



Campaign for Dental Health

The Clear Weight of the Evidence: A Summary of Research Supporting Water Fluoridation

Decades of research confirm the benefits of water fluoridation. Some people may question the value of fluoridating water at a time when fluoride toothpaste is widely used and children can get fluoride treatments from dentists. The following peer-reviewed studies and reports answer this question because many of them were conducted within the past 20 years—when both fluoride toothpaste and fluoride treatments were widely available. This research demonstrates the crucial, added protection against tooth decay that fluoridated water provides:

It reduces the rate of tooth decay among children

- The U.S. Task Force on Community Preventive Services—a blue-ribbon panel of experts—examined 21 studies and concluded in its 2000 report that fluoridated water reduces tooth decay by a median rate of 29% among children of ages 4 to 17.¹
- A study of **Alaska** children (2011), conducted by the Centers for Disease Control and Prevention, showed that children living in non-fluoridated areas had a 32% higher rate of decayed, missing or filled teeth than kids in fluoridated communities.²
- A study of **Illinois** and **Nebraska** children (1998) found that the tooth decay rate among children in the fluoridated town was 45% lower than the rate among kids in the in the two non-fluoridated towns. This benefit occurred even though the vast majority of children in each of these communities were using fluoridated toothpaste.³
- A **Nevada** study (2010) examined teenagers' oral health and found that living in a community *without* fluoridated water was one of the top three risk factors associated with high rates of decay and other dental problems.⁴
- A study of more than 17,000 **Australian children** (2003) found that fluoridated water's "preventive effect was maximized by continuous exposure both before and after eruption (i.e., when teeth first appear in the mouth)." This finding refutes the claim made by fluoridation opponents that topical application of fluoride is the only effective way to use fluoride.⁵



It protects adults' dental health

- Nine studies were analyzed (2007) in the *Journal of Dental Research* to estimate water fluoridation's impact on adult teeth, and this report concluded that fluoridation reduced decay by 27%. The co-authors noted the study's significance for seniors because Medicare does not cover routine dental services and this lack of coverage "increases the need for effective prevention" of decay among older adults.⁶



It reduces disparities in dental health

- A 2002 study concluded that water fluoridation is “the most effective and practical method” for reducing the gap in decay rates between low-income and upper-income Americans. The study concluded, “There is no practical alternative to water fluoridation for reducing these disparities in the United States.”⁷
- A study in the *American Journal of Public Health* (2010) determined that the fluoridated water consumed as a young child makes the loss of teeth (due to decay) less likely 40 or 50 years later when that child is a middle-aged adult. The co-authors wrote that this study suggests that the benefits of fluoridation “may be larger than previously believed and that [fluoridation] has a lasting improvement in racial/ethnic and economic disparities in oral health.”⁸
- **Australia’s** National Health and Medical Research Council (2007) reviewed 77 studies and concluded that fluoridation “remains the most effective and socially equitable means of achieving community-wide exposure” to the decay-prevention effects of fluoride.⁹



It saves communities money

- A **New York** study (2010) revealed that low-income children in less fluoridated counties needed more dental treatments than those living in counties where fluoridated water was common. The annual treatment costs per Medicaid recipient were \$23.65 higher for those living in less fluoridated counties.¹⁰ A **Texas** study (2000) found that fluoridation saved the state Medicaid program an average of \$24 per child, per year.¹¹ Fluoridated water saved **Colorado** nearly \$149 million in 2003 by avoiding unnecessary treatment costs.¹²

Sources:

¹ “Preventing Dental Caries: Community Water Fluoridation,” U.S. Task Force on Community Preventive Services, (2000), <http://www.thecommunityguide.org/oral/fluoridation.html>.

² “Dental Caries in Rural Alaska Native Children – Alaska, 2008,” *Morbidity and Mortality Weekly Report*, Centers for Disease Control and Prevention, (September 23, 2011) Vol. 60, No. 37, 1275-1278, http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6037a2.htm?s_cid=mm6037a2_x.

³ R.H. Selwitz et al., “Dental caries and dental fluorosis among schoolchildren who were lifelong residents of communities having either low or optimal levels of fluoride in drinking water,” *Journal of Public Health Dentistry*, (Winter 1998) Vol. 58, No. 1, 28-35, <http://www.ncbi.nlm.nih.gov/pubmed/9608443>.

⁴ M. Ditmyer, G. Dounis, C. Mobley and E. Schwarz, “A case-control study of determinants for high and low dental caries prevalence in Nevada youth,” *BMC Oral Health*, (2010), Vol. 10, No. 24.

⁵ K.A. Singh et al., “Relative Effects of Pre- and Posteruption Water Fluoride on Caries Experience of Permanent First Molars,” *Journal of Public Health Dentistry*, Vol. 63, No. 1, Winter 2003, <http://www.ncbi.nlm.nih.gov/pubmed/15541159>.

⁶ S.O. Griffin, E. Regnier, P.M. Griffin and V. Huntley, “Effectiveness of Fluoride in Preventing Caries in Adults,” *The Journal of Dental Research*, (2007), Vol. 86, No. 5, 410-415, <http://www.ncbi.nlm.nih.gov/pubmed/17452559>.

⁷ B.A. Burt, “Fluoridation and Social Equity,” *Journal of Public Health Dentistry*, (2002), Vol. 62, Issue 4, 195-255, <http://onlinelibrary.wiley.com/doi/10.1111/j.1752-7325.2002.tb03445.x/abstract>.

⁸ M. Neidell, K. Herzog and S. Glied, “The Association Between Community Water Fluoridation and Adult Tooth Loss,” *American Journal of Public Health*, August 19, 2010, <http://www.ncbi.nlm.nih.gov/pubmed/20724674>.

⁹ “NHMRC Public Statement: The Efficacy and Safety of Fluoridation 2007,” National Health and Medical Research Council of Australia.

¹⁰ J.V. Kumar, O. Adekugbe and T.A. Melnik, “Geographic Variation in Medicaid Claims for Dental Procedures in New York State: Role of Fluoridation Under Contemporary Conditions,” *Public Health Reports*, (September-October 2010) Vol. 125, No. 5, 647-54.

¹¹ “Water Fluoridation Costs in Texas: Texas Health Steps,” Texas Department of Health, May 2000.

¹² J.M. O’Connell et al., “Costs and savings associated with community water fluoridation programs in Colorado,” *Preventing Chronic Disease* (November 2005), <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1459459/>.