

Fluoride Varnish: So Simple Even a Doctor Can Do It

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Faculty Disclosure

- I have no relevant financial relationships with the manufacturers or any commercial products and/or provider of commercial services discussed in this CME activity.
- I do not intend to discuss an unapproved/investigative use of a commercial product/device in my presentation.

Polio is a serious, preventable,
infectious disease of children.

No Indian children born in the last three decades
have developed polio.

Diphtheria is a serious, preventable
infectious disease of children.

No Indian children born in the last thirty years
have had diphtheria.

Early Childhood Caries is a serious,
preventable infectious disease of children

But lots of American Indian/Alaska
Native children continue to have lots
of early childhood caries

Objectives

- Understand the epidemiology and pathogenesis of early childhood caries in AI/AN children
- Understand how fluoride varnish can reduce early childhood caries in AI/AN children
- Realize that primary care providers will be the ones to reduce the epidemic of early childhood caries in AI/AN children

Early Childhood Caries

- Tooth decay of the primary teeth
- Used to be called baby bottle tooth decay
- Interplay of dietary habits, oral hygiene and presence of cariogenic bacteria; primarily *Streptococcus mutans*
- Caries occur from demineralization of tooth enamel by acid produced by cariogenic bacteria

Caries Prevalence in US Children

Surgeon General's Report on Oral Health, 2000

Caries Intensity

- By first grade 40% of AI/AN children in many communities meet criteria for full mouth restorations
- The rate of in hospital full mouth restorations in AI/AN children is 5000% the rate in US white children

Epidemiology of ECC in Native Americans

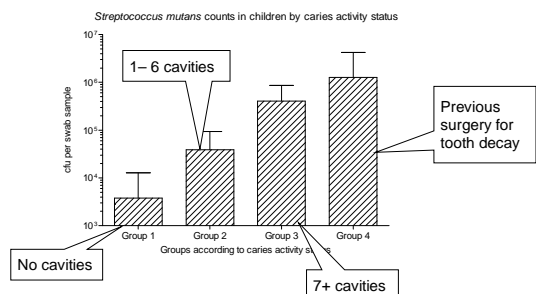
- there has been an INCREASE in ECC in NA children 2-5 years old since 1991
- This increase has occurred despite fluoridation of water
- This increase has occurred despite educational efforts

Oral Health Survey of AI/AN dental patients, 1999

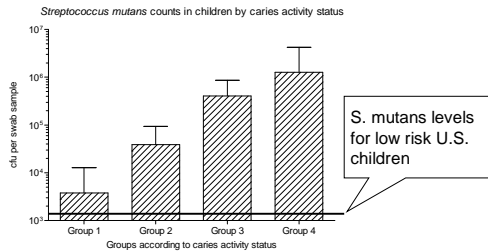
Why do AI/AN children have worse decay?

- ECC is an infectious disease -
 - earlier acquisition of *S. mutans*
 - Higher colony counts of *S. mutans*

Strep mutans study results from a Northwest Tribe



How does these levels compare to other children in the U.S.?



The Moment of Zen

- “When I first came to Pine Ridge as a family dentist I thought...
- What we need is a pediatric dentist...
- 15 Years later I am one of two pediatric dentists at Pine Ridge but...
- We will never drill or fill our way out of this problem”

John Zimmer, DDS

There is a window of infectivity

- Children are not born with caries bacteria
- Bacteria are spread from mother to child
- The greatest risk for transmission is from the eruption of the 1st primary tooth until age 2 years
- The intervention has to occur by age 2 years

The window of infectivity is also a window of opportunity

- Fluoride varnish can safely be applied to toddlers
- 25 years experience in Europe
- Caries reduction of 30%-70% in permanent teeth
- Licensed in US in 1994

Fluoride Varnish: mechanisms of action

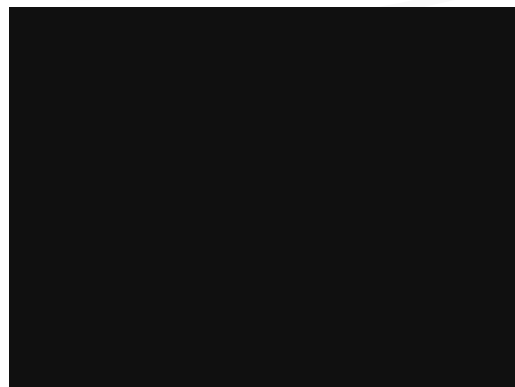
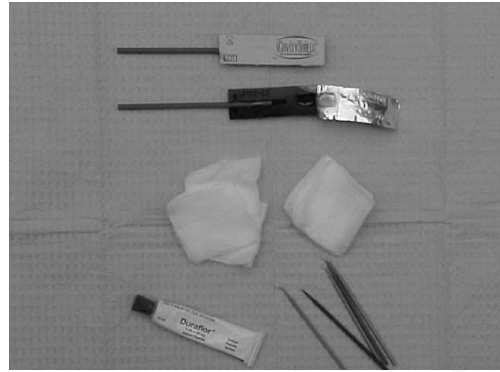
- inhibits demineralization
- Encourages remineralization
- inhibits bacterial growth in plaque

Fluoride Varnish

- must be applied at least 2 times per year
 - unclear if more often is of greater benefit
- advantages
 - easy to apply
 - don’t need professional cleaning before application
 - cheap (<\$1 per application)

What We Did in Tuba City

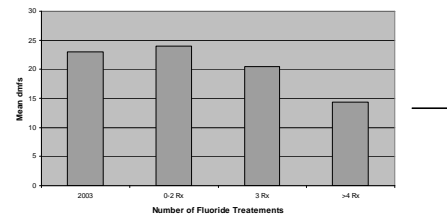
- All children seen at well child checks are offered varnish once primary teeth erupt: from 9 months to 30 months
- Providers apply varnish at the conclusion of the visit but before vaccinations
- Oral health examination and education occurs as we apply varnish
- Takes about three minutes



Tuba City Fluoride Varnish Program 2003- 2006

- Examined all Headstart Children
- 133 as controls in 2003
- 128 in 2004
- 96 in 2005
- Total N = 357
- Achieved statistical significance for 4+ fluoride treatments versus zero

Mean dmfs per Fluoride Treatment
2003 - 2006



The Canadian Experience

- *2444 Randomized Fluoride Varnish Trial for Preventing ECC in Aboriginal Communities*
H.P. LAWRENCE¹, D. BINGUIS², B. SWITZER², L. MCKEOWN³, R. FIGUEIREDO¹, A. LAPORTE¹, and J.B. ROGERS⁴, ¹University of Toronto, Canada, ²Sioux Lookout Zone Dental Program, Canada, ³Thunder Bay, Canada, ⁴First Nations and Inuit Health Branch, Health Canada, Canada
- 34% caries decrement in 1 year

American Dental Association Recommendations 2006

- High risk category includes all groups of "low socio-economic Status"
- High risk children ages 0- 60 months should receive professionally applied topical fluoride every 3 months
- Recommendation based on systematic review of scientific literature

In summary

- ECC are a big health disparity for the Native American children
- Changing behavior is hard and doesn't seem to have worked
- fluoride varnish application is easy and does seem to work

In Summary

- Access to dental care for young children is difficult...
- But everyone goes to well child visits sooner or later
- We need to approach ECC not as a dental disease but a pediatric infectious disease that occurs in teeth

“Our capability to prevent and treat disease seems to exceed our willingness to apply our interventions.”

*C. Everett Koop, MD
Former Surgeon General*

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