Guideline on Fluoride Therapy

Originating Committee
Liaison with Other Groups Committee

Review Council
Council on Clinical Affairs

Adopted
1967

Revised
1978, 1995, 2000, 2003, 2007

Reaffirmed
1972, 1977

Purpose
The American Academy of Pediatric Dentistry (AAPD) intends this guideline to help practitioners and parents make decisions concerning appropriate use of fluoride as part of the comprehensive oral health care for infants, children, adolescents, and persons with special health care needs.

Methods
A thorough review of the scientific literature pertaining to the use of systemic and topical fluoride was completed to revise and update this guideline. A MEDLINE search was conducted using the terms "fluoride", "fluoridation", "acidulated phosphate fluoride", "fluoride varnish", "fluoride therapy", and "topical fluoride". Expert opinions and best current practices also were relied upon for this guideline.

Background
Use of fluorides for the prevention and control of caries is documented to be both safe and highly effective.[1-5] Fluoride has several caries-protective mechanisms of action, including enamel remineralization and altering bacterial metabolism to help prevent caries.[6] Optimizing fluoride levels in water supplies is an ideal public health measure because it is effective and inexpensive and does not require conscious daily cooperation from individuals.[4,7-10] Daily fluoride exposure through water supplies and monitored use of fluoride toothpaste can be effective preventive procedures. Determination of dietary sources of fluoride before prescribing supplements can help reduce intake of excess fluoride.[11-15] Sources of dietary fluoride may include drinking water from home, day care, and school; beverages such as soda[12], juice[15], and infant formula[11,16,17]; prepared food[18]; and toothpaste. Infant formulas (powdered or liquid) and water bottled specifically for infants have varying concentrations of fluoride.[16-24] Fluorosis has been associated with cumulative fluoride intake during enamel development, with the severity dependant on the dose, duration, and timing of intake.[4]

Professionally-applied topical fluoride treatments are efficacious in reducing caries in children with moderate or high caries risk.[5,7,8,25-32] Two percent sodium fluoride (NaF; 9000 ppm)[1], 1.23% acidulated phosphate fluoride (APF; 12,300 ppm) solution or gel [1,33-44], and 5% sodium fluoride varnish (NaFV; 22,500ppm)[1,41,43,45-54] are the most commonly used agents for professionally applied fluoride treatments.[1,45] Other fluoride preparations (eg, varying concentrations, stannous fluoride, silver diamine fluoride) are used less commonly or not available in the US.[55,56] Topical foam fluoride products are marketed with the recommended treatment times of less than 4 minutes, but the majority of studies suggest that 4-minute applications are more efficacious.[1,8,36,57,58] Children at higher caries risk may require additional or more frequent fluoride therapies.[7,59,60] If an individual's caries risk level is uncertain, treating this person as high risk is prudent until further experience allows a more accurate assessment.[4]

Recommendations
Systemically administered fluoride supplements
Fluoride supplements should be considered for all children drinking fluoride-deficient (<0.6 ppm) water. After determining the fluoride level of the water supply or supplies (either through contacting public health officials or water analysis), evaluating other dietary sources of fluoride, and assessing the child's caries risk, the daily fluoride supplement dosage can be determined using the Dietary Fluoride Supplementation Schedule (Table 1). To optimize benefits of systemic fluoride

Table 1. DIETARY FLUORIDE SUPPLEMENTATION SCHEDULE

Age	<0.3 ppm F	0.3-0.6 ppm F	0.3-0.6 ppm F
Birth-6 months	0	0	0
6 mo-3 years	0.25 mg	0	0
3-6 years	0.50 mg	0.25 mg	0
6 y up to at least 16 years	1.00 mg	0.50 mg	0

supplements, the child should be encouraged to maximize topical exposure of the erupted dentition (ie, chew or suck fluoride tablets).[1]

Professionally-applied topical fluoride treatment

Professional topical fluoride treatments should be based on caries-risk assessment.[1,4,5,7,60] A pumice prophylaxis is not an essential prerequisite to this treatment.[61] Appropriate precautionary measures should be taken to prevent swallowing of any professionally-applied topical fluoride. Children at moderate caries risk should receive a professional fluoride treatment at least every 6 months; those with high caries risk should receive greater frequency of professional fluoride applications (ie, every 3-6 months).[7,32,59,62-67] Ideally, this would occur as part of a comprehensive preventive program in a dental home. When a dental home cannot be established for individuals with increased caries risk, periodic applications of fluoride varnish by trained non-dental healthcare professionals may be effective in reducing the incidence of early childhood caries.[50-54,68,69]

Fluoride-containing products for home use

The use of fluoridated toothpaste should be recommended twice daily as a primary preventive procedure.[1,70] Parents should be counseled on their child's caries risk and frequency and supervision of tooth-brushing. Dispensing no more than a "pea-size" amount of toothpaste is recommended for young children.[71]

Additional fluoride therapy should be considered for children at high risk for caries.[1,4,7,60] Home fluoride programs using fluoride mouth rinses or brush-on fluoride gels should be considered for use by school-aged child at high risk for caries.

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