

Silver Diamine Fluoride (38% Solution) for Prevention and Treatment of Early Childhood Caries. C.A.T. Summary

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Clinical Problem
<ul style="list-style-type: none"> Early childhood caries (ECC) is a preventable disease affecting teeth of children under 6 years old ¹ Studies reveal that the prevalence of ECC can be as high as 98% in some parts of Canada ² Non-invasive or minimally invasive treatment options are preferred Silver diamine fluoride (SDF) application is a simple, safe and inexpensive treatment option for ECC SDF could be an alternative method as a non-surgical treatment/prevention of ECC Dental clinicians need to be aware of the effectiveness of this method to prevent and arrest active ECC lesions compared to conventional invasive treatments

Clinical Question

Amongst children (>6 years old) with ECC, to what extent is SDF (38% solution) effective in arresting and preventing active cavitated caries lesions compared to conventional treatment within a minimum of 2 years?

Evidence Search

PubMed yield: 124 evidence sources.

- Slayton, et al., 2018. Evidence-based clinical practice guideline on non-restorative treatments for carious lesions: A report from the American Dental Association
- Oliveira et al., 2019. The effect of silver diamine fluoride in preventing caries in the primary dentition: a systematic review and of meta-analysis, 6 RCTs

MESH Terms and Key words: (("Dental Caries"[Mesh]) OR ("dental carie*" or "teeth caries" or "tooth carie*" or "dental decay" or "tooth decay" or "teeth decay")) AND (("silver diamine fluoride" [Supplementary Concept]) OR ("diamine silver fluoride" or "silver ammonia fluoride")) Filters: Preschool Child: 2-5 years – 6; with Preschool child filter.

Clinical Bottom Line
<ul style="list-style-type: none"> Clinical guideline (Slayton et al., 2018) supports bi-annual application of 38% SDF to treat occlusal, approximal, facial and lingual cavitated lesions in primary teeth. Lesions should be monitored every 6 months for signs of hardness and radiographic arrest. The results of systematic review (Oliveira et al., 2019) suggest that SDF can prevent development of new dentinal caries lesions in primary teeth when comparing to placebo at 24 months of follow-up. SDF application is simple, safe and inexpensive, with an adverse effect of causing black staining of lesions.



Results

Slayton et al., 2018

- The expert panel recommends clinicians prioritize the use of 38% SDF solution (biannual application) over 5% NaF varnish (application once per week for 3 weeks) to arrest advanced cavitated carious lesions on any coronal surface of primary teeth

Oliveira et al., 2019

- SDF application led to a clinically meaningful reduction of new dentinal caries lesions development in treated and untreated primary teeth when compared to a placebo, no treatment, or FV with ≥ 24 months of follow-up
- SDF vs placebo/no treatment: PF: 77.48% (95%CI 67.78, 87.19)
- SDF vs FV: PF = 54.0% (95%CI 26.63%, 73.16%)
- If we apply SDF to the control group, there will be 78% (54%) of new dentine caries lesions prevented. The results are statistically significant, clinically meaningful and decisive

Strengths
<ul style="list-style-type: none"> Two independent reviewers and an arbitrator Comprehensive search strategy with no restrictions on languages or date of publication Primary and secondary outcomes clearly stated Recommendations in the clinical guideline were clear and actionable, justified, and made based on the up to date systematic review

Limitations

- Vague intervention inclusion criteria; SES of patients not addressed
- All included studies had at least one domain with unclear or high risk of bias
- Among adverse effects of SDF treatments, there is staining of teeth. Blinding of the examiners was compromised.

Applicability

- Population age group and follow up time (2 years) are appropriate
- Locations: Brazil, Cuba, Nepal, Spain and China
- Caries risk factors including socio-economic status, diet, water fluoridation and oral health care systems may differ
- Caries experience of children (Oliveira et al., 2019) is comparable to general Canadian population
- The 38% SDF treatment is non-restorative, non-costly, easy to apply and may be covered by dental insurance in Canada

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References

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