Role of Silver Nitrate in Non-Operative Management of Caries in Children

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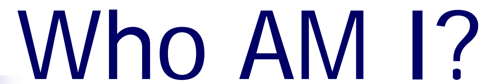


Who AM I?

Steve Duffin

- I am a general dentist with several associates
- I have been treating children for 30 years
- My practice is primarily public health and Medicaid
- My clinic reimbursement is 40% fee for service 60% Capitated
- On average my clinic sees about 100 children each week.

Disclosures – Steve Duffin

- Owner of Shoreview Dental, LLC, in Keizer, OR
- Dental Director and an owner in Oral Health Outreach (OHO) Beaverton, OR
- OHO has submitted a 510(k) application to the FDA for a Silver Nitrate+FV unit dose system
- Consultant for Advantage Dental, Redmond OR

Disclosures – Steve Duffin

- I am working with the Ministry of Health in Ecuador to develop a pilot program to control caries in children using silver nitrate as part of the strategy.

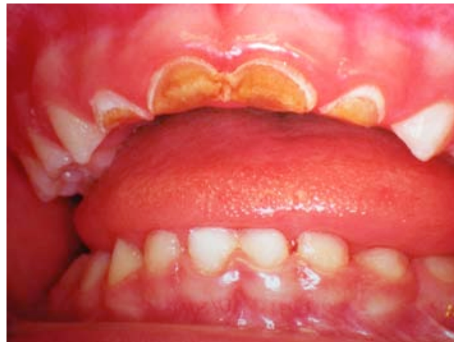
- I am working with the California Medicaid dental program to develop a pilot program to increase access to care using silver nitrate as part of the strategy.

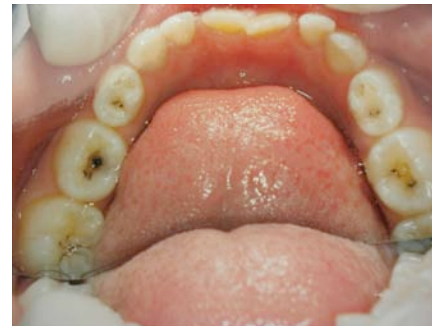
My Overall Approach to Managing Caries in Children

- The foundation of my practice is an emphasis on primary prevention, including:
  - A family-based approach
  - Counseling on diet and oral hygiene
  - Using fluoridated toothpaste
  - Regular use of fluoride varnish
  - Motivational interviewing (the real MI)
  - Regular check-ups
- All patients are evaluated for their risk for developing caries using CAMBRA metrics

When Primary Prevention Fails…

- On their initial visit approximately 75 % of my pediatric patients have cavitated caries
- Common patterns of caries in young children in my clinic have been:
  - Upper central incisors in children under 3
  - Mixed dentition in children 3-6 years old





When Primary Prevention Fails…

- My general approach prior to 2006 was:
  - Address emergent needs
  - Initiate prevention programs
  - Begin quadrant restorative care, or
  - Schedule restorations and extractions under general anesthesia for advanced disease
- Since 2006 I have incorporated a silver ion product to first treat the active caries:
  - Initially silver diammine fluoride (Saforide)
  - Since 2011 25% silver nitrate + fluoride varnish

My Non-operative Initial Treatment Approach with Children

SN + FV Technique

My Use of Silver Nitrate to Control Caries in High Risk Children

- Depending on patient compliance and disease level, my standard protocol is (with consent by the parent):
  - Visit #1: apply silver nitrate and followed by fluoride varnish on all active caries
  - I schedule follow-up visits at 2, 4, 8, & 12 weeks for a total of 5 applications of silver nitrate over three months

My overall impression of using the silver nitrate is:

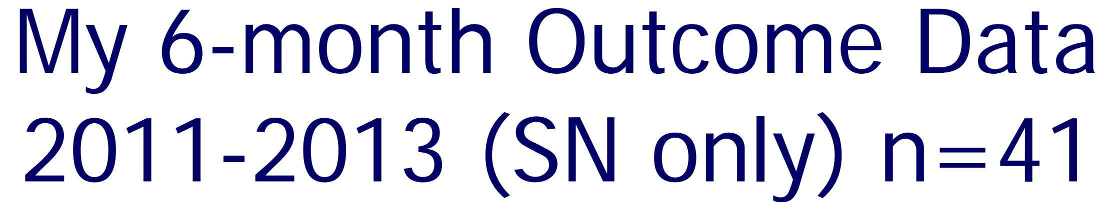
- It arrests essentially all carious lesions after 2-4 applications.
- The results are about the same for anterior and posterior teeth; interproximal lesions in posterior teeth are more difficult to arrest.
- In my practice the results <u>seem</u> to be largely independent of changes in oral hygiene and diet.
- After arrest, I offer to do restorations for esthetics or functional reasons—usually with GIC.

How Using of Silver Nitrate as part of NOACC Has Changed My Practice

- I nearly always begin active treatment on the first visit.
- I do very few traditional amalgam or composite restorations.
- I use local anesthesia and conscious sedation much less often than before.
- I have had a large reduction in the number of children who require restorations and extractions under GA.
- I NEVER use the papoose board to restrain a child any more.

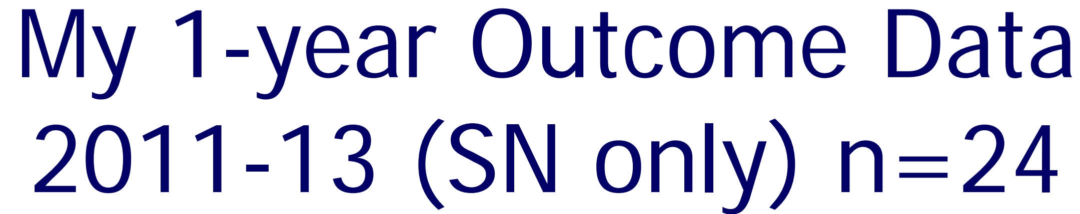
And yes, I Have Data (but with caveats)

1. These results are from clinical practice—not research.
2. These children were treated at my clinic.
3. I treated most of these children myself.
4. I scored the baseline and follow-up exams.
5. My assistant extracted the data from the charts into a database.
6. Most—but not all—of the children received 4-6 applications over a 3-6 month interval.
7. I don’t have data on the children who never returned for a follow-up exam.



Parameter	*Pre-Tx*	*Post-Tx*
Total dmfas*	383	370
# surfaces w/ active caries	375	2
# of surfaces arrested	0	363
% carious surfaces arrested		97
% of carious teeth arrested		97

*dmfas = decayed, missing, filled or arrested surfaces



Parameter	***Pre-Tx***	***Post-Tx***
Total dmfas	241	243
# surfaces w/ active caries	241	0
# of surfaces arrested	0	211
% carious surfaces arrested		88
% of carious teeth arrested		89

Potential Concerns About Using Silver Nitrate As an Adjunct

- Safety
- Parental concern about the discoloration
- Efficacy
- Duration of effect
- Requires strict adherence to the protocol
- Concern for children who do not return for follow-up visits
- This hasn't been used in the U.S. in over 50 years
- What will my colleagues think

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Thank You