

Problem

Dental caries is a progressive, multi-factorial chronic disease that can begin in early infancy and currently affects over 92 percent of the US adult population.¹ Dental caries prevalence and severity varies by age, dentition and type of tooth surface.² Dental caries control historically has been addressed by daily brushing and flossing, modifying dietary practices, and improving the resistance of tooth enamel to acid attack. However, only fluorides and dental sealants have a high degree of scientific evidence for reducing dental caries in populations. The Centers for Disease Control and Prevention (CDC) noted that the baby boomer generation will be the first where the majority will maintain their natural teeth over their entire lifetime, having benefited from fluoride available in drinking water and fluoride toothpastes.³

Methods

Fluoride modalities include: drinking water (natural and adjusted levels), milk, salt, toothpastes, mouthrinses, and the professional application of gels, foams or varnishes. Caries protection, lifetime cost and appropriateness for use in populations will vary by the methods, or combination of methods selected.⁴ Community water fluoridation, the adjustment of the existing fluoride levels in public drinking water systems to a level that reduces dental caries, has an individual lifetime cost that is less than the cost of a single filling.^{5,6,7} Community water fluoridation has been demonstrated to be safe, cost-effective and beneficial through every stage of life and for all people, regardless of age, race, ethnicity or socio-economic status. Water fluoridation remains effective in reducing caries, even in the presence of a dilution effect from other fluoride modalities.⁸

Since the epidemiologic, environmental and laboratory studies confirmed the association between naturally-occurring optimal levels of fluoride in water supplies, improved dental health and absence of any negative health impacts, community water fluoridation has been the cornerstone of caries prevention in the United States.⁹ Communities continue to be encouraged to adjust the level of fluoride in drinking water to a level that reduces tooth decay while protecting the cosmetic appearance of teeth. Indeed, the CDC has recognized water fluoridation as one of ten great public health achievements of the twentieth century.¹⁰ Pre-eruptive systemic fluoride exposure remains important; however, current consensus recognizes that optimal caries reduction occurs when fluoride exposure continues after tooth eruption.¹¹ Daily, multiple low exposures to fluoride in drinking water at a level of 0.7-1.2 parts per million (ppm) facilitate the balance between remineralization and demineralization of tooth enamel of primary and permanent teeth, thus reducing caries incidence.¹²

Since the 1945 field trials were completed, all US Surgeons General, have supported water fluoridation. The American Dental Association (ADA) has unreservedly supported fluoridation as being, “safe, effective and necessary in preventing tooth decay.”¹³ Since 1989 ASTDD, ADA and CDC have jointly recognized specific individuals, organizations and agencies for their contributions toward the progress and quality of community water fluoridation. ASTDD’s standing committee on fluorides provides technical support for community water fluoridation systems development and assists in the sharing of information regarding fluoridation efforts among states and communities.

Policy Statement

The Association of State and Territorial Dental Directors (ASTDD) fully supports and endorses community water fluoridation (maintaining optimal fluoride levels between 0.7 and 1.2 parts per million) in all public water systems throughout the United States.

¹ Dye BA, Tan S, Smith V, et al. Trends in oral health status: United States, 1988-1994 and 1999-2004. *Vital Health Stat 11*. April 2007;(248):1-92.

² Macek MD, Heller KE, Selwitz RH, Manz MC. Is 75 percent of dental caries really found in 25 percent of the population? *J Public Health Dent*. Winter 2004;64(1):20-25.

³ CDC Division of Oral Health, National Center for Chronic Disease Prevention and Health Promotion. Historical Document, Oral Health for Adults. December 2006. <http://www.cdc.gov/oralhealth/publications/factsheets/adult.htm>. Accessed March 18, 2009.

⁴ Marinho VCC, Higgins JPT, Sheiham A, et al. Combinations of topical fluoride (toothpastes, mouthrinses, gels, varnishes) versus single topical fluoride for preventing dental caries in children and adolescents. *Cochrane Database of Systematic Reviews*. 2004, Issue 1. Art. No.: CD002781. DOI: 10.1002/14651858.CD002781.pub2.

⁵ Griffin SO, Jones K, Tomar, SL. An economic evaluation of community water fluoridation. *J Public Health Dent*. Spring 2001; 61(2):78-86.

⁶ Kumar JV, Moss ME. Fluorides in dental public health programs. *Dent Clin N Am*. 2008;52:387-401.

⁷ Griffin SO, Gooch BF, Lockwood SA, et al. The halo effect: quantifying the diffused benefit from water fluoridation in the United States. *Community Dent Oral Epidemiol*. 2001;29:120-129.

⁸ Spencer AJ, Armfield JM, Slade GD. Exposure to water fluoridation and caries increment. *Community Dent Health*. March 2008;25(1):12-22.

⁹ Pollick HF. Water fluoridation and the environment: current perspective in the United States. *Int. J Occup Environ Health*. 2004;10:343-350.

¹⁰ Ten Great Public Health Achievements—United States, 1900-1999. *MMWR*. December 24, 1999;48(50):1141.

¹¹ Singh KA, Spencer AJ, Armfield JM. Relative effects of pre- and post-eruption water fluoride on caries experience of permanent first molars. *J Public Health Dent*. Winter 2003;63(1):11-19.

¹² Featherstone JD. Prevention and reversal of dental caries: role of low level fluoride. *Community Dent Oral Epidemiol*. February 1999;27(1):31-40.

¹³ Policy Statements American Dental Association. <http://www.ada.org/prof/resources/topics/fluoride.asp>. Accessed March 18, 2009.