority of proximal lesions, even in dentin, are not cavitated.⁵¹

Other approaches to the assessment and treatment of dental caries will emerge with time and, with evidence of effectiveness, may be included in future guidelines on caries-risk assessment and management protocols. For example, there are emerging trends to use calcium and phosphate remineralizing solution to reverse dental caries.⁵² Other fluoride compounds, such as silver diamine fluoride⁵³ and stannous fluoride⁵⁴, may be more effective than sodium fluoride for topical applications. There has been interest in antimicrobials to affect the caries rates, but evidence from caries trials is still inconclusive.^{55,56} However, some other proven methods, such as prescription fluoride drops and tablets, may be removed from this protocol in the future due to attitudes, risks, or compliance.^{57,58}

Recommendations

1. Dental caries-risk assessment, based on a child's age, biological factors, protective factors, and clinical findings, should be a routine component of new and periodic examinations by oral health and medical providers.
2. While there is not enough information at present to have quantitative caries-risk assessment analyses, estimating children at low, moderate, and high caries risk by a preponderance of risk and protective factors will enable a more evidence-based approach to medical provider referrals, as well as establish periodicity and intensity of diagnostic, preventive, and restorative services.
3. Clinical management protocols, based on a child's age, caries risk, and level of patient/parent cooperation, provide health providers with criteria and protocols for determining the types and frequency of diagnostic, preventive, and restorative care for patient specific management of dental caries.

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ADA - Fluoride: Topical and Systemic Supplements – May 2019

<https://www.ada.org/en/member-center/oral-health-topics/fluoride-topical-and-systemic-supplements>

Key Points

- The ADA recognizes the use of fluoride and community water fluoridation as safe and effective in preventing tooth decay for both children and adults. For more information, please visit the [ADA Fluoride in Water resource page](#).
- Fluoride is a mineral that is found in all natural water sources and is the ionic form of the trace element fluorine, which is commonly found in the environment; fluorine reaches water sources by leaching from soil and rocks into groundwater.
- When used as directed or within the context of community water fluoridation programs, fluoride is a safe and effective agent that can be used to prevent and control dental caries.
- Fluoride can be delivered topically and systemically. Topical fluorides strengthen teeth already present in the mouth, making them more decay resistant, while systemic fluorides are those that are ingested and become incorporated into forming tooth structures. Systemic fluorides also provide topical protection because fluoride is present in saliva, which continually bathes the teeth.
- Self-applied topical fluorides include toothpastes, mouthrinses, and gels. Professionally applied topical fluorides include higher-strength rinses, gels, and foams; fluoride varnishes; and silver diamine fluoride.
- Community water fluoridation is the process of adjusting the fluoride content of fluoride-deficient water to the recommended level for optimal dental health, which is currently recommended at 0.7 parts fluoride per million parts water.
- Many bottled waters on the market do not contain optimal levels of fluoride. In addition, some types of home water treatment systems (e.g., reverse osmosis and distillation systems) can reduce the fluoride levels in water supplies, potentially decreasing the decay-preventive effects of optimally fluoridated water; however, carbon/charcoal filtration systems do not remove fluoride.
- Fluoride supplements can be prescribed for children ages 6 months to 16 years who are at high risk for tooth decay and whose primary drinking water has a low fluoride concentration.
- A potential risk of fluoride use is the development of fluorosis, which may occur when excess levels of fluoride are ingested during tooth development. Fluorosis varies in appearance from white striations to stained pitting of enamel.

Introduction

Fluoride is a mineral that is found in all natural water sources.¹ Fluoride is the ionic form of the trace element fluorine. Fluorine is commonly found in the environment, and reaches water sources by leaching from soil and rocks into groundwater.¹

When used as directed or within the context of community water fluoridation programs, fluoride is a safe and effective agent that can prevent and control dental caries.^{2,3} The process of caries is multifactorial and, over time, can culminate in localized destruction of hard dental tissues by the weak acids produced by bacterial carbohydrate fermentation.³⁻⁵ Fluoride remineralizes the calcium hydroxyapatite structure in enamel by forming calcium fluorapatite, which is more resistant to acid attacks.¹ The remineralization effect of fluoride can both reverse the early decay process as well as create a tooth surface that is more resistant to decay.⁵

Fluoride can be delivered topically and systemically.^{1,3} Topical fluorides strengthen teeth already present in the mouth, making them more decay resistant.^{3,5,6} Topical fluorides encourage remineralization of enamel, and also inhibit bacterial metabolism, reducing the growth of plaque bacteria.¹ Modes of topical fluoride delivery include toothpastes, gels, mouthrinses, and professionally applied fluoride therapies.¹

Systemic fluorides are those that are ingested and become incorporated into forming tooth structures.^{1,5} Systemic fluorides can also confer topical protection because fluoride is present in saliva, which continually bathes the teeth.¹ Modes of systemic fluoride delivery include water fluoridation or dietary fluoride supplements in the form of tablets, drops, or lozenges.²

Topical Fluorides

Self-Applied

Fluoride Toothpaste. Fluoride-containing toothpaste is the most commonly used form of self-applied fluoride worldwide.³ Fluoride in toothpaste is taken up directly by the dental plaque and demineralized enamel and also increases the concentration of fluoride in saliva.^{2,3} Brushing with fluoride toothpaste increases the fluoride concentration in saliva 100- to 1,000-fold; this concentration returns to baseline levels within 1 to 2 hours.³ Fluoride toothpaste makes up more than 95% of toothpaste sales in the U.S.² The American Dental Association recommends use of a fluoride toothpaste displaying the ADA Seal of Acceptance. Fluoride toothpastes available over the counter in the U.S. generally contain a fluoride concentration of 1,000 to 1,500 ppm.^{2,5,6} Prescription-strength fluoride toothpastes contain 5,000 ppm fluoride as sodium fluoride.^{2,6} In the U.S., the active ingredient in fluoride-containing toothpastes can be sodium fluoride, sodium monofluorophosphate, or stannous fluoride.^{5,6}

For most people (children, adolescents, and adults) brushing twice a day with a fluoride toothpaste—when you get up in the morning and before going to bed—is recommended.² Children’s brushing should be supervised to ensure that they use the appropriate amount of toothpaste. For children younger than 3 years, parents and caregivers should begin brushing children’s teeth as soon as they begin to come into the mouth by using fluoride toothpaste in an amount described as no more than a smear or alternatively as the size of a grain of rice.³ For children 3 to 6 years of age, parents and caregivers should dispense no more than a pea-sized amount of fluoride toothpaste.³

Fluoride Mouthrinse or Gels. Fluoride mouthrinse is a concentrated solution intended for daily or weekly use and designed to be rinsed and spit out.² The most common fluoride compound used in mouthrinse is sodium fluoride.² The fluoride from mouthrinse is retained in dental plaque and saliva and helps prevent tooth decay.^{2,3} Over-the-counter solutions of 0.05% sodium fluoride (230 ppm fluoride) for daily rinsing are available for use by persons older than 6 years of age;^{2,5,6} use in persons younger than 6 years of age is not recommended because of the risk of fluorosis if the rinse is swallowed repeatedly.^{3,6} Higher strength mouthrinses (e.g., 0.2% neutral sodium fluoride to be used once a week) for those at high risk of tooth decay must be prescribed by a dentist or physician.² Solutions of 0.2% sodium fluoride (920 ppm fluoride) are also used in supervised, school-based weekly rinsing programs.^{2,3,5}

There are also self-applied gel formulations of sodium fluoride (1.1% [5,000 ppm] sodium fluoride) or stannous fluoride (0.15% [1,000 ppm] fluoride) available by prescription for home use.^{2,5}

Professionally Applied

Fluoride Mouthrinse, Gels, or Foams. Professionally applied fluorides are in the form of a gel, foam or rinse, and are applied by a dental professional during dental visits.² These fluorides are more concentrated than the self-applied fluorides (e.g., 1.23% fluoride ion [12,300 ppm]), and therefore are not needed as frequently.

Because an early study⁷ reported that fluoride uptake by dental enamel increased in an acidic environment, fluoride gel is often formulated to be highly acidic (pH of approximately 3.0).³ Products available in the U.S. include gels of acidulated phosphate fluoride (1.23% [12,300 ppm] fluoride), as 2% neutral sodium fluoride products (containing 9,000 ppm fluoride), and as gels or foams of sodium fluoride (0.9% [9,040 ppm] fluoride).² ⁵ In a dental office, fluoride gel is generally applied for 1 to 4 minutes.^{2,5} Home use follows instructions provided in the package insert or as instructed by a dentist or physician.² These higher strength products, if used in the home, must be prescribed by a dentist or physician.

Because these applications are relatively infrequent, generally at 3- to 12-month intervals, fluoride gel poses little risk for dental fluorosis, even among patients younger than 6 years of age.^{2,3} Routine use of professionally applied fluoride gel or foam likely provides benefit only to persons at high risk for tooth decay, especially those who do not consume fluoridated water and brush daily with fluoride toothpaste.²

Fluoride-Containing Prophylaxis Paste. Fluoride-containing paste is routinely used during dental prophylaxis. The abrasive paste, which contains 4,000 to 20,000 ppm fluoride, might restore the concentration of fluoride in the surface layer of enamel removed by polishing, but it is not an adequate substitute for fluoride gel or varnish in

treating persons at high risk for dental caries.³ Fluoride prophylaxis paste alone is not considered by the U.S. Food and Drug Administration (FDA) or ADA an effective method to prevent dental caries.^{3,8}

Fluoride Varnish. Varnishes are available as sodium fluoride (2.26% [22,600 ppm] fluoride) or difluorsilane (0.1% [1,000 ppm] fluoride) preparations.^{2,5,6} A typical application requires 0.2 to 0.5 mL, resulting in a total fluoride ion application of approximately 5 to 11 mg.⁵

High-concentration fluoride varnish is painted by dental or other health care professionals directly onto the teeth and sets when it comes into contact with saliva.^{2,5,6} Fluoride varnish is not intended to adhere permanently; this method holds a high concentration of fluoride in a small amount of material in close contact with the teeth for several hours.² Varnishes must be reapplied at regular intervals with at least 2 applications per year needed for sustained benefit.² Although it is not currently cleared for marketing by the FDA as an anticaries agent, fluoride varnish has been widely used for this purpose in Canada and Europe since the 1970s.^{2,3} Studies conducted in Canada and Europe have reported that fluoride varnish is as effective in preventing tooth decay as professionally applied fluoride gel.² The U.S. Preventive Services Task Force recommends the clinical application of fluoride varnish to the primary teeth of all infants and children starting at the age of primary tooth eruption.⁹ The recommendation is given a “B” grade, indicating that there is high certainty that the net benefit of the intervention is moderate or there is moderate certainty that the net benefit is moderate to substantial.¹⁰

According to the Centers for Disease Control and Prevention (CDC), there is no published evidence to indicate that professionally applied fluoride varnish is a risk factor for dental fluorosis, even among children younger than 6 years of age.² Proper application technique reduces the possibility that a patient will swallow varnish during its application and limits the total amount of fluoride swallowed as the varnish wears off the teeth over a period of hours.¹¹

Silver Diamine Fluoride. Silver diamine fluoride (SDF) is a colorless liquid that at pH 10 is 24.4% to 28.8% (weight/volume) silver and 5.0% to 5.9% fluoride.¹² The FDA has classified SDF as a Class II medical device and it is cleared for use in the treatment of tooth sensitivity, which is the same type of clearance as fluoride varnish, and must be professionally applied. Although some products are commercially available in other countries, currently, Advantage Arrest™ (Elevate Oral Care, L.L.C.) and Riva Star™ (SDI, Inc.) are the only commercially available SDF products for dental use in the U.S.¹³ There have been reports of the use of SDF in caries control and management, although it is not specifically labeled for use for this indication (i.e., “off-label use”). Likely a result of its fluoride content, when applied to a carious lesion, SDF has been shown to lower caries risk of the adjacent tooth surface.¹⁴ SDF has also shown efficacy in management of root caries in the elderly.¹⁵⁻¹⁷ It likely has additional applicability as an interim approach for managing problematic caries in individuals currently unable to tolerate more involved dental treatment.¹⁸

Single application of SDF has been reported to be insufficient for sustained benefit.¹⁹ Its potential downsides include a reportedly unpleasant metallic taste, potential to irritate gingival and mucosal surfaces, and the characteristic black staining of the tooth surfaces to which it is applied.¹³

Systemic Fluorides

Systemic fluorides such as community water fluoridation and dietary fluoride supplements are effective in reducing tooth decay. These fluorides provide topical as well as systemic protection because fluoride is present in the saliva.

Water Fluoridation

Fluoride is present naturally in all water sources.¹ Community water fluoridation is the process of adjusting the fluoride content of fluoride-deficient water to the recommended level for optimal dental health, which is currently recommended at 0.7 parts fluoride per million parts water.^{20,21} Water fluoridation is an effective and inexpensive means of obtaining the fluoride necessary to prevent tooth decay.³ Studies show that water fluoridation continues to be effective in reducing tooth decay by 20% to 40% in children and adults, even in the era of widespread availability of fluoride from other sources, such as fluoride toothpaste.²² While water fluoridation is an extremely effective and inexpensive means of obtaining the fluoride necessary for optimal tooth decay prevention, not everyone lives in a community with a centralized, public or private water source that can be fluoridated.²² For those individuals, fluoride is available in other forms.

There are several ways to determine the concentration of fluoride in the water supply.^{3, 22} If water comes from a public or community water supply, contact the local water supplier to determine the fluoride level. Local, county or state health departments can also be a resource for this information. The U.S. Environmental Protection Agency's (EPA) website for water quality reports (called [Consumer Confidence Reports](#)) provides information, as does the U.S. Centers for Disease Control and Prevention's (CDC) fluoridation website, "[My Water's Fluoride](#)." The CDC website lists fluoridation status by water system for those states that have provided information.

If the water source is a private well, it will need to be tested and the results obtained from a certified laboratory.²² The local or state health department will have water sample testing information. Although the EPA does not have the authority to regulate private drinking water wells, the agency recommends that private well water be tested every year. And although the EPA does not specifically recommend testing private wells for fluoride levels, health professionals will need this information before consideration of prescription of dietary fluoride supplements or to counsel patients about alternative water sources to reduce the risk of fluorosis if the fluoride levels are above 2 ppm.

The majority of bottled waters on the market contain less than 0.3 ppm fluoride, which is less than the optimal level of fluoride.^{3, 11} The FDA announced in April 2019 that it is proposing to revise the quality standard for bottled water to state that bottled water to which fluoride is added by the manufacturer may not contain fluoride that exceeds 0.7 milligrams per liter (0.7 ppm).^{23, 24} If finalized, the proposed rule would amend the allowable levels of fluoride in domestically packaged and imported bottled water to which fluoride is added.

Some types of home water treatment systems (e.g., reverse osmosis and distillation systems) can reduce the fluoride levels in water supplies, potentially decreasing the decay-preventive effects of optimally fluoridated water; however, carbon/charcoal filtration systems do not remove fluoride.¹¹

Dietary Fluoride Supplements

Fluoride supplements can be prescribed for children ages 6 months to 16 years who are at high risk for tooth decay and whose primary drinking water has a low fluoride concentration.^{2, 25} Tablets and lozenges are manufactured with 1.0, 0.5, or 0.25 mg fluoride.^{2, 3} Most supplements contain sodium fluoride as the active ingredient.² To maximize the topical effect of fluoride, tablets and lozenges are intended to be chewed or sucked for 1–2 minutes before being swallowed;^{2, 3, 5} for infants, supplements are available as a liquid and used with a dropper.³ Dosing is based on the natural fluoride concentration of the child's drinking water and the age of the child (see Table).^{5, 25}

All dietary fluoride supplements must be prescribed by a dentist or physician.² For children aged younger than 6 years, health care providers should weigh the risk for tooth decay without fluoride supplements, the decay prevention offered by supplements, and the potential for dental fluorosis.² Consideration of the child's other sources of fluoride, especially drinking water, is essential in determining this balance.^{3, 5} Parents and caregivers should be informed of both the benefit of protection against tooth decay and the potential risk of dental fluorosis.² The U.S. Preventive Services Task Force recommends the clinical use of oral fluoride supplementation starting at age 6 months through 5 years for children whose water supply is deficient in fluoride.⁹ The recommendation is given a "B" grade, indicating that there is high certainty that the net benefit of the intervention is moderate or there is moderate certainty that the net benefit is moderate to substantial.¹⁰

Table. Fluoride Supplement (Tablets and Drops) Dosage Schedule 2010 (Approved by the American Dental Association Council on Scientific Affairs)²⁵

Age	Fluoride Ion Level in Drinking Water (ppm)*		
	<0.3	0.3-0.6	>0.6
Birth-6 months	None	None	None
6 months-3 years	0.25 mg/day**	None	None
3-6 years	0.50 mg/day	0.25 mg/day	None
6-16 years	1.0 mg/day	0.50 mg/day	None

*1.0 part per million (ppm) = 1 milligram per liter (mg/L)
 **2.2 mg sodium fluoride contains 1 mg fluoride ion

Important Considerations When Using Dosage Schedule:²⁵

- If fluoride level is unknown, drinking water should be tested for fluoride content before supplements are prescribed. For testing of fluoride content, contact the local or state health department.
- All sources of fluoride should be evaluated with a thorough fluoride history.
- Patient exposure to multiple water sources may complicate proper prescribing.
- Ingestion of higher than recommended levels of fluoride by children has been associated with an increased risk of mild dental fluorosis in developing, unerupted teeth.
- To obtain the benefits from fluoride supplements, long-term compliance on a daily basis is required.

It is important to note that fluoridated water may be consumed from sources other than the home water supply, such as the workplace, school and/or day care, bottled water, filtered water and from processed beverages and foods prepared with fluoridated water. For this reason, dietary fluoride supplements should be prescribed by carefully following the recommended dosage schedule. Dietary fluoride supplements are not recommended for children residing in a community with adequate levels of fluoride in the water supply.

The ADA's dietary fluoride supplement recommendations remain unchanged in light of the new guidelines for community water fluoridation in the U.S. released in April 2015 by the U.S. Public Health Service.²¹ The [recommendation](#) for fluoride levels in drinking water was reconsidered in 2015 when it was determined that 0.7 milligrams of fluoride per liter of water (0.7 ppm) was optimal. The new recommendation, which was supported by the ADA, does not change the ADA Council on Scientific Affairs' [systematic review](#), [clinical recommendation](#) and [chairside guide](#) for the use of dietary fluoride supplements that were released in 2010.

Links for more information:

- [ADA Clinical Recommendations for Topical Fluorides \(2013\)](#)
- [Fluorosis](#)
- [ADA Policies on Fluoride and Fluoridation](#)
- [ADA Resources](#)
- [Other Resources](#)

Topic last updated: May 1, 2019



Fluoride Varnish

For children age six
months and older

What is fluoride varnish and what does it do?

- Fluoride varnish is a protective coating that is painted on the teeth to prevent new cavities from forming. It helps stop small cavities that have already started.
- Fluoride varnish strengthens a child's teeth. The stronger the teeth, the less chance that the child will develop cavities.

Is fluoride varnish safe?

Yes, fluoride varnish can be used on babies' teeth. It is safe because only a small amount of fluoride varnish is used, and it sticks to the teeth immediately. This reduces the risk of too much being swallowed.

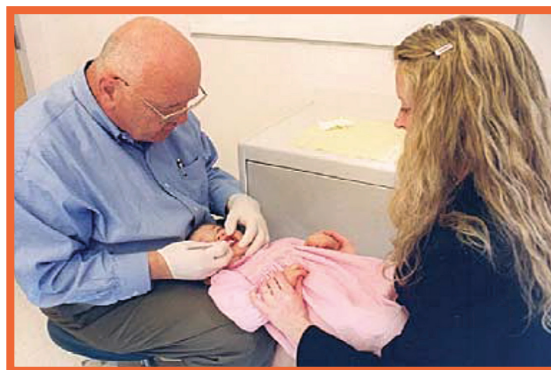
How is fluoride varnish put on the teeth?

- The varnish is painted on the teeth. The varnish has a mild, pleasant taste and can be applied quickly and easily. It takes less than a minute to apply the varnish.
- Application is not painful but the child might cry because babies and young children do not like being held in one position or having things put in their mouths.

- Depending on the type of fluoride varnish used, the teeth might appear dull after the application. This will wear off or be brushed off the next day.
- The teeth should not be brushed until the next day.

How long does the fluoride varnish last?

- The protection from fluoride varnish will continue to work for several months
- The fluoride varnish should be reapplied every 4-6 months.



Fluoride varnish being applied to a baby's teeth.



Información para los Padres Sobre el Esmalte de Fluoruro

¿Por qué nosotros recomendamos la aplicación del esmalte de fluoruro en los dientes de los niños?

Las caries son una de las enfermedades prevenibles más comunes vista en los niños. Los niños pequeños desde los 12-18 meses pueden tener caries. Las caries en los dientes de leche pueden causar dolor y aun hasta evitar a los niños a poder comer, hablar, dormir y aprender apropiadamente. Los niños no pierden todos sus dientes de leche hasta que tienen como de 11 a 12 años de edad.

¿Qué es el esmalte del fluoruro?

El esmalte de fluoruro es una capa protectora temporal que es pintada sobre los dientes para ayudar a prevenir nuevas caries y para ayudar a detener a las caries que ya hayan comenzado.

¿Es el esmalte de fluoruro seguro?

Sí, el esmalte de fluoruro puede ser usado en bebés desde que ellos tienen sus primeros dientes. Solamente una cantidad pequeña de esmalte de fluoruro es usada. Este método de proveer fluoruro a los dientes ha sido usado en Europa por más de 25 años.

¿Cómo es el fluoruro aplicado en los dientes?

El esmalte es pintado sobre los dientes. Es rápido y fácil de aplicar y no tiene mal sabor. No hay dolor, pero su niño/a puede llorar simplemente porque a los bebés y niños no les gusta que les pongan cosas en su boca especialmente por gente que ellos no conocen! Los dientes de su niño/a estarán amarillos después que el esmalte de fluoruro sea aplicado, pero el color amarillo se caerá cuando usted cepille los dientes de su niño/a mañana.

¿Cuánto tiempo dura el fluoruro?

La capa de fluoruro trabajará mejor si es aplicada en los dientes de 2 veces al año.

Los dientes de leche de su niño son importantes! Ellos:



- Permiten que su niño mastique bien la comida
- Ayudan en el desarrollo del lenguaje
- Guían la buena ubicación de los dientes permanentes
- Ayudan en la formación de la mandíbula y la cara
- Ayudan a mantener la buena salud de su niño
- Hacen que la sonrisa sea bonita!


















Oral Health Risk Assessment Tool

The American Academy of Pediatrics (AAP) has developed this tool to aid in the implementation of oral health risk assessment during health supervision visits. This tool has been subsequently reviewed and endorsed by the National Interprofessional Initiative on Oral Health.

Instructions for Use

This tool is intended for documenting caries risk of the child, however, two risk factors are based on the mother or primary caregiver's oral health. All other factors and findings should be documented based on the child.

The child is at an absolute high risk for caries if any risk factors or clinical findings, marked with a  sign, are documented yes. In the absence of  risk factors or clinical findings, the clinician may determine the child is at high risk of caries based on one or more positive responses to other risk factors or clinical findings. Answering yes to protective factors should be taken into account with risk factors/clinical findings in determining low versus high risk.

Patient Name: _____ Date of Birth: _____ Date: _____			
Visit: <input type="checkbox"/> 6 month <input type="checkbox"/> 9 month <input type="checkbox"/> 12 month <input type="checkbox"/> 15 month <input type="checkbox"/> 18 month <input type="checkbox"/> 24 month <input type="checkbox"/> 30 month <input type="checkbox"/> 3 year <input type="checkbox"/> 4 year <input type="checkbox"/> 5 year <input type="checkbox"/> 6 year <input type="checkbox"/> Other _____			
RISK FACTORS	PROTECTIVE FACTORS	CLINICAL FINDINGS	
<ul style="list-style-type: none">  Mother or primary caregiver had active decay in the past 12 months <input type="checkbox"/> Yes <input type="checkbox"/> No  Mother or primary caregiver does not have a dentist <input type="checkbox"/> Yes <input type="checkbox"/> No 	<ul style="list-style-type: none">  Existing dental home <input type="checkbox"/> Yes <input type="checkbox"/> No  Drinks fluoridated water or takes fluoride supplements <input type="checkbox"/> Yes <input type="checkbox"/> No  Fluoride varnish in the last 6 months <input type="checkbox"/> Yes <input type="checkbox"/> No  Has teeth brushed twice daily <input type="checkbox"/> Yes <input type="checkbox"/> No 	<ul style="list-style-type: none">  White spots or visible decalcifications in the past 12 months <input type="checkbox"/> Yes <input type="checkbox"/> No  Obvious decay <input type="checkbox"/> Yes <input type="checkbox"/> No  Restorations (fillings) present <input type="checkbox"/> Yes <input type="checkbox"/> No 	
<ul style="list-style-type: none">  Continual bottle/sippy cup use with fluid other than water <input type="checkbox"/> Yes <input type="checkbox"/> No  Frequent snacking <input type="checkbox"/> Yes <input type="checkbox"/> No  Special health care needs <input type="checkbox"/> Yes <input type="checkbox"/> No  Medicaid eligible <input type="checkbox"/> Yes <input type="checkbox"/> No 		<ul style="list-style-type: none">  Visible plaque accumulation <input type="checkbox"/> Yes <input type="checkbox"/> No  Gingivitis (swollen/bleeding gums) <input type="checkbox"/> Yes <input type="checkbox"/> No  Teeth present <input type="checkbox"/> Yes <input type="checkbox"/> No  Healthy teeth <input type="checkbox"/> Yes <input type="checkbox"/> No 	
ASSESSMENT/PLAN			
Caries Risk: <input type="checkbox"/> Low <input type="checkbox"/> High	Self Management Goals:		
Completed: <input type="checkbox"/> Anticipatory Guidance <input type="checkbox"/> Fluoride Varnish <input type="checkbox"/> Dental Referral	<input type="checkbox"/> Regular dental visits <input type="checkbox"/> Dental treatment for parents <input type="checkbox"/> Brush twice daily <input type="checkbox"/> Use fluoride toothpaste	<input type="checkbox"/> Wean off bottle <input type="checkbox"/> Less/No juice <input type="checkbox"/> Only water in sippy cup <input type="checkbox"/> Drink tap water	<input type="checkbox"/> Healthy snacks <input type="checkbox"/> Less/No junk food or candy <input type="checkbox"/> No soda <input type="checkbox"/> Xylitol

Treatment of High Risk Children

If appropriate, high-risk children should receive professionally applied fluoride varnish and have their teeth brushed twice daily with an age-appropriate amount of fluoridated toothpaste. Referral to a pediatric dentist or a dentist comfortable caring for children should be made with follow-up to ensure that the child is being cared for in the dental home.

Adapted from Ramos-Gomez FJ, Crystal YO, Ng MW, Crall JJ, Featherstone JD. Pediatric dental care: prevention and management protocols based on caries risk assessment. *J Calif Dent Assoc.* 2010;38(10):746-761; American Academy of Pediatrics Section on Pediatric Dentistry and Oral Health. Preventive oral health intervention for pediatricians. *Pediatrics.* 2003; 122(6):1387-1394; and American Academy of Pediatrics Section of Pediatric Dentistry. Oral health risk assessment timing and establishment of the dental home. *Pediatrics.* 2003;111(5):1113-1116.

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Oral Health Risk Assessment Tool Guidance

Timing of Risk Assessment

The Bright Futures/AAP “Recommendations for Preventive Pediatric Health Care,” (ie, Periodicity Schedule) recommends all children receive a risk assessment at the 6- and 9-month visits. For the 12-, 18-, 24-, 30-month, and the 3- and 6-year visits, risk assessment should continue if a dental home has not been established. View the Bright Futures/AAP Periodicity Schedule—http://brightfutures.aap.org/clinical_practice.html.

Risk Factors

Maternal Oral Health

Studies have shown that children with mothers or primary caregivers who have had active decay in the past 12 months are at greater risk to develop caries. **This child is high risk.**

Maternal Access to Dental Care

Studies have shown that children with mothers or primary caregivers who do not have a regular source of dental care are at a greater risk to develop caries. A follow-up question may be if the child has a dentist.

Continual Bottle/Sippy Cup Use

Children who drink juice, soda, and other liquids that are not water, from a bottle or sippy cup continually throughout the day or at night are at an increased risk of caries. The frequent intake of sugar does not allow for the acid it produces to be neutralized or washed away by saliva. Parents of children with this risk factor need to be counseled on how to reduce the frequency of sugar-containing beverages in the child’s diet.

Frequent Snacking

Children who snack frequently are at an increased risk of caries. The frequent intake of sugar/refined carbohydrates does not allow for the acid it produces to be neutralized or washed away by saliva. Parents of children with this risk factor need to be counseled on how to reduce frequent snacking and choose healthy snacks such as cheese, vegetables, and fruit.

Special Health Care Needs

Children with special health care needs are at an increased risk for caries due to their diet, xerostomia (dryness of the mouth, sometimes due to asthma or allergy medication use), difficulty performing oral hygiene, seizures, gastroesophageal reflux disease and vomiting, attention deficit hyperactivity disorder, and gingival hyperplasia or overcrowding of teeth. Premature babies also may experience enamel hypoplasia.

Protective Factors

Dental Home

According to the American Academy of Pediatric Dentistry (AAPD), the dental home is oral health care for the child that is delivered in a comprehensive, continuously accessible, coordinated and family-centered way by a licensed dentist. The AAP and the AAPD recommend that a dental home be established by age 1. Communication between the dental and medical homes should be ongoing to appropriately coordinate care for the child. If a dental home is not available, the primary care clinician should continue to do oral health risk assessment at every well-child visit.

Fluoridated Water/Supplements

Drinking fluoridated water provides a child with systemic and topical fluoride exposure, a proven caries reduction intervention. Fluoride supplements may be prescribed by the primary care clinician or dentist if needed. View fluoride resources on the Oral Health Practice Tools Web Page <http://aap.org/oralhealth/PracticeTools.html>.

Fluoride Varnish in the Last 6 Months

Applying fluoride varnish provides a child with highly concentrated fluoride to protect against caries. Fluoride varnish may be professionally applied and is now recommended by the United States Preventive Services Task Force as a preventive service in the primary care setting for all children through age 5 <http://www.uspreventiveservicestaskforce.org/Page/Topic/recommendation-summary/dental-caries-in-children-from-birth-through-age-5-years-screening>. For online fluoride varnish training, access the Caries Risk Assessment, Fluoride Varnish, and Counseling Module in the Smiles for Life National Oral Health Curriculum, www.smilesforlifeoralhealth.org.

Tooth Brushing and Oral Hygiene

Primary care clinicians can reinforce good oral hygiene by teaching parents and children simple practices. Infants should have their mouths cleaned after feedings with a wet soft washcloth. Once teeth erupt it is recommended that children have their teeth brushed twice a day. For children under the age of 3 (until 3rd birthday) it is appropriate to recommend brushing with a smear (grain of rice amount) of fluoridated toothpaste twice per day. Children 3 years of age and older should use a pea-sized amount of fluoridated toothpaste twice a day. View the AAP Clinical Report on the use of fluoride in the primary care setting for more information <http://pediatrics.aappublications.org/content/early/2014/08/19/peds.2014-1699>.

Clinical Findings



⚠️ **White Spots/Decalcifications**

This child is high risk.

White spot decalcifications present—immediately place the child in the high-risk category.



⚠️ **Obvious Decay**

This child is high risk.

Obvious decay present—immediately place the child in the high-risk category.



⚠️ **Restorations (Fillings) Present**

This child is high risk.

Restorations (Fillings) present—immediately place the child in the high-risk category.



Visible Plaque Accumulation

Plaque is the soft and sticky substance that accumulates on the teeth from food debris and bacteria. Primary care clinicians can teach parents how to remove plaque from the child's teeth by brushing and flossing.



Gingivitis

Gingivitis is the inflammation of the gums. Primary care clinicians can teach parents good oral hygiene skills to reduce the inflammation.



Healthy Teeth

Children with healthy teeth have no signs of early childhood caries and no other clinical findings. They are also experiencing normal tooth and mouth development and spacing.

For more information about the AAP's oral health activities email oralhealth@aap.org or visit www.aap.org/oralhealth.

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**Key Elements to Incorporate Oral Health in the Pediatric Electronic Health Record
AAP Section on Oral Health**

Refer or link to the AAP Oral Health Risk Assessment Tool to document risk factors, protective factors, and clinical findings <http://www2.aap.org/oralhealth/RiskAssessmentTool.html> and then record the following in the Electronic Health Record for each child.

Required Elements:

Question	Yes or No	Insert additional information
Is the child at high risk for dental caries?		
Should the child be referred to a dentist at this visit?		Name of referral
Should the child receive fluoride varnish or a fluoride supplement prescription at this visit?		
Does the child have dental insurance?		Insurance type or indicate if Medicaid/CHIP patient

Additional Information:

Type of Information	Comment Field or Yes No
Environmental	
Is there fluoride in the local water supply?	
Are there dietary issues (i.e. bottle to bed, frequent snacking, high intake of sugary foods, under or over-weight, etc)?	
Biological	
Are there genetic/birth defects/physical predisposition (ie mother with caries, siblings with caries, special needs child)?	
Other health conditions (metabolic), diet, medications?	
Psychosocial	
Does family use only bottle or well water without fluoride supplementation?	
Are there other cultural/social/economic barriers to oral health?	
Pragmatic	
Describe physical findings from oral exam (ie healthy teeth, caries suspected, previous restorations, malocclusion, etc).	

End Actions:

Education	Insert additional information	Resources (Insert local resources as needed)
Standard oral health package		Low Literacy Goals Handout - http://www2.aap.org/oralhealth/docs/GoalsPictureHandout.pdf AAP Bookstore – A Guide to Children’s Dental Health –

		http://www.aap.org Oral Health Brochures for Consumers - http://www.mchoralhealth.org/materials/consumerbrochures.html
Special oral health packages for different conditions and locales (ie areas without fluoride, fluoride varnish consent forms and instructions, etc)		Fluoride Varnish Instructions in a variety of languages - http://www2.aap.org/oralhealth/docs/varnish-instructions-ALL.pdf Special Needs Oral Health Fact Sheets - http://dental.washington.edu/departments/oral-medicine/special-needs-fact-sheets.html
Dental Resources		
Availability of dentists (Develop a list of dentists in the area and what ages/types of children they see.)		Dental Referral Resource Template - http://www2.aap.org/oralhealth/docs/Dental-Referral-Resource-Template.doc Questions to ask Dental Offices - http://www2.aap.org/oralhealth/docs/QuestionsforDentalHome.docx
Insurance coverage for these services and alternatives		http://insurekidsnow.gov/
Ease/difficulty of access for the family		Head Start Public health School-based programs
Treatment/Prescription		
Fluoride varnish treatment	Date applied and other info	Fluoride Varnish Manufacturers List - http://www2.aap.org/oralhealth/docs/fluoride-varnish-manufacturers.pdf
Fluoride supplement prescription	Prescription info	Fluoride Supplement Decision Tool and Dosage Chart http://ebd.ada.org/contentdocs/6327_Fluoride_Chairside_Tool.pdf

For more information about oral health in the electronic health record or for examples of systems that include oral health, please email oralhealth@aap.org.