Pathways to Improving Children’s Oral Health Using Silver Diamine Fluoride

Center for Medicaid and CHIP Services (CMCS)
Advancing Prevention and Reducing Childhood Caries in Medicaid and CHIP Learning Collaborative: Webinar #1

May 20, 2020

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Bruce Austin, D.M.D., formerly of the Oregon Health Authority
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Housekeeping Instructions
Webinar logistics

- Phone lines muted upon entry
- Q&A
- Chat
## Agenda

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CMCS’s Advancing Prevention and Reducing Childhood Caries in Medicaid and CHIP Learning Collaborative

**Goal:** Support state Medicaid oral health teams over two years to increase the use of fluoride treatments

Participating state teams will have the opportunity to:

- Expand their knowledge of oral health policies, programs, and practices
- Develop, implement, and assess a data-driven quality improvement project
- Network with peers
- Advance their knowledge of and skills in quality improvement
Learning Collaborative events and opportunities

• **Webinar #2**: “Improving Children’s Oral Health Using Fluoride Varnish in Non-Dental Settings”—*June 2020*

• **Webinar #3**: “Introduction to Advancing Prevention and Reducing Childhood Caries in Medicaid and CHIP Learning Collaborative Affinity Group”—*July 2020*

• Affinity group expression-of-interest form posted—*July 2020*

• Affinity group expression-of-interest form due—*Summer 2020*

• Affinity group begins—*Summer 2020*
Silver Diamine Fluoride: Medicaid and Public Health Use for Dental Caries Control

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Disclosures

I have no financial interests in any silver diamine fluoride (SDF) product.
Outline

• What is SDF?
• What does SDF do?
• How does SDF work?
• How to use SDF
• Regulatory issues
• Medicaid and SDF
Why I think SDF is a game changer in dental public health and Medicaid

- SDF arrests ~80% dental caries (tooth decay) when used twice per year
- Indirect prevention
- Inexpensive
- Benefits far outweigh risks
- Easily used in field settings
- May be applied by dental hygienists
- Great potential for Medicaid cost savings
Simulation to estimate averted restorative visits and Medicaid expenditures in seven states for children age 1–5 years

Averted restorative visits range: 2,049 (VT) to 60,542 (NC) at 50% SDF penetration level

Averted per-restorative visit costs ranged from $100 to $350 per visit

SDF can reduce Medicaid expenditures by averting expensive caries treatment options

Can prevent stressful restorative procedures

SDF—What is it? What does it do?

- Colorless liquid
- Arrests dental caries
- Prevents dental caries
- Decreases dentin hypersensitivity
SDF—How does it work?

- SDF kills bacteria, especially those that cause decay
- Keeps bacteria from attaching to teeth
- Inhibits destruction of tooth structure
- Promotes repair of tooth surfaces

Evidence of effectiveness

- Dozens of clinical trials and multiple systematic reviews*
- SDF is highly effective in arresting decay in children and older adults
- Outperforms anything else currently available for arresting decay

*References available upon request
SDF for caries management

- SDF is an approach to caries management
- Choice when restoration not possible or feasible, e.g., for infants, young kids
- Use in public health: provides treatment and prevention at the same time, easy to apply, noninvasive, requires minimal training, inexpensive
- Does not eliminate the need for follow-up
- May still need tooth restoration
When would you use SDF?

- Extreme caries risk
- Behavior or medical management challenges
- More lesions than treatable in one visit
- Difficult-to-treat lesions (including root surface caries)
- Patients without access to care
- Young patients wait-listed for OR-based dental treatment
Where we now use SDF

- Young patients wait-listed for OR- or sedation-based dental treatment
- Head Start
- Early learning centers
Recent study on impact of SDF in pediatric dental clinic

- Research question: Can SDF reduce the risk of dental emergencies among children wait-listed for treatment under general anesthesia or sedation?
- Comparing to historic control (chart review)
- Emergency visits reduced from 19% of children on wait list to 4%
- 81% of lesions arrested at follow-up visit

Thomas M, Mugayar L, Dávila ME, Salkowitz A, Tate A, Tomar SL. Silver diamine fluoride may prevent emergency visits in children with ECC. Pediatric Dentistry [in press].
SDF in the United States

- SDF used in other countries for many years
- Currently two products in U.S.:
  - Advantage Arrest (Elevate Oral Care)
  - Riva Star (SDI, Inc.)

FDA clearance = hypersensitivity
Off-label use = caries treatment
This is the same as fluoride varnish
How do you use SDF?

- Dry and apply 2+ times per year
- Minimal supplies needed
- Not highly technical but does require training
SDF staining

How safe is SDF?

• No adverse reports in >80 years of use in Japan
• Contraindication
  – Silver allergy
• Relative contraindication
  – Certain oral soft-tissue conditions, e.g., ulcerative gingivitis, stomatitis
• Side effects
  – Small, white mucosal lesions (disappear in 48 hours)
  – Will stain lesions black
Regulatory issues

• SDF cleared by U.S. Food and Drug Administration as Class II medical device to treat tooth sensitivity
• Treatment and prevention of dental caries is off-label use (same as fluoride varnish)
• U.S. FDA granted “breakthrough therapy status” to Advantage Arrest for caries arrest
  – “...may demonstrate substantial improvement over existing therapies on 1 or more clinically significant endpoints…”
  – First dental drug/device to gain such status
Regulatory issues

• Dental hygienists’ permission to apply SDF varies among states
• Some states treat SDF like other topical fluorides in board rules; some explicitly include (or exclude) SDF
SDF CDT codes

D1208 - Topical application of fluoride

D9910 - Application of a desensitizing medicament, per visit

D1999 - Unspecified preventive procedure by report

CDT code for the use of caries-arresting medicaments, the off-label use of SDF:

D1354 - Interim caries-arresting medicament application

“Conservative treatment of an active, nonsymptomatic carious lesion by topical application of a caries-arresting or inhibiting medicament and without mechanical removal of sound tooth structure.”
Medicaid and SDF

- About 35 states have at least some coverage for CDT code D1354 in state Medicaid programs
- Wide range of fees, from $2.75/tooth/application (Missouri) to $98.50/tooth/lifetime (Indiana)
- Varying frequency of application; most allow application every six months, with a lifetime maximum number of applications per tooth
Summary

• SDF is very effective for arresting tooth decay
• Also prevents decay
• Especially useful for young children, older adults, and individuals with behavioral challenges
• Inexpensive
• Minimal training needed
• Very wide margin of safety
• Potentially cost-saving to Medicaid programs
Thank you!

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Silver Diamine Fluoride in Oregon

Kellie Skenandore
Dental Program Manager
Health Systems Division
• Oregon is a Medicaid expansion state and has extensive dental coverage for adults.

• Much of Oregon is rural and frontier, which adds to access challenges.

• Much of the development of SDF occurred in Oregon, from the leadership of Dr. Mike Shirtcliff, Advantage Dental, who realized “we are not going to drill and fill our way out of the overwhelming caries in our Medicaid population.”

  – The result was the SDF product Advantage Arrest, by Elevate Oral Care.
SDF in Oregon

• State has the most extensive scope of practice for hygienists, along with Colorado. The application of SDF, which is considered a fluoride application, could be added to its scope in 2014.

• Current reimbursement rate is $14.27 per tooth.
  – Reimbursement was priced similar to fluoride application
  – Allowed reimbursement for restorations on the same tooth
Barriers to SDF introduction

• Faced opposition from some dentists, dentist groups, and some dental care organizations and nonprofits providing dental services, based on their concerns that:
  – SDF may be an inferior treatment
  – SDF might create a two-tiered system of care
  – The treatment causes staining (though of the caries, not the “tooth”)
  – Reimbursing for SDF could seem to encourage SDF over more traditional treatments (restorations)
Factors driving acceptance of SDF

Factors that seemed to help introduction and acceptance:

• Continuing research on SDF’s effectiveness
• Mainstream media articles and stories
• Provided parents with detailed consent forms accompanied by before/after photos
• Overwhelming acceptance by parents, who realized the benefits over traditional restorations, especially for “pre-cooperative children” (Dr. Jeremy Horst)
Uptake of SDF in Oregon

• We have seen continual increases in claims numbers for D1354 since it was introduced in 2016
• No known opposition or pushback since we went through the rollout period in the first year
SILVER DIAMINE FLUORIDE

Dr. Zachary Hairston, D.D.S.
DMAS Dental Consultant

Smiles For Children
Improving Dental Care Across Virginia
**Smiles For Children card**

**Virginia’s Medicaid Smiles For Children Program**

Virginia’s Smiles For Children (SFC) Medicaid dental program is recognized as one of the top oral health programs in the country. SFC provides comprehensive dental benefits. Expanded dental benefits are also provided to adult pregnant women enrolled in Medicaid, TANF, and HIP. Limited dental benefits are provided for Medicaid members over age 21. Delta Dental serves as the Dental Benefits Administrator for the Smiles For Children program.

**Virginia’s Smiles For Children program offers benefits to over 950,000 Virginians**

- **Member Utilization**
  - 2015: 40%
  - 2016: 45%
  - 2017: 50%

- **Percent Medicaid & CHIP Enrollees Ages 2-21 Who Received a Dental Visit in 2016**
  - State Average: 61.8%
  - Virginia Average: 66.30%
  - National Average: 52.96%

- **15,000+ pregnant women received needed dental care.**

- **Virginia continues to surpass the national average for children who receive a dental visit:**
  - **YEAR 1:** 4,200+ Unique pregnant women served
  - **YEAR 2:** 6,300+ Unique pregnant women served
  - **YEAR 3:** 6,800+ Unique pregnant women served

- **66.30% Virginia Children**

- **52.66% National Average**

**Comparison of the utilization of dental services by SFC members to the utilization of dental services by state employees**

- **Children under age 3 receiving fluoride varnish by non-dental providers**
  - 2015: 46%
  - 2016: 48%
  - 2017: 52%

- **Number of non-dental providers administering fluoride varnish**
  - 2015: 18%
  - 2016: 24%
  - 2017: 30%

- **36% of the state’s practicing dentists participate in the Smiles For Children network (2,000 dentists)**

**MEMBER SATISFACTION**

- Satisfaction continued to be very high with the dental care received, and the Smiles For Children program.
- 85% have seen an improvement in their/their child’s oral health in the past year.
- 98% felt the dentist/staff did everything they could to make them feel comfortable.

**PROVIDER SATISFACTION**

- Providers continue to rate the Smiles For Children highly.
- 94% of providers plan to continue participating in the Smiles For Children program next year.
- 93% of providers rated Delta Dental as excellent or better than competitor dental insurance carriers.
Medical/dental collaboration in the SFC program

1. 2013 CPT 99188 added to reimburse physicians for fluoride varnish thru age 6 for Smiles For Children members
2. 2016 increased effort to train nondental providers in fluoride varnish administration
# DMAS medical claims

## Fluoride varnish applications

<table>
<thead>
<tr>
<th>State Fiscal Year</th>
<th># of medical providers</th>
<th># of overall claims submitted by nondental providers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>386</td>
<td>16,650</td>
</tr>
<tr>
<td>2017</td>
<td>504</td>
<td>22,916</td>
</tr>
<tr>
<td>2018</td>
<td>567</td>
<td>22,952</td>
</tr>
<tr>
<td>2019</td>
<td>714</td>
<td>25,646</td>
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Fluoride varnish by non-dental providers: improvements over time

Children under age 3 receiving fluoride varnish by non-dental providers

↑39%
2016 to 2019
(Source GA Report 2019)

Number of non-dental providers submitting claims for fluoride varnish application

↑85%
2016 to 2019
(Source GA Report 2019)
FLUORIDE VARNISH DENTISTS

State Fiscal Year 2019
325,196 billings
$6.7 million
Benefits to provider for SDF

• D1354 added as benefit in 2017
• Two applications / tooth / lifetime
• Must be separated by no less than 91 days
• Primary and permanent dentition
• Restorative, endodontic, and extraction procedures cannot be billed within 180 days of D1354 or payment will be reduced by SDF amount
<table>
<thead>
<tr>
<th>Calendar year</th>
<th>Total number of services submitted</th>
<th>Total number of services paid for</th>
</tr>
</thead>
<tbody>
<tr>
<td>October–December 2017</td>
<td>1,390</td>
<td>1,179</td>
</tr>
<tr>
<td>January–December 2018</td>
<td>16,757</td>
<td>15,279</td>
</tr>
<tr>
<td>January–September 2019</td>
<td>21,913</td>
<td>20,820</td>
</tr>
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Takeaways: SDF usage

• Discoloration was not seen as much of a problem by parents when weighed against using operating room/sedation and reducing discomfort
• Ideally, both parents should be informed
• Youngsters who are just not ready for definitive treatment were able to build confidence
• Parental discussion to proactively address that kids are not receiving an inferior product
• Be mindful of elementary kids bullying recipients about having teeth with black discoloration
• Consider fluoride-releasing glass ionomer to shield against debris entering SDF-treated area
For additional information:

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804.786.6635
Discussion and Q&A
Poll Question #1

Which type of organization do you represent? (Check all that apply)

a) State Medicaid or CHIP agency
b) Other state or local agency
c) Community organization
d) Health/dental plan
e) Dental provider
f) Other health care provider
g) Other
Poll Question #2

Please only respond if you represent a state Medicaid or CHIP agency.

Which types of quality improvement technical assistance activities are you interested participating in the next 3 to 4 months? (Check all that apply)

a) Webinars

b) Affinity group: ongoing support for implementing a QI project on silver diamine fluoride or fluoride varnish in non-dental settings

c) Other (Type your response in the Q&A pod)
Q&A

• To submit a written question or comment, click the Q&A pod and type in the text box provided; please select “All Panelists” in the “Ask” field before submitting your question or comment
  – Your comments can only be seen by our presentation team and are not viewable by other attendees
Wrap-Up
Upcoming Learning Collaborative events

• **Webinar #2:** “Improving Children’s Oral Health Using Fluoride Varnish in Non-Dental Settings”—**June 2020**

• **Webinar #3:** “Introduction to the Advancing Prevention and Reducing Childhood Caries in Medicaid and CHIP Learning Collaborative Affinity Group”—**July 2020**

• Affinity group expression-of-interest form posted—**July 2020**

To sign up for upcoming Learning Collaborative events, visit our registration page:
https://mathematica.webex.com/mathematica/onstage/g.php?PRID=abe273d4952e0cfe2a666aaaf879fff1
Introduction to childhood caries prevention: resources

• Integration of Oral Health and Primary Care Practice (Health Resources and Services Administration)

• Smiles for Life: A National Oral Health Curriculum

• American Academy of Pediatrics: Section on Oral Health

• Silver Diamine Fluoride Fact Sheet (Association of State and Territorial Dental Directors)
Contact the Learning Collaborative

If you have any questions about the Advancing Prevention and Reducing Childhood Caries in Medicaid and CHIP Learning Collaborative, please email the TA mailbox at MACQualityImprovement@mathematica-mpr.com.
Thank you for participating!

Please complete the evaluation as you exit the webinar.
Appendix:

Silver Diamine Fluoride: Medicaid and Public Health Use for Dental Caries Control

Scott L. Tomar, D.M.D., Dr.P.H.
UIC College of Dentistry
Where did this come from?

- Silver nitrate used globally for > 1,000 years
  - Caries arrest case series and protocols in 1800s
  - 1891: 87 of 142 treated lesions were arrested
  - Founding fathers of dentistry had protocols
- Silver fluoride (AgF) used in Japan for ~900 years
  - Cosmetic blackening of teeth
  - Known to prevent caries
- NH$_3^+$ added > 80 years ago = SDF
  - Approved and monitored by Japan
- Available in Australia, Brazil, Argentina, Cuba, China since 1980s or before...

Evidence: arrest of coronal caries

- At least 26 published clinical trials
- At least 7 published systematic reviews¹
- One recent umbrella review ("systematic review of systematic reviews")²
- Nearly all studies on coronal caries arrest conducted with children, mostly deciduous teeth


SDF caries arrest in children

- SDF is effective in arresting caries in children (arrest rates 65%-91%)
- SDF consistently outperformed comparative treatments (fluoride varnish, atraumatic restorative technique, placebo) for arrest


SDF in root-surface caries

- SDF is effective in arresting root-surface caries (arrest rates 100%—725% higher than placebo)
- SDF prevents 38% of root-surface caries with yearly application (prevented fraction: 25–71%)

Advantage Arrest 38% SDF

- 8-ml bottle
- Provides ~250 drops
- Treats up to five sites per drop
- Elevate Oral Care, West Palm Beach, Florida [www.elevateoralcare.com](http://www.elevateoralcare.com)
  - $175 / bottle (~$0.70/drop)
  - Education institution discount available
Advantage Arrest SDF 38% unit dose

- 30 doses
- 30 small applicators
- 30 regular applicators
- Instruction card
- Price:
  - 1 @ $129.95 $4.33/each
  - 3+ @ $116.50 $3.88/each
Available in unit dose only

- 10 capsules SDF + 10 capsules potassium iodide (KI) + applicators for 10 patients
- Pricing $97–$107 ($9.70–$10.70 per use)