

CADTH RAPID RESPONSE REPORT: REFERENCE LIST

Community Water Fluoridation: Clinical and Cost-Effectiveness

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Research Questions

1. What is the clinical effectiveness regarding the use of community water fluoridation?
2. What is the cost-effectiveness regarding the use of community water fluoridation?

Key Findings

Three systematic reviews, one systematic review of economic evaluations, one meta-analysis, nineteen non-randomized studies, and eight economic evaluations were identified regarding the clinical effectiveness, safety, or cost-effectiveness of community water fluoridation.

Methods

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies and economic studies. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2012 and March 19, 2017. Internet links were provided, where available.

Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria

Population	Children and adults living in communities
Intervention	Community water fluoridation
Comparator	No community water fluoridation
Outcomes	Q1: Clinical effectiveness and safety Q2: Cost-effectiveness
Study Designs	Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, economic evaluations

Results

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and economic evaluations.

Three systematic reviews, one systematic review of economic evaluations, one meta-analysis, nineteen non-randomized studies, and eight economic evaluations were identified regarding the clinical effectiveness, safety, or cost-effectiveness of community water fluoridation. No relevant health technology assessments or randomized controlled trials were identified.

Additional references of potential interest are provided in the appendix.

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

1. McLaren L, Singhal S. Does cessation of community water fluoridation lead to an increase in tooth decay? A systematic review of published studies. *J Epidemiol Community Health* [Internet]. 2016 Sep [cited 2017 Mar 19];70(9):934-40. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5013153>
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[PubMed: PM26841772](#)
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[PubMed: PM26092033](#)
4. Yin XH, Huang GL, Lin DR, Wan CC, Wang YD, Song JK, et al. Exposure to fluoride in drinking water and hip fracture risk: a meta-analysis of observational studies. *PLoS One* [Internet]. 2015 [cited 2017 Mar 19];10(5):e0126488. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4447426>
[PubMed: PM26020536](#)
5. Marino RJ, Khan AR, Morgan M. Systematic review of publications on economic evaluations of caries prevention programs. *Caries Res* [Internet]. 2013 [cited 2017 Mar 19];47(4):265-72. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4813796>
[PubMed: PM23407213](#)

Randomized Controlled Trials

No literature identified.

Non-Randomized Studies

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<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4265943>
[PubMed: PM24832151](#)
11. Crocombe LA, Brennan DS, Slade GD, Stewart JF, Spencer AJ. The effect of lifetime fluoridation exposure on dental caries experience of younger rural adults. *Aust Dent J*. 2015 Mar;60(1):30-7.
[PubMed: PM25329426](#)
12. Do L, Spencer AJ. Contemporary multilevel analysis of the effectiveness of water fluoridation in Australia. *Aust N Z J Public Health*. 2015 Feb;39(1):44-50.
[PubMed: PM25558897](#)
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[PubMed: PM25714098](#)
18. Cho HJ, Lee HS, Paik DI, Bae KH. Association of dental caries with socioeconomic status in relation to different water fluoridation levels. *Community Dent Oral Epidemiol.* 2014 Dec;42(6):536-42.
[PubMed: PM24890821](#)
19. Johnson NW, Laloo R, Kroon J, Fernando S, Tut O. Effectiveness of water fluoridation in caries reduction in a remote Indigenous community in Far North Queensland. *Aust Dent J.* 2014 Sep;59(3):366-71.
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[PubMed: PM22910620](#)

Economic Evaluations

25. Atkins CY, Thomas TK, Lenaker D, Day GM, Hennessy TW, Meltzer MI. Cost-effectiveness of preventing dental caries and full mouth dental reconstructions among Alaska Native children in the Yukon-Kuskokwim delta region of Alaska. *J Public Health Dent* [Internet]. 2016 Jun [cited 2017 Mar 19];76(3):228-40. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5010502>
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Appendix — Further Information

Previous CADTH Reports

33. Fluoridated water for cavity prevention: a review of the clinical effectiveness, cost effectiveness, and guidelines [Internet]. Ottawa: CADTH; 2009 May [cited 2017 Mar 19]. (Rapid response: summary with critical appraisal). Available from: <https://www.cadth.ca/fluoridated-water-cavity-prevention-review-clinical-effectiveness-cost-effectiveness-and-guideline-0>
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Non-Randomized Studies

Fluoridation Unspecified/Natural Fluoridation

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Review Articles

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[PubMed: PM28243675](#)
39. Zhang LE, Huang D, Yang J, Wei X, Qin J, Ou S, et al. Probabilistic risk assessment of Chinese residents' exposure to fluoride in improved drinking water in endemic fluorosis areas. *Environ Pollut.* 2017 Mar;222:118-25.
[PubMed: PM28063715](#)
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[PubMed: PM25890329](#)
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