

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

Dental caries affects about one out of four children aged 2-5 years.¹ Silver diamine fluoride (SDF), recently approved for use in the United States, has been shown to be efficacious in arresting caries lesions.^{2,3} It is a valuable therapy which may be included as part of a caries management plan for patients. Caries lesions treated with SDF usually turn black and hard. Stopping the caries process in all targeted lesions may take several applications of SDF, and reapplication may be necessary to sustain arrest.



Active cavitated caries lesions before application of SDF



SDF-treated lesions with temporary gingival staining

Case selection for application of silver diamine fluoride

Patients who may benefit from SDF include those:

- With high caries risk who have active cavitated caries lesions in anterior or posterior teeth;
- Presenting with behavioral or medical management challenges and cavitated caries lesions;
- With multiple cavitated caries lesions that may not all be treated in one visit;
- With dental caries lesions that are difficult to treat; and
- Without access to or with difficulty accessing dental care.

Criteria for tooth selection include:

- No clinical signs of pulpal inflammation or reports of unsolicited/spontaneous pain.
- Cavitated caries lesions that are not encroaching on the pulp. If possible, radiographs should be taken to assess depth of caries lesions.
- Cavitated caries lesions on any surface as long as they are accessible with a brush for applying SDF. (Orthodontic separators may be used to help gain access to proximal lesions.)

SDF can be used prior to restoration placement and as part of caries control therapy.⁴ Informed consent, particularly highlighting expected staining of treated lesions, potential staining of skin and clothes, and need for reapplication for disease control, is recommended.

Clinical application of silver diamine fluoride

- Remove gross debris from cavitation to allow better SDF contact with denatured dentin.
- Carious dentin excavation prior to SDF application is not necessary. As excavation may reduce proportion of arrested caries lesions that become black, it may be considered for esthetic purposes.

- A protective coating may be applied to the lips and skin to prevent a temporary henna-appearing tattoo that can occur if soft tissues come into contact with SDF.
- Isolate areas to be treated with cotton rolls or other isolation methods. If applying cocoa butter or any other product to protect surrounding gingival tissues, use care to not inadvertently coat the surfaces of the caries lesions.
- Caution should be taken when applying SDF on primary teeth adjacent to permanent anterior teeth that may have non-cavitated (white spot) lesions to avoid inadvertent staining.
- Careful application with a microbrush should be adequate to prevent intraoral and extraoral soft tissue exposure. No more than one drop of SDF should be used for the entire appointment.
- Dry lesion with gentle flow of compressed air.
- Bend micro sponge brush. Dip brush into SDF and dab on the side of the plastic dappen dish to remove excess liquid before application. Apply SDF directly to only the affected tooth surface. Remove excess SDF with gauze, cotton roll, or cotton pellet to minimize systemic absorption.
- Application time should be at least one minute if possible. (Application time likely will be shorter in very young and difficult to manage patients. When using shorter application periods, monitor carefully at post-operative and recall visits to evaluate arrest and consider reapplication.)
- Apply gentle flow of compressed air until medicament is dry. Try to keep isolated for as long as three minutes.
- The entire dentition may be treated after SDF treatment with five percent sodium fluoride varnish to help prevent caries on the teeth and sites not treated with SDF.

* Refer to AAPD Clinical Practice Guideline: 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. (Available at: <http://www.aapd.org/policies/>)

Follow-up

Estimations of SDF effectiveness in arresting dental caries lesions range from 47 to 90 percent with one-time application depending on size of the cavity and tooth location.^{4,7} Anterior teeth have higher rates of arrest than posterior teeth.⁵ Therefore, follow-up for evaluation of caries arrest is advisable.²⁻³

- Follow-up at 2-4 weeks after initial treatment to check the arrest of the lesions treated.
- Reapplication of SDF may be indicated if the treated lesions do not appear arrested (dark and hard). Additional SDF can be applied at recall appointments as needed, based on the color and hardness of the lesion or evidence of lesion progression.
- Caries lesions can be restored after treatment with SDF.
- When lesions are not restored after SDF therapy, bi-annual reapplication shows increased caries arrest rate versus a single application.

References

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