

## Response to Newport Flyer on Water fluoridation

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Rick North, the individual disseminating the "Fluoride Free Newport" flyer, is neither a scientist, healthcare expert, nor healthcare provider. He has no qualifications or credentials to render appropriate recommendations on a healthcare issue such as water fluoridation. His statement that "I’m neither a doctor nor scientist, but have worked with them most of my life. I still do.", is remindful of the TV commercial in which an actor clad in a white lab coat appears and states "I'm not a doctor, but I play one on TV", and then proceeds to give his spiel about whatever healthcare product is being advertised, as if he is an authority on the subject.

Water fluoridation is simply the adjustment of the level of a naturally occurring mineral in water to that concentration at which maximum benefit will be obtained when ingesting that mineral, and strictly maintaining that mineral at a concentration well below the threshold of adverse effects. The only substances ingested as a result of fluoridation are fluoride ions, identical to those which have always existed in water, and trace contaminants in barely detectable levels, far below EPA mandated maximum allowable levels of safety.

The following is a point-by-point response to claims made in the flyer, followed by a list of effectiveness studies, followed by a list of footnoted references.

In regard to the claims of page 1 of the flyer:

1. Flyer*: "Fluorosis is a disease of tooth enamel caused by too much swallowed fluoride".*

Facts:

Fluorosis can either be dental fluorosis or skeletal fluorosis. Dental fluorosis is to what this flyer references here.

A. Dental fluorosis is not a "disease", as the flyer erroneously claims. It is simply an effect which occurs during the teeth developing years of 0-8.

From the American Dental Association:

"Dental fluorosis is a change in the appearance of teeth and is caused when higher than optimal amounts of fluoride are ingested in early childhood while tooth enamel is forming. The risk of dental fluorosis can be greatly reduced by closely monitoring the proper use of fluoride products by young children."

"The type of fluorosis seen today remains largely limited to the very mild and mild categories; however, the prevalence of dental fluorosis in both fluoridated and non fluoridated communities in the United States is higher than it was when the original epidemiological studies were con- ducted approximately 60 years ago.(84) The inappropriate use of fluoride-containing dental products is the largest risk factor for increased fluorosis as fluoride intake from food and beverages has remained constant over time.(180, 181) The risk of fluorosis can be greatly reduced by following label directions for the use of these fluoride products." (123, 167). **[1]**

2. Flyer: *"Mild levels [of dental fluorosis] produce white streaks or mottling. Moderate and severe levels cause unsightly brown stains and damage to tooth structure."*

Facts:

 A. Mild dental fluorosis does not produce "mottling". Mottling is a hallmark characteristic of moderate/severe dental fluorosis.

From the American Dental Association:

"Very mild to mild fluorosis has no effect on tooth function and may make the tooth enamel more resistant to decay. These types of fluorosis are not readily apparent to the affected individual or casual observer and often require a trained specialist to detect. In contrast, the moderate and severe forms of dental fluorosis, characterized by esthetically (cosmetically) objectionable changes in tooth color and surface irregularities, are typically easy to detect." **[1]**

As peer-reviewed science has demonstrated mildly fluorosed teeth to be more decay resistant, many consider this effect to not even be undesirable, much less adverse. **[2]**

B. Moderate and severe dental fluorosis do not occur attributable to optimally fluoridated water. Fluoridation opponents constantly and dishonestly imply that the "unsightly brown stains and damage to tooth structure" are associated with optimally fluoridated water. These are characteristic of moderate/severe dental fluorosis, not mild to very mild.

The only reason to insert moderate/severe dental fluorosis into a discussion of water fluoridation is to disingenuously induce unwarranted fear.

C. Accurate photos of mild dental fluorosis may be viewed on the website of the ADA:

http://www.ada.org/en/member-center/oral-health-topics/fluorosis

3. Flyer: *"It’s [dental fluorosis] the most visible sign of over-exposure to fluoride, which can also affect other tissues in the body, such as the bones, thyroid and brain."*

Facts:

There is no valid, peer-reviewed scientific evidence of any adverse effect to the "bones, thyroid, and brain", or any other tissues of the body, from optimal level fluoride......as evidenced by the lack of provision of any such evidence within this flyer.

4. Flyer: *"According to the CDC’s own figures, fluorosis now affects more than 41% of all U.S. adolescents, with 3.6% moderate or severe. The condition is permanent. The CDC also found that fluorosis afflicts communities of color at a much higher rate. (See other side)"*

Facts:

Again, the fluorosis to which is referred here is dental fluorosis. The "41%" noted is in reference to a 2010 CDC study by Beltran-Aguilar in which 41% of adolescents they examined were found to have signs of dental fluorosis. This 41% was composed of 37.1% with mild to very mild dental fluorosis, both of which are barely detectable, benign effects requiring no treatment, and which have no effect on cosmetics, form, function, or health of teeth....with the other 3.8% being those with moderate dental fluorosis, attributable to improper ingestion of toothpaste and/or exposure to abnormally high levels of environmental or well-water fluoride during the teeth forming years of 0-8. **[3]**

The hypocrisy of fluoridation opponents is clearly evident by their constant attempts to induce unwarranted fear about benign, barely detectable mild dental fluorosis, while callously disregarding the lifetimes of extreme pain, debilitation, development of serious medical conditions, black discoloration and loss of teeth, and life-threatening infection, directly resultant of untreated dental decay which can be, and is, prevented by water fluoridation.

A comparison between a photo showing preventible dental decay, versus two photos showing mild dental fluorosis may be found:

http://americanfluoridationsociety.org/information/photos/

5. Flyer: *"Fluorosis is also associated with other harmful health effects. A recent peer-reviewed study found a strong link between moderate and severe fluorosis and lowered IQ scores in children. This adds to the significant evidence from a Harvard meta-analysis that water with higher levels of fluoride could decrease IQ in children."*

Facts:

A. There is no valid, peer-reviewed scientific evidence of any adverse effect on IQ, or anything else, in regard to optimally fluoridated water.

B. Moderate/severe dental fluorosis is not attributable to optimally fluoridated water. Thus, any study purporting claims about effects of moderate/severe dental fluorosis is irrelevant.

C. Without proper controls for the myriad factors involved in IQ tests, attempting to imply causation of purported IQ loss being associated with moderate/severe dental fluorosis, is meaningless.

6. Flyer: *"Parents of babies and small children are often not aware of fluoridated water’s connection to fluorosis, especially when mixed with infant formula. Many parents aren’t able to afford buying unfluoridated bottled water or expensive filters to avoid it."*

Facts:

A. Again, the fluorosis to which is referred is dental fluorosis.

B. The only "connection" of optimally fluoridated water with dental fluorosis is with mild to very mild. Due to the existing fluoride content of powdered infant formula, the use of fluoridated water to reconstitute it risks mild to very mild dental fluorosis in developing teeth. Mild to very mild dental fluorosis is a barely detectable effect which cause no adversity on cosmetics, form, function, or health of teeth. As peer-reviewed science has demonstrated mildly fluorosed teeth to be more decay resistant, many consider this effect to not even be undesirable, much less adverse. For those parents who are concerned with even mild dental fluorosis, in spite of the decay resistance benefit, the ADA and the CDC have suggested they use non-fluoridated bottled water to reconstitute powdered formula, or simply use pre-mixed formula, most, if not all, of which is made with low fluoride content water. **[2]**

From the CDC:

"The proper amount of fluoride from infancy through old age helps prevent and control tooth decay. is a widely accepted practice for preventing and controlling tooth decay by adjusting the concentration of fluoride in the public water supply.

'"Fluoride intake from water and other fluoride sources, such as toothpaste and mouthrinses, during the ages when teeth are forming (from birth through age 8) also can result in changes in the appearance of the tooth's surface called dental fluorosis. In the United States, the majority of dental fluorosis is mild and appears as white spots that are barely noticeable and difficult for anyone except a dental health care professional to see."

"Recent evidence suggests that mixing powdered or liquid infant formula concentrate with fluoridated water on a regular basis may increase the chance of a child developing the faint, white markings of very mild or mild enamel fluorosis."

"You can use fluoridated water for preparing infant formula. However, if your child is exclusively consuming infant formula reconstituted with fluoridated water, there may be an increased chance for mild dental fluorosis. To lessen this chance, parents can use low-fluoride bottled water some of the time to mix infant formula; these bottled waters are labeled as de-ionized, purified,demineralized, or distilled." **[4]**

C. As a dentist with 35 years of experience, being knowledgeable about fluoridation, I fed my infant children powdered infant formula, reconstituted exclusively with optimally fluoridated water, and then raised them on optimally fluoridated water. I strongly urged them to do the same with their own infants and children......which they now do.

D. There is no need for anyone to be "buying unfiltered bottled water or expensive filters to avoid it [fluoride]". Those who wish to do so are entirely free to buy these things. However, any costs or inconvenience incurred by so doing, are the responsibility of those persons desiring these items......just as it would be for those who desire to avoid chlorine, ammonia, or any of the other myriad, routine water additives.

7. Flyer: *"Fluoridation takes away the choice of Newport’s residents of whether to ingest fluoride."*

Facts:

No one's choice to do anything is taken away by optimally fluoridated water flowing from their faucets. Fluoride is in their water, fluoridated or not. Water piped directly in homes and other dwellings is a convenience offered by communities to their citizenries. It is not a right. Those who desire to not avail themselves of this convenience because they do not like the contents of this water are entirely free to obtain their water from other sources with content more to their personal preferences.

8. Flyer: *" Is it ethical to force our citizens, especially low income and communities of color, to ingest a substance that could put their children’s appearance and health at risk?"*

 Facts:

A. No one is forced to ingest anything in regard to water fluoridation.

B. There is no valid, peer-reviewed scientific evidence of "risk" to anyone's "appearance and health" from optimally fluoridated water.....as evidenced by the lack of provision of any such evidence within this flyer.

C. The only ethics in question here are those of people who seek to deny entire populations the benefits of a very valuable public health initiative based on nothing but false statements, unsubstantiated claims, misrepresented science, and misinformation.

Page 2 of Flyer

1. Flyer: *"Newport’s low-income families face many challenges, including higher cavity rates. Some believe that adding fluoridation chemicals to the water is a solution. This simply isn’t the case. Clean Water Newport strongly opposes water fluoridation, which is ineffective in preventing cavities and poses serious risks to human health."*

Facts:

A. There is an overwhelming problem with untreated dental decay, in all areas of this country, and in most others. Anyone with a real understanding of this problem and of water fluoridation does not claim this initiative to be a "solution" to the problem. Fluoridation is simply one very effective measure which causes significant prevention of this disease in entire populations. It has always been meant to work in conjunction with all other preventive measures, not in place of them.

2. Flyer: *Fluoridation isn’t effective, no matter the income level.*

Facts:

Countless peer-reviewed scientific studies clearly demonstrate the effectiveness of water fluoridation in the prevention of dental decay in entire populations, including many within the past 5 years. A list of but a few of these studies may be found at the end of this report.

3. Flyer: *"Even the CDC acknowledges fluoride’s actions are mostly topical, not from swallowing."*

Facts:

The effects of fluoride are both topical and systemic.  The systemic effects are demonstrated in the mild to very mild dental fluorosis which is the only dental fluorosis in any manner associated with optimally fluoridated water.  Mild to very mild dental fluorosis is a barely detectable effect which causes no adverse effect on cosmetics, form, function, or health of teeth.   Dental fluorosis can only occur systemically.

Additionally, saliva with fluoride incorporated into it provides a constant bathing if the teeth in a low concentration of fluoride all throughout the day, a very effective means of dental decay prevention. Incorporation of fluoride into saliva occurs systemically.

From the CDC:

"Fluoride works to control early dental caries in several ways. Fluoride concentrated in plaque and saliva inhibits the demineralization of sound enamel and enhances the remineralization (i.e., recovery) of demineralized enamel. As cariogenic bacteria metabolize carbohydrates and produce acid, fluoride is released from dental plaque in response to lowered pH at the tooth-plaque interface. The released fluoride and the fluoride present in saliva are then taken up, along with calcium and phosphate, by de-mineralized enamel to establish an improved enamel crystal structure. This improved structure is more acid resistant and contains more fluoride and less carbonate.. Fluoride is more readily taken up by demineralized enamel than by sound enamel.. Cycles of demineralization and remineralization continue throughout the lifetime of the tooth." **[5]**

 Additionally, in a 2014 study Cho, et al. found:

"Conclusions: While 6-year-old children who had not ingested ﬂuoridated water showed higher dft in theWF-ceased area than in the non-WF area, 11-year-old children in theWF-ceased area who had ingested ﬂuoridated water for approximately 4 years after birth showed signiﬁcantly lower DMFT than those in the non-WF area. This suggests that the systemic effect of ﬂuoride intake through water ﬂuoridation could be important for the prevention of

dental caries." **[6]**

Additionally, Buzalaf, et al. conclude:

“Evidence also supports fluoride’s systemic mechanism of caries inhibition in pit and fissure surfaces of permanent first molars when it is incorporated into these teeth pre-eruptively.” **[7]**

4. Flyer: *The largest U.S. government study found that children drinking fluoridated water averaged only about half a cavity less than those drinking unfluoridated water.*

Facts:

This claim is in regard to Brunelle and Carlos. This study is routinely read superficially by folks eager to discount fluoridation.

The paper can be quoted as averages to minimize the effect because the 0.6 surface is the effect averaged over both age and geography. 5 year olds have only 1 or two permanent teeth and there is essentially no difference between cavity rates at that early age yet they are counted in calculating the "average"

By age 17 the difference between fluoridated and non-fluoridated is about 1.6 surfaces and the benefit curve is sharply accelerating with a benefit just under 3 times higher than the 0.6 so commonly quoted. **[8] [9]**

5. Flyer: *"Even that minimal effectiveness is in question. In 2015, the Cochrane Collaboration, considered the gold standard of scientific review, reported that nearly all studies supposedly showing fluoridation’s effectiveness were low quality and outdated. Moreover, it found 'There was insufficient information available to find out whether the introduction of a water fluoridation programme changed existing differences in tooth decay across socioeconomic groups.' ”*

Facts:

A. There is no question about the effectiveness of water fluoridation. Countless peer-reviewed scientific studies clearly demonstrate this fact. A list of but a few of those studies may be found at the end of this report.

B. Fluoridation opponents constantly misrepresent the Cochrane Review, as has been done here in this flyer. In actuality, the Cochrane Review did not state what is claimed in the flyer. This review was an update of the 2000 York Review.  As such, Cochrane set narrow parameters for fluoridation studies it would review, consistent with the parameters originally set by York. It then culled the scientific literature and found 155 studies, out of 4,600 fluoride studies considered,  which fit within its parameters. This immediately excluded well over 4,000 quality, peer-reviewed fluoridation studies. Within the 155 studies Cochrane chose to review, it deemed the majority to fall within the parameters it had established for them to be considered at high risk of bias. It did not state that the studies were biased, nor invalid.

Additionally, Cochrane reported that within the 155 studies it chose to review, they found insufficient information for them to reach any conclusion about the effectiveness of fluoridation across socio-economic strata.

6. Flyer: *"Several factors affect cavity rates, but on-the-ground studies repeatedly show fluoridation’s ineffectiveness for low-income populations in cities all over the country. A few examples, out of many:"*

Facts:

The cause and preventive factors involved in dental decay are myriad. To present snapshots of data, which control for no other variables, and claim these to "repeatedly show fluoridation's ineffectiveness"......is ludicrous, and indicative of a profound lack of understanding of basic science and healthcare.

7. Flyer: *"There are effective alternatives to prevent cavities for low-income families: Everyone wants good dental health for both kids and adults, but fluoridation is not the answer. The most effective alternatives are education on proper nutrition, personal dental habits and professional dental care. Preventative care for low-income families, including fluoride varnish, is already provided through Head Start and the Oregon Health Plan at Advantage Dental.*

Facts:

 Neither Rick North, nor "Fluoride Free Newport" have any qualifications to personally determine what is, or is not, the answer to preventing and combatting dental decay, or what are the "the most effective alternatives". In actuality, other viable dental decay preventive measures are not "alternatives" to water fluoridation. They have been, are, and will continue to be aggressively performed, in conjunction with water fluoridation. To claim that the massive problem we have with untreated dental decay in this country can be resolved by "nutritional guidance, personal dental habits, and professional dental care" is completely naive and indicative of how far out of touch with reality are fluoridation opponents such as North and FF Newport who believe this massive problem can be resolved with simplistic, superficial suggestions.

We need all of the help we can get if we are ever to make inroads into the overwhelming problem with untreated dental decay in this country. The seeking, as do fluoridation opponents, to undermine the most cost-effective means available to prevent a significant amount of dental decay in entire populations only makes this problem far more difficult with which to deal by those who are doing everything they can to improve this situation.

8. Flyer: *"Also, dental sealants, treatment and supplies for low-income kids are provided on site at Newport schools. Facilitating families’ access to these services is far more effective (and cost-effective) than fluoridation, with its minimum $300,000 estimated cost*."

Facts:

Providing preventive measures for children in schools is certainly laudable. However, doing so for this one subset of individuals within a population, does not even scratch the surface of prevention of dental decay in the entire population, in those of all age groups, as does water fluoridation.

Water fluoridation prevents dental decay in all age groups within populations. It is not simply a preventive measure for children. At a cost of less than $1 per person, per year for fluoridation, there is no other dental decay preventive measure which even approaches the cost-effectiveness of fluoridation in the prevention of dental decay in entire populations.

Additionally, all of the preventive measures noted in the flyer are completely dependent on patient and parental compliance in order to convey any benefit whatsoever. Water fluoridation has no compliance issues. All individuals of a population receive the benefit of fluoride automatically every time they drink tap water in a fluoridated community, or consume food and beverages made with fluoridated water.

9. Flyer: *"Low-income populations are more vulnerable to the harmful effects of fluoride on health: Low-income families are more prone to nutritional deficiencies, fluorosis, kidney disease and diabetes than the general population. These are some of the same illnesses that the National Academy of Sciences landmark 2006 report, Fluoride in Drinking Water, identified as more susceptible to risks from fluoride’s toxic effects."*

Facts:

A. There is no valid, peer-reviewed scientific evidence of any "harmful effects of fluoride on health" by optimally fluoridated water.....as evidenced by the failure of provision of any such evidence within this flyer.

B. There is no valid, peer-reviewed scientific evidence of any adverse effects on any "low income families" by optimally fluoridated water....as evidenced by the failure of provision of any such evidence within this flyer.

C. Any propensity of low-income families, or anyone else, toward "nutritional deficiencies, fluorosis, kidney disease, and diabetes" is of no relevance to optimally fluoridated water.

D.  The 2006 NRC Committee on Fluoride in Drinking Water was charged to evaluate the adequacy of the EPA primary and secondary MCLs for fluoride, 4.0 ppm and 2.0 ppm respectively, to protect against adverse effects.  The final recommendation of this Committee was for the primary MCL to be lowered from 4.0 ppm.  The sole reasons cited by the Committee for this recommendation were the risk of severe dental fluorosis, bone fracture, and skeletal fluorosis, with chronic ingestion of water with a fluoride content of 4.0 ppm or greater.  Nothing else.  Had this Committee deemed there to be any other concerns with fluoride at this level, it would have been responsible for stating so and recommending accordingly.  It did not.

Additionally, the NRC Committee made no recommendation to lower the secondary MCL of 2.0 ppm.  Water is fluoridated at 0.7 ppm. one third the level which the 2006 NRC Committee on Fluoride in Drinking Water made no recommendation to lower.

In March of 2013, Dr. John Doull, Chair of the 2006 NRC Committee on Fluoride in Drinking Water made the following statement:

"I do not believe there is any valid, scientific reason for fearing adverse health conditions from the consumption of water fluoridated at the optimal level”

---John Doull, MD, PhD, Chair of the National Academy of Sciences, National Research Council 2006 Committee Report on Fluoride in Drinking Water

10. Flyer: *"Low-income families have a higher rate of using infant formula. Ingestion of fluoride is NOT recommended for infants and young children because it’s a neurotoxin that can increase fluorosis, which has been associated with diminished IQ. Infants who consume formula mixed with fluoridated water consume about 100 times the very low amount of fluoride considered safe."*

Facts:

This is pure fabrication.

A. Neither the CDC, the ADA, the American Academy of Pediatrics, nor any other credible source has recommended that infants and young children not ingest fluoride.

From the CDC:

"You can use fluoridated water for preparing infant formula. However, if your child is exclusively consuming infant formula reconstituted with fluoridated water, there may be an increased chance for mild dental fluorosis. To lessen this chance, parents can use low-fluoride bottled water some of the time to mix infant formula; these bottled waters are labeled as de-ionized, purified,demineralized, or distilled." **[4]**

B. There is no valid, peer-reviewed scientific evidence of any adverse effects on infants, children, or anyone else from "neurotoxicity" of optimal level fluoride.......as evidenced by the lack of provision of any such evidence within this flyer.

C. The only "risk" to infants and children 0-8 years from optimally fluoridated water is mild to very mild dental fluorosis during those teeth developing years. Nothing else.

D. Infants who consume powdered infant formula reconstituted with optimally fluoridated water do not "consume about 100 times the very low amount of fluoride considered safe".

The US Institute of Medicine has established the following daily upper limits of fluoride intake from all sources before adverse effects may occur:

0-6 mos: 0.7 mg

6-12 mos: 0.9 mg

1-3 years: 1.3 mg

4-8 years : 2.2 mg

Above 8 years: 10 mg. **[10]**

Water is fluoridated at 0.7 mg/liter. This means that for every liter of fluoridated water consumed, 0.7 mg of fluoride is ingested. Infants consume approximately 1 liter of formula per day. Thus, their daily fluoride intake from powdered formula reconstituted with optimally fluoridated water is 0.7 mg. The only "risk" in exceeding that amount in any manner associated with optimally fluoridated water is mild to very mild dental fluorosis. This is evidenced by the

fact that after age 8, the teeth have developed, dental fluorosis is no longer possible, and the IOM established daily upper limit jumps to 10 mg thereafter.

11. Flyer: *Low-income families trying to avoid fluoride for health reasons can’t afford to buy expensive filters or unfluoridated bottled water. Cheaper, counter-top brands cannot filter fluoride.*

Facts:

Optimal level fluoride is odorless, colorless, tasteless, and causes no adverse effects. There is no valid scientific reason to filter it out of drinking water. Any who personally wish to consume bottled water and/or buy filters to remove fluoride from their water, are entirely free to do so. However, any expense and inconvenience incurred in satisfying such personal preferences is entirely their responsibility. Society is not expected to provide water with content customized to the personal preferences of each individual.

12. Flyer: "*Fluoridation takes away the right of ALL Newport residents to choose whether they want to ingest fluoride or not. Everyone should have the right of informed consent – to be able to refuse to ingest a drug they don’t want. Currently, ALL Newport residents have this choice. Adding fluoridation chemicals to the water takes this choice away, especially for low-income families."*

Facts:

A. The public health initiative of water fluoridation takes away no one's rights to do anything. People are entirely free to consume the water, or not. Their choice.

B. There are no drugs involved in water fluoridation. There are simply fluoride ions, identical to those which have always existed in water.

C. Informed consent applies to treatment rendered. Any who deem the drinking of a glass of water to be a "treatment" of some sort, requiring informed consent, are entirely free to inform themselves and provide consent to themselves every time they get ready to "administer" a glass of water to themselves. There is no informed consent required for local officials to approve the level of an existing mineral in public drinking water under their jurisdiction. Consent for these officials to perform their responsibilities is conferred via their election/appointment to office.

 13. Flyer: *See Clean Water Newport’s Facebook page to sign our petition opposing fluoridation.*

Facts:

Fluoridation ensures that consumers obtain maximum benefit from a mineral, fluoride, which they will ingest in their water, fluoridated or not. Fluoridation strictly maintains the level of that existing fluoride at a concentration well below the threshold of adverse effects.

Signing a petition against fluoridation is stating that one desires to remove the benefit of this mineral which will be ingested in water anyway, and that one desires to remove the strict controls which maintain the level of this mineral well below the threshold of adverse effects.

There is no logic in signing any such petition.

**Effectiveness Studies**

1) 2015

Results

In the 3 areas the proportion of children who received a dental examination varied; 77.5% (n = 825) for the fluoridated area, 80.1% (n = 781) for the pre-fluoridated area and 55.3% (n = 523) for the non-fluoridated area. The mean dmft was 1.40 for the fluoridated area, 2.02 for the pre-fluoridated area and 2.09 for the non-fluoridated area. These differences were statistically significant (p < 0.01). Differences were also noted in the proportion of children who were caries free, 62.6% fluoridated area, 50.8% for the pre-fluoride area and 48.6% for the non-fluoride location.

Conclusion

The children living in the well-established fluoridated area had less dental caries and a higher proportion free from disease when compared with the other two areas which were not fluoridated. Fluoridation demonstrated a clear benefit in terms of better oral health for young children.

---The Dental Health of primary school children living in fluoridated, pre-fluoridated and non-fluoridated communities in New South Wales, Australia

Anthony S Blinkhorn, Roy Byun, George Johnson, Pathik Metha, Meredith Kay, and Peter Lewis

BMC Oral Health 2015, 15:9  doi:10.1186/1472-6831-15-9http://www.biomedcentral.com/1472-6831/15/9

2)  RESULTS:

The prevalence of dental caries was inversely related and the prevalence of fluorosis was directly related to the concentration of fluoride in the drinking water. The mean DMFS in the communities with 0.8 to 1.4 ppm fluoride was 53.9 percent to 62.4 percent lower than that in communities with negligible amounts of fluoride. Multivariate analysis showed that water fluoride level was the strongest factor influencing DMFS scores. The prevalence of fluorosis ranged from 1.7 percent to 15.4 percent, and the increase in fluorosis with increasing fluoride exposure was limited entirely to the milder forms.

-----J Public Health Dent. 2000 Summer;60(3):147-53.

The prevalence of dental caries and fluorosis in Japanese communities with up to 1.4 ppm of naturally occurring fluoride.

Tsutsui A, Yagi M, Horowitz AM.

Department of Preventive Dentistry, Fukuoka Dental College, Fukuoka, Japan. tutuia@college.fdcnet.ac.jp

http://www.ncbi.nlm.nih.gov/pubmed/11109211

3)  2000

CONCLUSIONS:

Caries levels are lower among children with fluoridated domestic water supplies. Decay levels are much lower in 2002 than they were in 1984 and in the 1960s. The oral health of the less well off is worse than that of the rest of the population. The prevalence of dental fluorosis is higher amongst children and adolescents with fluoridated water supplies. Comparisons with 1984 data show an increase in the prevalence of fluorosis since that time.

----Community Dent Health. 2004 Mar;21(1):37-44.

Dental caries and enamel fluorosis among the fluoridated and non-fluoridated populations in the Republic of Ireland in 2002.

Whelton H, Crowley E, O'Mullane D, Donaldson M, Kelleher V, Cronin M.

Source

Oral Health Services Research Centre, University Dental School and Hospital, Wilton, Cork, Ireland.

4) http://www.ncbi.nlm.nih.gov/pubmed/7643331

CONCLUSIONS:

The ingestion of water containing 1 ppm or less fluoride during the time of tooth development may result in dental fluorosis, albeit in its milder forms. However, in these times of numerous products containing fluoride being available, children ingesting water containing 1 ppm fluoride continue to derive caries protection compared to children ingesting water with negligible amounts of fluoride. Thus, the potential for developing a relatively minor unesthetic condition must be weighed against the potential for reducing dental disease.

-----J Public Health Dent. 1995 Spring;55(2):79-84.

Dental fluorosis and caries prevalence in children residing in communities with different levels of fluoride in the water.

Jackson RD, Kelly SA, Katz BP, Hull JR, Stookey GK.

Source

Oral Health Research Institute, Indianapolis, IN 46202-2876, USA.

http://www.ncbi.nlm.nih.gov/pubmed/15074871

5)  2004

Conclusions:

The results of this study support existing work suggesting water fluoridation together with the use of fluoridated dentifrice provides improved caries prevention over the use of fluoridated dentifrice alone. The social gradient between caries and deprivation appears to be lower in the fluoridated population compared to the non-fluoridated population, particularly when considering caries into dentine, demonstrating a reduction in inequalities of oral health for the most deprived individuals in the population.

----The association between social deprivation and the prevalence and severity of dental caries and fluorosis in populations with and without water fluoridation

Michael G McGrady, Roger P Ellwood, [...], and Iain A Pretty

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3543717/

6)  2012

CONCLUSIONS:

Fewer studies have been published recently. More of these have investigated effect at the multi-community, state or even national level. The dmf/DMF index remains the most widely used measure of effect. % CR were lower in recent studies, and the 'halo' effect was discussed frequently. Nevertheless, reductions were still substantial. Statistical control for confounding factors is now routine, although the effect on per cent reductions tended to be small. Further thought is needed about the purpose of evaluation and whether measures of effect and study design are appropriate for that purpose.

-----Community Dent Oral Epidemiol. 2012 Oct;40 Suppl 2:55-64. doi: 10.1111/j.1600-0528.2012.00721.x.

Effectiveness of water fluoridation in caries prevention.

Rugg-Gunn AJ, Do L.

Source

Newcastle University, UK. andrew@rugg-gunn.net

http://www.ncbi.nlm.nih.gov/pubmed/22998306

7) 2012

CONCLUSIONS:

Data showed a significant decrease in dental caries across the entire country, with an average reduction of 25% occurring every 5 years. General trends indicated that a reduction in DMFT index values occurred over time, that a further reduction in DMFT index values occurred when a municipality fluoridated its water supply, and mean DMFT index values were lower in larger than in smaller municipalities.

----Int Dent J. 2012 Dec;62(6):308-14. doi: 10.1111/j.1875-595x.2012.00124.x.

Decline in dental caries among 12-year-old children in Brazil, 1980-2005.

Lauris JR, da Silva Bastos R, de Magalhaes Bastos JR.

Source

Department of Paediatric Dentistry, University of São Paulo, Bauru, São Paulo, Brazil. jrlauris@fob.usp.br

http://www.ncbi.nlm.nih.gov/pubmed/23252588

8). 2012

Abstract

The effectiveness of fluoridation has been documented by observational and interventional studies for over 50 years. Data are available from 113 studies in 23 countries. The modal reduction in DMFT values for primary teeth was 40-49% and 50-59% for permanent teeth. The pattern of caries now occurring in fluoride and low-fluoride areas in 15- to 16-year-old children illustrates the impact of water fluoridation on first and second molars.

----Caries Res. 1993;27 Suppl 1:2-8.

Efficacy of preventive agents for dental caries. Systemic fluorides: water fluoridation.

Murray JJ.

Source

Department of Child Dental Health, Dental School, University of Newcastle upon Tyne, UK.

http://www.ncbi.nlm.nih.gov/pubmed/8500120

9) 1993

CONCLUSIONS:

The survey provides further evidence of the effectiveness in reducing dental caries experience up to 16 years of age. The extra intricacies involved in using the Percentage Lifetime Exposure method did not provide much more information when compared to the simpler Estimated Fluoridation Status method.

-----Community Dent Health. 2012 Dec;29(4):293-6.

Caries status in 16 year-olds with varying exposure to water fluoridation in Ireland.

Mullen J, McGaffin J, Farvardin N, Brightman S, Haire C, Freeman R.

Source

Health Service Executive, Sligo, Republic of Ireland. joej.mullen@hse.ie

http://www.ncbi.nlm.nih.gov/pubmed/23488212

10). 2012

CONCLUSIONS:

Children with severe dental caries had statistically significantly lower numbers of lesions if they lived in a fluoridated area. The lower treatment need in such high-risk children has important implications for publicly-funded dental care.

------Community Dent Health. 2013 Mar;30(1):15-8.

Fluoridation and dental caries severity in young children treated under general anaesthesia: an analysis of treatment records in a 10-year case series.

Kamel MS, Thomson WM, Drummond BK.

Source

Department of Oral Sciences, Sir John Walsh Research Institute, School of Dentistry, The University of Otago, Dunedin, New Zealand.

Research Design:  Consecutive clinical case series: clinical details (diagnoses and the treatments provided) were recorded for children who had received comprehensive dental care under GA between 2000 and 2009. Age, gender, ethnicity, socio-economic status and fluoridation status (determined from the residential address) were also recorded.

http://www.ncbi.nlm.nih.gov/pubmed/23550501

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Hiroko Iida, DDS, MPH and Jayanth V. Kumar, DDS, MPH

<http://jada.ada.org/content/140/7/855.long>

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Eugenio D. Beltrán-Aguilar, D.M.D., M.S., Dr.P.H.; Laurie Barker, M.S.P.H.; and Bruce A. Dye, D.D.S., M.P.H.

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Community Water Fluoridation

United States Centers for Disease Control and Prevention

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United States Centers for Disease Control

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Cho HJ, Jin BH, Park DY, Jung SH, Lee HS, Paik DI, Bae KH.

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Food and Nutrition Board, Institute of Medicine, National Academies

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