

Dietary Fluoride Supplement Protocol for the New Millennium

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The appropriate use of fluoride provides a tremendous benefit in the prevention and management of dental caries. To ensure the use of fluoride is not jeopardized in Canada, fluoride policies need to be framed to maximize this benefit while minimizing the risk of dental fluorosis. During the 1990s, CDA updated its policy on dietary fluoride supplements in keeping with the best available information. It is now time to update the policy once again.

The need for change became apparent as credible and concerned investigators presented sound arguments for restricting the use of fluoride supplements in children.¹ The committee on community and institutional dentistry (CID) was tasked with reviewing the current CDA position on fluoride supplements (drops, tablets and lozenges) in light of differences between CDA's fluoride supplementation schedule and that of Health Canada's Medical Services Branch, which does not recommend fluoride supplements.

CID reviewed the evidence²⁻⁶ supporting both caries reduction and the risk of dental fluorosis associated with the use of fluoride supplements. Based on the clinical research available at the end of 1999, the committee confirmed that the use of dietary fluoride supplements in children is associated with fluorosis while the caries protection effect of supplements is considered variable. **Fluoride supplements need only be considered for patients at high risk for dental caries and even then may be unnecessary if patients are receiving adequate fluoride from other sources.**

In young children, there is a risk that the use of fluoride supplements prior to the eruption of the first permanent tooth will cause fluorosis of the permanent teeth at the front of the mouth. The traditional fluoride supplementation schedules based on age and the concentration of fluoride in the drinking water do not take into account the significant variation in both children's body weight and the total daily intake of fluoride from all sources. As a result, the traditional dosage schedules have been abandoned in favour of dosages based on body weight and total daily fluoride intake. The threshold at which fluoride causes dental fluorosis is not precisely known but has been estimated at 0.10 mg fluoride/kg body weight. The most

frequently used standard of 0.05-0.07 mg fluoride/kg body weight has generally been accepted as the upper limit of intake for minimizing dental fluorosis. The requirement to estimate the daily fluoride intake from all sources in the context of the present-day widespread exposure to multiple sources of fluoride is viewed by some as unrealistic. This may very well be true, and in those cases where it is not possible to confidently do so, fluoride supplements would not be indicated.

For older children whose first permanent tooth has erupted and for adults, fluoride supplements provide an intraoral fluoride dose before being ingested. This intraoral level of fluoride promotes post-eruptive enamel protection and has a therapeutic effect on dental caries. The topical exposure from a 1-mg fluoride tablet dissolved in the mouth is equivalent to brushing with an average adult brush load (1 gm) of 1,000 ppm fluoride dentifrice. Individuals with limitations that restrict standard oral hygiene practices may benefit from using chewable tablets or lozenges, although the evidence supporting this use is not yet available.

The adoption of these new recommendations require a change in the clinical protocols of dentists and others who recommend fluoride supplements for their patients. Evidenced-based dentistry requires us all to continually update our clinical protocols as new knowledge becomes available. The CDA recommendations are consistent with a worldwide trend to lower fluoride supplement dosages so as to minimize the risk of dental fluorosis. These recommendations allow for the integration of clinical judgement, patient preference, and the best available evidence to guide clinical decisions regarding the use of fluoride supplements in the management of dental caries for Canadians of all ages. ♦

Dr. Swan is currently chair of the committee on community and institutional dentistry.

References

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Fluoride Supplementation

The Canadian Dental Association supports the appropriate use of fluorides in the prevention of dental caries as one of the most successful preventive health measures in the history of health care. The availability of fluorides from a variety of sources, however, is a current reality which the practising dentist needs to take into account in dealing with patients. This is particularly true of children under the age of six, where exposure to more fluoride than is required simply to prevent dental caries can cause dental fluorosis. There is no evidence of any health problems being created by such exposure, but it is prudent to attempt to limit exposure to the optimal levels required for continuing dental caries protection. Current levels of fluoride intake from all sources are difficult to establish for any given area, but the dentist should consider general intake to the extent possible in recommending fluoride supplementation.

The following suggestions are consistent with these principles:

Fluoride supplements are only required for high dental caries risk patients and may be unnecessary if the patient is receiving adequate fluoride from other sources.

Before prescribing fluoride supplements, a thorough clinical examination, dental caries risk assessment and informed consent with patients/caregivers are required.

The Canadian Consensus Conference on the Appropriate Use of Fluoride Supplements for the Prevention of Dental Caries in Children, held in November 1997, suggested that high caries risk individuals or groups may include those who do not brush their teeth (or have them brushed) with a fluoridated dentifrice twice a day or those who are assessed as susceptible to high caries activity because of community or family history, etc.

The estimation of fluoride exposure from all sources should include use of fluoridated dentifrice and all home and child care water sources. Dentists should be aware of the average fluoride exposure in their area. The possible impact of fluoride reducing factors within the home such as the use of unfluoridated bottled water of some reverse osmosis devices should be taken into account.

Lozenges or chewable tablets are the preferred forms of fluoride supplementation. Drops may be required for individual patients with special needs.

The use of fluoride supplements before the eruption of the first permanent tooth is generally not recommended. When, on an individual basis, the benefit of supplemental fluoride outweighs the risk of dental fluorosis, practitioners may elect to use these supplements at appropriate dosages on younger children. In doing so, the total daily fluoride intake from all sources should not exceed 0.05-0.07 mg F / kg body weight in order to minimize the risk of dental fluorosis.

Following the eruption of the first permanent tooth and the associated decrease in the risk of dental fluorosis at this stage of development, fluoride supplements in the form of lozenges or chewable tablets may be used to deliver an intra-oral fluoride dose. A lozenge or chewable tablet containing 1 mg fluoride delivers the same amount of fluoride intra-orally as brushing with an average load (1 gm) of a 1000 ppm fluoride dentifrice.

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