ASTDD
ASSOCIATION OF STATE & TERRITORIAL DENTAL DIRECTORS

OHRC
National Maternal and Child Oral Health Resource Center

## Policy Statement

# Silver Diamine Fluoride: A Non-Restorative Treatment for Dental Decay


### Association of State and Territorial Dental Directors
### National Maternal and Child Oral Health Resource Center



**Approved: June 2026**



## Summary

Dental caries (tooth decay) is the most prevalent chronic condition globally. In the United States, untreated tooth decay affects a considerable proportion of individuals across all age groups, highlighting its widespread burden. It has significant impacts on both the individual and societal levels. At the individual level, it affects general health and quality of life, including oral-health-related quality of life. At the societal level, it contributes to increased health care expenditures and productivity losses. These consequences underscore the importance of timely and effective management of tooth decay.

Silver diamine fluoride (SDF) has emerged as a safe, effective, evidence-based, and increasingly utilized option for arresting tooth decay within minimally invasive care (MIC) frameworks – techniques that focus on preserving healthy tooth structure while restoring damaged teeth.[*] Among these techniques, SDF offers a low-cost, portable, and efficient treatment approach that may delay or reduce the need for invasive restorative procedures, sedation, and general anesthesia, particularly for young children, individuals with special health care needs, individuals with complex medical issues, older adults, and populations facing barriers to traditional oral health care.

Growing evidence demonstrates that reimbursement policy, provider training, scope-of-practice flexibility, and integration of oral health care into community-based settings significantly influence SDF utilization. At this time, barriers such as restrictive reimbursement policies, variability in state practice acts, informed consent considerations, and esthetic concerns related to black staining of arrested lesions (tooth decay) may limit broader implementation.

State and territorial oral health programs (S/TOHPs) are well positioned to support evidence-based expansion of SDF through policy development, workforce support, community partnerships, provider education, surveillance activities, and integration into broader oral health access strategies. The Association of State and Territorial Dental Directors (ASTDD) supports the use of SDF as a safe, effective, and evidence-based option for tooth decay arrest (stopping the process of tooth decay) and encourages its integration into MIC frameworks across dental settings and primary care settings.


[*] For additional information on MIC, see the white paper published by ASTDD and the CareQuest Institute for Oral Health. *Championing Minimally Invasive Care: Aligning Advocacy to Transform Oral Health*, 2024.

## Problem

Tooth decay is the most prevalent chronic condition globally.[1] In the United States (U.S.), untreated tooth decay affects approximately 11% of individuals aged 2–5 years, 17% of those aged 6–9 years, 10% of those aged 12–19 years, 21% of those aged 20–64 years, and 13% of those aged 65 years or older.[2] Although overall prevalence of tooth decay has decreased over the past few decades, significant population differences persist based on income level, race/ethnicity, gender, and education level.[2,3]

The consequences of tooth decay are substantial, impacting general health and overall quality of life, including oral-health-related quality of life.[3,4] Studies have linked oral diseases to systemic conditions such as cardiovascular disease, adverse pregnancy outcomes, and cognitive decline.[4] Untreated tooth decay may result in severe pain, facial swellings, and systemic infections.[3] It may also affect child growth, esthetics, speech, and psychosocial development.[3] Beyond the impact on individual's health and wellness, untreated decay contributes to higher rates of hospitalization, increased emergency department use, reduced work productivity, and poor school attendance and performance.[4,5] These consequences emphasize the importance of timely and effective management of tooth decay.

Traditional control of tooth decay involves complete removal of decayed tooth tissue and replacement with restorative treatment (RT) such as a filling, crown, bridge, or implant.[6] However, RT is not always feasible, timely, accessible, or clinically appropriate for every patient or setting. In some cases, MIC methods such as non-restorative treatment (NRT) may be more appropriate. Silver diamine fluoride (SDF) is a low-cost, portable, and efficient treatment approach and is part of a broader NRT approach that focuses on reversing or arresting tooth decay while preserving tooth structure and prolonging tooth retention.[6] As more individuals retain their teeth as they age, the demand for treatment that preserves healthy tooth structure has increased.[6] When tooth decay is treated with RT, healthy tooth structure may be removed. Over time, RT can fail or new decay can form around the restoration, requiring replacement of RT which leads to loss of more tooth structure.[7] NRT does not replace RT but may delay RT until necessary or reduce the need for invasive treatment, thereby delaying the initiation of the "restorative cycle."[6]

NRT may be beneficial for children and individuals with special health care needs when RT is not feasible, but even when it is.[8,9,10] Typically, RT can be challenging in these population groups and may only be possible using techniques such as general anesthesia (GA) or oral conscious sedation.[8,11] GA may pose significant risks including brain damage and death.[11] Moreover, it may not be accessible in a timely manner and in settings with limited resources, and it poses a financial burden to families and the health system.[8,11]

RT is resource-intensive, requiring trained personnel, specialized equipment, and lengthy procedure times. This presents a significant disadvantage for populations living in rural areas who experience higher rates of tooth decay compared to their counterparts living in urban areas. They often face considerable barriers to care such as limited availability of health care facilities, long travel distances, and limited dental insurance coverage.[12] In rural and underserved areas, NRT such as SDF may offer a practical alternative for delivering prompt and affordable care. SDF is readily available and, in accordance with scopes of practice and state practice acts, can be applied by a range of oral health

professionals and non-oral health professionals.[13] When applied in medical settings, SDF can provide interim care while families are supported in establishing a dental home. Using teledentistry, SDF or other NRT interventions can be delivered by a dental hygienist and other oral health professionals, acting within and in accordance with their scopes of practice in a satellite setting, following a diagnosis of tooth decay and when appropriate indications are met.

NRT interventions like SDF may also help ease the financial burden tooth decay places on individuals and the health care system. In 2024, total dental expenditure in the U.S. reached $189 billion and is projected to grow substantially in the coming decades.[14] A substantial portion of these costs can be attributed to RT and do not account for indirect costs, such as transportation and lost wages, to individuals.[15] When RT is performed under GA, costs are substantially higher.[16] RT under GA represents a significant financial burden to state Medicaid programs. In an analysis of Medicaid data from 8 states, $68 million was spent on dental treatment delivered under GA, with an average of $2,581 per case and 98% of cases related to tooth decay.[17]

## Method

### *Background on Silver Diamine Fluoride*

Notable among NRT techniques has been the use of SDF, first introduced in Japan in the 1960s for management of tooth decay.[18] SDF is a colorless or blue-tinted liquid compound consisting of silver, fluoride, ammonia, and water.[19] It was cleared by the U.S. Food and Drug Administration in 2014 for the treatment of dentinal hypersensitivity and was widely used off-label by oral health professionals to treat and arrest tooth decay; in 2016, SDF received "breakthrough therapy designation," facilitating its off-label use to treat and arrest tooth decay.[13,19] Its off-label use was supported by its ability to inhibit the growth of bacteria that cause tooth decay, helping to prevent the formation of new decay. In addition, SDF promotes remineralization of dental tissues, strengthening areas affected by decay.[19]

A substantial body of evidence supports the safety and efficacy of SDF. Randomized controlled trials demonstrated that annual application of SDF arrested tooth decay and prevented new decay in primary teeth at rates significantly exceeding other fluoride modalities.[20,21] Systematic reviews and meta-analyses confirm that SDF is effective in arresting tooth decay and reducing progression of disease, particularly in primary teeth and in populations at high-risk for tooth decay, including older adults.[20,21] The UCSF Protocol for Caries Arrest Using Silver Diamine Fluoride operationalized SDF use in clinical practice, providing widely adopted guidance on indications, contraindications, application technique, and informed consent.[22]

The increasing adoption of SDF reflects growing recognition of MIC and NRT approaches to tooth decay management and expanding reimbursement through state Medicaid programs and other insurance systems. Research examining Medicaid policy changes demonstrates significant increase in utilization of SDF in states with reimbursement coverage and supportive implementation policies.[23]

SDF application is not without limitations. SDF does not rebuild tooth structure or function, and RT may still be needed.[6] Successful outcomes require careful case selection, informed consent, on-going

surveillance, and periodic reapplication. The characteristic dark black staining of an SDF-treated decayed tooth is the primary esthetic concern associated with SDF; the resulting appearance must be a key element of informed consent prior to applying SDF.[22,24] Esthetic concerns related to black staining of arrested lesions remain an important consideration for patients and caregivers.[22,23]

***Use in Non-Traditional Dental Settings***

SDF is well suited for patients who face barriers to traditional RT, including young children; individuals with complex medical issues; children and adults with physical, developmental, and/or cognitive disabilities; and those with dental anxiety. NRT techniques are valid treatment options that should be offered to all people in all settings (including dental practices) when appropriate. Due to the minimally invasive nature of SDF application, it is suitable for managing tooth decay in children who are unable to cooperate for traditional restorative procedures, as it can be delivered without local anesthesia or specialized equipment.[19,22] SDF also can provide emotional and financial relief for families managing the care for these individuals on a daily basis.

As noted, SDF is additionally a useful interim management strategy when definitive RT must be deferred, such as where access to comprehensive dental services is limited. SDF's low cost, portability, and minimal equipment requirements also make SDF appropriate for delivery in schools, Head Start programs, community health centers, long-term care facilities, and primary care medical offices.[13,19] In the school-based setting, the landmark CariedAway trial, the largest school-based caries prevention study in the U.S., demonstrated that SDF was clinically noninferior to dental sealants in preventing and arresting tooth decay among over 4,000 children in elementary school from families with low incomes living in New York City, supporting its role as a scalable, cost-effective tool for community-based programs.[25]

In 2024, the American Academy of Pediatrics released formal guidance on SDF application in the pediatric medical setting, reflecting growing recognition of its utility when delivered by non-oral professionals such as physicians and nurses during well-child visits, especially for families with limited or no access to oral health care.[26] The guidance has been augmented by a set of frequently asked questions.[27] In recognition of SDF's potential integration in primary care, the American Medical Association approved a Category III Current Procedural Terminology (CPT) code (0792T) in 2022, effective July 2023, allowing physicians and other qualified health professionals to apply and bill for SDF application.[28,29] SDF and other NRT techniques also have workforce implications because they can be performed by allied health care providers (if within their scopes of practice, as noted above), making dentists available for more complicated procedures. It is important to note that policies under which health professionals are allowed to apply SDF, and additionally which support health professionals to bill for SDF, vary from state to state; more information can be obtained from state dental, medical, and/or nursing boards.

***Clinical Considerations***

SDF is contraindicated in individuals with a known allergy to silver or any component of the solution.[22,23] It should not be applied to teeth with signs or symptoms consistent with irreversible pulpitis, pulp necrosis, or active tooth infection.[22,23,25] Thorough informed consent is essential prior to use of SDF, as

patients and caregivers must be advised of its effect of irreversible dark staining of tooth structure.[22,25] SDF causes permanent black discoloration of arrested decay due to the precipitation of silver compounds, whereas any incidental soft tissue staining is temporary and resolves within approximately 2 to 14 days via natural tissue exfoliation.[25] This esthetic concern is of lesser consequence in the primary dentition, as the staining does not transfer to the underlying permanent tooth and the primary tooth will be lost with natural exfoliation.[25] Although SDF may delay or reduce the need for RT, it should be considered part of comprehensive tooth decay management strategies that include preventive care, oral hygiene instruction, dietary counseling, oral health risk assessment, referral pathways, and RT when clinically indicated.

***Role of State and Territorial Oral Health Programs***

State and Territorial Oral Health Programs (S/TOHPs) are well positioned to support evidenced-based expansion of SDF through policy development, workforce support, community partnership, provider education, surveillance activities, and integration into broader oral health access strategies. State Medicaid policy has emerged as a major driver of SDF adoption. As of 2022, most state Medicaid programs reported some form of reimbursement coverage for SDF application.[30] Research suggests that children living in states with Medicaid reimbursement policies for SDF are significantly more likely to receive treatment than their peers living in states without Medicaid reimbursement.[31,32] Additional research involving health professionals working in safety net settings reported increased SDF utilization when reimbursement policies supported broad application frequency, adult coverage, and use by qualified oral health team members. These findings underscore the importance of policy environments that align reimbursement structures with evidence-based MIC.[33]

S/TOHPs and their partners may support SDF implementation through:

- Provider training and technical assistance
- School-based and other community-based oral health initiatives
- Medical-dental integration efforts
- Workforce and scope-of-practice policy development
- Public education regarding MIC options

SDF represents an important opportunity to improve timely, patient-centered, MIC to support broad access to oral health care and population health goals.

**Policy Statement**

ASTDD supports the use of silver diamine fluoride (SDF) as a safe, effective, and evidence-based option for caries arrest and encourages its integration into minimally invasive care frameworks across dental settings and primary care settings. ASTDD encourages Medicaid and other public insurance programs to establish adequate reimbursement for SDF application and supports changes in state practice acts that authorize dental hygienists and other qualified health professionals to apply SDF within their scope of practice. S/TOHPs and their partners can promote provider training on SDF indications, contraindications, and informed consent; support integration of SDF into school-based programs, primary care settings, and long-term care facilities; and encourage referral pathways to dental homes following SDF treatment delivered in non-dental settings.

The ASTDD Dental Public Health Policy Committee is pleased to acknowledge Christine Chiao, DMD, MPH, and Victoria Amonoo, BDS, MPH, for their work in researching and drafting this policy statement.

This resource was supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) as part of an annual award totaling $1,700,000 with no funding from nongovernmental sources. The contents are those of the author(s) and do not necessarily represent the official views of, or endorsement by, HRSA, HHS, or the U.S. government. For more information, please visit www.HRSA.gov.

**References**

Note: Links in the following references were correct at the time of publication. If a link does not work, the website location or document name may have changed. Searching for the document by name may be an alternative way to find it.

[1] World Health Organization. Sugars and dental caries. Published August 14, 2025. Accessed February 27, 2026. https://www.who.int/news-room/fact-sheets/detail/sugars-and-dental-caries

[2] Centers for Disease Control and Prevention. Oral Health Surveillance Report: Dental Caries, Tooth Retention, and Edentulism, United States, 2017–March 2020. U.S. Department of Health and Human Services; 2024. Accessed February 27, 2026. https://www.cdc.gov/oral-health/php/2024-oral-health-surveillance-report/index.html

[3] Selwitz RH, Ismail AI, Pitts NB. Dental caries. *Lancet*. 2007;369(9555):51–59. doi:10.1016/S0140-6736(07)60031-2

[4] Peres MA, Macpherson LMD, Weyant RJ, et al. Oral diseases: A global public health challenge. *Lancet*. 2019;394(10194):249–260. doi:10.1016/S0140-6736(19)31146-8

[5] Jackson SL, Vann WF Jr, Kotch JB, et al. Impact of poor oral health on children's school attendance and performance. *Am J Public Health*. 2011;101(10):1900–1906. doi:10.2105/AJPH.2010.200915

[6] Yu OY, Lam WY, Wong AW, Duangthip D, Chu CH. Nonrestorative management of dental caries. *Dent J* (Basel). 2021;9(10):121. doi:10.3390/dj9100121

[7] American Academy of Pediatric Dentistry. Policy on minimally invasive dentistry. In: The Reference Manual of Pediatric Dentistry. Chicago, IL: American Academy of Pediatric Dentistry; 2025:107–109.

[8] Crystal YO, Marghalani AA, Ureles SD, et al. Use of silver diamine fluoride for dental caries management in children and adolescents, including those with special health care needs. *Pediatr Dent*. 2017;39(5):135–145.

[9] Uppal S, Sultan A, Juneja A. Silver diamine fluoride use in children with special health-care needs: Breaking the barriers. *Arch Med Health Sci*. 2024;12(2):237–241. doi:10.4103/amhs.amhs_293_23

[10] Whitlatch K, Richardson C, Cocke S, et al. (2026) Implementing a disease management standard operating procedure in a contemporary private pediatric dental practice. Front. Dent. Med. 7:1781479. doi: 10.3389/fdmed.2026.1781479

[11] Patel S, Fantauzzi AJ, Patel R, et al. Childhood caries and dental surgery under general anesthesia: an overview of a global disease and its impact on anesthesiology. *Int Anesthesiol Clin.* 2023;61(1):21–25. doi:10.1097/AIA.0000000000000385

[12] Parmar D, Sailo JL, Sakhamuri S, et al. Assessment of oral health disparities and barriers to care among underserved populations in urban and rural settings. *J Pharm Bioallied Sci*. 2025;17(Suppl 1):S445–S447. doi:10.4103/jpbs.jpbs_1449_24

[13] Association of State and Territorial Dental Directors. *Silver diamine fluoride (SDF) fact sheet.* 2017. Updated September 2024. Available from: https://www.astdd.org/docs/sdf-fact-sheet.pdf

[14] American Dental Association, Health Policy Institute. *National dental expenditures, 2024.* Updated January 2026. Accessed February 26, 2026. https://www.ada.org/resources/research/health-policy-institute/dental-care-market/national-dental-expenses

[15] Anderson SE, Sandoval P, Sim G, Campbell B. A comparative expected cost analysis study on dental services and products used in the United States. *Account Financ Manag J.* 2020;5(1):2048–2054.

[16] Green LK, Lee JY, Roberts MW, et al. A cost analysis of three pharmacologic behavior guidance modalities in pediatric dentistry. *Pediatr Dent.* 2018;40(7):419–424.
[17] Bruen BK, Steinmetz E, Bysshe T, et al. Potentially preventable dental care in operating rooms for children enrolled in Medicaid. *J Am Dent Assoc.* 2016;147(9):702–708. doi:10.1016/j.adaj.2016.03.019
[18] Chai HH, Kiuchi S, Osaka K, et al. Knowledge, practices and attitudes towards silver diamine fluoride therapy among dentists in Japan: a mixed methods study. *Int J Environ Res Public Health.* 2022;19(14):8705. doi:10.3390/ijerph19148705
[19] Zheng FM, Yan IG, Duangthip D, et al. Silver diamine fluoride therapy for dental care. *Jpn Dent Sci Rev.* 2022;58:249–257. doi:10.1016/j.jdsr.2022.08.001
[20] Gao SS, Zhao IS, Hiraishi N, et al. Clinical trials of silver diamine fluoride in arresting caries among children: a systematic review. *JDR Clin Trans Res.* 2016;1(3):201–210.
[21] Crystal YO, Niederman R. Evidence-based dentistry update on silver diamine fluoride. *Dent Clin North Am*. 2019;63(1):45–68. doi:10.1016/j.cden.2018.08.011
[22] Horst JA, Ellenikiotis H, Milgrom PL. UCSF protocol for caries arrest using silver diamine fluoride: rationale, indications and consent. *J Calif Dent Assoc*. 2016;44(1):16–28
[23] Medicaid-CHIP State Dental Association (MSDA). National Profile of State Medicaid and CHIP Dental Programs: Policy Report 2024. Published 2024. Accessed February 27, 2026. https://www.medicaiddental.org/
[24] Rosenblatt A, Stamford TCM, Niederman R. Silver diamine fluoride: a caries “silver-fluoride bullet.” *J Dent Res.* 2009;88(2):116–125.
[25] Ruff RR, Barry-Godín T, Niederman R. Effect of silver diamine fluoride on caries arrest and prevention: the CariedAway school-based randomized clinical trial. *JAMA Netw Open*. 2023;6(2):e2255458. doi:10.1001/jamanetworkopen.2022.55458
[26] American Academy of Pediatrics. Silver diamine fluoride (SDF) application in the pediatric medical setting. 2024. Available at: https://www.aap.org/en/patient-care/silver-diamine-fluoride-application-in-the-pediatric-medical-setting/
[27] American Academy of Pediatrics. Silver diamine fluoride (SDF) FAQ for health professionals. 2026. Available at https://www.aap.org/en/patient-care/silver-diamine-fluoride-application-in-the-pediatric-medical-setting/silver-diamine-fluoride-frequently-asked-questions-for-health-professionals
[28] American Medical Association. CPT Category III Code (0792T) for Silver Diamine Fluoride Application. Chicago, IL: AMA; approved September 2022, effective July 2023.
[29] American Academy of Pediatrics. SDF CPT Category 3 codes long descriptors. Accessed May 3, 2026. https://downloads.aap.org/AAP/PDF/SDF-cpt-category3-codes-long-descriptors.pdf
[30] Association of State and Territorial Dental Directors. 2025 Synopses of state dental public health programs: Data for FY 2023–2024. Reno, NV: Association of State and Territorial Dental Directors; June 2025. Available at: https://www.astdd.org/docs/2025-synopses-summary-report.pdf
[31] Medicaid|Medicare|CHIP Services Dental Association. Medicaid policy on SDF by state, updated 12/7/2022. SDF Update_Medicaid Policy 1206, 1354, 1355.pdf
[32] Meyer BD, Shoff C, Chalmers NI. Pandemic-driven shift: increase in silver diamine fluoride utilization among Medicaid-enrolled children during the COVID-19 public health emergency. *Front Public Health*. 2025;13:1546365.
[33] Clayton C, Richardson C, Peng J, et al. Examining clinical, patient, and policy factors associated with silver diamine fluoride adoption in safety-net dental clinics. *J Am Dent Assoc.* 2026 Apr;157(4):355-366. doi: 10.1016/j.adaj.2025.10.015. Epub 2025 Dec 18. PMID: 41410639.