A Non-Operative Approach to Caries in Children (NOACC)

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Who AM I?

- I am a dentist and dental director for Dental Clinics run by King County, WA
  - Five Public Health Clinics
  - Two County Jail Dental Clinics
  - Mobile Homeless Dental Clinic
  - School-based Mobile Prevention Team
- Life before dentistry
  - Before I became a dentist I was in research science.
  - My PhD is from the University of Washington’s school of Public Health and Community Medicine.
King County Clinics

- Our clinics serve about 40% adults and 60% kids. Annually, we provide approximately 25,000 dental visits for 12,000 children.

- Our clinics are Federally Qualified Health Centers. Patients are either covered by Medicaid or are uninsured.

- I have been treating high risk young children for 13 years.
Overall Approach to Managing Caries in Children

- The foundation is an emphasis on primary prevention, including:
  - Counseling on diet and hygiene
  - Regular use of fluoride varnish
  - Sealants on permanent first molars
- I do not currently use a formal caries risk assessment tool
- On their initial visit approximately
  - 20% of my patients at ages 1-3 have visible decay
  - 50% of 4-7 yr olds have to return for restorative work after their initial visit
When Primary Prevention Fails

Approaches we have tried with very limited or no success

- Increased frequency of fluoride varnish
- Chlorhexidine swabs & rinses
- Iodine swabs
- Fuji triage on occlusals
When Primary Prevention Fails

**Primary Anteriors**
- Have had a high level of failure* with materials & techniques including:
  - Composite (flowable, compressible, compomer)
  - Glass Ionomer
  - Opening Contacts

**Primary Molars**
- Failure somewhat less common and less rapid
- Unacceptably high rates of failure* with primary molars restored with amalgam or composite
- Good success with stainless steel crowns

*Failure= need to treat the tooth again due to material failure, recurrent decay or newly decayed surfaces
When Primary Prevention Fails:

The usual pattern of caries in children I see:

- Decay by age 1-3: A group of children with very aggressive disease that starts when the teeth erupt and attacks:
  - 1st - upper anteriors (worst where teeth contact but also facial decay along the gum line)
  - 2nd - occlusals of the molars

- Decay in age 4-7: A different group of children, with only weakened/decalcified enamel on the upper anteriors and posterior occlusals, but lots of interproximal caries.
Typical Presentations of Caries in Children in My Clinic
My Use of Silver Nitrate to Control Caries in High Risk Children

- August 2012- I first learned of using silver nitrate to control caries in children

- October 2012- May 2014 I used silver nitrate to arrest caries in primary teeth.
  - Our typical protocol was three treatments at least a week apart
  - During this period I tracked arrest when children returned for exams.
  - Approximately 1,000 patients had at least one silver nitrate application.

- June 14, 2015, We stopped using silver nitrate in our clinics, for complex operational reasons. Along the way we have learned that silver nitrate can be a good tool for arresting caries.
General Issues and Concerns

- No safety concerns

- Some temporary discoloration of lip or skin (but not mucosa) can occur

- Discoloration of anterior teeth can occasionally cause concern for parents or teachers but is a manageable issue

- The ability or inability to monitor lesions for progression is a factor to consider. Use of SN Requires a systematic approach to treatment, documentation, tracking.
My Overall Impressions of the Effectiveness of Silver Nitrate

- Initial arrest after 3 applications, as determined by visual assessment
  - is very reliable
  - seems to be independent of changes in oral hygiene and diet
  - when restoring teeth after initial arrest I find solid dentin under the arrested lesion.

- Mid and long term arrest
  - Stability of arrest may be dependent upon the aggressiveness of the disease or influenced by diet and oral hygiene
  - Mid-term and long term results without subsequent re-treatment is good but variable. Progression of caries as shown in sequential bitewings can occur
  - Silver nitrate does not appear to prevent patients from getting new cavities. Whether it reduces the rate of new caries is unknown.
Specific Observations on the Effectiveness of Silver Nitrate

- Initial arrest, as judged by a visual exam is 95+%

- Arrest at 1 year was scored as 72% of treated surfaces based on evaluation of 96 kids who had a 1 year exam

- 79% of surfaces were scored as arrested by evaluation of 52 kids who had an exam after 1.5-2 years.
2 year follow up - decay progression

3X SN treatment at 7 yrs old
By the 2 yr follow up 3 of the 10 teeth needed restorations
2 year follow up - stable arrest

3X SN treatments at 3 yrs old
stable arrest of treated surfaces at 5 yrs old
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