County of Los Angeles Department of Public Health

Children's Medical Services

Child Health and Disability Prevention (CHDP) Program

CHDP FLUORIDE VARNISH PACKET

On-line Rev. 4-8-19

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN®

Recommendations for Preventive Pediatric Health Care

Bright Futures/American Academy of Pediatrics

Bright Futures®
prevention and health promotion for infants, children, adolescents, and their families™

Each child and family is unique; therefore, these Recommendations for Preventive Pediatric Health Care are designed for the care of children who are receiving competent parenting, have no manifestations of any important health problems, and are growing and developing in a satisfactory fashion. Developmental, psychosocial, and chronic disease issues for children and adolescents may require frequent counseling and treatment visits separate from preventive care visits. Additional visits also may become necessary if circumstances suggest variations from normal.

These recommendations represent a consensus by the American Academy of Pediatrics (AAP) and Bright Futures. The AAP continues to emphasize the great importance of continuity of care in comprehensive health supervision and the need to avoid fragmentation of care.

Refer to the specific guidance by age as listed in the *Bright Futures Guidelines* (Hagan JF, Shaw JS, Duncan PM, eds. *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents.* 4th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2017).

The recommendations in this statement do not indicate an exclusive course of treatment or standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

Copyright © 2019 by the American Academy of Pediatrics, updated March 2019.

No part of this statement may be reproduced in any form or by any means without prior written permission from the American Academy of Pediatrics except for one copy for personal use.

	INFANCY								EARLY CHILDHOOD							MIDDLE CHILDHOOD						ADOLESCENCE										
AGE[1]	**Prenatal**[2]	**Newborn**[3]	**3-5 d**[4]	**By 1 mo**	**2 mo**	**4 mo**	**6 mo**	**9 mo**	**12 mo**	**15 mo**	**18 mo**	**24 mo**	**30 mo**	**3 y**	**4 y**	**5 y**	**6 y**	**7 y**	**8 y**	**9 y**	**10 y**	**11 y**	**12 y**	**13 y**	**14 y**	**15 y**	**16 y**	**17 y**	**18 y**	**19 y**	**20 y**	**21 y**
HISTORY Initial/Interval	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
MEASUREMENTS																															
Length/Height and Weight		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Head Circumference		●	●	●	●	●	●	●	●	●	●	●																			
Weight for Length		●	●	●	●	●	●	●	●	●	●																				
Body Mass Index[5]												●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Blood Pressure[6]		★	★	★	★	★	★	★	★	★	★	★	★	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SENSORY SCREENING																															
Vision[7]		★	★	★	★	★	★	★	★	★	★	★	★	●	●	●	●	★	●	★	●	★	●	★	★	●	★	★	★	★	★	★
Hearing		●[8]	●[9] →			★	★	★	★	★	★	★	★	★	●	●	●	★	●	★	●	←		●[10]	→	←	●	→	←		●	→
DEVELOPMENTAL/BEHAVIORAL HEALTH																															
Developmental Screening[11]								●			●		●																		
Autism Spectrum Disorder Screening[12]											●	●																			
Developmental Surveillance		●	●	●	●	●	●		●	●		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Psychosocial/Behavioral Assessment[13]		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Tobacco, Alcohol, or Drug Use Assessment[14]																					★	★	★	★	★	★	★	★	★	★	★
Depression Screening[15]																						●	●	●	●	●	●	●	●	●	●
Maternal Depression Screening[16]				●	●	●	●																								
PHYSICAL EXAMINATION[17]		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PROCEDURES[18]																															
Newborn Blood		●[19]	●[20] →																												
Newborn Bilirubin[21]		●																													
Critical Congenital Heart Defect[22]		●																													
Immunization[23]		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Anemia[24]						★			●	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
Lead[25]							★	★	● or ★[26]		★	● or ★[26]		★	★	★	★															
Tuberculosis[27]				★			★		★			★		★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
Dyslipidemia[28]												★			★		★		★	←	● →	★	★	★	★	★	←			●	→	
Sexually Transmitted Infections[29]																						★	★	★	★	★	★	★	★	★	★	★
HIV[30]																						★	★	★	★	←		● →		★	★	★
Cervical Dysplasia[31]																															●
ORAL HEALTH[32]							●[33]	●[33]	★		★	★	★	★	★	★	★														
Fluoride Varnish[34]							←				●			→																	
Fluoride Supplementation[35]							★	★	★		★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★					
ANTICIPATORY GUIDANCE	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

1. If a child comes under care for the first time at any point on the schedule, or if any items are not accomplished at the suggested age, the schedule should be brought up-to-date at the earliest possible time.
2. A prenatal visit is recommended for parents who are at high risk, for first-time parents, and for those who request a conference. The prenatal visit should include anticipatory guidance, pertinent medical history, and a discussion of benefits of breastfeeding and planned method of feeding, per "The Prenatal Visit" (http://pediatrics.aappublications.org/content/124/4/1227.full).
3. Newborns should have an evaluation after birth, and breastfeeding should be encouraged (and instruction and support should be offered).
4. Newborns should have an evaluation within 3 to 5 days of birth and within 48 to 72 hours after discharge from the hospital to include evaluation for feeding and jaundice. Breastfeeding newborns should receive formal breastfeeding evaluation, and their mothers should receive encouragement and instruction, as recommended in "Breastfeeding and the Use of Human Milk" (http://pediatrics.aappublications.org/content/129/3/e827.full). Newborns discharged less than 48 hours after delivery must be examined within 48 hours of discharge, per "Hospital Stay for Healthy Term Newborns" (http://pediatrics.aappublications.org/content/125/2/405.full).
5. Screen, per "Expert Committee Recommendations Regarding the Prevention, Assessment, and Treatment of Child and Adolescent Overweight and Obesity: Summary Report" (http://pediatrics.aappublications.org/content/120/Supplement_4/S164.full).
6. Screening should occur per "Clinical Practice Guideline for Screening and Management of High Blood Pressure in Children and Adolescents" (http://pediatrics.aappublications.org/content/140/3/e20171904). Blood pressure measurement in infants and children with specific risk conditions should be performed at visits before age 3 years.
7. 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 "Visual System Assessment in Infants, Children, and Young Adults by Pediatricians" (http://pediatrics.aappublications.org/content/137/1/e20153596) and "Procedures for the Evaluation of the Visual System by Pediatricians" (http://pediatrics.aappublications.org/content/137/1/e20153597).
8. Confirm initial screen was completed, verify results, and follow up, as appropriate. Newborns should be screened, per "Year 2007 Position Statement: Principles and Guidelines for Early Hearing Detection and Intervention Programs" (http://pediatrics.aappublications.org/content/120/4/898.full).
9. Verify results as soon as possible, and follow up, as appropriate.
10. Screen with audiometry including 6,000 and 8,000 Hz high frequencies once between 11 and 14 years, once between 15 and 17 years, and once between 18 and 21 years. See "The Sensitivity of Adolescent Hearing Screens Significantly Improves by Adding High Frequencies" (http://www.jahonline.org/article/S1054-139X(16)00048-3/fulltext).
11. See "Identifying Infants and Young Children With Developmental Disorders in the Medical Home: An Algorithm for Developmental Surveillance and Screening" (http://pediatrics.aappublications.org/content/118/1/405.full).
12. Screening should occur per "Identification and Evaluation of Children With Autism Spectrum Disorders" (http://pediatrics.aappublications.org/content/120/5/1183.full).
13. This assessment should be family centered and may include an assessment of child social-emotional health, caregiver depression, and social determinants of health. See "Promoting Optimal Development: Screening for Behavioral and Emotional Problems" (http://pediatrics.aappublications.org/content/135/2/384) and "Poverty and Child Health in the United States" (http://pediatrics.aappublications.org/content/137/4/e20160339).
14. A recommended assessment tool is available at http://www.ceasar-boston.org/CRAFFT/index.php.
15. Recommended screening using the Patient Health Questionnaire (PHQ)-2 or other tools available in the GLAD-PC toolkit and at http://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Mental-Health/Documents/MH_ScreeningChart.pdf.
16. Screening should occur per "Incorporating Recognition and Management of Perinatal and Postpartum Depression Into Pediatric Practice" (http://pediatrics.aappublications.org/content/126/5/1032).
17. At each visit, age-appropriate physical examination is essential, with infant totally unclothed and older children undressed and suitably draped. See "Use of Chaperones During the Physical Examination of the Pediatric Patient" (http://pediatrics.aappublications.org/content/127/5/991.full).
18. These may be modified, depending on entry point into schedule and individual need.

(continued)

KEY: ● = to be performed ★ = risk assessment to be performed with appropriate action to follow, if positive ← ● → = range during which a service may be provided

BFNC 2019.PSMAR
3-351/0319

(continued)

19. Confirm initial screen was accomplished, verify results, and follow up, as appropriate. The Recommended Uniform Screening Panel (https://www.hrsa.gov/advisory-committees/heritable-disorders/rusp/index.html), as determined by The Secretary's Advisory Committee on Heritable Disorders in Newborns and Children, and state newborn screening laws/regulations (http://genes-r-us.uthscsa.edu/home) establish the criteria for and coverage of newborn screening procedures and programs.
20. Verify results as soon as possible, and follow up, as appropriate.
21. Confirm initial screening was accomplished, verify results, and follow up, as appropriate. See "Hyperbilirubinemia in the Newborn Infant ≥35 Weeks' Gestation: An Update With Clarifications" (http://pediatrics.aappublications.org/content/124/4/1193).
22. 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 "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).
23. Schedules, per the AAP Committee on Infectious Diseases, are available at http://redbook.solutions.aap.org/SS/Immunization_Schedules.aspx. Every visit should be an opportunity to update and complete a child's immunizations.
24. Perform risk assessment or screening, as appropriate, per recommendations in the current edition of the AAP *Pediatric Nutrition: Policy of the American Academy of Pediatrics* (Iron chapter).
25. For children at risk of lead exposure, see "Prevention of Childhood Lead Toxicity" (http://pediatrics.aappublications.org/content/138/1/e20161493) and "Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention" (http://www.cdc.gov/nceh/lead/ACCLPP/Final_Document_030712.pdf).
26. Perform risk assessments or screenings as appropriate, based on universal screening requirements for patients with Medicaid or in high prevalence areas.
27. Tuberculosis testing per recommendations of the AAP Committee on Infectious Diseases, published in the current edition of the AAP *Red Book: Report of the Committee on Infectious Diseases*. Testing should be performed on recognition of high-risk factors.
28. See "Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents" (http://www.nhlbi.nih.gov/guidelines/cvd_ped/index.htm).
29. Adolescents should be screened for sexually transmitted infections (STIs) per recommendations in the current edition of the AAP *Red Book: Report of the Committee on Infectious Diseases*.
30. Adolescents should be screened for HIV according to the USPSTF recommendations (http://www.uspreventiveservicestaskforce.org/uspstf/uspshivi.htm) once between the ages of 15 and 18, making every effort to preserve confidentiality of the adolescent. Those at increased risk of HIV infection, including those who are sexually active, participate in injection drug use, or are being tested for other STIs, should be tested for HIV and reassessed annually.
31. See USPSTF recommendations (http://www.uspreventiveservicestaskforce.org/uspstf/uspscerv.htm). Indications for pelvic examinations prior to age 21 are noted in "Gynecologic Examination for Adolescents in the Pediatric Office Setting" (http://pediatrics.aappublications.org/content/126/3/583.full).
32. Assess whether the child has a dental home. If no dental home is identified, perform a risk assessment (http://www2.aap.org/oralhealth/docs/RiskAssessmentTool.pdf) and refer to a dental home. Recommend brushing with fluoride toothpaste in the proper dosage for age. See "Maintaining and Improving the Oral Health of Young Children" (http://pediatrics.aappublications.org/content/134/6/1224).
33. Perform a risk assessment (http://www2.aap.org/oralhealth/docs/RiskAssessmentTool.pdf). See "Maintaining and Improving the Oral Health of Young Children" (http://pediatrics.aappublications.org/content/134/6/1224).
34. 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 "Fluoride Use in Caries Prevention in the Primary Care Setting" (http://pediatrics.aappublications.org/content/134/3/626).
35. If primary water source is deficient in fluoride, consider oral fluoride supplementation. See "Fluoride Use in Caries Prevention in the Primary Care Setting" (http://pediatrics.aappublications.org/content/134/3/626).

Summary of Changes Made to the Bright Futures/AAP Recommendations for Preventive Pediatric Health Care

(Periodicity Schedule)

This schedule reflects changes approved in December 2018 and published in March 2019.
For updates and a list of previous changes made, visit www.aap.org/periodicityschedule.

CHANGES MADE IN DECEMBER 2018

BLOOD PRESSURE

- Footnote 6 has been updated to read as follows: "Screening should occur per 'Clinical Practice Guideline for Screening and Management of High Blood Pressure in Children and Adolescents' (http://pediatrics.aappublications.org/content/140/3/e20171904). Blood pressure measurement in infants and children with specific risk conditions should be performed at visits before age 3 years."

ANEMIA

- Footnote 24 has been updated to read as follows: "Perform risk assessment or screening, as appropriate, per recommendations in the current edition of the AAP *Pediatric Nutrition: Policy of the American Academy of Pediatrics* (Iron chapter)."

LEAD

- Footnote 25 has been updated to read as follows: "For children at risk of lead exposure, see 'Prevention of Childhood Lead Toxicity' (http://pediatrics.aappublications.org/content/138/1/e20161493) and 'Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention' (https://www.cdc.gov/nceh/lead/ACCLPP/Final_Document_030712.pdf)."

HRSA
Health Resources & Services Administration
This program is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) as part of an award totaling $5,000,000 with 10 percent financed with non-governmental sources. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by HRSA, HHS, or the U.S. Government. For more information, please visit HRSA.gov.

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

CLINICAL REPORT

Fluoride Use in Caries Prevention in the Primary Care Setting

Melinda B. Clark, MD, FAAP, Rebecca L. Slayton, DDS, PhD, and SECTION ON ORAL HEALTH

abstract

FREE

Dental caries remains the most common chronic disease of childhood in the United States. Caries is a largely preventable condition, and fluoride has proven effectiveness in the prevention of caries. The goals of this clinical report are to clarify the use of available fluoride modalities for caries prevention in the primary care setting and to assist pediatricians in using fluoride to achieve maximum protection against dental caries while minimizing the likelihood of enamel fluorosis. *Pediatrics* 2014;134:626–633

KEY WORDS

enamel fluorosis, fluoride, fluoride varnish, formula mixing, systemic fluoride supplements, toothpaste, water fluoridation

ABBREVIATIONS

AAP—American Academy of Pediatrics
ADA—American Dental Association
CDC—Centers for Disease Control and Prevention
EPA—Environmental Protection Agency

This document is copyrighted and is property of the American Academy of Pediatrics and its Board of Directors. All authors have filed conflict of interest statements with the American Academy of Pediatrics. Any conflicts have been resolved through a process approved by the Board of Directors. The American Academy of Pediatrics has neither solicited nor accepted any commercial involvement in the development of the content of this publication.

The guidance in this report does not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

Dental caries (ie, tooth decay) is an infectious disease in which acid produced by bacteria dissolves tooth enamel. If not halted, this process will continue through the tooth and into the pulp, resulting in pain and tooth loss. This activity can further progress to local infections (ie, dental alveolar abscess or facial cellulitis), systemic infection, and, in rare cases, death. Dental caries in the United States is responsible for many of the 51 million school hours lost per year as a result of dental-related illness, which translates into lost work hours for the parent or adult caregiver.[1] Early childhood caries is the single greatest risk factor for caries in the permanent dentition. Good oral health is a necessary part of overall health, and recent studies have demonstrated the adverse effects of poor oral health on multiple other chronic conditions, including diabetes control.[2] Therefore, the failure to prevent caries has health, educational, and financial consequences at both the individual and societal level.

Dental caries is the most common chronic disease of childhood,[1] with 59% of 12- to 19-year-olds having at least 1 documented cavity.[3] Caries is the "silent epidemic" that disproportionately affects poor, young, and minority populations.[1] The prevalence of dental caries in very young children increased during the period between the last 2 national surveys, despite improvements for older children.[4] Because many children do not receive dental care at young ages, and risk factors for dental caries are influenced by parenting practices, pediatricians have a unique opportunity to participate in the primary prevention of dental caries. Studies show that simple home and primary care setting prevention measures would save health care dollars.[5]

Development of dental caries requires 4 components: teeth, bacteria, carbohydrate exposure, and time. Once teeth emerge, they may become colonized with cariogenic bacteria. The bacteria metabolize carbohydrates

www.pediatrics.org/cgi/doi/10.1542/peds.2014-1699

doi:10.1542/peds.2014-1699

Accepted for publication Jun 9, 2014

All clinical reports from the American Academy of Pediatrics automatically expire 5 years after publication unless reaffirmed, revised, or retired at or before that time.

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

Copyright © 2014 by the American Academy of Pediatrics

Downloaded from www.aappublications.org/news by guest on December 28, 2018

and create acid as a byproduct. The acid dissolves the mineral content of enamel (demineralization) and, over time with repeated acid attacks, the enamel surface collapses and results in a cavity in the tooth. Protective factors that help to remineralize enamel include exposing the teeth to fluoride, limiting the frequency of carbohydrate consumption, choosing less cariogenic foods, practicing good oral hygiene, receiving regular dental care, and delaying bacterial colonization. If carious lesions are identified early, the process can be halted or reversed by modifying the patient's individual risk and protective factors. Certain American Academy of Pediatrics (AAP) publications (*Oral Health Risk Assessment Timing and Establishment of the Dental Home*[6] and *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents*[7]) discuss these concepts in greater depth and provide targeted preventive anticipatory guidance. The Medical Expenditure Panel Survey demonstrated that 89% of infants and 1-year-olds have office-based physician visits annually, compared with only 1.5% who have dental visits.[8] For primary prevention to be effective, it is imperative that pediatricians be knowledgeable about the process of dental caries, prevention of the disease, and available interventions, including fluoride.

Fluoride is available from many sources and is divided into 3 major categories: tap water (and foods and beverages processed with fluoridated water), home administered, and professionally applied. There has been substantial public and professional debate about fluoride, and myriad information is available, often with confusing or conflicting messages. The widespread decline in dental caries in many developed countries, including the United States, has been largely attributable to the use of fluoride. Fluoride has 3 main mechanisms of action: (1) it promotes enamel remineralization; (2) it reduces enamel demineralization; and (3) it inhibits bacterial metabolism and acid production.[9] The mechanisms of fluoride are both topical and systemic, but the topical effect is the most important, especially over the life span.[10]

RISK OF FLUOROSIS

The only scientifically proven risk of fluoride use is the development of fluorosis, which may occur with fluoride ingestion during tooth and bone development. Fluorosis of permanent teeth occurs when fluoride of sufficient quantity for a sufficient period of time is ingested during the time that tooth enamel is being mineralized. Fluorosis is the result of subsurface hypomineralization and porosity between the developing enamel rods.[11] This risk exists in children younger than 8 years, and the most susceptible period for permanent maxillary incisor fluorosis is between 15 and 30 months of age.[12–14] The risk of fluorosis is influenced by both the dose and frequency of exposure to fluoride during tooth development.[15] Recent evidence also suggests that individual susceptibility or resistance to fluorosis includes a genetic component.[16]

After 8 years of age, there is no further risk of fluorosis (except for the third molars) because the permanent tooth enamel is fully mineralized. The vast majority of enamel fluorosis is mild or very mild and characterized by small white striations or opaque areas that are not readily noticeable to the casual observer. Although this type of fluorosis is of no clinical consequence, enamel fluorosis has been increasing in frequency over the last 2 decades to a rate of approximately 41% among adolescents because fluoride sources are more widely available in varied forms.[17] Moderate and severe forms of enamel fluorosis are uncommon in the United States but have both an aesthetic concern and potentially a structural concern, with pitting, brittle incisal edges, and weakened groove anatomy in the permanent 6-year molars.

In 2001, the AAP endorsed the guidelines from the Centers for Disease Control and Prevention (CDC), "Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States."[15] Dental and governmental organizations (American Dental Association [ADA], American Academy of Pediatric Dentistry, the Department of Health and Human Services, and the CDC) have more recently published guidelines on the use of fluoride, but current AAP publications do not reflect these newer evidence-based guidelines. Table 1 provides a simple explanation of fluoride use for patients at low and high risk of caries.

The present report has 2 goals: (1) to assist pediatricians in using fluoride to achieve maximum protection against

TABLE 1 Summary of Fluoride Modalities for Low- and High-Risk Patients

Fluoride Modality	Low Caries Risk	High Caries Risk
Toothpaste	Starting at tooth emergence (smear of paste until age 3 y, then pea-sized)	Starting at tooth emergence (smear of paste until age 3 y, then pea-sized)
Fluoride varnish	Every 3–6 mo starting at tooth emergence	Every 3–6 mo starting at tooth emergence
Over-the-counter mouth rinse	Not applicable	Starting at age 6 y if the child can reliably swish and spit
Community water fluoridation	Yes	Yes
Dietary fluoride supplements	Yes, if drinking water supply is not fluoridated	Yes, if drinking water supply is not fluoridated

Downloaded from www.aappublications.org/news by guest on December 28, 2018

dental caries while minimizing the likelihood of enamel fluorosis; and (2) to clarify the advice that should be given by pediatricians regarding fluoride in the primary care setting.

CURRENT INFORMATION REGARDING FLUORIDE USE IN CARIES PREVENTION

The following information aims to assist pediatricians in achieving maximum protection against dental caries for their patients while minimizing the likelihood of enamel fluorosis. Sources of ingested fluoride include drinking water, infant formula, fluoride toothpaste, prescription fluoride supplements, fluoride mouth rinses, professionally applied topical fluoride, and some foods and beverages.[18]

Fluoride Toothpaste

Fluoride toothpaste has consistently been proven to provide a caries-preventive effect for individuals of all ages.[15,19] In the United States, the fluoride concentration of over-the-counter toothpaste ranges from 1000 to 1100 ppm. In some other countries, toothpastes containing 1500 ppm of fluoride are available. A 1-inch (1-g) strip of toothpaste translates to 1 or 1.5 mg of fluoride, respectively. A pea-sized amount of toothpaste is approximately one-quarter of an inch. Therefore, a pea-sized amount of toothpaste containing 1000/1100 ppm of fluoride would have approximately 0.25 mg of fluoride, and the same amount of toothpaste containing 1500 ppm of fluoride would have approximately 0.38 mg of fluoride. Most fluoride toothpaste in the United States contains sodium fluoride, sodium monofluorophosphate, or stannous fluoride as the active ingredient. Parents should supervise children younger than 8 years to ensure the proper amount of toothpaste and effective brushing technique. Children younger than 6 years are more likely to ingest some or all of the toothpaste used. Ingestion of excessive amounts of fluoride can increase the risk of fluorosis. This excess can be minimized by limiting the amount of toothpaste used and by storing toothpaste where young children cannot access it without parental help.

Use of fluoride toothpaste should begin with the eruption of the first tooth. When fluoride toothpaste is used for children younger than 3 years, it is recommended that the amount be limited to a smear or grain of rice size (about one-half of a pea). Once the child has turned 3 years of age, a pea-sized amount of toothpaste should be used.[20,21] Young children should not be given water to rinse after brushing because their instinct is to swallow. Expectorating without rinsing will both reduce the amount of fluoride swallowed and leave some fluoride in the saliva, where it is available for uptake by the dental plaque. Parents should be strongly advised to supervise their child's use of fluoride toothpaste to avoid overuse or ingestion.

High-concentration toothpaste (5000 ppm) is available by prescription only. The active ingredient in this toothpaste is sodium fluoride. This agent can be recommended for children 6 years and older and adolescents who are at high risk of caries and who are able to expectorate after brushing. Dentists may also prescribe this agent for adolescents who are undergoing orthodontic treatment, as they are at increased risk of caries during this time.[22]

Fluoride Varnish

Fluoride varnish is a concentrated topical fluoride that is applied to the teeth by using a small brush and sets on contact with saliva. Advantages of this modality are that it is well tolerated by infants and young children, has a prolonged therapeutic effect, and can be applied by both dental and nondental health professionals in a variety of settings.[23] The concentration of fluoride varnish is 22 600 ppm (2.26%), and the active ingredient is sodium fluoride. The unit dose packaging from most manufacturers provides a specific measured amount (0.25 mg, providing 5 mg of fluoride ion). The application of fluoride varnish during an oral screening is of benefit to children, especially those who may have limited access to dental care. Current American Academy of Pediatric Dentistry recommendations for children at high risk of caries is that fluoride varnish be applied to their teeth every 3 to 6 months.[24] The 2013 ADA guideline recommends application of fluoride varnish at least every 6 months to both primary and permanent teeth in those subjects at elevated caries risk.[25] The US Preventive Services Task Force recently published a new recommendation that primary care clinicians apply fluoride varnish to the primary teeth of all infants and children starting at the age of primary tooth eruption (B recommendation).[26]

In most states, Medicaid will pay physicians for the application of fluoride varnish. Information regarding fluoride varnish application reimbursement and which states currently provide payment can be found on the AAP Web site (http://www2.aap.org/oralhealth/docs/OHReimbursementChart.pdf) and the Pew Charitable Trusts Web site (http://www.pewstates.org/research/analysis/reimbursing-physicians-for-fluoride-varnish-85899377335). Because state regulations vary regarding whether fluoride varnish must be applied within the context of a preventive care code, this information should be determined before billing.

Indications for Use

In the primary care setting, fluoride varnish should be applied to the teeth of all infants and children at least once every 6 months and preferably every 3 months, starting when the first tooth

Downloaded from www.aappublications.org/news by guest on December 28, 2018

erupts and until establishment of a dental home.

Instructions for Use

Fluoride varnish must be applied by a dentist, dental auxiliary professional, physician, nurse, or other health care professional, depending on the practice regulations in each state. It should not be dispensed to families to apply at home. Application of fluoride varnish is most commonly performed at the time of a well-child visit. Teeth are dried with a 2-inch gauze square, and the varnish is then painted onto all surfaces of the teeth with a brush provided with the varnish. Children are instructed to eat soft foods and not to brush their teeth on the evening after the varnish application to maximize the contact time of the varnish to the tooth. The following day, they should resume brushing twice daily with fluoridated toothpaste.

Over-the-Counter Fluoride Rinse

Over-the-counter fluoride rinse provides a lower concentration of sodium fluoride than toothpaste or varnish. The concentration is most commonly 230 ppm (0.05% sodium fluoride). Expert panels on this topic have concluded that over-the-counter fluoride rinses should not be recommended for children younger than 6 years because of their limited ability to rinse and spit and the risk of swallowing higher-than-recommended levels of fluoride.[27] A teaspoon (5 mL) of over-the-counter fluoride rinse contains approximately 1 mg of fluoride. For children younger than 6 years, this type of rinse provides an additional, low-dose topical fluoride application that may assist in the prevention of enamel demineralization. However, the evidence for an anticaries effect is limited. The daily use of a 0.05% sodium fluoride rinse may be of benefit for children older than 6 years who are at high risk of dental caries; however, there is no additional benefit beyond daily use of fluoridated toothpaste for children at low risk of caries.[28,29]

Dietary Fluoride Supplements

Dietary fluoride supplements should be considered for children living in communities in which the community water is not fluoridated or who drink well water that does not contain fluoride.[26] Because there are many sources of fluoride in the water supply and in processed food, it is essential that all potential sources of fluoride be assessed before prescribing a dietary supplement, including consideration of differing environmental exposures (eg, dual homes, child care). As a general guideline, if the primary source of water is fluoridated tap or well water, the child will not require fluoride supplementation, even if he or she primarily drinks bottled water, because the teeth are exposed to fluoride through cooking and brushing. The risk of fluorosis is high if fluoride supplements are given to a child consuming fluoridated water.[30] Information about the fluoridation levels in many community water systems can be found on the CDC Web site entitled My Water's Fluoride (http://apps.nccd.cdc.gov/MWF/Index.asp). Not all communities report this information to the CDC; therefore, it may be necessary to contact the local water department to determine the level of fluoride in the community water. Well water must be tested for fluoride content before prescribing supplements; such testing is available in most states through the state or county public health laboratory.

Guidelines for Use

CDC recommendations regarding fluoride supplementation are provided in Table 2. Supplements can be prescribed in liquid or tablet form. Tablets are preferable for children old enough to chew, because they gain an additional topical benefit to the teeth during the chewing process. Liquid supplements are recommended for younger children and should ideally be added to water or put directly into the child's mouth. Addition of the fluoride supplement to milk or formula is not recommended because of the reduced absorption of fluoride in the presence of calcium.[31] The risk of mild fluorosis can be minimized by health care providers verifying that there are no other sources of fluoride exposure before prescribing systemic fluoride supplements.

Other Sources of Fluoride

Fluoride is present in processed foods and beverages and may be naturally occurring in some areas of the country. The presence of fluoride in juices and carbonated beverages does not counteract the cariogenic nature of these beverages.

Reconstitution of Infant Formula

In a study of infant feeding practices, 70% to 75% of mothers who fed their infants formula used tap water to reconstitute the powdered formula.[32] According to CDC data from 2012, approximately 67% of US households using public water supplies received

TABLE 2 Fluoride Supplementation Schedule for Children

Age	Fluoride Ion Level in Drinking Water[a]		
	<0.3 ppm	0.3–0.6 ppm	>0.6 ppm
Birth–6 mo	None	None	None
6 mo–3 y	0.25 mg/d[b]	None	None
3–6 y	0.50 mg/d	0.25 mg/d	None
6–16 y	1.0 mg/d	0.50 mg/d	None

Source: Centers for Disease Control and Prevention.[43]

[a] 1.0 ppm = 1 mg/L.

[b] 2.2 mg of sodium fluoride contains 1 mg of fluoride ion.

Downloaded from www.aappublications.org/news by guest on December 28, 2018

optimally fluoridated water (between 0.7 and 1.2 ppm).[33]

ADA Evidenced-Based Clinical Recommendations

In 2011, the ADA Council on Scientific Affairs examined the existing evidence and made 2 recommendations. The first recommendation supported the continued use of optimally fluoridated water to reconstitute powdered and liquid infant formula, being cognizant of the small risk of fluorosis in permanent teeth. The second recommendation stated that if there was concern about the risk of mild fluorosis, the formula could be reconstituted with bottled (nonfluoridated) water.[18] It should be noted that most bottled water has suboptimal levels of fluoride and that fluoride content is not listed unless it is added.

Community Water Fluoridation

Community water fluoridation is the practice of adding a small amount of fluoride to the water supply. It has been heralded as 1 of the top 10 public health achievements of the 20th century by the CDC.[34] Community water fluoridation is a safe, efficient, and cost-effective way to prevent tooth decay and has been shown to reduce tooth decay by 29%.[35] It prevents tooth decay through the provision of low levels of fluoride exposure to the teeth over time and provides both topical and systemic exposure. It is estimated that every dollar invested in water fluoridation saves $38 in dental treatment costs (http://www.cdc.gov/fluoridation/benefits/). Currently, although more than 210 million Americans live in communities with optimally fluoridated water, there are more than 70 million others with public water systems who do not have access to fluoridated water.[33] The fluoridation status of a community water supply can be determined by contacting the local water department or accessing the Web site My Water's Fluoride (http://apps.nccd.cdc.gov/MWF/Index.asp).

Recommended Concentration

Water fluoridation was initiated in the United States in the 1940s. In January 2011, the US Department of Health and Human Services proposed a change to lower the optimal fluoride level in drinking water. The proposed new recommendation is 0.7 mg of fluoride per liter of water to replace the previous recommendation, which was based on climate and ranged from 0.7 mg/L in the warmest climates to 1.2 mg/L in the coldest climates.[36] The change was recommended because recent studies showed no variation in water consumption by young children based on climate and to adjust for an overall increase in sources of fluoride (foods and beverages processed with fluoridated water and fluoridated mouth rinses and toothpastes) in the American diet.

Evidence Supporting Community Water Fluoridation

Despite overwhelming evidence supporting the safety and preventive benefits of fluoridated water, community water fluoridation continues to be a controversial and highly emotional issue. Opponents express a number of concerns, all of which have been addressed or disproven by validated research. The only scientifically documented adverse effect of excess (nontoxic) exposure to fluoride is fluorosis. An increase in the incidence of mild enamel fluorosis among teenagers has been cited as a reason to discontinue fluoridation, even though this condition is cosmetic with no detrimental health outcomes. Recent opposition has sometimes centered on the question of who decides whether to fluoridate (elected/public officials or the voters), possibly reflecting a recent trend of distrust of the US government. Many opponents believe fluoridation to be mass medication and call the ethics of community water fluoridation into question, but courts have consistently held that it is legal and appropriate for a community to adopt a fluoridation program.[37] Opponents also express concern about the quality and source of fluoride, claiming that the additives (fluorosilicic acid, sodium fluoride, or sodium fluorosilicate), in their concentrated form, are highly toxic and are byproducts of the production of phosphate fertilizer and may include other contaminants, such as arsenic. The quality and safety of fluoride additives are ensured by Standard 60 of the National Sanitation Foundation/American National Standards Institute, a program commissioned by the Environmental Protection Agency (EPA), and testing has been conducted to confirm that arsenic or other substances are below the levels allowed by the EPA.[38] Finally, there have been many unsubstantiated or disproven claims that fluoride leads to kidney disease, bone cancer, and compromised IQ. More than 3000 studies or research papers have been published on the subject of fluoride or fluoridation.[39] Few topics have been as thoroughly researched, and the overwhelming weight of the evidence—in addition to 68 years of experience—supports the safety and effectiveness of this public health practice.

Naturally Occurring Fluoride in Drinking Water

The optimal fluoride level in drinking water is 0.7 to 1.2 ppm, an amount that has been proven beneficial in reducing tooth decay. Naturally occurring fluoride may be below or above these levels in some areas. Under the Safe Drinking Water Act (Pub L No. 93-523 [1974]), the EPA requires notification by the water supplier if the fluoride level exceeds 2 ppm. In areas where naturally occurring fluoride levels in drinking water exceed 2 ppm, people should consider an alternative water source or home water treatments to reduce the risk of

Downloaded from www.aappublications.org/news by guest on December 28, 2018

fluorosis in young children.[40] Well water should be tested for the level of fluoride; this testing is most commonly performed through the health department.

Fluoride Toxicity

Toxic levels of fluoride are possible, particularly in children, as a result of ingesting large quantities of fluoride supplements. The toxic dose of elemental fluoride is 5 to 10 mg of fluoride per kilogram of body weight.[41] Lethal doses in children have been calculated to be between 8 and 16 mg/kg. When prescribing sodium fluoride supplements, it is recommended to limit the quantity prescribed at one time to no more than a 4-month supply. Parents should be advised to keep fluoride products out of the reach of young children and to supervise their use.

Fluoride Removal Systems

There are a number of water treatment systems that are effective in the removal of fluoride from water,[42] including reverse osmosis and distillation. Parents should be counseled on the use of these and activated alumina filters in the home and, should they choose to use one that removes fluoride, the potential effect on their family's oral health. Commonly used home carbon filters (eg, Brita [Brita LP, Oakland, California], PUR [Kaz USA, Incorporated, Southborough, MA]) do not remove fluoride. These can be recommended for families who are concerned about heavy metals or other impurities in their home water supply but who wish to retain the benefits of fluoridated water.

SUGGESTIONS FOR PEDIATRICIANS

1. Know how to assess caries risk. As recommended by the AAP's *Oral Health Risk Assessment Timing and Establishment of the Dental Home*[6] and *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents*,[7] pediatricians should perform oral health risk assessments on all children at preventive visits beginning at 6 months of age. An oral health risk assessment tool has been developed by the AAP/Bright Futures and endorsed by the National Interprofessional Initiative on Oral Health. This tool can be accessed at http://www2.aap.org/oralhealth/RiskAssessmentTool.html. There are currently no validated early childhood caries risk assessment tools. The aforementioned tool is a guide to help clinicians counsel patients about oral health and best identify risk.
2. Know how to assess a child's exposure to fluoride and determine the need for topical or systemic supplements.[43]
3. Understand indications for fluoride varnish and how to provide it. Fluoride varnish can be a useful tool in the prevention of early childhood caries. Additional training on oral screenings, fluoride varnish indications and application, and office implementation can be found in the Smiles for Life Curriculum Course 6: Caries Risk Assessment, Fluoride Varnish and Counseling[44] at www.smilesforlifeoralhealth.org. In addition, the AAP Children's Oral Health Web site is a resource for oral health practice tools (http://www2.aap.org/oralhealth/PracticeTools.html).
4. Advocate for water fluoridation in the local community. Public water fluoridation is an effective and safe method of protecting the most vulnerable members of our population from dental caries. Pediatricians are encouraged to advocate on behalf of public water fluoridation in their communities and states. For additional information and water fluoridation facts and detailed questions and answers, see http://www.ada.org/sections/newsAndEvents/pdfs/fluoridation_facts.pdf, http://www.cdc.gov/fluoridation/, and http://www.ilikemyteeth.org.

LEAD AUTHORS

Melinda B. Clark, MD, FAAP
Rebecca L. Slayton, DDS, PhD

SECTION ON ORAL HEALTH EXECUTIVE COMMITTEE, 2011–2012

Adriana Segura, DDS, MS, Chairperson
Suzanne Boulter, MD, FAAP
Melinda B. Clark, MD, FAAP
Rani Gereige, MD, FAAP
David Krol, MD, MPH, FAAP
Wendy Mouradian, MD, FAAP
Rocio Quinonez, DMD, MPH
Francisco Ramos-Gomez, DDS
Rebecca L. Slayton, DDS, PhD
Martha Ann Keels, DDS, PhD, Immediate Past Chairperson

LIAISONS

Joseph Castellano, DDS – *American Academy of Pediatric Dentistry*
Sheila Strock, DMD, MPH – *American Dental Association Liaison*

STAFF

Lauren Barone, MPH

REFERENCES

1. US Department of Health and Human Services. *Oral Health in America: A Report of the Surgeon General.* Rockville, MD: National Institute of Dental and Craniofacial Research, National Institutes of Health; 2000
2. Mealey BL. Periodontal disease and diabetes. A two-way street. *J Am Dent Assoc.* 2006;137(suppl):26S–31S

Downloaded from www.aappublications.org/news by guest on December 28, 2018

3. Tomar SL, Reeves AF. Changes in the oral health of US children and adolescents and dental public health infrastructure since the release of the Healthy People 2010 Objectives. *Acad Pediatr*. 2009;9(6):388–395
4. Dye BA, Thornton-Evans G. Trends in oral health by poverty status as measured by Healthy People 2010 objectives. *Public Health Rep*. 2010;125(6):817–830
5. Stearns SC, Rozier RG, Kranz AM, Pahel BT, Quiñonez RB. Cost-effectiveness of preventive oral health care in medical offices for young Medicaid enrollees. *Arch Pediatr Adolesc Med*. 2012;166(10):945–951
6. Hale KJ; American Academy of Pediatrics Section on Pediatric Dentistry. Oral health risk assessment timing and establishment of the dental home. *Pediatrics*. 2003;111(5 pt 1):1113–1116
7. American Academy of Pediatrics, Bright Futures Steering Committee. Promoting oral health. In: Hagan JF, Shaw JS, Duncan PM, eds. *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents*. 3rd ed. Elk Grove Village, IL: American Academy of Pediatrics; 2008:155–168
8. American Academy of Pediatrics. Profile of pediatric visits: AAP analysis of the 2004–2007 Medical Expenditure Panel Survey and 2004–2007 National Ambulatory Medical Care Survey. Available at: www.aap.org/en-us/professional-resources/practice-support/financing-and-payment/Billing-and-Payment/Documents/Profile_Pediatric_Visits.pdf. Accessed May 20, 2014
9. Lynch RJ, Navada R, Walia R. Low-levels of fluoride in plaque and saliva and their effects on the demineralisation and remineralisation of enamel; role of fluoride toothpastes. *Int Dent J*. 2004;54(5 suppl 1):304–309
10. Featherstone JD. Prevention and reversal of dental caries: role of low level fluoride. *Community Dent Oral Epidemiol*. 1999;27(1):31–40
11. Aoba T, Fejerskov O. Dental fluorosis: chemistry and biology. *Crit Rev Oral Biol Med*. 2002;13(2):155–170
12. DenBesten PK. Biological mechanisms of dental fluorosis relevant to the use of fluoride supplements. *Community Dent Oral Epidemiol*. 1999;27(1):41–47
13. Ismail AI, Bandekar RR. Fluoride supplements and fluorosis: a meta-analysis. *Community Dent Oral Epidemiol*. 1999;27(1):48–56
14. Levy SM, Broffitt B, Marshall TA, Eichenberger-Gilmore JM, Warren JJ. Associations between fluorosis of permanent incisors and fluoride intake from infant formula, other dietary sources and dentifrice during early childhood. *J Am Dent Assoc*. 2010;141(10):1190–1201
15. Adair SM, Bowen WH, Burt BA, et al; Centers for Disease Control and Prevention. Recommendations for using fluoride to prevent and control dental caries in the United States. *MMWR Recomm Rep*. 2001;50(RR-14):1–42
16. Everett ET. Fluoride's effects on the formation of teeth and bones, and the influence of genetics. *J Dent Res*. 2011;90(5):552–560
17. Beltrán-Aguilar ED, Barker L, Dye BA. Prevalence and severity of dental fluorosis in the United States, 1999-2004. *NCHS Data Brief*. 2010;(53):1–8
18. Berg J, Gerweck C, Hujoel PP, et al; American Dental Association Council on Scientific Affairs Expert Panel on Fluoride Intake From Infant Formula and Fluorosis. Evidence-based clinical recommendations regarding fluoride intake from reconstituted infant formula and enamel fluorosis: a report of the American Dental Association Council on Scientific Affairs. *J Am Dent Assoc*. 2011;142(1):79–87
19. Wong MC, Clarkson J, Glenny AM, et al. Cochrane reviews on the benefits/risks of fluoride toothpastes. *J Dent Res*. 2011;90(5):573–579
20. Wright JT, Hanson N, Ristic H, et al. Fluoride toothpaste efficacy and safety in children younger than six years of age: a systematic review. *J Am Dent Assoc*. 2014;145(2):182–189
21. Scottish Intercollegiate Guidelines Network. Prevention and Management of Dental Decay in the Pre-School Child. A National Guideline. Edinburgh, Scotland: Scottish Intercollegiate Guidelines Network; 2005. Available at: www.sign.ac.uk/pdf/qrg83.pdf. Accessed May 20, 2014
22. Al-Mulla A, Karlsson L, Kharsa S, Kjellberg H, Birkhed D. Combination of high-fluoride toothpaste and no post-brushing water rinsing on enamel demineralization using an in-situ caries model with orthodontic bands. *Acta Odontol Scand*. 2010;68(6):323–328
23. American Dental Association Council on Scientific Affairs. Professionally applied topical fluoride: evidence-based clinical recommendations. *J Am Dent Assoc*. 2006;137(8):1151–1159
24. American Academy of Pediatric Dentistry. Guideline on Fluoride Therapy. Chicago, IL: American Academy of Pediatric Dentistry; 2013. Available at: www.aapd.org/media/Policies_Guidelines/G_fluoridetherapy.pdf. Accessed May 20, 2014
25. Weyant RJ, Tracy SL, Anselmo TT, et al; American Dental Association Council on Scientific Affairs Expert Panel on Topical Fluoride Caries Preventive Agents. Topical fluoride for caries prevention: executive summary of the updated clinical recommendations and supporting systematic review [published correction appears in *J Am Dent Assoc*. 2013;144(12):1335]. *J Am Dent Assoc*. 2013;144(11):1279–1291
26. US Preventive Services Task Force. Prevention of Dental Caries in Children From Birth Through Age 5 Years: US Preventive Services Task Force Recommendation Statement. Rockville, MD: US Preventive Services Task Force; 2014. Available at: www.uspreventiveservicestaskforce.org/uspstf/uspsdnch.htm. Accessed May 20, 2014
27. Maternal and Child Health Bureau. Expert Panel. Topical Fluoride Recommendations for High-Risk Children: Development of Decision Support Matrix. Washington, DC: Altarum Institute; 2007. Available at: www.mchoralhealth.org/PDFs/TopicalFluorideRpt.pdf. Accessed May 20, 2014
28. Adair SM. Evidence-based use of fluoride in contemporary pediatric dental practice. *Pediatr Dent*. 2006;28(2):133–142, discussion 192–198
29. Twetman S, Petersson L, Axelsson S, et al. Caries-preventive effect of sodium fluoride mouthrinses: a systematic review of controlled clinical trials. *Acta Odontol Scand*. 2004;62(4):223–230
30. Pendrys DG, Katz RV, Morse DE. Risk factors for enamel fluorosis in a fluoridated population. *Am J Epidemiol*. 1994;140(5):461–471
31. Buzalaf MA, Whitford GM. Fluoride metabolism. *Monogr Oral Sci*. 2011;22:20–36
32. Fein SB, Grummer-Strawn LM, Raju TN, Raju MD. Infant feeding and care practices in the United States: results from the Infant Feeding Practices Study II. *Pediatrics*. 2008;122(suppl 2):S25–S27
33. Centers for Disease Control and Prevention. Community water fluoridation. Water fluoridation statistics. Available at: www.cdc.gov/fluoridation/statistics/2012stats.htm. Accessed May 20, 2014
34. Centers for Disease Control and Prevention (CDC). Ten great public health achievements—United States, 1900-1999. *MMWR Morb Mortal Wkly Rep*. 1999;48(12):241–243
35. Community Preventive Services Task Force. Summary of Task Force Recommendations and Findings. Atlanta, GA: Community Preventive Services Task Force; 2002. Available at: www.thecommunityguide.org/oral/fluoridation.html. Accessed May 20, 2014
36. Department of Health and Human Services. HHS recommendation for fluoride concentration in drinking water for prevention of dental caries. *Fed Regist*. 2011;76(9):2383–2388

Downloaded from www.aappublications.org/news by guest on December 28, 2018

37. Burt B, Eklund S. *Dentistry, Dental Practice, and the Community*. 6th ed. St. Louis, MO: Elsevier Saunders; 2005
38. Centers for Disease Control and Prevention. Community water fluoridation. Engineering. water fluoridation additives fact sheet. Available at: www.cdc.gov/fluoridation/factsheets/engineering/wfadditives.htm. Accessed May 20, 2014
39. Cheng KK, Chalmers I, Sheldon TA. Adding fluoride to water supplies. *BMJ*. 2007;335(7622):699–702
40. ADA Division of Communications. For the dental patient: infants, formula and fluoride. *J Am Dent Assoc*. 2007;138(1):132
41. Shulman JD, Wells LM. Acute fluoride toxicity from ingesting home-use dental products in children, birth to 6 years of age. *J Public Health Dent*. 1997;57(3):150–158
42. Van Winkle S, Levy SM, Kiritsy MC, Heilman JR, Wefel JS, Marshall T. Water and formula fluoride concentrations: significance for infants fed formula. *Pediatr Dent*. 1995;17(4):305–310
43. Centers for Disease Control and Prevention. Recommendations for using fluoride to prevent and control dental caries in the United States. *MMWR Recomm Rep*. 2001;50(RR-14):1–42 www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm. Accessed May 20, 2014
44. Douglass AB, Clark MB, Maier R, et al. *Smiles for Life: A National Oral Health Curriculum*. 3rd ed. Leawood, KS: Society of Teachers of Family Medicine; 2010. Available at: www.smilesforlifeoralhealth.com. Accessed May 20, 2014

Downloaded from www.aappublications.org/news by guest on December 28, 2018

Fluoride Use in Caries Prevention in the Primary Care Setting
Melinda B. Clark, Rebecca L. Slayton and SECTION ON ORAL HEALTH
Pediatrics 2014;134;626
DOI: 10.1542/peds.2014-1699 originally published online August 25, 2014;

Updated Information & Services	including high resolution figures, can be found at: http://pediatrics.aappublications.org/content/134/3/626
References	This article cites 31 articles, 9 of which you can access for free at: http://pediatrics.aappublications.org/content/134/3/626#BIBL
Subspecialty Collections	This article, along with others on similar topics, appears in the following collection(s): **Current Policy** http://www.aappublications.org/cgi/collection/current_policy **Dentistry/Oral Health** http://www.aappublications.org/cgi/collection/dentistry:oral_health_sub **Section on Oral Health** http://www.aappublications.org/cgi/collection/section_on_pediatric_dentistry_and_oral_heath
Permissions & Licensing	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: http://www.aappublications.org/site/misc/Permissions.xhtml
Reprints	Information about ordering reprints can be found online: http://www.aappublications.org/site/misc/reprints.xhtml

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

Downloaded from www.aappublications.org/news by guest on December 28, 2018

PEDIATRICS®
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Fluoride Use in Caries Prevention in the Primary Care Setting

Melinda B. Clark, Rebecca L. Slayton and SECTION ON ORAL HEALTH

Pediatrics 2014;134;626
DOI: 10.1542/peds.2014-1699 originally published online August 25, 2014;

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://pediatrics.aappublications.org/content/134/3/626

Pediatrics is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. Pediatrics is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2014 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 1073-0397.

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

Downloaded from www.aappublications.org/news by guest on December 28, 2018

CHDP Dental Training:

Fluoride Varnish

April 2019

County of Los Angeles Public Health

Child Health & Disability Prevention (CHDP) Program
Oral Health Subcommittee
Adapted by Los Angeles County CHDP Program
Fluoride Varnish Committee

http://www.dhcs.ca.gov/services/chdp/Pages/FluorideVarnish.aspx

Training Objectives

County of Los Angeles Public Health

- Recognize the importance of providing Fluoride Varnish (FV) in the medical office
- Understand Steps to Fluoride Varnish application
- Provide Patient Education after application
- Demonstrate knowledge of Fluoride Varnish application

2

IMPORTANCE OF FLUORIDE VARNISH

- What are Dental Caries?
- What is Fluoride/Fluoride Varnish?
- Why CHDP Providers?

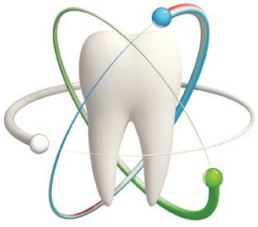
What are Dental Caries?

- Dental caries is an infectious disease in which acid produced by bacteria dissolves tooth enamel (demineralization).
- Can progress to local/systemic infections & death (rare).
- Most common chronic childhood disease in the U.S.
- Early childhood caries is the single greatest risk factor for caries in permanent teeth.

http://pediatrics.aappublications.org/content/134/3/626

What is Fluoride?

- Naturally occurring element
- Promotes re-mineralization of tooth enamel
- Inhibits bacteria's ability to produce acid by blocking bacterial enzymes
- Helps prevent dental decay



5

What is Fluoride Varnish?

- A concentrated topical fluoride that is applied to teeth by using a small brush and sets on contact with saliva
- 1 application can reduce decay risk up to 59%*
- Fluoride varnish is recommended every 3-6 months for children at high risk of caries (CHDP population)

For more information: * https://www.ncbi.nlm.nih.gov/books/NBK202094/

6

Why CHDP Providers?

- Medical providers see young children **earlier** and **more frequently** than by dentists
- **Low income,** young children are at higher risk for dental decay*
- Medical providers can help **prevent tooth decay** by applying fluoride varnish

For more information: * www.ncbi.nlm.nih.gov/pmc/articles/PMC2257982/?tool=pubmed

7

Fluoride Varnish Facts

- Fluoride Varnish Considerations
- Which Teeth Benefit?
- Frequency of Application
- Who Can Apply?

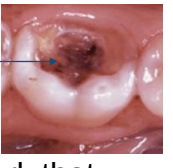
8

Fluoride Varnish Considerations

- Concerns about Fluorosis
  - Per American Dental Association, fluorosis is when young children consume too much fluoride from any source over long periods when teeth are developing under the gums (Mouthhealthy.org)
  - After 8 years of age, there is no further risk of fluorosis (except for the third molars).
- Concurrent use of FV with other types of Fluoride
  - Fluoride varnish is recommended even if other types of fluoride are being used, including:
    - Systemic fluoride (e.g. water fluoridation, tablets or drops)
    - Other topical fluorides (e.g. fluoridated toothpaste, mouth rinses, foam or gel trays)

Fluoride Varnish Considerations

- Allergies/Contraindications:
  - Allergy to colophony (resin from conifers) – *rare*
  - Ulcerative gingivitis and/or stomatitis
  - Pulp exposure or deep decay



- Trauma Informed Care (TIC)
  - Organizational structure and treatment framework that involves understanding, recognizing, and responding to the effects of all types of trauma. (SAMHSA*)
  - Practical Tools include allowing material things of comfort; explaining steps of exam or procedure and letting them know why; having culturally and age appropriate language/visual aides
- Special Needs and/or Developmental Delay

*Substance Abuse and Mental Health Services Administration

Fluoride Varnish - Which Teeth Benefit?

No Visible Decay
but may have high risk factors

Preventable with fluoride varnish and good home care

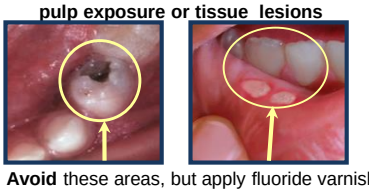
Beginning Decay
white chalky decalcification near gum line

Reversible with fluoride varnish and improved home care to inhibit progression of caries

Advanced Decay
destroyed enamel

Irreversible, however with fluoride varnish decay progression is inhibited
~ Dental treatment needed ASAP ~

DO NOT Apply to Teeth with
pulp exposure or tissue lesions



Avoid these areas, but apply fluoride varnish to all other teeth in the mouth.
~Immediate treatment needed for severe decay~

11

Frequency of Application

- Apply during a well child exam, follow-up visit, or stand-alone appointment.
- Fluoride varnish should be applied every 3-6 months starting at tooth emergence.
- Medical offices can be reimbursed for FV by Medi-Cal 3x in a 12 month period for children under 6yrs of age*

*http://www.dhcs.ca.gov/services/chdp/Documents/Letters/chdppin0608.pdf

12

Fluoride Varnish - Who Can Apply?

County of Los Angeles Public Health

- Medical Office Setting
  - MD
  - Trained nurses and assistants
    - With MD/NP order *

- Community Setting*
  (School, health fair or government program)
  - Any trained person
    - Under a doctor's (or dentist's) prescription
    - Following doctor's (or dentist's) protocol

* http://www.dhcs.ca.gov/services/chdp/Documents/CHDPDental/FVAB667.pdf

13

County of Los Angeles Public Health

Fluoride Varnish - Application

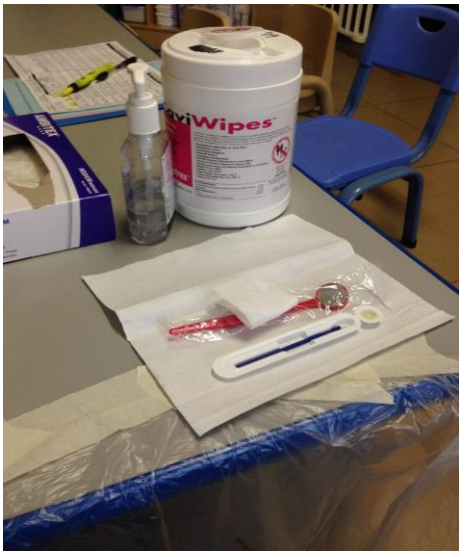
14

Fluoride Varnish Application

County of Los Angeles Public Health

Supplies Needed

- Gauze
- Gloves
- Varnish Packet
- Tray or napkin(s)
- Hand sanitizer
- Optional
  - Mouth Mirror
- Post Procedure
  - FV Brochure



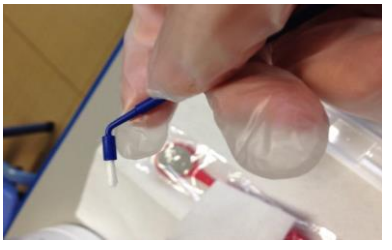
15

Fluoride Varnish Application

County of Los Angeles Public Health

Fluoride Varnish Preparation:

1. OPEN the packet of varnish
2. PUT on gloves
3. STIR varnish with applicator
4. POSITION the child securing arms and legs
5. WRAP the gauze around finger



16

Fluoride Varnish Application

County of Los Angeles Public Health

- Step 1: Dry teeth with gauze by section or quadrant

- Step 2: Apply fluoride varnish to all tooth surfaces in that area

17

Fluoride Varnish Application

County of Los Angeles Public Health

- Step 3: Repeat in each section until all teeth have been painted with varnish

-Varnish immediately sets in contact with saliva

18

Fluoride Varnish Online Trainings

Videos

American Academy of Pediatrics Television
http://www.youtube.com/watch?v=zNOlGS1ggSg&feature=player

Smiles for Life University of Connecticut
http://www.youtube.com/watch?v=cV5OmL7C8K4&feature=player

Modules

Maryland's Mouths Matter Module 4
http://www.mchoralhealth.org/flvarnish/mod4_0.html

Smiles for Life Training: Course #6
https://www.smilesforlifeoralhealth.org/buildcontent.aspx?pagekey=66053&lastpagekey=64595&userkey=13873164&sessionkey=4170798&tut=584&customerkey=84&custsitegroupkey=0

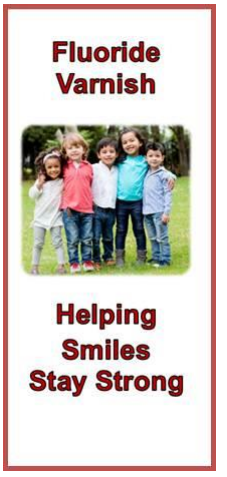
Resources & Education

- Patient Education
- Provider Resources

Patient Education After FV Application

- No water restrictions after application
- Avoid crunchy, chewy, and hot foods/ drinks for the rest of the day
- Do not brush/floss until the next day
- Fluoride Varnish may leave a light color coating that will be brushed off the next day

BROCHURE



http://www.dhcs.ca.gov/formsandpubs/publications/Pages/CHDPPubs.aspx

Patient Education (cont.)

- Fluoride Varnish does not take the place of:
  - A dental visit
  - Brushing with fluoride toothpaste twice a day
  - Limiting sweets or sugary snacks
  - Drinking fluoridated tap water

Provider Resources- Billing

- Fee-for-Service Medi-Cal
  - Reimbursable 3 times (*in a 12 month period*) for children under 6yrs of age
  - Billing code: CPT 99188*
  - Reimbursement - $18 per application
- Managed Care Medi-Cal
  - Reimbursement varies
  - Contact individual plan

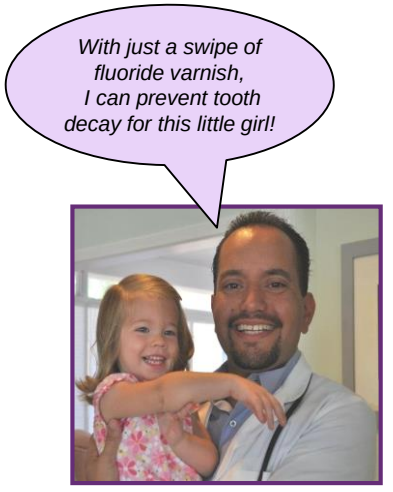
*http://files.medi-cal.ca.gov/pubsdoco/rates/rates_information.asp?num=22&first=94799&last=99600

Provider Resources- How to Order

- Fluoride Varnish Kits:
  - Center for Oral Health 909-469-8300
  - https://centerfororalhealth.org/store/
  - Plak Smacker 800-558-6684
  - https://www.plaksmacker.com/Catalog/varnish-america
- Dental supply companies:
  - Patterson Dental Supply 1-800-672-1409
  - Henry Schein 1-800-372-4346

Key Points

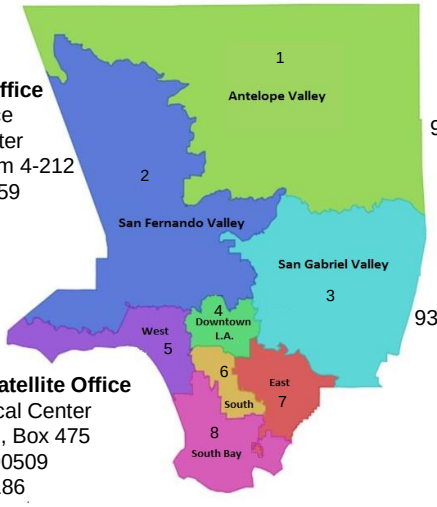
- Young and low income children are at the HIGHEST risk for dental decay.
- Medical providers see young children EARLIER & more FREQUENTLY than dental providers, which positions them at the front line against oral disease.



25

County of Los Angeles

Southwest Regional Office
MLK Jr., Multi-Service Ambulatory Care Center
12012 S. Compton Ave., Rm 4-212
Los Angeles, CA 90059
(424) 338-1186



North Regional Office
9320 Telstar Ave., Suite 226
El Monte, CA 91731
(855) 272-6820

East Regional Office
9320 Telstar Ave., Suite 226
El Monte, CA 91731
(626) 569-3750

Southwest Regional Satellite Office
Harbor-UCLA Medical Center
1000 W. Carson St., Box 475
Torrance, CA 90509
(424) 338-1186

For local CHDP contact information:
http://publichealth.lacounty.gov/cms/chdp.htm

26

Medical Providers

CHDP

Dental Providers

Together we can stop the epidemic of oral disease!

Parents/Caregivers

Individuals

CHDP Program information: www.dhcs.ca.gov/services/chdp/Pages/CountyOffices.aspx

27

Questions?

28

STEPS TO FLUORIDE VARNISH APPLICATION

Step 1: Dry teeth with gauze by section or quadrant

Step 2: Apply fluoride varnish to all tooth surfaces in that area

---

Step 3: Repeat in each section until all teeth have been painted with varnish

Varnish immediately sets in contact with saliva

Rev. 12/31/18

Tips to help fluoride varnish stay on the teeth all day…

- ☑ It's ok to drink water.
- ☑ Don't give foods that are hard, crunchy, or chewy for the rest of the day.
- ☑ Give cold or warm (not hot) foods or liquids.
- ☑ Don't brush or floss child's teeth that day or night.
- ☑ Brush and floss teeth beginning the next morning.

Remember

- ➢ Baby teeth are important.
- ➢ Brush your child's teeth every morning and night with a tiny dab of fluoride toothpaste.
- ➢ Limit sugary snacks, drinks, and juices. Offer water often. Do not give soda.
- ➢ Choose a dental office for your child's "Dental Home."
- ➢ Make your child's first dental visit by age one.
- ➢ Begin regular visits every 6 months or as advised by the dentist.

For more information, call your local CHDP program:

California Department of Health Care Services
Child Health and Disability Prevention (CHDP) Program
Oral Health Subcommittee

Revised 7/16/2018

Fluoride Varnish

Helping Smiles Stay Strong

Fluoride Varnish

Ask your medical doctor to apply fluoride varnish to your child's teeth today!

- Is a protective coating brushed on the teeth to prevent tooth decay
- Is safe, quick, and doesn't hurt
- Helps even if using fluoride drops, tablets, rinses, toothpaste, or drinking fluoridated water
- Can be applied at well-child visits, other doctor appointments, and the dental office
- Works best when applied 2 to 5 times a year
- Can be applied as soon as the first tooth comes in
- May appear yellow on the teeth – brushing the next morning will return teeth to their normal color
- Is also effective for children with special health care needs

COUNTY OF LOS ANGELES – DEPARTMENT OF PUBLIC HEALTH
Child Health and Disability Prevention (CHDP) Program
Personnel Roster

CHDP ADMINISTRATION HEADQUARTERS

CHDP Administration **9320 Telstar Ave., Suite 233** **El Monte, CA 91731** **(626) 569-6020** **(800) 993-2437** **FAX (626) 569-9350** Internet Address: http://publichealth.lacounty.gov/cms/CHDP.htm **Yasangi Jayasinha MD** **Medical Director** **(626) 569-6019** Ana Alatorre, Secretary (626) 569-6020 **Cheri Stabell, MPH** **Assistant Director** **(626) 569-6028** Sandra Montes, STC (626) 569-6021 Irene Atilano, STC (626) 569-3780	**Nursing** **Diane Sanchez** **Interim CMS Nursing Director** **(626) 569-6006** **Daniela Dominguez, PHN** **Program Specialist** **(626) 569-6029** **Provider Desk** Rosamaria Fine, AAII (626) 569-6047 Lourdes Hernandez, STC (626) 569-6045 Gloria Aguilar, STC (626) 569-6038 **EPSDT Unit** Gai Le, ITC (626) 569-6039 Yolanda Hurtado, ITC (626) 569-6040	**Health Education/Nutrition** Health Ed Coordinator – Vacant Sorina Sambula, MPH, HE (626) 569-6022 Cinthiya Ather, MPH, HE (626) 569-6036 Parvaneh Lalezari, MS, RD Nutritionist (626) 569-6037 **Clerical Staff** Romy Gallegos, IC (626) 569-6033 Elvira Ordonez, IC (626) 569-6046

REGIONAL OFFICE	NURSING	CLERICAL SUPPORT
East Regional Office (05) **9320 Telstar Ave., Suite 226** **El Monte, CA 91731** **(626) 569-3750** **Fax (626) 571-4580**	**Carol Van, PHNS 626-569-3770** Maribel Castillon, **PHN** 626-569-3752 Norlizza Armas, **PHN** 626-569-3763 Gladys Lucero, **PHN** 626-569-3762 Lynn Tobola, **PHN** 626-569-3756 Kymberly Aoki, **PHN** 626-569-3760	Tracy Carter, **STC** 626-569-3775 Vacant, **ITC** 626-569-6416
North Regional Office (04) **9320 Telstar Ave., Suite 226** **El Monte, CA 91731** **(855) 272-6820** **Fax (855) 871-0380**	**Carol, Van PHNS 626-569-3770** Joenilyn Navarro, **PHN** 747-210-8664 Myra Valencia, **PHN** 747-210-8663 Bethany Lorca, **PHN** 747-210-8662	Tracy Carter, **STC** 626-569-3775 Kimberly Mendez, **ITC** 626-569-6415
Southwest Regional Office (06) **Martin Luther King, Jr.** **Interns & Residents Bldg.** **12012 Compton Ave., Rm4-212** **Los Angeles, CA 90059** **(424) 338-1186** **Fax (310) 223-0090**	**Luis Avitia, PHNS 424-338-1187** Eiko Williams, **PHN** 424-338-1195 Rosheda Samuel, **PHN** 424-338-1194 Tongia Pinner, **PHN** 424-338-1192 Aineeh Montano, **PHN** 424-338-1193	Dina Meza, **STC** 424-338-1199 Veronica Calderon, **ITC** 424-338-1197 Zonia Lopez, **ITC** 424-338-1198
Southwest Regional Satellite Off **Harbor UCLA Medical Center** **1000 W. Carson Street, Box 475** **Torrance, CA 90509** **(424) 306-8480** **Fax (310) 212-5267**	**Luis Avitia, PHNS 424-306-8484** Carolie Arendain, **PHN** 424-306-8486 Maria Lewis, **PHN** 424-306-8483 Tressa Bobb, **PHN** 424-306-8485 Emy Murakami, **PHN** 424-306-8482	Dina Meza, **STC**