

Oral health: Fluoride varnish treatment for primary teeth

Health Care: Obesity and Diabetes

Literature review updated October 2014.

As part of WSIPP’s research approach to identifying evidence-based programs and policies, WSIPP determines “what works” (and what does not work) to improve outcomes using an approach called meta-analysis. For detail on our methods, see our [Technical Documentation](#). At this time, WSIPP has not yet calculated benefits and costs for this topic.

Program Description: Fluoride varnish is a form of fluoride that temporarily adheres to the tooth in order to maintain contact between the fluoride and the tooth for several hours. In the studies we reviewed, fluoride varnish was applied every three to six months over a 12- to 36-month time period.

The analysis presented here reflects the effect of fluoride varnish applied to primary teeth.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Tooth decay	6	1042	-0.198	0.095	6	-0.198	0.036

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our [Technical Documentation](#).

Citations Used in the Meta-Analysis

- Chu, C.H., Lo, E.C., & Lin, H.C. (2002). Effectiveness of silver diamine fluoride and sodium fluoride varnish in arresting dentin caries in Chinese pre-school children. *Journal of Dental Research*, 81(11), 767-770.
- Clark, D.C., Stamm, J.W., Robert, G., & Tessier, C. (1985). Results of a 32-month fluoride varnish study in Sherbrooke and Lac-Mégantic, Canada. *Journal of the American Dental Association*, 111(6), 949-53.
- Frostell, G., Birkhed, D., Edwardsson, S., Goldberg, P., Petersson, L.-G., Priwe, C., & Winholt, A.-S. (1991). Effect of partial substitution of invert sugar for sucrose in combination with Duraphat® treatment on caries development in preschool children: The Malmo study. *Caries Research*, 25(4), 304-310.
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- Holm, A. (1979). Effect of a fluoride varnish (Duraphat®) in preschool children. *Community Dentistry and Oral Epidemiology*, 7(5), 241-245.

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Printed on 04-03-2024



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