Family physicians as advocates for community water fluoridation

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Community water fluoridation (CWF) is a safe, efficient, and inexpensive way to reduce dental cavities (also called *tooth decay* or *dental caries*) in adults and children, yet currently only 39.8% of Canadians receive fluoridated drinking water, down from 42.6% in 2007.[1] However, this rate mostly captures CWF in larger cities, as it is less common in smaller communities and in Indigenous populations. Severe cavities and tooth loss are more common among Indigenous peoples, new Canadians, and people living in poverty.[2,3] While oral health is not traditionally part of the work of family physicians, the link between oral health and overall health is well documented, so family physicians have a responsibility to care about it. The CanMEDS–Family Medicine 2017 competency framework states that family physicians should be health advocates, meaning they should use their expertise and knowledge to improve the health of their patients and communities.[4] Family physicians should collaborate with oral health care providers, local health advocates, and elected officials to ensure all Canadians have access to fluoridated water.

Fluoridation of drinking water was introduced in Brantford, Ont, in 1945. Comparisons of water in Brantford and in other communities were part of the initial evidence that established CWF effectiveness and led to the US Centers for Disease Control and Prevention naming it 1 of the 10 greatest public health achievements of the 20th century.[5] From 1945 on, municipalities began to fluoridate, but from the very beginning fluoridation opponents used every conceivable argument—emotional and political—to prevent its adoption[6,7] or to stop it.[1] As water treatment decisions across Canada lie within municipal jurisdictions, debate occurs at the local level, but municipal officials often lack the training needed to appraise science and evidence. They are susceptible to strong views of influential community members and vitriolic campaigns against public health.[7] This history has produced uneven adoption of CWF across the country. Ontario now has the highest CWF rate, with 73.2% of the population on community water systems receiving fluoridated water, but less than 2% receiving it in British Columbia, Yukon, Quebec, New Brunswick, and Newfoundland and Labrador (**Table 1**).[1] In Australia, fluoridated water is supplied to more than 90% of the population in all but 1 state.[8] Why not in Canada?

As health advocates, we must promote water fluoridation and refute arguments against it. There are 4 aspects of CWF that are often poorly understood: the importance of dental health, CWF effectiveness, CWF safety, and CWF ethics and legality.

Table 1. Water fluoridation rate estimates in Canadian jurisdictions: *Data are mainly from 2021.*

REGION	WITHOUT FLUORIDATED WATER SYSTEM, %	WITH FLUORIDATED WATER SYSTEM, %
British Columbia	98.5	1.5
Alberta	57.0*	43.0*
Saskatchewan	59.6	40.4
Manitoba	31.7	68.3
Ontario	26.8	73.2
Quebec	99.0	1.0
New Brunswick	98.9	1.1
Nova Scotia	49.6	50.4
Prince Edward Island	74.9	25.1
Newfoundland and Labrador	100.0	0.0
Nunavut	72.3	27.7
Northwest Territories	31.4	68.6
Yukon	100.0	0.0
Canada	60.2	39.8

*This number is expected to change when fluoridation returns to Calgary in 2024.
Adapted from the Public Health Agency of Canada.[1]

Dental disease and health

Fluoridation opponents may not appreciate the frequency and severity of dental disease and its harm to general health. Among children 6 to 11 years old, 57% have dental caries, with a mean of 2 filled deciduous teeth. This percentage rises with age (**Table 2**).[2] Dental treatment is the most common reason children receive general anesthesia in Canada, representing 31% of all day surgeries among children younger than 6 years.[9] People of all ages with untreated dental caries can develop periodontal disease, abscesses, cervical fascial infection, and chronic pain. People with dental pain find it difficult to chew, and pain disturbs sleep, interrupts learning, and affects mood.[10] Those with missing or decayed teeth often feel self-conscious and are unwilling to smile. They are less likely to obtain client-facing jobs, possibly earning lower incomes,[6] and may go into debt to pay for urgent dental treatment.[10]

Dental disease is costly and cumulates over time. A small filling (restoration) given to a child on a single

Table 2. Prevalence of dental decay in Canada

AGE GROUP, Y	WITH DENTAL DECAY, %	MEAN NO. OF TEETH WITH DECAY	MEAN NO. OF FILLINGS	MEAN NO. OF MISSING TEETH	MEAN NO. OF DFMT
Children, 6-11	• Primary, 47.8 • Permanent, 56.8	• Primary, 1.99 • Permanent, 0.49	2.04	NA	2.48
Adolescents, 12-19	58.8	2.49	2.10	NA	2.49
Adults					
• 20-39	91.2	6.66	5.85	0.39	6.85
• 40-59	98.8	9.88	9.43	2.42	12.30
• 60-79	100.0	10.09	9.72	5.57	15.67

DMFT—decayed, missing, or filled teeth; NA—not available.
Adapted from Health Canada.[2]

surface costs approximately $150.[11] Young children or those with disabilities may require general anesthesia for dental work, increasing the cost of the procedure. A dental cavity, once treated, inevitably leads to a cascade of further treatments (**Box 1**).[11] Dental costs can become a "tax" on disadvantaged individuals, especially those living in rural areas where access to dental services is limited.[6] The new Canada Dental Benefit covers only up to $650 per year for some children younger than 12.[12]

Effectiveness of water fluoridation

Some opponents claim that fluoridation is ineffective. They cite a Cochrane review that criticized the quality of evidence for fluoridation because of study design and risk of bias.[13] Nonetheless, those authors concluded that CWF is 22% effective in reducing cavities. Randomized controlled studies are impossible to perform with large samples over the many years needed to demonstrate effects, so we must be content with parallel cohorts of communities.

Detailed evidence reviews conducted by authoritative groups in Canada,[14] Australia,[8] New Zealand,[15] and Ireland[16] used current best methods and reached similar conclusions that fluoridation effectively reduces dental decay by around 25% (Appendix 1, available from **CFPlus***).

Children growing up in areas with fluoridated water have better dental health than those without. At all ages, tooth decay is reduced by about 25% and the proportion of children with no decay in either deciduous or permanent teeth is about 15% higher than those in unfluoridated areas. Recently, studies on fluoridation cessation in Calgary, Alta,[17,18] and in Juneau, Alaska,[19] have demonstrated that dental health of schoolchildren deteriorates after water fluoridation stops, even in this era of fluoridated toothpaste and other measures.

Since dental treatment is expensive, fluoridation is cost-effective, with savings estimated at more than 30 to 40 times the cost of supply over a 20-year period in large water systems—less in smaller ones.[20] It has been difficult for small municipalities to obtain cost-effective systems, but newly developed equipment makes this easier to achieve.[21] The cost is borne by public water supply authorities, while gains accrue to families in the form of dental work not needed. Such gains are difficult to measure and, like other preventive actions, seldom appreciated.

Box 1. Costly natural history of a childhood filling

A single small filling (restoration) is usually the beginning of a lifelong saga of interventions, discomfort, and cost. Even 1 filling is an indicator of potential poor mouth care and dental hygiene: those with 1 filling are likely to need several more in future. Children who have undergone extensive treatment at a young age are at a higher risk of recurrent decay and retreatment.

- If a child is uncooperative at a dental appointment, they might be referred to a pediatric dentist for conscious sedation, resulting in a more expensive procedure. For young children or those with disabilities making them unable to cooperate, dental work must be conducted under general anesthesia; the costs of this treatment must be borne by the parents if they do not have adequate dental coverage
- An initial filling (restoration) of a small cavity costs about $150.[11] If it is properly cared for, an amalgam (silver) filling will last 10 to 15 years before needing a replacement. If it is in a visible area, or if parents fear mercury poisoning from the amalgam, a white composite filling may be used, but they generally deteriorate faster, lasting only 7 to 10 years
- Each time a filling is replaced, the cavity is "freshened" and enlarged by removing more tooth structure, increasing costs ($370 for a large filling).[11] Over time, the tooth structure weakens and may crack. Infection may track down the root, leading to root canal treatment ($700 to $1500). Crowns ($1500) or bridges ($4500) may be needed. When there is more severe damage, the tooth must be extracted and perhaps replaced with a dental implant
- Multiple tooth loss could eventually lead to partial or complete dentures, which becomes an additional bother and expense

***Appendix 1** is available from **https://www.cfp.ca**. Go to the full text of the article online and click on the **CFPlus** tab.

Fluoridation safety

Opponents misstate fluoridation safety. They often focus on the toxicity of elemental fluoride and some of its compounds. At the Canadian standard of 0.7 mg/L (0.7 ppm with maximum allowable concentration of 1.5 mg/L)[22] fluoride is not toxic. Water system operators must control fluoridation systems carefully to stabilize this concentration.

Opponents raise concerns about dental fluorosis and the possibility of affecting brain development. Fluorosis is discolouration and pitting of teeth that occurs among those with higher fluoride intake, but in Canada moderate or severe fluorosis is too rare to allow reporting.[2] Such discolouration appears likely related to childhood ingestion of either excess fluoridated toothpaste or well water with high fluoride levels. Since toothpaste in Canada contains up to 1150 ppm of fluoride,[23] parents must monitor children younger than 8 years to prevent its overuse, regardless of whether the water is being fluoridated (**Box 2**).[24,25]

Recently, researchers at York University in Toronto, Ont, asserted that even the concentration in fluoridated water causes reduced intellectual achievement in children born in those areas.[26] Yet, fluoridation has more than 75 years of safety evidence; IQ changes in countries or areas where CWF started or ceased have not been observed. The assertion that fluoridation causes decreased intelligence is an extraordinary claim requiring extraordinary evidence. Moreover, the Canadian Agency for Drugs and Technologies in Health appraised the York University paper and noted that the main effect (which was reported on only 1 line of table 1) showed no difference in IQ between those living in areas with CWF and those without.[27] Other studies and organizations have concluded that fluoridation has no effect on neurologic development.[8,15,28]

Ethics and law regarding fluoridation

Is it ethical to fluoridate? Fluoride is a mineral that is added as a supplement, similar to the addition of iodine in salt, folate in flour, and iron in breakfast cereals. Opponents claim fluoride is a "medication" and it is unethical to medicate anyone against their will. After exhaustive consideration of the arguments and evidence, the Canadian Agency for Drugs and Technologies in Health concluded that CWF can be "ethically justified because the balance of its public health benefits outweigh its measured harms, and are significant enough to override the concerns related to individual choice."[29]

Some assert it is illegal to "force" people to accept fluoridated water. In 2004 the British Columbia Court of Appeal ruled that when a democratic majority votes in favour of CWF, a litigant cannot halt the public health measure because of concerns about the rare incidence of severe fluorosis.[30] The overall benefit for most community members may prevail over a few objectors. In this case, the major reduction in tooth decay was more important than concerns about the possibility of cosmetic changes of fluorosis. The Supreme Court of Canada did not grant an appeal and might be understood to have expressed disapproval of the request by dismissing it with costs.[31]

Box 2. Tooth care guidelines for children: *Additional sources are provided for assistance with child tooth care.*

Risk assessment tool

- The Canadian Caries Risk Assessment Tool assesses the dental risk of children younger than 6 years of age: **https://umanitoba.ca/CRA_Tool_ENG_Version.pdf**
  - -The tool provides photos of tooth lesions and a checklist of risk factors. If the child scores as high risk, apply fluoride varnish and refer for dental assessment and care
  - -The assessment tool can also be found on the Rourke Baby Record website: **https://www.rourkebabyrecord.ca/downloads**

Toothbrushing advice

- A responsible adult should brush the child's teeth twice daily for 2 minutes from eruption until the child is able to do so effectively themselves, usually around 8 to 9 years.[24] This includes using the right amount of fluoridated toothpaste. The Winnipeg Regional Health Authority provides helpful tips: **https://wrha.mb.ca/wp-content/site-documents/healthinfo/preventill/files/ECTD_ToothbrushTips.pdf**

Proper use of fluoridated toothpaste

- Health Canada provides a toothpaste guide for children[25]: **https://www.canada.ca/en/health-canada/services/healthy-living/your-health/environment/fluorides-human-health.html#s5**

Amount of toothpaste

Guidelines for toothpaste amount:

- First tooth appearance to 3 years of age: apply a smearof toothpaste the size of a grain of rice[25]
- From 3 to 6 years: apply a green pea–sized amount[25]
- From 6 to 9 years: apply a green pea–sized amount and supervise and assist child with toothbrushing
- From 9 years to adult: ensure teeth are being brushed regularly for at least 2 minutes and a green pea–sized amount of toothpaste is being used

It is best for the toothpaste to remain in contact with the teeth after brushing: excess should be spat out, but it is not advisable to rinse the mouth with water.[24] Health Canada has additional guidance on cleaning a child's mouth[24]: **https://www.canada.ca/en/public-health/topics/oral-health/caring-your-teeth-mouth/children.html#a4**.

Next steps for family physicians

Overwhelming evidence has led authorities around the world to conclude that CWF is effective and safe. Fluoridation improves dental and general health, more so for children who are disadvantaged because adherence to mouth care routines is low. Consequently, family physicians should strongly encourage patients to use fluoridated toothpaste according to guidelines (**Box 2**)[24,25]

and should work to ensure that patients have fluoride in their drinking water.

In communities without CWF, or if the question of ceasing fluoridation arises, speak with municipal elected officials to understand their views. Learn their perceptions of the costs and complexity of fluoridation, and whether they support CWF. They might respond positively to information from authoritative sources. Other officials might have misinformed views stemming from antiscience or conspiracy ideas, possibly influenced by the vitriolic antifluoride campaigners on social media and email who use the Gish gallop approach[32] to swamp rational appraisal of evidence. Depending on your community's situation, you may develop an alliance with a variety of local experts and activists to mount a campaign, as we did in Calgary, after the city council voted in 2011 to overturn the results of 2 plebiscites in favour, thereby ceasing water fluoridation. In 2021 the "Fluoride Yes!" campaign[33] (**Figure 1**) won a plebiscite with 62% voter support[34]; the new council immediately voted to reinstate fluoridation. As a result of the campaign, the Canadian Fluoridation Society (**https://canadianfluoridationsociety.ca/**) was formed and is ready to assist not only family physicians with CWF advocacy, but anyone in Canada.

Figure 1. Fluoride Yes! campaign button

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Competing interests
None declared

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References

1. Office of the Chief Dental Officer of Canada. *The state of community water fluoridation across Canada: 2022 report*. Ottawa, ON: Public Health Agency of Canada; 2022. Available from: **https://publications.gc.ca/site/fra/9.916703/publication.html**. Accessed 2023 Apr 5.
2. *Report on the findings of the oral health component of the Canadian Health Measures Survey 2007-2009*. Ottawa, ON: Health Canada; 2010. Available from: **https://publications.gc.ca/collections/collection_2010/sc-hc/H34-221-2010-eng.pdf**. Accessed 2023 Apr 5.
3. Shi C, Faris P, McNeil DA, Patterson S, Potestio ML, Thawer S, et al. Ethnic disparities in children's oral health: findings from a population-based survey of grade 1 and 2 schoolchildren in Alberta, Canada. *BMC Oral Health* 2018;18(1):1.
4. Shaw E, Oandasan I, Fowler N, editors. *CanMEDS–Family Medicine 2017. A competency framework for family physicians across the continuum*. Mississauga, ON: College of Family Physicians of Canada; 2017. Available from: **https://www.cfpc.ca/CFPC/media/Resources/Medical-Education/CanMEDS-Family-Medicine-2017-ENG.pdf**. Accessed 2023 Apr 13.
5. From the Centers for Disease Control and Prevention. Achievements in public health, 1900-1999: fluoridation of drinking water to prevent dental caries. *JAMA* 2000;283(10):1283-6.
6. Carstairs C. *The smile gap. A history of oral health and social inequality*. McGill-Queen's University Press; 2022.
7. Markusoff J. After a decade of cavities, will Calgary put fluoride back in its water supply? *Maclean's* 2021 Apr 26. Available from: **https://macleans.ca/news/after-a-decade-of-cavities-will-calgary-put-fluoride-back-in-its-water-supply/**. Accessed 2023 Apr 5.
8. *2017 public statement—water fluoridation and human health*. Canberra, Australia: National Health and Medical Research Council; 2017. Available from: **https://www.nhmrc.gov.au/about-us/publications/2017-public-statement-water-fluoridation-and-human-health**. Accessed 2023 Jan 21.
9. Schroth RJ, Quiñonez C, Shwart L, Wagar B. Treating early childhood caries under general anesthesia: a national review of Canadian data. *J Can Dent Assoc* 2016;82:g20.
10. *Dental health of adults and seniors in Windsor-Essex survey results 2018*. Windsor, ON: Windsor-Essex County Health Unit; 2018. Available from: **https://www.wechu.org/reports/dental-health-adults-and-seniors-windsor-essex-survey-results-2018-0**. Accessed 2023 Apr 6.
11. *Alberta dental fee guides*. Edmonton, AB: Alberta Dental Association; 2023. Available from: **https://www.albertadentalassociation.ca/alberta-dental-fee-guides**. Accessed 2023 Feb 28.
12. *Canada dental benefit*. Ottawa, ON: Government of Canada; 2023. Available from: **https://www.canada.ca/en/revenue-agency/services/child-family-benefits/dental-benefit.html**. Accessed 2023 Apr 10.
13. Iheozor-Ejiofor Z, Worthington HV, Walsh T, O'Malley L, Clarkson JE, Macey R, et al. Water fluoridation for the prevention of dental caries. *Cochrane Database Syst Rev* 2015;(6):CD010856.
14. *CADTH technology review. Community water fluoridation programs: a health technology assessment—implementation issues analysis*. Ottawa, ON: Canadian Agency for Drugs and Technologies in Health; 2018. Available from: **https://www.cadth.ca/sites/default/files/pdf/feedback/DRAFT_HT0022-CWF_Implementation_Issues_Analysis_Report.pdf**. Accessed 2023 Apr 6.
15. *Fluoridation: an update on evidence*. Auckland, New Zealand: Office of the Prime Minister's Chief Science Advisor; 2021. Available from: **https://www.pmcsa.ac.nz/topics/fluoridation-an-update-on-evidence/**. Accessed 2023 Jan 21.
16. Sutton M, Kiersey R, Farragher L, Long J. *Health effects of water fluoridation. An evidence review 2015*. Dublin, Ireland: Health Research Board; 2015. Available from: **https://www.hrb.ie/fileadmin/publications_files/Health_Effects_of_Water_Fluoridation.pdf**. Accessed 2023 Apr 17.
17. McLaren L, Patterson S, Thawer S, Faris P, McNeil D, Potestio M, et al. Measuring the short-term impact of fluoridation cessation on dental caries in grade 2 children using tooth surface indices. *Community Dent Oral Epidemiol* 2016;44(3):274-82. Epub 2016 Feb 17.
18. McLaren L, Patterson SK, Faris P, Chen G, Thawer S, Figueiredo R, et al. Fluoridation cessation and children's dental caries: a 7-year follow-up evaluation of grade 2 schoolchildren in Calgary and Edmonton, Canada. *Community Dent Oral Epidemiol* 2022;50(5):391-403. Epub 2021 Jul 26.
19. Meyer J, Margaritis V, Mendelsohn A. Consequences of community water fluoridation cessation for Medicaid-eligible children and adolescents in Juneau, Alaska. *BMC Oral Health* 2018;18(1):215.
20. *CADTH technology review. Community water fluoridation programs: a health technology assessment—budget impact analysis*. Ottawa, ON: Canadian Agency for Drugs and Technologies in Health; 2019.
21. *CDC initiative creates new water fluoridation technology to support rural health needs*. Atlanta, GA: Centers for Disease Control and Prevention; 2021. Available from: **https://www.cdc.gov/media/releases/2021/p0318-Fluoridation.html**. Accessed 2023 Apr 4.
22. Health Canada. *Guidelines for Canadian drinking water quality—summary tables*. Ottawa, ON: Government of Canada; 2022. Available from: **https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html**. Accessed 2023 Apr 17.
23. Health Products and Foods Branch. *Oral health products monograph*. Ottawa, ON: Health Canada; 2022. Available from: **https://webprod.hc-sc.gc.ca/nhpid-bdipsn/atReq.do?atid=oral.health.sante.bucco.dentaire&lang=eng**. Accessed 2023 Apr 6.
24. Cleaning your child's mouth. In: *Oral health for children*. Ottawa, ON: Health Canada; 2022. Available from: **https://www.canada.ca/en/public-health/topics/oral-health/caring-your-teeth-mouth/children.html#a4**. Accessed 2023 Apr 14.

25. Proper use of fluoridated toothpaste for children. In: *Fluoride and oral health*. Ottawa, ON: Health Canada; 2022. Available from: **https://www.canada.ca/en/health-canada/services/healthy-living/your-health/environment/fluorides-human-health.html#s5**. Accessed 2023 Apr 14.
26. Green R, Lanphear B, Hornung R, Flora D, Martinez-Mier EA, Neufeld R, et al. Association between maternal fluoride exposure during pregnancy and IQ scores in offspring in Canada. *JAMA Pediatr* 2019;173(10):940-8.
27. *Community water fluoridation exposure: a review of neurological and cognitive effects—a 2020 update*. Ottawa, ON: Canadian Agency for Drugs and Technologies in Health; 2020.
28. Lambe K, Farragher A, Moloney T, Sunday S, Long J. *Impact of community water fluoridation on systemic health excluding oral health: an evidence review*. Dublin, Ireland: Health Research Board; 2022. Available from: **https://www.hrb.ie/data-collections-evidence/hrb-evidence-centre/publications/publication/impact-of-community-water-fluoridation-on-systemic-health-excluding-oral-health-an-evidence-review/returnPage/1/**. Accessed 2023 Apr 6.
29. *CADTH technology review. Community water fluoridation programs: a health technology assessment—ethical considerations*. Ottawa, ON: Canadian Agency for Drugs and Technologies in Health; 2018. Available from: **https://www.cadth.ca/sites/default/files/pdf/feedback/DRAFT_HT0022-CWF_Ethical_Considerations_Report.pdf**. Accessed 2023 Apr 6.
30. *Millership v. HMTQ*. 2004. BCCA. 9 (CanLII).
31. *Docket. 30197. Kevin James Millership v. Her Majesty the Queen in Right of the Attorney General of Canada, et al*. Ottawa, ON: Supreme Court of Canada; 2018. Available from: **https://www.scc-csc.ca/case-dossier/info/dock-regi-eng.aspx?cas=30197**. Accessed 2023 Feb 28.
32. Shatz I. *Gish gallop: when people try to win debates by using overwhelming nonsense* [blog]. Effectiviology; 2023. Available from: **https://effectiviology.com/gish-gallop/**. Accessed 2023 Feb 18.
33. *Fluoride Yes Campaign Facebook page*. Menlo Park, CA: Facebook. Available from: **https://www.facebook.com/fluoridationyyc**. Accessed 2023 Apr 14.
34. *2021 results—Calgary general election*. Calgary, AB: Elections Calgary; 2021. Available from: **https://www.calgary.ca/election/results/2021-results.html#question-for-a-vote-of-the-electors**. Accessed 2023 Apr 6.

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La traduction en français de cet article se trouve à **https://www.cfp.ca** dans la table des matières du numéro **de mai 2023** à la **page e98**.

Suggested reading

Society of Teachers of Family Medicine Group on Oral Health. *Smiles for Life: a national oral health curriculum* [website]. Smiles for Life Oral Health; 2023. Available from: **https://www.smilesforlifeoralhealth.org/**. Accessed 2023 Apr 6.

Smarsh S. *Poor teeth* [essay]. Aeon Media Group Ltd; 2014. Available from: **https://aeon.co/essays/there-is-no-shame-worse-than-poor-teeth-in-a-rich-world**. Accessed 2023 Apr 6.

Videos—fluoride. Wellington, NZ: New Zealand Ministry of Health; 2023. Available from: **https://www.health.govt.nz/your-health/healthy-living/teeth-and-gums/fluoride/fluoride-facts/videos-fluoride**. Accessed 2023 Apr 6.