Effects of Fluoridation on Oral Health and Clinical Guidelines for Fluoride Therapy

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Objective: This review article presents a summary of evidence-based research on the risks and benefits of water fluoridation and serves to offer primary care providers (PCPs) knowledge regarding supplemental application in their clinical practice.

Methods: The literature obtained was selected primarily on relevance of information pertaining to risks, benefits, and clinical guidelines associated with the uses of supplemental fluoride in providing oral health care. Articles were selected from 1982 to present and were selected from reputable health organizations such as the World Health Organization (WHO), Centers for Disease Control and Prevention (CDC), United States Preventative Services Task Force (USPSTF), American Dental Association (ADA), and the American Academy of Pediatric Dentistry (AAPD) and peer reviewed journals from MEDLINE, CINAHL, and Cochrane Library. Search terms included: fluoridation, fluoride supplementation, cost analysis fluoride, fluoride risk, fluoride benefits, fluoridated community drinking water, fluorosis, and dental caries.

Results: Water fluoridation was found to be safe and effective in preventing dental caries and improve oral health as long as the concentration remained between the recommended level of 0.7-1.2ppm. Reputable organizations included the WHO, CDC, USPSTF, ADA, and AAPD all agreed that fluoride was essential in the prevention of dental caries in all socioeconomic classes. Enamel fluorosis and impaired intellectual development were adverse effects that occurred when exposed to fluoride concentrations above the recommended therapeutic range. Enamel fluorosis was the only adverse side effect seen with exposure to fluoride levels that was within the recommended range.

Conclusion: Water fluoridation is proven safe and effective in preventing dental caries and reaches all populations regardless of availability to dental services. When water fluoride concentrations are sub-therapeutic, supplemental fluoride is recommended. PCPs are at the frontlines of preventing dental caries and should have adequate knowledge regarding supplemental guidelines and skills to prevent poor oral health of their patients.