

Physician Use of Silver Diamine Fluoride (SDF) in Dental Caries Management

Guidance from the American Academy of Pediatric Dentistry

In July 2023, a procedure code for physicians' use of silver diamine fluoride (SDF) was introduced into the American Medical Association's (AMA) Current Procedural Terminology (CPT) code set. Code 0792T is for the "application of silver diamine fluoride 38%, by a physician or other qualified health care professional" and will be published in the CPT® 2024 manual.ⁱ It is a Category III code, meaning it represents an emerging technology, service, or procedure and it is introduced primarily for data collection purposes to track usage of the service or procedure.ⁱⁱ Like other CPT codes, health insurance plans are not required to cover or pay for the service despite its inclusion in the code set.

Pediatric Dentists Are Here To Support

As the early adopters of SDF, pediatric dentists have extensive experience with the medication. The American Academy of Pediatric Dentistry (AAPD) aims to serve as a resource to our physician colleagues as they consider incorporating this service into their armamentarium and undergo the necessary training and referral preparation to do so. The physician-dentist interprofessional relationship will be key to successful patient co-management to effectively manage dental caries.

Chairside Guide: Silver Diamine Fluoride in the Management of Dental Caries Lesions*

Dental caries affects about one out of four children ages two through five in the United States. It has been shown to be efficacious in arresting, including as part of a caries management plan for prevention. Caries lesions on the caries process in all targeted tissues may benefit from application of SDF.¹



Active caries lesions before application of SDF.

Can children for application of silver diamine fluoride?
Patients who are best suited for SDF include those:
• with high caries risk who have active carious lesions in anterior or posterior teeth;
• presenting with behavioral or medical management challenges and carious lesions;
• with multiple carious lesions that may not all be treated in one visit;
• with dental caries lesions that are difficult to restore, and
• whose access to or with difficulty accessing dental care.
Criteria for each situation include:
• In clinical signs of pulp inflammation or signs of pulpitis and spontaneous pain.
• In carious lesions that are not encroaching on the pulp. If possible, radiographs should be taken to assess depth of caries lesions.
• Carious lesions that may interfere with eating as they are accessible with a brush for applying SDF. (Orthodontic separators may be used to help gain access to posterior lesions.)
• SDF can be used prior to restorative placement and as part of caries control therapy.¹ Infected crown, particularly high lighting, repeated staining of enamel, permanent staining of skin and clothes, and need for prophylaxis for allergic contact dermatitis.
• **Contraindications:** Allergic reactions to silver, mercury, or fluoride.
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Policy on the Use of Silver Diamine Fluoride for Pediatric Dental Patients

Latest Revision
2023

How to Cite: American Academy of Pediatric Dentistry. Policy on the Use of Silver Diamine Fluoride for Pediatric Dental Patients. *J Pediatr Dent.* 2023;13(1):1-10.

Purpose
The American Academy of Pediatric Dentistry (AAPD) recognizes that dental caries continues to be a prevalent and severe disease in children. This policy addresses the use of silver diamine fluoride (SDF) as part of an ongoing caries management plan with the aim of optimizing individualized patient care consistent with the goal of a dental home. When used in a comprehensive dental examination, diagnosis, and treatment plan, SDF is indicated for the treatment of dental caries in an active disease condition requiring surgical debridement, early progression, and mechanical restoration of the tooth, but increasingly especially for the infant and child population, practitioners are utilizing individually tailored treatment to prevent, arrest, or ameliorate the disease process based on caries risk assessment. One of those strategies is the application of SDF as an antimicrobial and remineralization agent to arrest caries lesions after diagnosis and in the decision of a responsible dentist or dentist.

Methods
This document was developed by the Council on Clinical Affairs and adopted in 2023. This policy is a review of current dental and medical literature, and content of recognized professional experience and practice, including both the academic and practice health communication, related to SDF and silver diamine. In addition, literature searches of PubMed, MEDLINE and Google Scholar databases were conducted using the terms: silver diamine fluoride and caries, fluoride, silver diamine fluoride and caries, and silver diamine fluoride. All items within the last 15 years, human, English, high through age 19. One hundred eighty articles matched these criteria. Papers for review were chosen from this list and from the references within selected articles. Expert and/or consensus opinion by experienced researchers and clinicians were reviewed.

Background
Treatment of incipient caries usually involves early therapeutic intervention using topical fluoride and non-surgical restorative techniques such as dental sealants and resin infiltration. The use and effectiveness of these techniques have been well-documented.

Use of Silver Diamine Fluoride for Dental Caries Management in Children and Adolescents Including Those with Special Health Care Needs

Abstract: Background: This manuscript presents evidence-based guidance on the use of 38 percent silver diamine fluoride (SDF) for caries management in children and adolescents, including those with special health care needs. A guideline workshop convened by the American Academy of Pediatric Dentistry developed guidance and an evidence-based recommendation regarding the application of 38 percent SDF to arrest dental caries in primary teeth. **Types of studies reviewed:** The basis of the guideline's recommendations is evidence from an ongoing systematic review of the literature. **Search strategy:** The search strategy included a comprehensive search of the literature. **Search terms:** Silver diamine fluoride, dental caries, children, adolescents, special health care needs, and dental caries management. **Search dates:** The search dates were from 2010 to 2023. **Search locations:** The search locations were PubMed, MEDLINE, and Google Scholar. **Search results:** The search results included 183 articles. **Search results:** The search results included 183 articles. **Search results:** The search results included 183 articles.



Policy and Fact Summary

Silver Diamine Fluoride (SDF) has been shown to help stop cavities from getting worse and is a valuable additional tool to manage tooth decay. Its effective use requires a professional diagnosis of cavities, a plan of use specific to the treatment of an individual patient, and monitoring by a dentist.



Primary front teeth before SDF (left) and after SDF (right).

What is silver diamine fluoride (SDF)?
SDF is a clear liquid that combines the antibacterial effects of silver with the remineralizing effects of fluoride. According to the 2017 clinical practice guidelines of the American Academy of Pediatric Dentistry (AAPD), SDF may be used in certain circumstances as a non-restorative management technique for the arrest of progression of small cavities and early non-restorable areas on primary baby teeth¹ and permanent teeth.² SDF is painted on the caries affected areas of teeth in a quick, painless procedure. After application, the treated decay is permanently stained black.

What is SDF?ⁱⁱⁱ

SDF is a clear liquid that combines the antibacterial effects of silver with the remineralizing power of fluoride. According to the 2017 clinical practice guidelines of the AAPD, SDF may be used in certain circumstances as a non-restorative management technique for the arrest of progression of small cavities and cavity-susceptible areas on primary (baby) teeth and permanent teeth. SDF is painted on the caries-affected areas of teeth in a quick, painless procedure. After application, the decay is permanently stained black.



Primary front teeth before SDF



Primary front teeth after SDF

Important Reminders For Physicians

- **Case selection for SDF is more nuanced** than fluoride varnish. This has traditionally required a caries diagnosis by a dentist, including dental radiographs when possible. While topical fluoride varnish application by primary care clinicians for children under 5 is supported by the US Preventive Services Task Force,^{iv} no comparable recommendation exists for SDF.
- **Application of SDF is more technique-sensitive** than fluoride varnish.
- **Risks and side effects of SDF are more numerous and potentially more severe** than fluoride varnish. In addition to the black stain, SDF may cause discomfort and harm if caries extends into the pulp or nerve of the tooth.
- **SDF is not meant to be a “one and done” procedure nor is it necessarily definitive treatment.** Follow-up, reapplication, and monitoring are necessary in the proper professional use of SDF and should be completed by a dentist.
- **Pros & Cons of SDF:** ⁱⁱⁱ See table on the right.

Preparing Your Dental Referral Network

The presence of dental caries such that use of SDF is indicated constitutes an **urgent referral to a dental provider for comprehensive treatment**. For children, the first-line provider is a **pediatric dentist**. Here are resources to identify pediatric dentists and other dentists in your community:

- [AAPD Find a Pediatric Dentist Tool](#)
- [Insure Kids Now – Find a Dentist Tool](#)
- [ADA Find-a-Dentist Tool](#)
(filter for Medicaid as payment option is available)
- [Medicaid & CHIP Beneficiary Resources](#)
(navigate to state site, then find a provider tool)

Pros of SDF

- Quick, easy, painless for the patient
- Simple to apply in a variety of clinical settings
- Inexpensive
- Relieves sensitivity
- Remineralizes natural tooth structure
- Arrests up to 80 percent of cavities when applied at least twice a year
- Avoids or delays more surgical interventions
- May reduce cost of dental care for some families

Cons of SDF

- Not a cure for caries
- Outcome depends on oral hygiene and regular dental visits
- Must be reapplied to cavities that are left unrestored
- Does not restore the form or function of decayed teeth
- Deeply decayed teeth, especially with nerve involvement, are not candidates for SDF
- Does not arrest decay in an estimated 20 percent of affected teeth
- Permanently stains areas of decay black
- Not viable for all patients due to such conditions as silver allergies

Clinical Training

Any health care provider considering the addition of SDF to their armamentarium should undergo both didactic and clinical training on the appropriate use, case selection, technique, and risks of SDF. (For context, in states that permit the placement of SDF by dental hygienists or expanded function dental assistants – dental team members who are very familiar with clinical presentation of caries – clinical hands-on training is also required.) The following are our recommendations:

1. Groundwork: Getting Familiar with SDF

Review these publicly available resources from AAPD:

- [Silver Diamine Fluoride Policy and Fact Summary](#)
- [Chairside Guide: Silver Diamine Fluoride in the Management of Dental Caries Lesions](#)
- [Policy on the Use of Silver Diamine Fluoride for Pediatric Dental Patients](#)
- [Clinical Practice Guidelines: Use of Silver Diamine Fluoride for Dental Caries Management in Children and Adolescents, Including Those with Special Health Care Needs](#)

2. Solidify Oral Health Foundational Knowledge

Review these resources designed specifically for medical professionals:

- [Bright Futures: Oral Health – Pocket Guide](#) (Dental Caries Risk Assessment with Risk Factors and Intervention Strategies on pages 72–73)
- [Smiles for Life](#), a national oral health curriculum (Society of Teachers of Family Medicine)
 - [Child Oral Health > Early Childhood Caries Prevention > Caries Management](#)
 - [Geriatric Oral Health > Common Oral Problems > Caries: Treatment](#)

3. SDF Didactic Training

Our partners at the American Academy of Pediatrics (AAP) and Smiles for Life are in the process of developing resources targeting physicians.

4. SDF Clinical Hands-on Training

- Reach out to your [state pediatric dental society](#), [state or local dental association](#), or [state dental board](#) any SDF courses for which you may be eligible to participate.
- Note: The AAP is exploring the implementation of SDF in the pediatric medical setting and will be sharing more information in the near future.

Additional Resources

- [Oral Health Policies & Recommendations \(The Reference Manual of Pediatric Dentistry\)](#)
- [AAPD Research & Policy Center](#)
- [AAP Section on Oral Health \(SOOH\)](#)

**Have questions, concerns, or feedback to share?
Contact us at RPC@aapd.org.**

ⁱ CPT® Category III Codes [recently approved]. Updated March 1, 2023. American Medical Association. <https://www.ama-assn.org/system/files/cpt-category3-codes-long-descriptors.pdf>.

ⁱⁱ CPT® Category III Codes [history]. Copyright 2010. American Medical Association. <https://www.ama-assn.org/practice-management/cpt/category-iii-codes>.

ⁱⁱⁱ Silver Diamine Fluoride Policy and Fact Summary. American Academy of Pediatric Dentistry. May 2021. <https://www.aapd.org/globalassets/media/policy-center/sdf.factsheet.pdf>

^{iv} Prevention of Dental Caries in Children Younger Than 5 Years: Screening and Interventions. US Preventive Services Task Force. December 2021. <https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/prevention-of-dental-caries-in-children-younger-than-age-5-years-screening-and-interventions1>