

Essay

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Essay

A Time-Bound Clinical Framework for Silver Diamine Fluoride as Interim Stabilization in Severe Early Childhood Caries: Bridging Preservation to Precision with Equity and Accountability

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Abstract

Purpose: To provide an evidence-calibrated, time-bound clinical framework for the use of 38% silver diamine fluoride (SDF) as interim stabilization for severe early childhood caries (SECC) in young children, addressing gaps in existing guidelines regarding treatment duration, exit criteria, equity, and system accountability. **Methods:** This framework was developed from the American Academy of Pediatric Dentistry (AAPD) guidance (2017–2025), the 2024 Cochrane review, real-world utilization studies, and a narrative review proposing a preservation-to-precision heuristic. Recommendations are expressed using GRADE terminology. **Results:** The framework includes ten recommendations, a systems drift principle, explicit time thresholds (<6 months, 6–12 months, >12 months), a 12-month reassessment mandate, equity guardrails, a bridge-vs-destination consent model, and a future research agenda. A clinical vignette contrasts appropriate short-term bridging with prolonged temporization due to access barriers. **Conclusion:** SDF is conditionally recommended for caries arrest in primary teeth. In children with SECC, SDF should be used within a documented, time-bound preservation-to-precision pathway. SDF should not become an open-ended substitute for definitive restorative care. Equity-explicit implementation prevents the framework from penalizing underserved children.

Keywords: silver diamine fluoride; severe early childhood caries; interim stabilization; health equity; clinical framework; pediatric dentistry

Purpose

This framework provides evidence-calibrated guidance on the use of 38% silver diamine fluoride for managing severe early childhood caries (SECC) in young children. It supports SDF as an evidence-based, minimally invasive option for caries arrest and interim stabilization, while emphasizing that SDF should be used within a documented, time-bound caries management plan and should not serve as an open-ended substitute for definitive restorative care when such care is indicated [1].

The AAPD's existing evidence-based clinical practice guideline made a conditional recommendation, based on low-quality evidence, to use 38% SDF to arrest cavitated carious lesions in primary teeth as part of a comprehensive caries management program [1]. This proposed framework builds on that position by adding implementation language specific to young children with SECC, particularly regarding recall, reapplication, time thresholds, exit criteria, and equity considerations.

Methods

This framework was developed from:

1. AAPD evidence-based guidance and chairside resources on SDF (2017–2025) [1]

2. An evidence-calibrated viewpoint on SDF implementation [2]
3. A narrative review proposing a preservation-to-precision framework for SECC [3]
4. The 2024 Cochrane review on SDF for caries arrest (Worthington et al.) [4]
5. Real-world utilization studies [5–8]

Recommendations are expressed using GRADE terminology where applicable. Recommendation strength is categorized as strong, conditional, or a good practice statement. Certainty of evidence is categorized as high, moderate, low, or very low [4]. This framework does not constitute a new systematic review or formal AAPD policy; it is a structured, publication-ready clinical framework intended to align decision-making with the current certainty of evidence.

Background

Silver diamine fluoride is a minimally invasive caries-arresting agent used in pediatric dentistry, particularly when conventional restorative care is delayed, not feasible, or not immediately appropriate [1]. The AAPD guidelines identify 38% SDF as the formulation addressed in their recommendation and emphasize that clinical decisions should be made by dental professionals and patients or caregivers, taking into account individual differences in disease risk, environment, and circumstances [1].

According to AAPD chairside guidance, a single SDF application has an estimated caries arrest effectiveness of 47% to 90%, depending on factors such as lesion size, tooth location, and plaque [1]. Follow-up is advised to evaluate arrest, and reapplication may be indicated if treated lesions do not arrest or if they appear dark and hard. Compared with a single application, biannual reapplication results in greater caries arrest [1].

However, evidence supporting SDF as an effective caries-arresting therapy is stronger than evidence defining the optimal reapplication interval, particularly in high-burden SECC [2,4]. Fixed-interval claims, such as a universal 6-month reapplication schedule, should remain conditional because implementation studies are often open-label, single-center, modest in size, or otherwise limited [5,6].

For young children with SECC, SDF should be viewed as part of a preservation-to-precision pathway: a strategy for stabilizing disease, buying time, and planning appropriate care, rather than a default long-term endpoint [3]. The framework proposes explicit time thresholds (<6 months, 6–12 months, >12 months) to distinguish appropriate interim stabilization from prolonged temporization [3].

Real-world data indicate that:

- Many SDF-treated primary teeth require additional intervention within approximately 2 years [5]
- Any delay in sedation or general anesthesia is typically measured in weeks to months, not years [6]
- Even under optimized protocols, 35% of children with caries escalate to higher-intensity treatment, with severe subtypes (Class III and V) showing escalation rates of 42–50% [7]

Clinical Vignette: Bridge vs. Drift

Case A – Well-resourced, timely pathway

Maya, age 3.5 years, presents with SECC involving four maxillary incisors (Class III/IV). Her parents have private insurance, flexible schedules, and live near a pediatric dental clinic that offers in-office sedation. The dentist applies 38% SDF as interim stabilization, explaining that it will arrest lesions for approximately 8–12 weeks while a definitive treatment appointment is scheduled. Within 6 weeks, Maya receives stainless steel crowns and composites. Total time from SDF to definitive care: 2 months. SDF served as a true bridge.

Case B – Under-resourced, prolonged temporization

Elijah, age 3.5 years, has identical SECC. His family relies on Medicaid, lives 90 miles from the nearest pediatric dentist, and faces a 14-month waiting list for sedation at the sole public hospital that accepts their insurance. SDF is applied with a plan to “reapply every 6 months pending sedation.” Over 2 years, SDF is applied four times. No definitive care occurs. Caregivers, never informed that SDF alone is not definitive treatment, assume the black-stained teeth are “fixed.” At age 5.5, Elijah presents with a draining fistula from a pulpal infection, requiring extraction under general anesthesia. Total time from first SDF to any definitive intervention: >24 months, with significant morbidity. SDF became a destination due to system failure.

Why exit criteria are an equity tool – A rigid 12-month cutoff would penalize Elijah. Instead, the framework mandates documented justification, active case management, and escalation to system accountability, not blame.

Definitions

Term	Definition
Interim stabilization	Use of SDF, preventive measures, or temporary/interim restorations to arrest or slow disease progression while monitoring the child and arranging definitive care when indicated [3].
Definitive restorative care	Treatment intended to restore form, function, and durability for the expected remaining service time of the primary tooth (typically >2 years for a young child), such as stainless steel crowns, multi-surface composites with appropriate isolation, preformed crowns, or treatment under sedation/general anesthesia when clinically necessary [9].
Disease controlled	A clinical state in which treated lesions appear arrested (hard, darkened), the child is free from pain and infection, and oral function (eating, sleep) is maintained [3].
Exit criteria	Clinical or time-based triggers indicating that interim stabilization is no longer sufficient and that escalation to definitive care or urgent reassessment is needed [3,8].
Preservation	Conserving tooth structure when appropriate, as well as preserving the child’s comfort and emotional safety, the family’s capacity to follow through with care, and the child’s opportunity for a stable health trajectory [3].
Precision	Tailoring intervention to tooth-level condition, child’s overall context, and system capacity to deliver timely care, including explicit decisions on tooth-level prognosis, disease severity, follow-up feasibility, and exit criteria [3].

Policy Statement and Systems Drift Principle

The proposed framework recognizes 38% SDF as an evidence-supported option for arresting cavitated carious lesions in primary teeth [1,4]. Its use in young children with SECC should be part of a comprehensive, documented, and time-bound caries management plan that includes follow-up, risk reassessment, tooth-level triage, caregiver communication, and explicit criteria for escalation.

SDF should not be presented as a universal long-term substitute for definitive restorative care in children with SECC [3,8]. When definitive care is indicated but not immediately feasible, SDF may be used for interim stabilization while an active pathway to appropriate care is pursued.

Systems Drift Principle

A critical yet underrecognized real-world problem is implementation drift—the gradual, often unintentional shift from interim stabilization to de facto long-term management [3]. In settings with limited access to sedation, general anesthesia, or timely restorative care, SDF may be reapplied repeatedly not because it is clinically optimal, but because no realistic pathway to definitive care exists [6,8]. Current guidelines assume a functioning access system and do not address system failure [1].

SDF should be used within a system that actively preserves, rather than passively abandons, the child's right to timely definitive care. When definitive care pathways are systematically unavailable, repeated SDF application without documented, time-bound escalation planning constitutes systems drift and should trigger case review, care navigation, or referral to a higher level of system accountability—not merely continued SDF reapplication. [3]

Clinicians adopting this framework should document barriers to definitive care, set a maximum drift threshold (12 months for flagging), and distinguish clinician-driven from system-driven delays in all quality metrics [3,8].

Health Equity Impact Assessment

The proposed time-bound exit criteria carry an inherent risk: without careful implementation, they could inadvertently penalize children who face the greatest barriers to definitive care [3]. Children from underserved communities often face multi-year waitlists, transportation challenges, and provider shortages [6,8]. Therefore, this framework adopts an equity-explicit approach:

1. **Thresholds trigger mandatory documentation and active case management, not an automatic cessation of SDF.** The 12-month point should never result in denial of SDF reapplication or discharge from care [3].
2. **Documented justification for exceeding 12 months must distinguish between system-driven and clinician- or family-driven delays.** Acceptable system-driven justifications include verified waitlists >12 months, repeated insurance denials under appeal, geographic maldistribution, or public health emergencies [3,6]. Unacceptable justifications include “lost to follow-up without outreach” or “convenience.”
3. **When a system-driven delay is identified, the clinician's responsibility shifts to escalation to alternative pathways or advocacy.** Options include referral to a state access program, notification of the primary care provider, submission of a systems barrier report to public health authorities, or documentation that the standard of care cannot be met due to systemic failure [3,8].
4. **Outcome measures should track equity separately.** Disaggregate data by insurance type, geography, race/ethnicity, and language to ensure that exit criteria are not disproportionately applied to marginalized groups [3].
5. **A safety-net modification is permitted:** practices serving populations with documented access barriers exceeding 12 months may operate a prolonged stabilization pathway with heightened documentation requirements (e.g., recertification every 6 months by a second clinician) [3].

Equity statement: A child in a well-resourced system who receives SDF for 24 months without definitive care represents a clinical failure. A child in an under-resourced system who receives SDF for 24 months while on a verified waiting list represents a systems failure [3,6]. This framework treats these scenarios differently—the former triggers clinical remediation, whereas the latter triggers system-level advocacy.

Recommendations

Recommendation 1: Use of 38% SDF for initial stabilization

38% SDF may be used to arrest cavitated carious lesions in primary teeth of children with SECC, provided the teeth do not show signs or symptoms of irreversible pulpal disease, necrosis, or acute infection [1,4].

- **Strength:** Conditional
- **Certainty:** Low [4]

Recommendation 2: Follow-up after initial SDF application

Children treated with SDF should receive follow-up to evaluate lesion arrest and clinical stability [1]. For SECC pathways, reassessment should occur within a defined interval, generally no later than 3–6 months, with earlier review when symptoms, lesion activity, high risk, or uncertainty regarding arrest is present [3].

- **Strength:** Good practice statement
- **Certainty:** Very low [4]

Recommendation 3: Reapplication of SDF

Reapplication may be considered if treated lesions do not appear arrested, caries risk remains high, or clinical monitoring indicates ongoing disease activity [1]. Reapplication at approximately 3–6-month intervals may be considered, but no single interval should be considered universally optimal [2,5].

- **Strength:** Conditional
- **Certainty:** Low [4]

Recommendation 4: Avoidance of fixed interval claims

A fixed SDF reapplication interval, including a universal 6-month interval, should not be considered the standard of care for all children with SECC [2,3].

- **Strength:** Good practice statement
- **Certainty:** Low [4]

Recommendation 5: Tooth-level precision triage

After initial stabilization, each affected tooth should be classified into one of the following categories [3,7]:

1. Appropriate for ongoing nonrestorative management
 2. Appropriate for interim restorative care
 3. Requires timely definitive restorative care
- **Strength:** Strong good practice statement
 - **Certainty:** Very low [4]

Recommendation 6: Time-bound care planning with 12-month reassessment mandate

When SDF is used for interim stabilization, the care plan should include explicit time thresholds [3]:

Duration	Recommendation
<6 months	Generally consistent with interim stabilization while arranging care
6–12 months	Requires documented justification and active pursuit of definitive care when indicated

Duration	Recommendation
>12 months without definitive care scheduled or achieved	<p>Mandatory reassessment and documentation. The treating clinician must: (a) re-evaluate clinical status, (b) document specific barriers, (c) specify steps taken to overcome each barrier, and (d) justify in writing why continued SDF-only management remains appropriate. This documentation must be shared with the family and, where feasible, with a care coordinator. If no acceptable justification exists, escalation to definitive care or referral to an alternative pathway is required within 90 days [3].</p> <hr/> <ul style="list-style-type: none"> • Strength: Strong good practice statement • Certainty: Low [4]

Recommendation 7: Exit criteria and escalation

Escalation from interim SDF-based management to definitive care or urgent reassessment is recommended when any of the following occur [3,7,8]:

- Pain or signs of infection
- Lesion progression or failure to arrest
- Functional compromise affecting eating, sleep, speech, or comfort
- Caregiver preference for definitive care
- Inability to maintain follow-up
- More than 12 months without definitive care when definitive care is indicated (with equity guardrails as per Health Equity Impact Assessment)
- **Strength:** Strong good practice statement
- **Certainty:** Low

Recommendation 8: Transition to definitive restorative care

Definitive restorative care should be pursued when clinically indicated and feasible, particularly for teeth with long expected service life, structural breakdown, functional demands, or a high risk of future failure with nonrestorative management alone [3,9].

- **Strength:** Strong good practice statement
- **Certainty:** Low (indirect from restorative guidelines) [9]

Recommendation 9: Caregiver communication and consent (Bridge vs. Destination)

Before applying SDF, caregivers should be informed that [1,3]:

- SDF may arrest caries but **does not restore tooth form, function, or esthetics**
- The staining of arrested lesions is expected
- Follow-up and possible reapplication are required
- Definitive care may still be necessary
- The absence of symptoms does not equal restoring function or preventing long-term breakdown
- **SDF is being used as a bridge to future care, not as the destination of care.** A bridge is temporary; completing the bridge by pursuing definitive care is an expected part of the plan [3].
- **If no definitive care pathway is established and actively pursued, SDF alone does not constitute completed treatment.** Caregivers should be asked to confirm understanding (e.g., "I understand that SDF is not a permanent fix") [3].
- A **written care agreement** may be offered, specifying a maximum interim period (e.g., "SDF will be used for up to 6 months while we arrange sedation") [3].

Consent should include discussion of these points and clear triggers for escalation [1,3].

- **Strength:** Strong good practice statement

- **Certainty:** Very low [4]

Recommendation 10: Ongoing nonrestorative management

Ongoing nonrestorative management **may be considered** only when [3,8]:

- Lesions remain arrested
- Child is asymptomatic
- Function is preserved
- Caries risk is low or controlled
- Reliable follow-up is feasible
- **Strength:** Conditional
- **Certainty:** Very low

Clinical Pathway Language for Figure Use

The following steps correspond to the Preservation-to-Precision flowchart (Figure 1) [3].

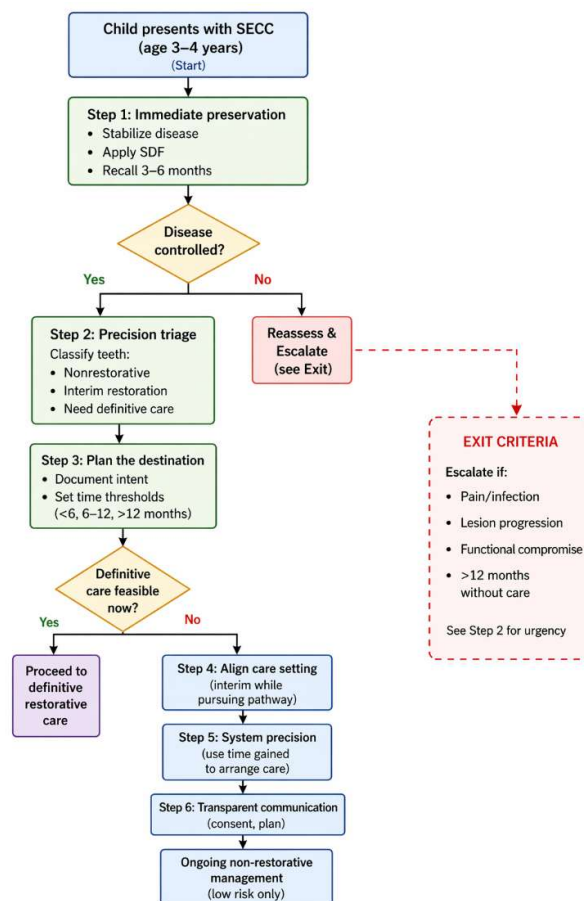


Figure 1. Preservation-to-Precision Pathway for SDF Use in Young Children With SECC. This pathway positions 38% SDF as an evidence-supported caries-arresting intervention within a comprehensive, time-bound care plan [3]. Reapplication may be considered based on lesion activity and caries risk, but no universal reapplication interval has been established [2,4]. Escalation is indicated for pain, infection, lesion progression, functional compromise, inability to maintain follow-up, or >12 months without definitive care when definitive care is indicated (with equity-explicit documentation) [3,7,8]. Real-world data indicate that many SDF-treated teeth require additional intervention within approximately 2 years, supporting planned exit criteria rather than open-ended temporization [3,5].

Step 1. Immediate preservation – Apply 38% SDF to indicated cavitated lesions. Establish preventive measures and schedule follow-up within 3–6 months [1,3]. Decision point: Is disease controlled? If yes, proceed to Step 2. If no, reassess, reapply SDF, provide an interim restoration, or escalate [3].

Step 2. Precision triage – Classify each tooth as suitable for nonrestorative management, interim restoration, or definitive restorative care [3,7].

Step 3. Plan the destination – Document whether SDF is intended for interim stabilization or longer-term nonrestorative management. Specify the monitoring interval, reapplication plan, and exit criteria using the thresholds in Recommendation 6 [3].

Step 4. Align care setting – Match the treatment setting to the child’s behavioral, medical, and restorative needs [1,3].

Step 5. System precision – Use the time gained by SDF (typically weeks to months) to arrange definitive care, reduce access barriers, and prevent progression [3,6].

Step 6. Transparent communication – Explain that SDF arrests lesions but does not guarantee durable function, esthetics, or tooth survival without additional care. Discuss exit criteria and the possibility of escalation within approximately 2 years [3,5].

Research and Policy Implications: Closing the Evidence–Implementation Gap

The proposed framework rests on evidence of low to very low certainty for several key implementation parameters [4]. Research is urgently needed to strengthen the evidence base and translate these principles into policy [3].

Priority Research Questions

Domain	Question	Suggested Design
Optimal duration of interim SDF	Maximum safe duration before adverse outcomes rise	Prospective cohort with time-to-event analysis [3,4]
Reapplication interval effectiveness	3-month vs. 6-month vs. as-needed schedules	Pragmatic cluster-randomized trial [2,4]
Exit criteria validation	Do explicit exit criteria improve timely definitive care and reduce adverse outcomes?	Stepped-wedge cluster randomized trial [3]
Equity impact	Do thresholds differentially affect children by insurance, rurality, and race?	Mixed methods with disparities analysis [3]
Systems drift prevalence	Among >12-month SDF cases, proportion attributable to system vs. clinician factors?	Multicenter chart audit [3,6]
Caregiver understanding	Does “bridge vs. destination” consent language improve recall and follow-through?	RCT of consent formats [3]

Policy Advocacy Recommendations

1. **AAPD/ADA guideline update:** Incorporate explicit time-bound exit criteria and equity guardrails [1,3].
2. **State Medicaid/ Children’s Health Insurance Program (CHIP):** Require documented care plans and a maximum interim SDF duration (e.g., 12 months) for repeated SDF reimbursement, with exceptions for documented system barriers [3,6].
3. **Health systems and dental Accountable Care Organizations (ACOs):** Adopt the 12-month reassessment mandate as a quality measure [3].
4. **Dental education:** Include preservation-to-precision and systems drift principles in residency and dental school curricula [3].
5. **Research funding:** Prioritize pragmatic trials of SDF implementation strategies among underserved populations [3,4].

Table 1 provides a structured comparison of the 2023 American Academy of Pediatric Dentistry (AAPD) policy on silver diamine fluoride (SDF) and the proposed time-bound clinical framework. The table highlights key domains—including purpose, time-bound care planning, exit criteria, equity considerations, and accountability mechanisms—and shows how the proposed framework goes beyond current guidance by operationalizing implementation. In particular, it introduces explicit duration thresholds, mandatory reassessment points, and system-level safeguards (e.g., the systems drift principle), thereby transforming SDF use from a general recommendation into a structured, auditable care pathway.

Comparison: My Framework vs. Current AAPD Policy (2023)

Domain	AAPD 2023 Policy	My Framework	Value Added
Purpose	Broadly supports SDF as part of an ongoing caries management plan consistent with a dental home.	Specific to interim stabilization for SECC, with explicit time boundaries and exit criteria.	My document operationalizes <i>how</i> to use SDF in high-burden cases, not just <i>that</i> it can be used.
Time-bound care planning	No mention of duration limits, reapplication intervals, or when to stop SDF and escalate.	Explicit thresholds: <6 months (appropriate), 6–12 months (requires justification), >12 months (mandatory reassessment & documentation).	Major gap filled. AAPD offers no guardrails against indefinite use of SDF.
Exit criteria	None.	Seven specific clinical and time-based triggers for escalation (pain, progression, functional compromise, >12 months, etc.).	Prevents SDF from becoming a default long-term substitute for restorative care.
Equity impact assessment	None.	Dedicated section addressing system-driven delays, safety-net modifications, and disaggregated outcome measures.	Ensures time thresholds do not penalize underserved children; absent from all current guidelines.
Systems drift principle	None.	Explicit concept of “implementation drift”—SDF becoming an unintended destination due to access barriers.	Recognizes a real-world failure mode ignored by existing policies.
Bridge vs. destination consent	Standard consent elements (staining, off-label use), but no distinction between interim and definitive care.	Mandatory language: “SDF is a bridge, not a destination”; written care agreements; caregiver confirmation statement.	Transforms consent from a formality to shared accountability for follow-through.
12-month reassessment mandate	None.	Active mandate with documentation requirements (barriers, actions taken, justification, next steps).	Converts passive “follow-up as needed” into auditable clinical accountability.
Tooth-level precision triage	Not addressed.	Classifies teeth into nonrestorative, interim restoration, or definitive care categories with escalation rate data (42–50% for Class III/IV).	Moves beyond treating SECC as a single entity; enables resource allocation by tooth prognosis.
Research & policy agenda	Encourages “more practice-based research” vaguely.	Six priority research questions with study designs; five specific policy advocacy targets (AAPD, Medicaid, dental education, etc.).	Provides a roadmap to elevate evidence from low to moderate certainty.
Clinical vignette	None.	Contrasts well-resourced (2-month bridge) vs. under-resourced (>24-month drift) cases.	Illustrates equity implications concretely; makes abstract principles tangible.
Guideline strength	Organizational policy statement; no GRADE or evidence calibration.	Uses GRADE terminology; transparent about low/very low certainty; distinguishes conditional vs. good practice statements.	Aligns with modern evidence-based guideline standards.
Real-world data integration	References efficacy trials but not implementation studies.	Cites 2023-2024 real-world studies (Meyer, Schlotz, Whitlatch) on escalation rates, sedation delays, and care duration.	Ground recommendations in actual clinical practice patterns, not just controlled trials.

Table 2 complements this comparison by identifying major gaps in current American Dental Association (ADA) guidance and mapping each gap to a corresponding solution in the proposed framework. These gaps include the absence of defined endpoints for SDF use, a lack of distinction between interim stabilization and definitive care, limited attention to equity, and insufficient accountability for prolonged temporization. The framework addresses these deficiencies through explicit exit criteria, tooth-level triage, equity-adjusted implementation strategies, and a mandated 12-month reassessment.

Key Gaps in ADA Guidance That My Framework Fills

Gap	ADA Position	My Framework's Solution
No endpoint for SDF use	"Biannual applications recommended" – implies indefinite continuation.	Explicit exit criteria and time thresholds.
No distinction between interim stabilization and definitive care	Mentions restoration "may be needed" but no operational guidance.	Strong policy statement + tooth-level triage + transition recommendations.
No equity considerations	Assumes equal access to follow-up and definitive care.	Health equity impact assessment + safety-net modifications.
No accountability for prolonged SDF	No mechanism to prevent SDF from becoming permanent.	12-month reassessment mandate with documentation requirements.
Rigid reapplication interval	Biannual recommended as standard.	Individualized intervals; warns against a universal standard.
No implementation science	Evidence summary, not implementation guidance.	Systems drift principle, clinical pathway, consent tools, and research agenda.

Together, these tables show that the framework's primary contribution is not to challenge the evidence base supporting SDF but to translate existing evidence into actionable clinical policy. By introducing time limits, escalation triggers, and equity-explicit safeguards, the framework closes the gap between efficacy-based recommendations and real-world implementation, where prolonged SDF use can otherwise serve as an unintended substitute for definitive care.

Call to Action

Current evidence supports SDF as an effective caries-arresting agent but does not support indefinite, undocumented SDF use as a substitute for definitive restorative care [1,3,4]. This framework provides the best available guidance—calibrated to current certainty, transparent about limitations, and designed to evolve as higher-quality evidence emerges [3]. The authors invite collaborative, multicenter efforts to validate, refine, and implement the preservation-to-precision pathway for the millions of young children worldwide affected by severe early childhood caries.

Key Summary Statement

Based on low-certainty evidence, 38% silver diamine fluoride is conditionally recommended to arrest cavitated carious lesions in primary teeth as part of comprehensive caries management [1,4]. For children with severe early childhood caries, SDF should be used within a documented, time-bound preservation-to-precision pathway that includes follow-up within 3–6 months, individualized reapplication, tooth-level triage, caregiver consent framed as bridge vs. destination, and explicit exit criteria with equity guardrails [3]. SDF should not be presented or used as a universal long-term substitute for definitive restorative care [3,8]. When definitive care is indicated, the time gained by SDF (typically weeks to months) should be used to pursue timely definitive treatment, not to normalize prolonged temporization as routine practice [3,6].

Declaration of interests: None declared. This framework does not represent the official policy of the AAPD, ADA, or any other organization.

References

1. 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):E135-E145.
2. Baghdadi, Z.D. From Preservation to Precision in Pediatric Dentistry: Evidence-Calibrated Viewpoint and Heuristic Framework for Silver Diamine Fluoride Guidance. *Children* **2026**, *13*, 629. doi: [10.3390/children13050629](https://doi.org/10.3390/children13050629)
3. Baghdadi, Z.D. Equity or Two-Tier Care? Guardrails for Silver Diamine Fluoride and Delegated Early Childhood Caries Pathways. *Children* **2026**, *13*, 386. doi: [10.3390/children13030386](https://doi.org/10.3390/children13030386)
4. Worthington HV, Clarkson JE, Wong F, et al. Topical silver diamine fluoride for preventing and managing dental caries in children and adults. *Cochrane Database Syst Rev*. 2024;11(11):CD012718.
5. Schlotz JC, Meyer BD, Rindal DB, et al. Longitudinal follow-up comparing future care of primary teeth treated with silver diamine fluoride. *Pediatr Dent*. 2024;46(3):186-191.
6. Meyer BD, Kelly ER, McDaniel P. Dentists' Adoption of Silver Diamine Fluoride among 1- to 5-Year-Old Children in North Carolina. *JDR Clin Trans Res*. 2021 Jan;6(1):59-67. doi: 10.1177/2380084420913251. Epub 2020 Mar 13. PMID: 32168462.
7. Meyer BD, Hyer JM, Milgrom P, Downey T, Chi DL. Silver diamine fluoride-associated delays in procedural sedation in young children: A retrospective cohort study. *J Am Dent Assoc*. 2023 Apr;154(4):311-320. doi: 10.1016/j.adaj.2022.12.008. Epub 2023 Feb 3. PMID: 36740480.
8. Whitlatch K, Richardson C, Cocke S, Norris J and Meyer B (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
9. Dhar V, Marghalani AA, Crystal YO, et al. Evidence-based clinical practice guideline on restorative treatments for caries lesions. *J Am Dent Assoc*. 2023;154(7):551-566.
10. The American Dental Association. Silver diamine fluoride. Available at: <https://www.ada.org/resources/ada-library/oral-health-topics/silver-diamine-fluoride>. Accessed on May 4, 2026.

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