PREFACE

Dosage Schedule for Dietary Fluoride Supplements

Background Papers for the 1994 Revision of American Dental Association/American Academy of Pediatric Dentistry/American Academy of Pediatrics Schedules

On January 31 and February 1, 1994, a Dietary Fluoride Supplement Workshop was held at the American Dental Association Headquarters in Chicago. The workshop was cosponsored by the American Dental Association (ADA), the American Academy of Pediatric Dentistry (AAPD), and the American Academy of Pediatrics (AAP). The workshop was convened because several reports had been published to show that the prevalence and, to a lesser degree, the intensity of dental fluorosis had increased in the permanent teeth of children of school age since the dosage schedules for fluoride supplements were last revised by the three sponsoring organizations in 1979. In some of these reports, fluorosis was associated with the use or misuse of dietary fluoride supplements. Moreover, at several workshops and symposia during the few years preceding the 1994 workshop, the belief was expressed by some participants that the dosage schedule for fluoride supplements should be revised downward based on findings of epidemiologic studies and the realization that background levels of ingested fluoride were higher than previously realized in fluoride-deficient areas from the ingestion by young children of fluoride containing toothpastes and of foods and beverages processed in fluoridated communities (diffusion effect of community water fluoridation).

Consensus had not been reached at the previous workshops and symposia, however, on whether the dosage schedule should be changed and, if it should, what the new schedule should be. At an international conference on the use of fluorides in caries prevention held at the University of North Carolina in 1991, two-thirds of the experts in attendance agreed on the need to lower the dosage schedule of fluoride supplements in use in the Untied States to reduce the risk of enamel fluorosis. Because of time constraints, the participants were unable to arrive at a specific lower dosage schedule. The sponsors of the ADA/AAPD/AAP workshop anticipated that a definite recommendation for a dietary fluoride supplement schedule would emanate from the 1994 workshop that all three organizations could endorse.

A joint planning committee for the workshop invited a group of 14 research experts to review the literature and prepare and present position papers on topics relevant to use of fluoride supplements. These papers were distributed prior to the workshop and summaries of them were presented with time for discussion during the full day of the workshop. The audience comprised the speaker–experts and a group of invited observers and other interested persons who had asked to attend.

Topics presented at the workshop included: reviews of the metabolism of fluoride, fluoride intake data from dietary and dental product sources, and infant's and children's nutrition and feeding practices; assessment of the role of fluoride supplements in caries prevention and a history of their use; the mechanisms of fluorosis formation, differential diagnostic signs, and its prevalence and severity; technical considerations in producing fluoride supplements; and suggested strategies to improve prescription practices. Three speakers made the case for either retaining the current dosage schedule, reducing it, or eliminating fluoride supplements entirely as a recommended caries-preventive regimen.

The proceedings of the workshop published in this issue of the *JPHD* provide details on the reasons for the revised dosage schedule. All of the papers are published as they were prepared for the workshop held in 1994, and thus reflect the information used by panel members in making their decisions about the revised schedule. They have not been updated so that the schedule and background papers coincide.

Late in the full day and during the second day of the workshop, participants met as a working group to develop a mutually satisfactory recommended dosage schedule for dietary fluoride supplements for conditions that prevail today. Despite the complexity of the issues that affected their recommendation, the participants were able to agree by consensus on the dosage schedule in Table 1. Each of the three sponsoring organizations have concurred with and endorsed the new schedule (1-4).

In essence, the changes from the previous dosage schedules make the

TABLE 1
Fluoride Supplement Dosage Schedule—1994* (in mg of Fluoride per Day)

	Concentration of Fluoride in Drinking water (ppm)†		
Child's Age	<0.3	0.3–0.6	> 0.6
Birth–6 months	0	0	0
6 months–3 years	0.25	0	0
3 years–6 years	0.50	0.25	0
6 years–16 years	1.0	0.50	0

*Recommended by the American Dental Association, the American Academy of Pediatric Dentistry and the American Academy of Pediatrics.
†Parts per million.

1994 schedule more conservative. It continues to provide protection against the development of dental caries, but reduces the risk from their use of contributing to the development of dental fluorosis.

Some of the major changes are:

♦ The recommended age to begin taking supplements is 6 months of age rather than at birth (previous ADA schedule) or at two weeks of age (previous AAP schedule). This change was made based on an assessment of risks and benefits.

♦ The transition age at which the dosage is increased to 0.50 mg of fluoride from 0.25 mg for children whose principal drinking water sources contain less than 0.3 parts per million (ppm) of fluoride is 3 years of age in the revised schedule rather than age 2. One major reason for this change is that the window of vulnerability to fluorosis for maxillary anterior teeth has been shown to be in ages less than 36 months. Because maxillary anterior teeth are important in social interactions, changing the transition to 3 years of age lowers the risk of producing dental fluorosis in these cosmetically important teeth.

♦ The transition age at which the dosage is increased to 1.0 mg of fluoride from 0.5 mg for children whose principal drinking water sources contain less than 0.3 ppm of fluoride is 6 years of age rather than age 3 according to the previous schedule. Because it is believed that dental fluorosis cannot be produced in permanent teeth other than third molars after about age 6 years, it seemed prudent to postpone increasing the dosage to a full milligram until that age.

♦ The water fluoride concentration above which dietary fluoride supplements are not recommended for prescription was changed from 0.7 ppm fluoride to 0.6 ppm fluoride. This change was prompted largely by a desire to reduce the risk of fluorosis among children who consume suboptimal but appreciable amounts of fluoride from drinking water and who may have consumed additional amounts from ingesting fluoride in toothpastes and processed foods and beverages.

The 1994 dosage schedule has not been tested in controlled clinical trials to ascertain whether it is the correct balance today for maximal cariostatic effectiveness with minimal risk of producing dental fluorosis. But the same caveat applied to the previous dosage schedules for fluoride supplements, which date back to 1958.

What is known is that an enormous body of research evidence supports the value of the use of dietary fluoride supplements as a method of protection against the development of dental decay in areas with fluoride-deficient water supplies. The 1994 dosage schedule was developed in recognition of the known effectiveness of the regimen coupled with the recognition that the previous schedules were unlikely to still be appropriate in an environment of greater availability and use of fluoride-containing foods, beverages, and products.

References

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