Alberta Health Services

Fluoride Products for Oral Health: Professional Information

Albertans without water fluoridation and without drinking water that has natural fluoride around 0.7 parts per million (ppm) may benefit from other forms of fluoride that prevent tooth decay. This information compares fluoride products that may lower the risk of tooth decay. Combined use with fluoridated water offers protection greater than any of these products used alone. Ask your local health authority about drinking water fluoride levels.

Fluoride Toothpaste (Grade I evidence; recommendation A)	
Product	Fluoride toothpaste in Canada has 1,000–1,100 ppm fluoride.
Use	Brush teeth at least once per day, but more frequent use offers additional protection. Fluoride in toothpaste remineralizes enamel, reduces ability of plaque bacteria to produce acid, and also increases the concentration of fluoride in saliva.
Recommendations	Children, adolescents, and adults should brush twice a day with fluoride toothpaste – after getting up in the morning and before going to bed. **Advice for Parents** Children aged 8 years and younger are at risk of dental fluorosis. Follow these recommendations to reduce the risk. • Seek advice from a dentist* or other health care professional before introducing fluoride toothpaste to children less than 3 years of age; if the child under age 3 years is at risk of tooth decay, use only a grain-of-rice size amount of fluoride toothpaste. • Place only a small pea-size amount of fluoride toothpaste on a child's toothbrush after age 3 years. • Supervise brushing to discourage swallowing toothpaste. Teach the child to spit out all excess toothpaste after brushing.

*see pages 7 and 8 for risk assessment protocol

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Fluoride Mouthrinse (Grade I evidence; recommendation A)	
Product	Fluoride mouthrinse is a concentrated solution for daily or weekly use. Over-the-counter solutions of 0.05% sodium fluoride (230 ppm fluoride) for daily rinsing are available for people older than 6 years of age. Solutions of 0.2% sodium fluoride (920 ppm fluoride) are typically used in supervised school-based weekly rinsing programs, and may be available for individual therapy.
Use	Rinses are used daily or weekly. The fluoride from mouthrinse is retained in dental plaque and saliva to help prevent tooth decay.
Availability	Mouthrinses for home use can be purchased over-the-counter at supermarkets or the pharmacy. Higher strength mouthrinses must be prescribed by a dentist or physician.
Recommendations	Fluoride mouthrinses have caries-preventive effect in children with limited exposure to fluoride from other sources such as toothpaste. Only individuals or groups at high risk for decay should use fluoride mouthrinse. Children younger than 6 years of age should not use fluoride mouthrinse without consultation with a dentist or other health care provider because dental fluorosis could occur if such mouthrinses are repeatedly swallowed. Fluoride mouthrinse and fluoride toothpaste prevent similar amounts of tooth decay.

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Professional Fluoride Gel (Grade I evidence; recommendation A)	
Product	Fluoride gels and foams are typically highly acidic (pH of approximately 3.0). Products include gel of acidulated phosphate fluoride (1.23% [12,300 ppm] fluoride), gel or foam of sodium fluoride (0.9% [9,040 ppm] fluoride), and self-applied (i.e., home use) gel of sodium fluoride (0.5% [5,000 ppm] fluoride) or stannous fluoride (0.15% [1,000 ppm] fluoride).
Use	In a dental office, fluoride gel is applied for 1–4 minutes. Some specific individuals are provided a prescription for home use.
Availability	Most fluoride gel and foam applications are delivered in a dental office by a dental professional. If used in the home, they must be prescribed by a dentist or physician.
Recommendations	The target populations for topical fluoride gel are people at high risk of tooth decay. Because these applications take place at 3- to 12–month intervals, fluoride gel poses little risk for dental fluorosis, even among patients younger than 6 years of age. Routine use of professionally applied fluoride gel or foam likely provides little benefit to persons not at high risk for tooth decay, especially those who drink fluoridated water and brush daily with fluoride toothpaste.

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Fluoride Varnish (Grade I evidence; recommendation A)	
Product	Varnishes are available as sodium fluoride (2.26% [22,600 ppm] fluoride) or difluorsilane (0.1% [1,000 ppm] fluoride) preparations.
Use	High-concentration fluoride varnish is painted on the teeth by dental or other health care professionals. Fluoride varnish sticks to the enamel, hardens, and holds a high concentration of fluoride in close contact with the teeth for hours. At least 2 applications per year are required for effectiveness. The varnish wears off the teeth over several hours or is brushed off the next day.
Availability	Fluoride varnish must be applied by a dentist or other health care provider.
Recommendations	The target populations for fluoride varnish are people at high risk of tooth decay. Fluoride varnish is as effective as professionally applied fluoride gel in preventing tooth decay. No published evidence indicates that professionally applied fluoride varnish is a risk factor for dental fluorosis, even among children younger than 6 years of age. Proper technique reduces the possibility that a patient will swallow varnish during its application.

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Albertans without water fluoridation and without drinking water that has natural fluoride around 0.7 parts per million (ppm) may benefit from other forms of fluoride that prevent tooth decay. Although not generally recommended by dentists or Health Canada, fluoride supplements may lower the risk of tooth decay. **Ask your local health authority about drinking water fluoride levels.**

Fluoride Supplements (<6 y.o.: Grade II-3 evidence; recommendation C; 6 – 16 y.o. Grade I evidence recommendation A)	
Product	Tablets, lozenges, or liquids (including fluoride-vitamin preparations) are available. Most supplements contain sodium fluoride as the active ingredient. Tablets and lozenges are manufactured with 1.0, 0.5, or 0.25 mg fluoride.
Use	Fluoride supplements may be prescribed for children at high risk for tooth decay and whose primary drinking water has a low fluoride concentration. To maximize the topical effect of fluoride, lozenges should be sucked for 1–2 minutes before being swallowed.
Availability	Fluoride supplements up to 1 mg are available for purchase over the counter at a pharmacy, without a prescription. The Canadian Pediatric Society has a recommended schedule of dose per age (http://www.cps.ca/english/statements/n/n02-01.htm).
Recommendations	Dental professional organizations in Canada oppose use of fluoride supplements (Canadian Association of Public Health Dentistry) or limit their use to after eruption of the first permanent tooth (Canadian Dental Association). Even after age six years, supplements should be considered only for high caries risk individuals or groups who do not brush their teeth (or have them brushed) with a fluoride dentifrice twice a day or people with high caries risk because of community or family history, etc. Fluoride supplements have limited evidence of success, potential for misuse and higher risk of developing dental fluorosis. Nevertheless, the American Dental Association and the Canadian Paediatric Society do have guidelines for fluoride supplements for children under the age of six years, recognizing the limited quality of evidence and Level C (weak) recommendation. After careful consideration (risk of tooth decay, prevention offered by supplements, potential for dental fluorosis, other sources of fluoride) health care providers should inform parents and caregivers of both the possible benefit of protection against tooth decay and the possibility of dental fluorosis in permanent teeth. The Fluoride Supplement Decision Flow Chart for Canadian Children (6 months – 16 years) reflects this alternate view.

see page 9: Fluoride Supplement Decision Flow Chart for Canadian Children: 6 months – 16 years.

BOX 1. Grading system used for determining the quality of evidence for a fluoride modality

Grade	Criteria
II	Evidence obtained from one or more properly conducted randomized clinical trials (i.e, one using concurrent controls, double-blind design, placebos, valid and reliable measurements, and a well-controlled study protocols).
II-1	Evidence obtained from one or more controlled clinical trials without randomization (i.e., one using systematic subject selection, some type of concurrent controls, valid and reliable measurements, and well-controlled study protocols).
II-2	Evidence obtained from one or more well-designed cohort or case-control analytic studies, preferably from more than one center or research group.
II-3	Evidence obtained from cross-sectional comparisons between times and places; studies with historical controls; or dramatic results in uncontrolled experiments (e.g., the results of the introduction of penicillin treatment in the 1940's).
III	Opinions of respected authorities on the basis of clinical experience, descriptive studies or case reports, or reports of expert ommittees.

Source: US Preventive Services Task Force. Guide to clinical preventive services. 2nd ed. Alexandria, VA: International Medical Publishing, 1996

BOX 2. Coding system used to classify recommendations for use of specific fluoride modalities to control dental caries

Code	Criteria
A	Good evidence to support the use of the modality.
B	Fair evidence to support the use of the modality.
C	Lack of evidence to develop a specific recommendation (i.e., the modality has not been adequately tested) or mixed evidence (i.e., some studies support the use of the modality and some oppose it).
D	Fair evidence to reject the use of the modality.
E	Good evidence to reject the use of the modality.

Source: US Preventive Services Task Force. Guide to clinical preventive services. 2nd ed. Alexandria, VA: International Medical Publishing, 1996

From: Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States. MMWR Recommendations and Reports. August 17, 2001 50(RR14) p1-42

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Risk assessment of low, moderate, or high is based on preponderance of factors for the individual. However, clinical judgement may justify the use of one factor (eg, frequent exposure to sugar-containing snacks or beverages; more than one dmfs) in determining overall risk.

Caries - Risk Assessment for 0-5 Year Olds

Factors	High Risk	Moderate Risk	Protective
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 >1 decayed/missing/filled surfaces (dmfs)	Yes		
• Child has active white spot lesions or enamel defects	Yes		
• Child has elevated mutans streptococci levels	Yes		
• Child has plaque on teeth		Yes	

From: Guideline on Caries-risk Assessment and Management for Infants, Children, and Adolescents. American Academy of Pediatric Dentistry (AAPD) 2010 Reference Manual V32 #6

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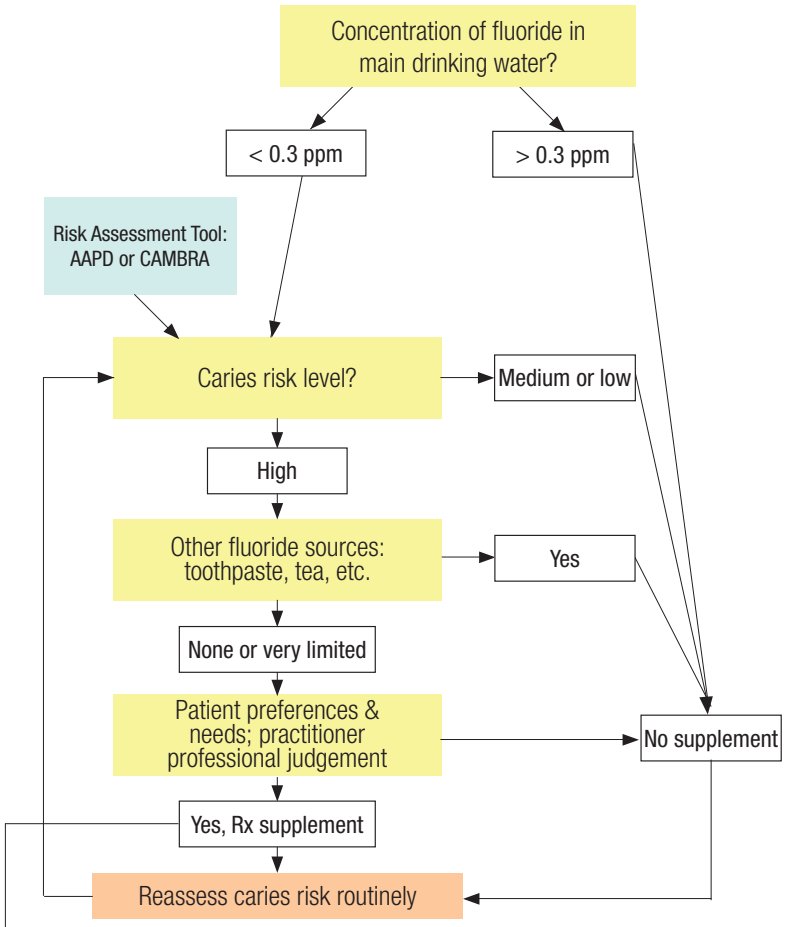
Caries - Risk Assessment for >6 Year Olds

Factors	High Risk	Moderate Risk	Protective
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
• Child 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	

From: Guideline on Caries-risk Assessment and Management for Infants, Children, and Adolescents. American Academy of Pediatric Dentistry (AAPD) 2010 Reference Manual V32 #6

Fluoride Supplement Decision Flow Chart for Canadian Children: 6 months – 16 years



Evidence-based clinical recommendations on the prescription of dietary fluoride supplements for caries prevention. A report of the American Dental Association Council on Scientific Affairs. JADA 141(12) December 2010, 1480-1489.

Recommended supplemental fluoride concentrations for children. Nutrition Committee. Canadian Paediatric Society. Paediatr. Child Health 2002; 7(8): 569-72.

Canadian Paediatric Society Schedule

Age of child	Water fluoride concentration	
	<0.3 ppm	>0.3 ppm
0 to 6 months	None	None
>6 months to 3 years	0.25 mg/day	None
>3 to 6 years	0.5 mg/day	None
>6 years	1.00 mg/day	None

Supplements may be unnecessary if the patient is receiving adequate fluoride from other sources. Before prescribing the supplement, the dentist must do a thorough clinical examination, dental caries risk assessment and informed consent with patients/ caregivers. Supplements are not recommended before the eruption of the first permanent tooth.
– Canadian Dental Association 2000

In the absence of adequate topical fluoride exposure (eg, fluoridated toothpaste or water), additional fluoride products may be provided in the form of drops, chewable tablets and lozenges. The effectiveness of these products in preventing dental caries is low in school-aged children (evidence level II-2, recommendation C) and has not been evaluated in infants and toddlers (evidence level II-3, recommendation C)
– Canadian Paediatric Society 2002

Do not use fluoride supplements unless specifically recommended by your dental professional.
– Health Canada 2010

AAPD: Guidelines on Caries-risk Assessment and Management for Infants, Children, and Adolescents. American Academy of Pediatric Dentistry (2010).

CAMBRA: Ramos-Gomez F, Crall J et al. Caries Risk Assessment Appropriate for the Age 1 Visit (Infants and Toddlers). 2007 Oct. California Dental Association Journal.

Risk is a continuum, and there is no exact definition of high risk. Risk behaviours differ by age.

Protective factors, especially fluoride intake from other sources need to be assessed.

Risk status is affected by changes in child's development, personal and family situations, diet and oral hygiene. Reassess routinely.

Compliance with daily regimen enhances caries-protective benefit of dietary supplements. Maximize topical effect by checking or sucking on tablets for 1-2 minutes before swallowing.

To get a chemical analysis of well water, ask your local public health office for bottles and information.

Includes material adapted from: Centers for Disease Control and Prevention – Other fluoride products (http://www.cdc.gov/fluoridation/other.htm)
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