

# Oral Health: Evidence Based Interventions being used in Alaska

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Interim Director, Iḷisagvik College Alaska Dental Therapy Educational Program



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# My story



## Education:

- The Ohio State University (DDS)
- A.T. Still University (MPH)
- UT Health Science Center –San Antonio (Dental Public Health Residency)

## Positions:

- YKHC
  - Staff Dentist (2005-2008)
  - Deputy Director and Acting Director (2008-2009)
- ANTHC
  - Clinical Site Director (2009-2020)
  - Interim Director, Dept. of Oral Health (2020-present)



# Objectives:

At the end of this presentation you will:

- Be able to summarize the effects COVID has had on oral health access
- Be able to describe the oral health workforce in Alaska
- Be able to describe and apply evidence-based oral health interventions

# COVID-19 In Alaska

- All dental clinics were closed for everything except emergency procedures from March 19, 2020 to May 11, 2020.
- Medicaid travel for routine dental care was suspended
- Tribal Health Organizations (THOs) cancelled dental field trips for Spring 2020 - Fall 2020
- Testing all patients for procedures prior to all Aerosol Generating Procedures (example: fillings)

# Alaska Tribal Health Dental Vacancies

For the most up to date information: <https://www.ihs.gov/dentistry/index.cfm/currentopenings/>

Location	State	NHSC Score	Job Title	PHS Billet Level				Point of Contact	Phone	E-mail
				O3	O4	O5	O6			
Anchorage	AK	8	Pediatric Dentist			X		For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Anchorage	AK	8	Director of Dental Specialty Residency - Pediatrics			X	X	For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Anchorage	AK	8	Dentist	X	X			For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Anchorage	AK		Advanced General Practice Residency		X	X	X	For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Anchorage	AK	18	Dentist, Oral Surgeon		X	X	X	For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Anchorage	AK	18	Dentist, Oral Surgeon		X	X	X	For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Bethel	AK	22	Dentist	X	X			For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Bethel	AK	22	Dentist	X	X			For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Dillingham	AK		Dentist	Tribal Hire				For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Dillingham	AK		Dentist	Tribal Hire				For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Dillingham	AK		Dentist	Tribal Hire				For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Fairbanks	AK	20	Staff Dentist	X	X	X		For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Fairbanks	AK	20	Staff Dentist	X	X	X		For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Kenai	AK	10	Dentist	Tribal Hire				For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Juneau	AK	20	Dentist	X	X			For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Juneau	AK	20	Pediatric Dentist		X	X	X	For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Nome	AK	26	Staff Dentist	X	X	X		For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Petersburg	AK		Dentist, Full Time	Tribal Hire				For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		
Utqiagvik (Barrow)	AK	8	Dentist	Tribal Hire				For the most up to date information: <a href="https://www.ihs.gov/dentistry/index.cfm/currentopenings/">https://www.ihs.gov/dentistry/index.cfm/currentopenings/</a>		

# Outcomes of Covid-19

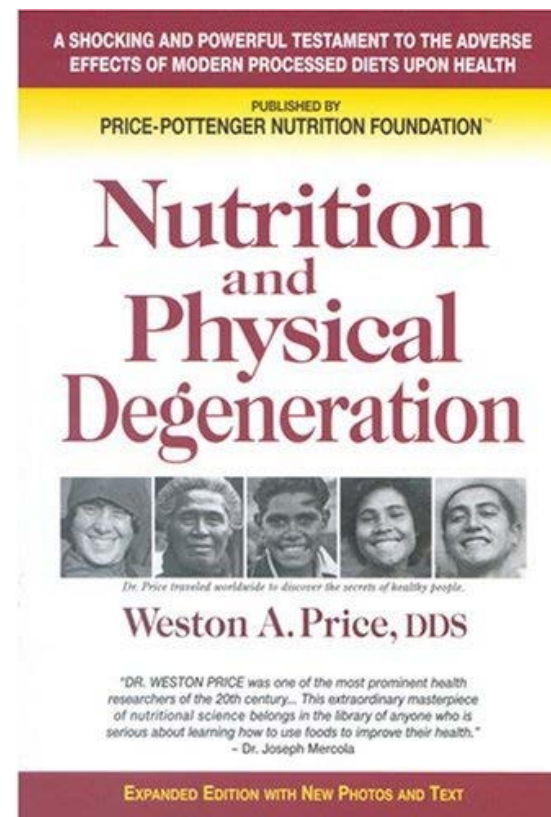
- Appointments take longer
- More patients in pain
- More emergency patients
- Long wait times to get appointment
- Less prevention work being completed



# History of Oral Health In Alaska Native Populations



Weston A. Price

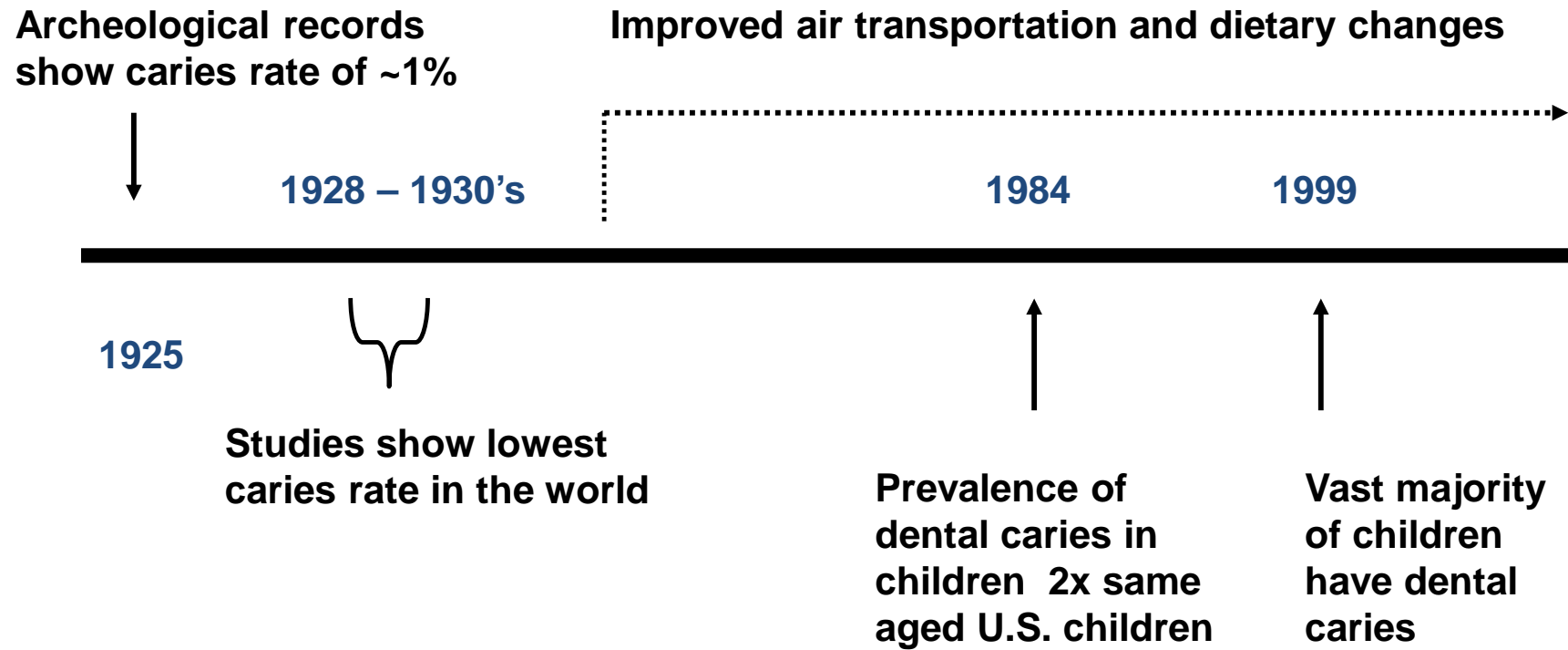


Price, WA. 1939. Nutrition and Physical Degeneration. 8<sup>th</sup> ed. Lemon Grove, CA.



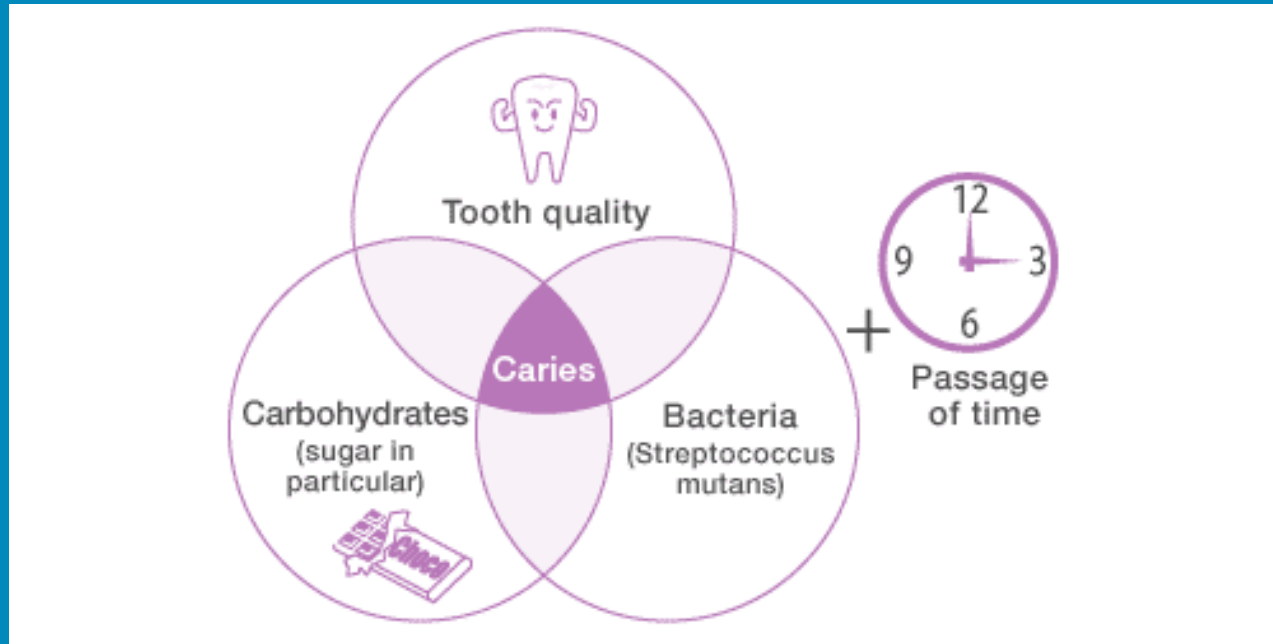
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# History of Dental Caries in Alaska Native People



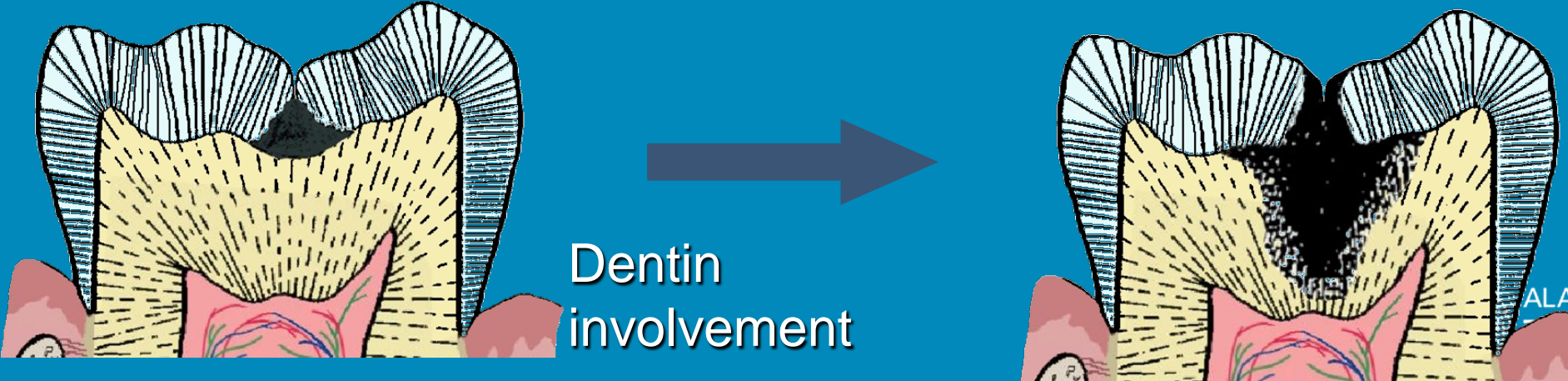
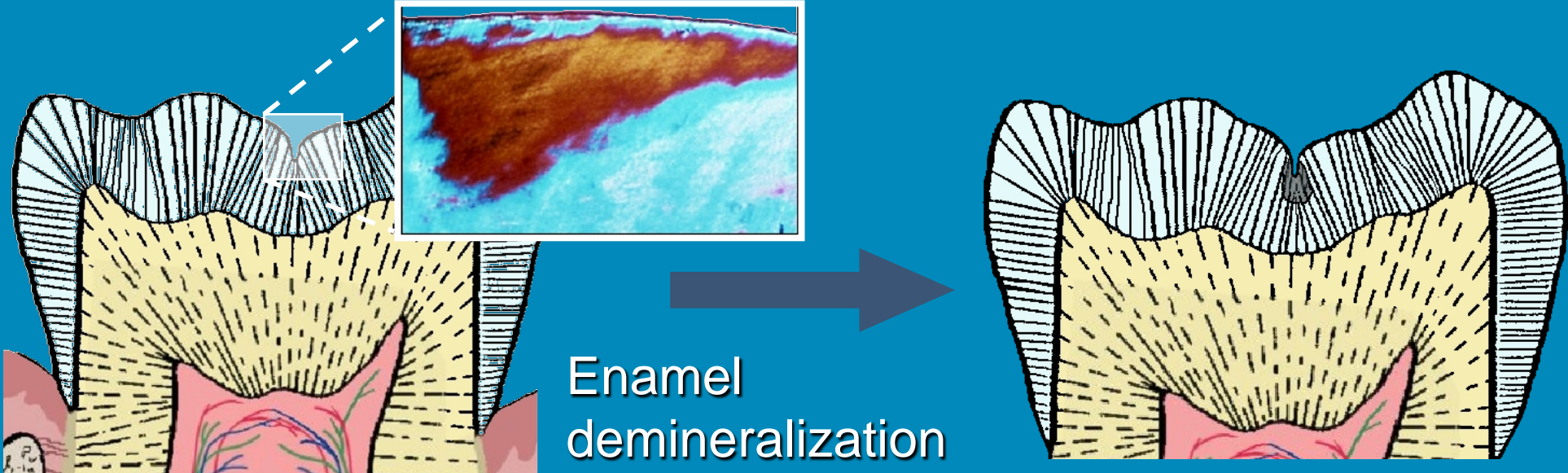


# Dental Caries is a Disease Process

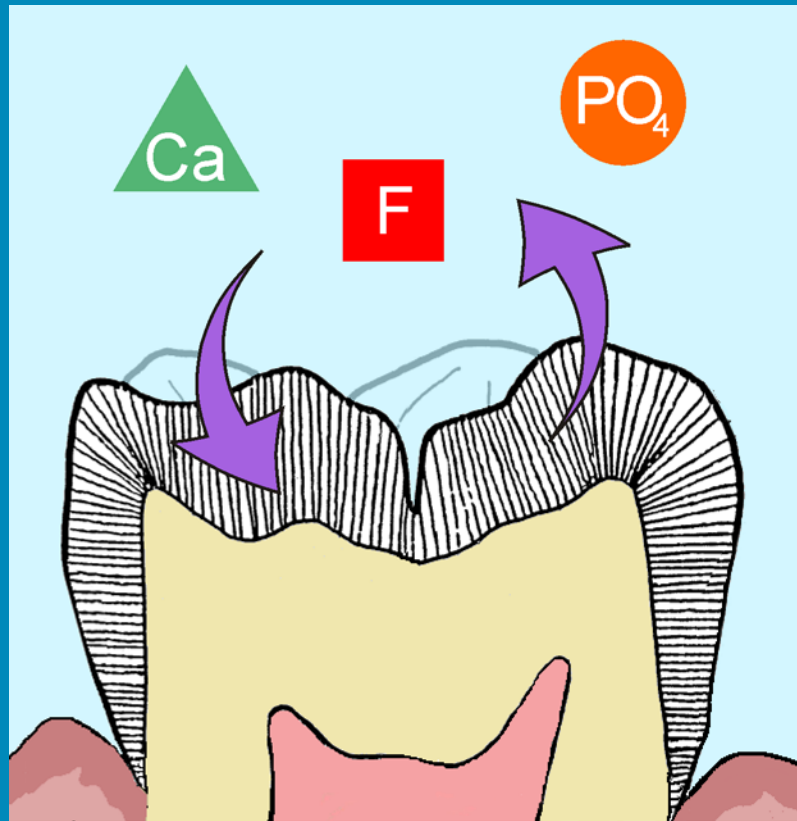


<https://www.lion.co.jp/en/oral/self/02.htm>

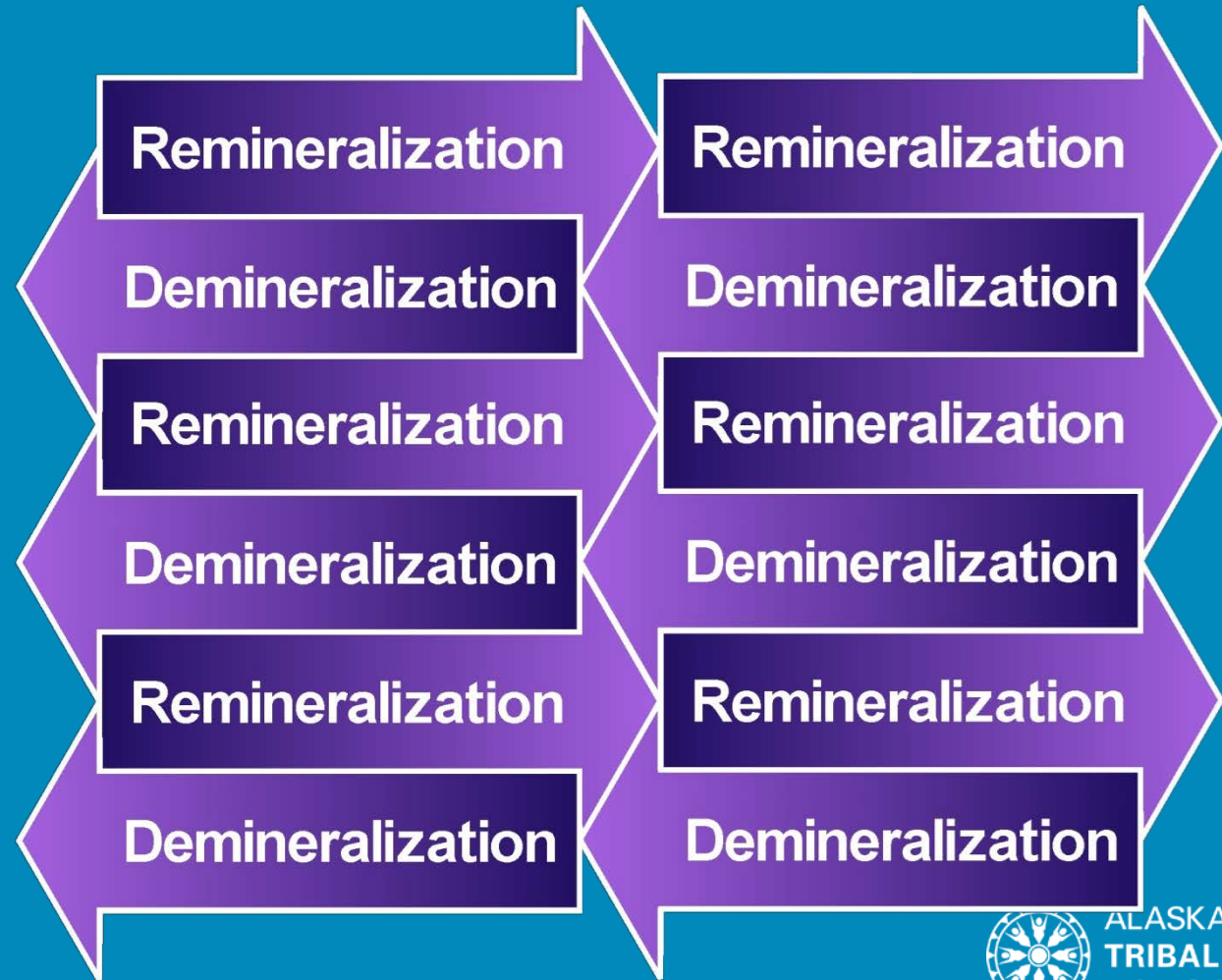
# Dental Caries is a Disease Process



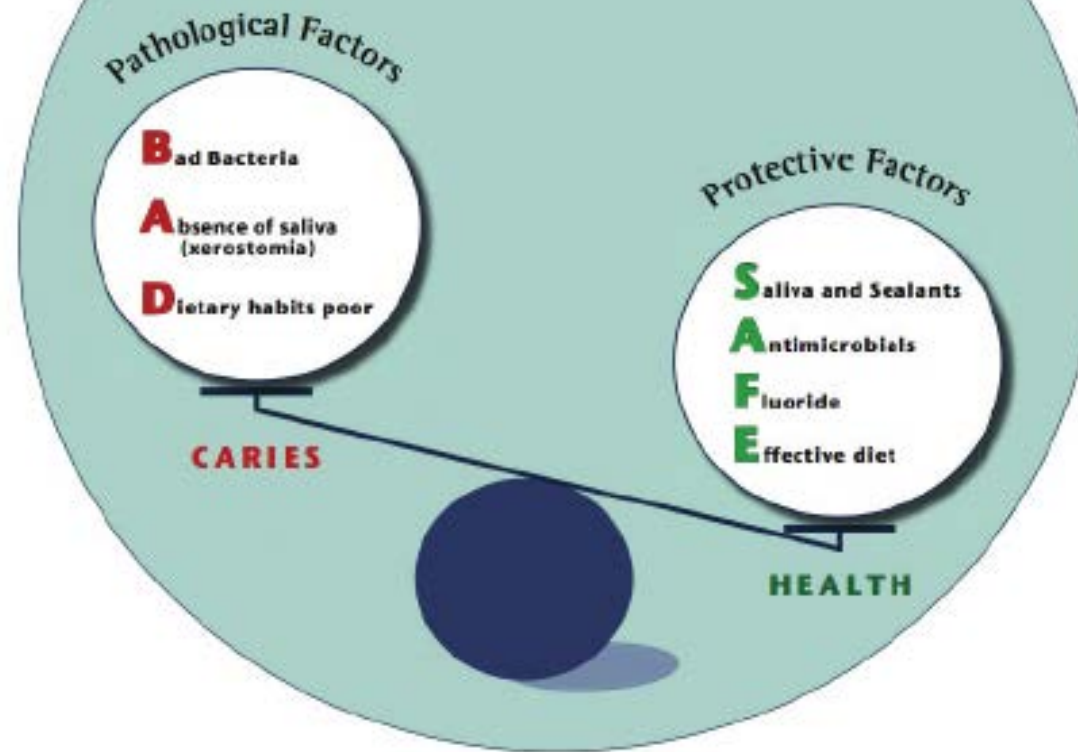
# Demineralization/Remineralization Process



Ca = calcium  
PO<sub>4</sub> = phosphate  
F = fluoride



# THE CARIES BALANCE

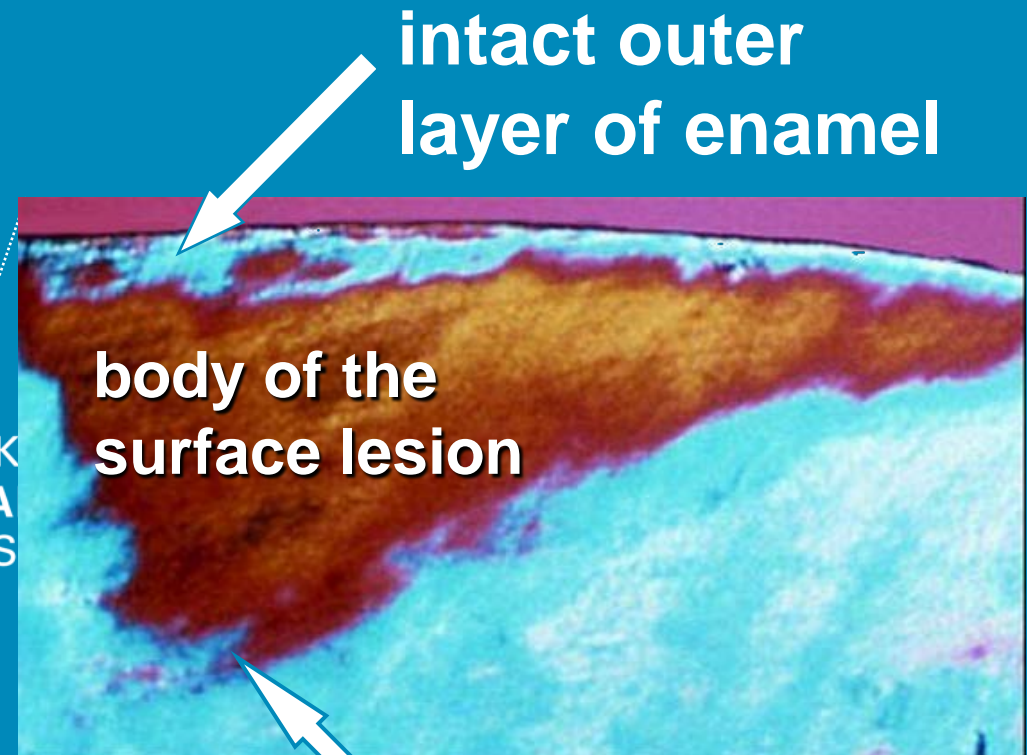
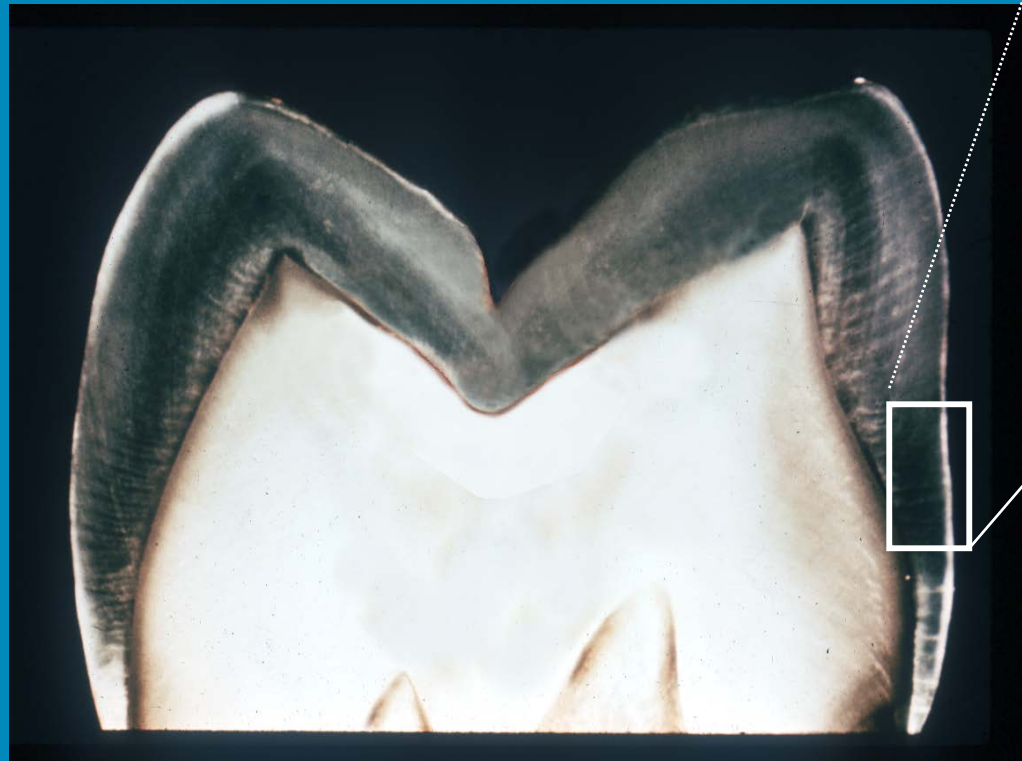


<https://www.researchgate.net/figure/Th e-caries-balance-pathological-factors-versus-protective-factors fig1 6337948>



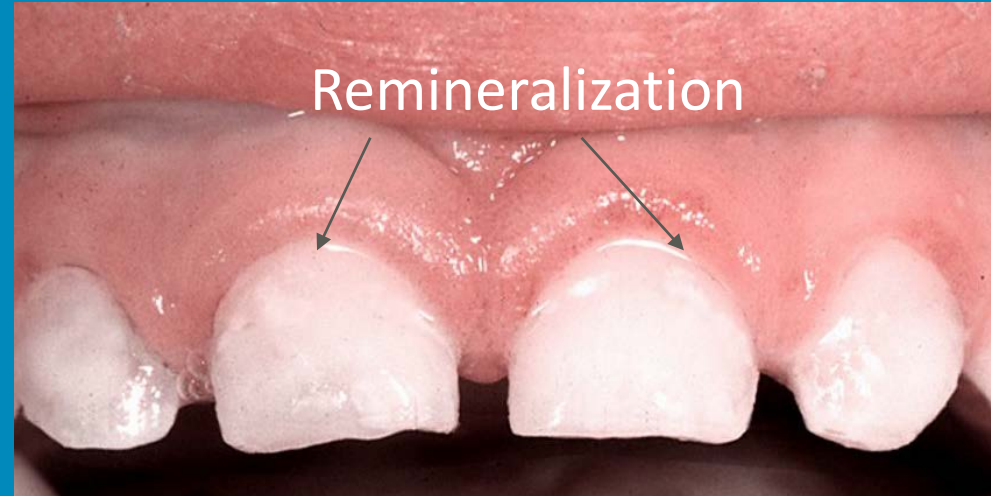
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# Subsurface Lesion



advancing lesion

# White Spot lesions



# Progression of Caries



Photo credit:

<https://www.drshwetabhatia.com/post/does-your-child-suffer-from-early-childhood-caries>



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# 2014 IHS Alaska BSS Data

## 1-5 Year Olds

Clinic/ Tribe	Decay Experience (%)	Untreated Decay (%)	Dental Sealants (%)
AK-1	47.9	32.2	15.3
AK-2	73.7	59.3	15.1
AK-3	86.3	37.9	28.0
AK-4	41.2	34.8	5.1
AK-5	83.6	48.3	5.1
AK-6	71.2	52.9	0.0
AK-7	79.4	62.4	0.8
Alaska Area	64.4	45.9	9.0
IHS Total	54.1	36.8	6.3

**Warning:** Clinic differences may be due to differences in the age distribution of children screened or small sample sizes.



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# Why is this Important?

## U.S. Food & Drug Administration Warning

### FDA Drug Safety Communication: FDA review results in new warnings about using general anesthetics and sedation drugs in young children and pregnant women

[f Share](#) [t Tweet](#) [in LinkedIn](#) [✉ Email](#) [🖨 Print](#)

The FDA has issued new information about this safety issue, see the [FDA Drug Safety Communication](#) issued on 4-27-2017.

#### Safety Announcement

[ 12-14-2016 ] The U.S. Food and Drug Administration (FDA) is warning that repeated or lengthy use of general anesthetic and sedation drugs during surgeries or procedures in children younger than 3 years or in pregnant women during their third trimester may affect the development of children's brains.

# Addressing the Challenge

- Workforce
  - Dental Health Aides
  - Primary Care Providers
- Evidence-Based Prevention and Treatment
  - Education
  - Fluoride Varnish
  - Silver Diamine Fluoride



# Dental Health Aides

## 1. Primary Dental Health Aide

- Level I (OHI, Nutritional Counseling, Fluoride varnish)
- Level II
  - Sealants, Atraumatic Restorative Treatment, Prophylaxis, Radiology and Dental Assisting

## 2. Expanded Function Dental Health Aide

- Level I (Prophylaxis or Basic Restorative Function)
- Level II (Advanced Restorative Function)

## 3. Dental Health Aide Hygienist

## 4. Dental Health Aide Therapist



Bonnie Hunt, DHAT, applying fluoride varnish

# Iļisagvik College / ANTHC

## Alaska Dental Therapy Educational Program

- First accredited dental therapy program in US by Commission on Dental Accreditation
- Associates in Applied Science
- Three academic years (7 semesters)



Trisha Patton, DHAT, taking x-rays

# DHAT Scope of Practice

- Diagnosis and Treatment Planning
- Prevention
- Basic Hygiene
- Radiographs
- Infection Control
- Restorative
- Pediatric
- Urgent Care
- Extractions
- Community Prevention
- Referral Process



Kari Douglass, DHAT

# Types of Supervision

- **Direct**
  - The dentist or dental health aide therapist in the dental office, personally diagnoses the condition to be treated, personally authorizes the procedure, and before dismissal of the patient evaluates the performance of the dental health aide
- **Indirect**
  - A dentist or dental health aide therapist is in the facility, authorizes the procedures, and remains in the dental facility while the procedures are being performed by the dental health aide
- **General**
  - The dentist or dental health aide therapist has authorized the procedures and they are being carried out in accordance with standing orders issued to a specific dental health aide



DHAT student Ben Steward

# Alaska Dental Therapy Educational Program

## About the Alaska Dental Therapy Education Program

Dental Health Aide Therapists (DHATs) provide professional and culturally competent dental care and prevention services to our people in rural communities.

DHATs currently practice in 81 communities; many of them are Alaska Native people serving who returned to their home communities and regions. More than 40,000 rural Alaskans now have regular access to dental care from a DHAT; most have never had this kind of access or continuity of care before.

In addition to expanding care in Alaska, the DHAT program also supports expanding dental care in Tribal communities across the U.S. Since 2015, 13 students representing Tribes from the Pacific Northwest have enrolled in the program.



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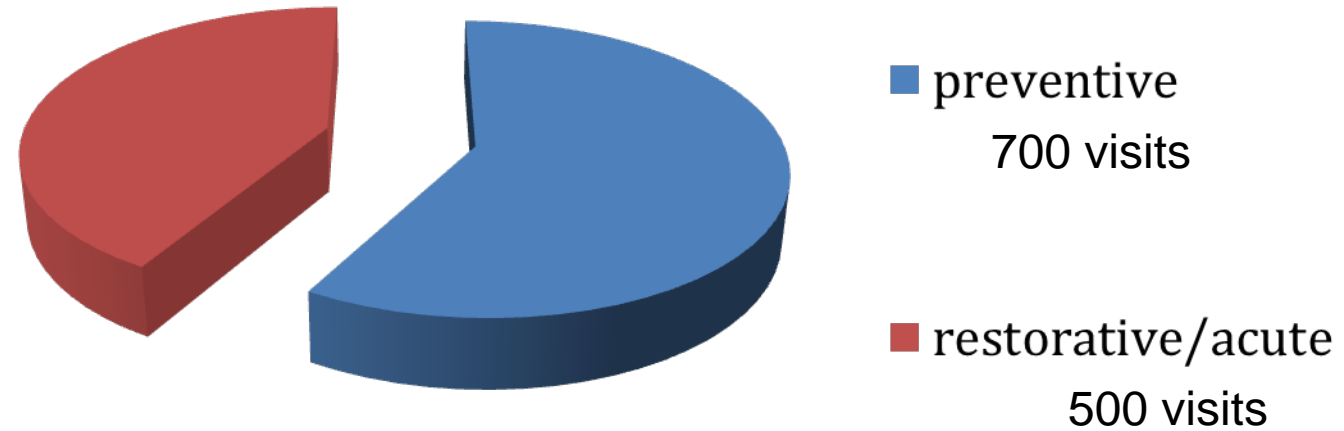
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# Survey of AK Tribal Dental Directors

Patient visits



Each DHAT team on average, provides care to 830 patients during approximately 1200 patient encounters (or visits) each year.

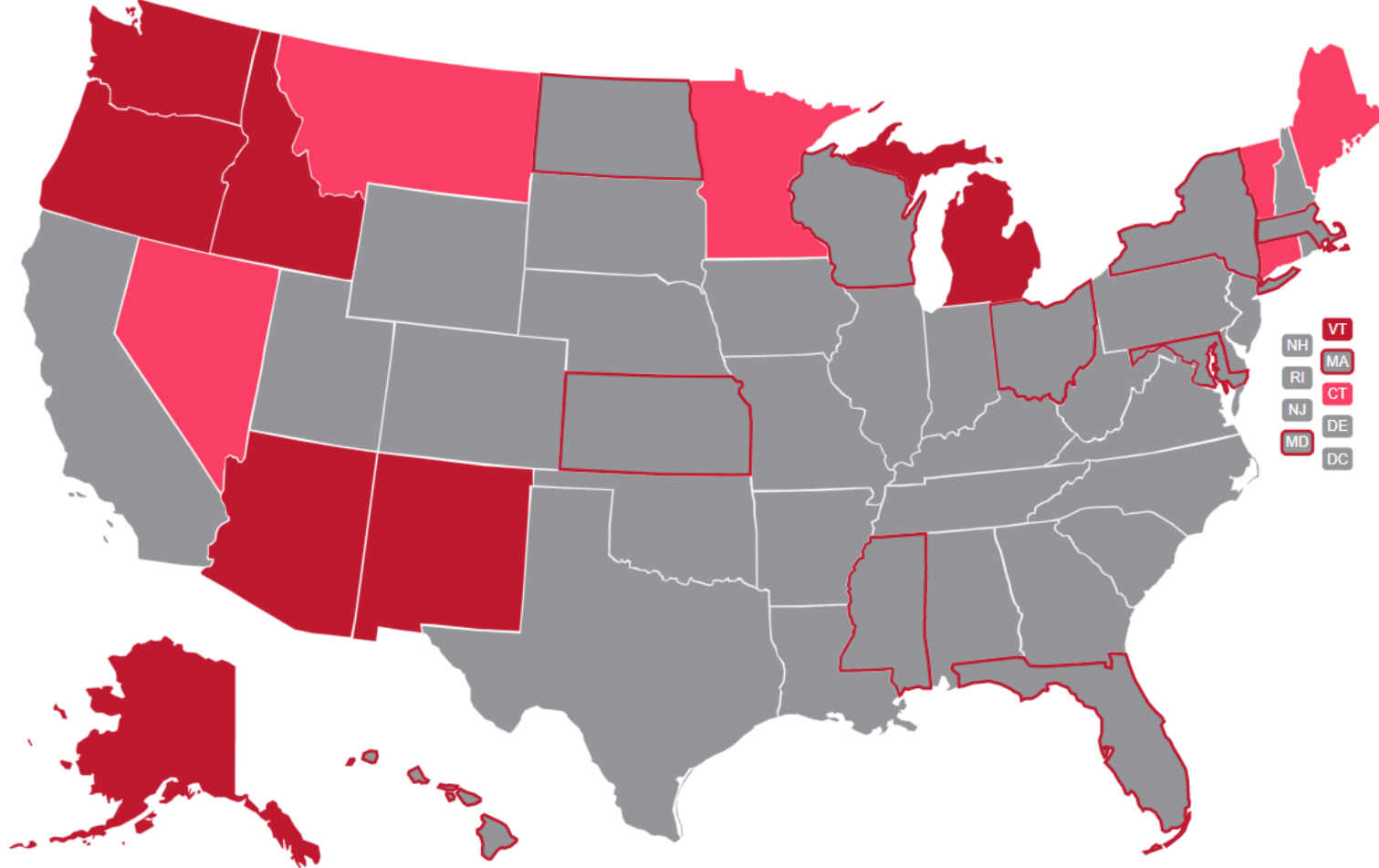
Scott and Co. Consulting



# Evidence-Based Outcomes

- Dental therapists linked to improved dental outcomes for Alaska Native communities in the Yukon-Kuskokwim Delta
- Chi, et al
- Journal of Public Health Dentistry: Spring 2018
- <https://onlinelibrary.wiley.com/doi/abs/10.1111/jphd.12263>
- Analysis of 10 years of Medicaid data
- Communities that had more days of care provided by a dental therapist had:
  - More preventive care
  - Fewer dental extractions in children and adults





State Authorizes Tribal Dental Therapy with CODA Standards

State Authorizes Tribal Dental Therapy with Additional Requirements or Limitations

State is Considering Authorizing Dental Therapy

State Does Not Authorize Dental Therapy

<https://www.nihb.org/oralhealthinitiative/map.php>



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Celebrating Native Heroes In Oral Health

“In one generation, we are  
changing the smiles of  
Alaska Native children.”

VALERIE DAVIDSON

Commissioner, Alaska Dept. of Health and Human Services



W.K.  
KELLOGG  
FOUNDATION™

#NativeHeroes



# Graduating Class of 2019



# What you can do?



<https://chapa-de.org/>

# Dental Home

- American Academy of Pediatric Dentistry

“The dental home is the ongoing relationship between the dentist and the patient, inclusive of all aspects of oral health care delivered in a comprehensive, continuously accessible, coordinated, and family-centered way. The dental home should be established no later than 12 months of age to help children and their families institute a lifetime of good oral health.”

# Parent Education

- Infants:
  - Start cleaning your child's gums after birth
  - Once teeth erupt using a smear of fluoridated toothpaste
- Toddlers (age 3+)
  - Use a pea size amount of fluoridated toothpaste



<https://www.sciencenews.org/blog/growth-curve/brush-kids-teeth-just-little-fluoride-toothpaste>

# Sealants

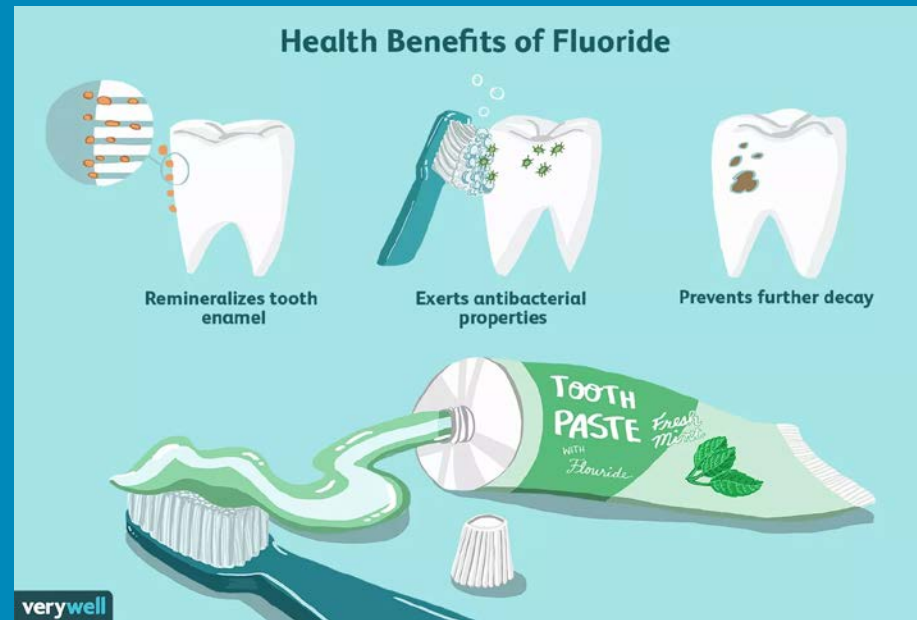
- Protect the pit and fissures of the teeth
- Material that releases fluoride
- Easy application





# Fluoride

- Fluoride is a mineral that is mined from phosphate rock.
- Found naturally in soil, water, foods
- Topical routes
  - Toothpastes
  - Fluoride mouthwash
  - Fluoride varnish
- Systemic routes
  - Water fluoridation
  - Fluoride supplements



<https://www.verywellhealth.com/facts-about-fluoride-toothpaste-4587999>



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# Fluoride Varnish Evidence

- Cochrane Review (July 2013):  
“The review suggests a substantial caries-inhibiting effect of fluoride varnish in both permanent and primary teeth...”
- <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD002279.pub2/full?highlightAbstract=varnish%7Cfluoride%7Cfluorid>



# Fluoride Varnish Benefits

- Safe, inexpensive, and effective
- Studies demonstrate 30-35% caries reduction
- Quickly and easily applied
- Children can eat and drink shortly after application
- Strengthens enamel and can stabilize and prevent progression of caries
- Not associated with treatment-related adverse events in young children
- Often reimbursable
- Easily integrated into medical practice



# Smiles for Life Website

## Learn from Academic Experts

Smiles For Life produces educational resources to ensure the integration of oral health and primary care

Online Courses

Downloadable Courses

Global, Front Line Health Worker, and Canadian PPT Modules

[Videohttps://youtu.be/j8Ujt1FhMU8](https://youtu.be/j8Ujt1FhMU8)



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# Silver Diamine Fluoride

Slides courtesy of  
Leandra Beech, DHAT



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Japanese Ohaguro

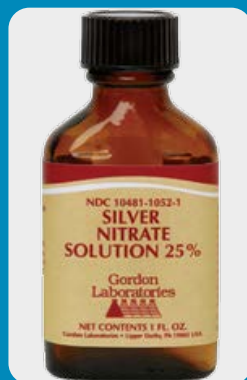
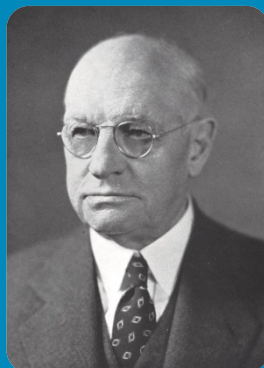
1891 Howes Solution

1950's Extensively used outside U.S

1969 Japan "Saforide"

April 2014 FDA approval for U.S.

2017 SDF approval for IHS



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# Advantage Arrest<sup>®</sup> Silver Diamine Fluoride 38%

- U.S. FDA approval August 2014
  - Elevate Oral Care (1<sup>st</sup> product)
  - 30mL bottle \$162.50 (250 drops)
  - Box of 30 unit dose ampoules (0.1mL) \$122.50



<https://rivastar.com/>



<http://www.elevateoralcare.com/dentist/AdvantageArrest>



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# Mechanism of Action

Active Ingredients:	
Silver (Ag)	24-27%
Fluoride ion pH 10	38%
Ammonia (NH <sub>3</sub> )	7.5-11%
Fluoride (F)	5-6%
Inactive Ingredients:	
Water	62.5%
FD&C Blue 1	<1%

- Silver acts as an antimicrobial
- Fluoride acts to remineralize



[https://www.google.com/search?q=silver+diamine+fluoride&source=lnms&tbn=isch&sa=X&ved=0ahUKEwil4JXop-jaAhUSzGMKHeRdCzUQ\\_AUICigB&biw=1536&bih=760&dpr=1.25#imgsrc=MZQeTZ40Tx\\_\\_8M](https://www.google.com/search?q=silver+diamine+fluoride&source=lnms&tbn=isch&sa=X&ved=0ahUKEwil4JXop-jaAhUSzGMKHeRdCzUQ_AUICigB&biw=1536&bih=760&dpr=1.25#imgsrc=MZQeTZ40Tx__8M)

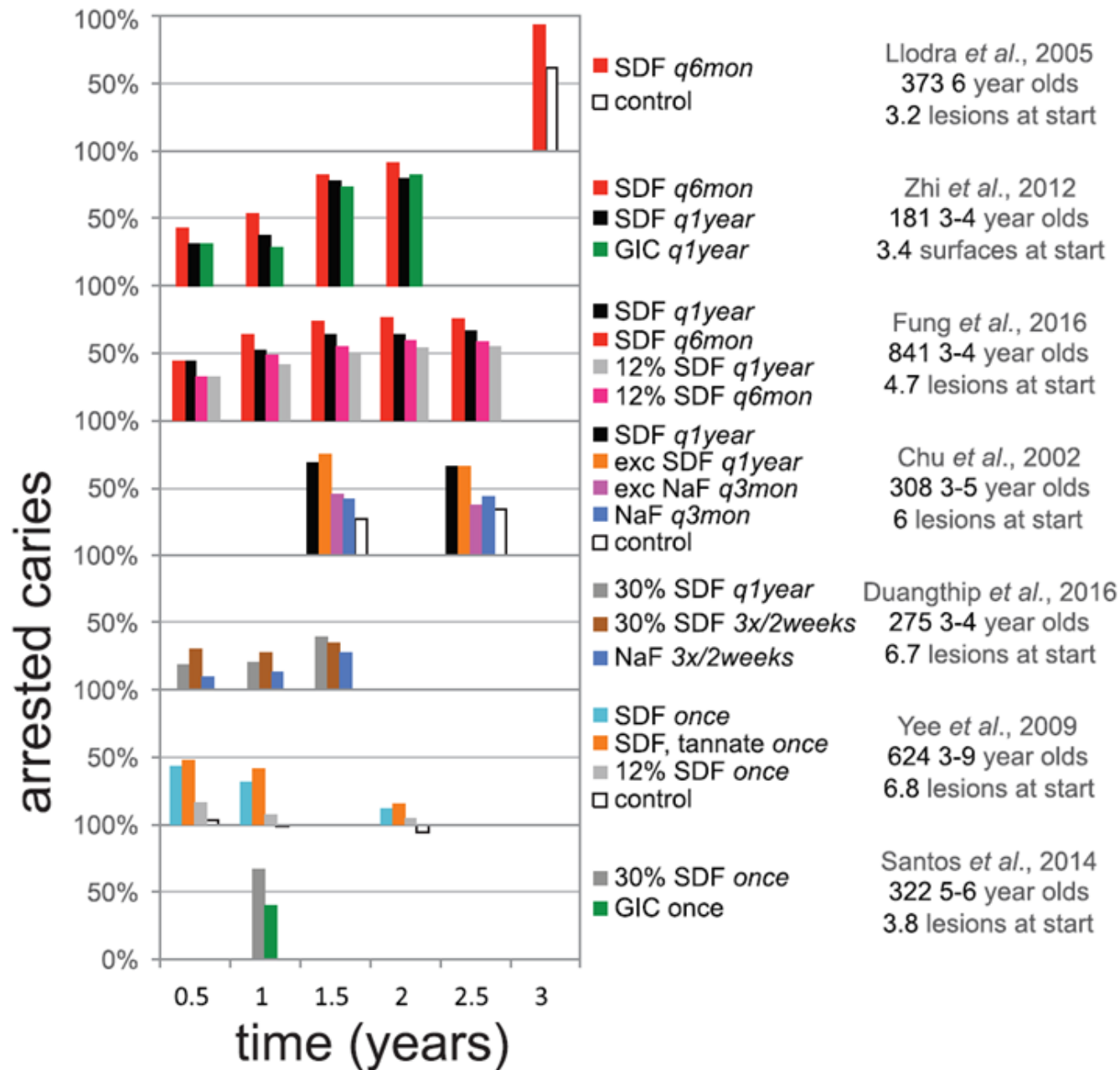


# “Zombie Effect”

- Silver ions act against bacteria in lesions
- Bacteria killed by silver ions are added to living bacteria
- Silver re-activates
- Dead bacteria kill the living bacteria



<https://mywhitedental.com/dead-tooth/>



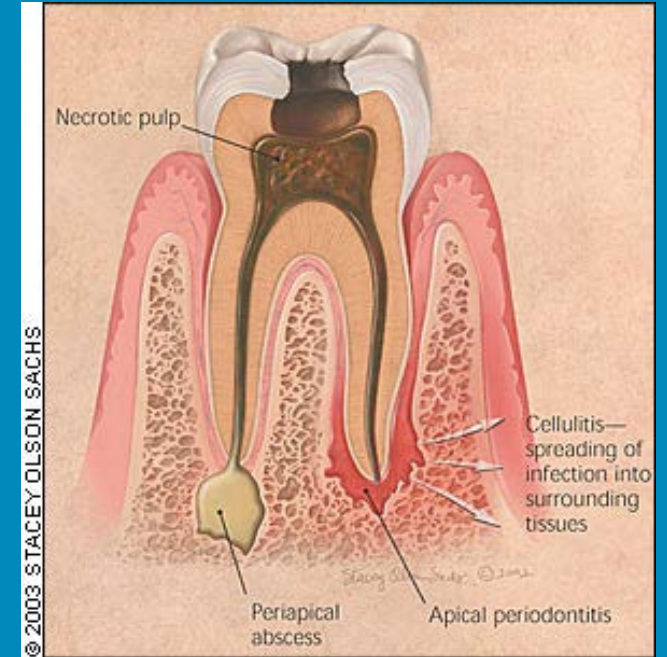
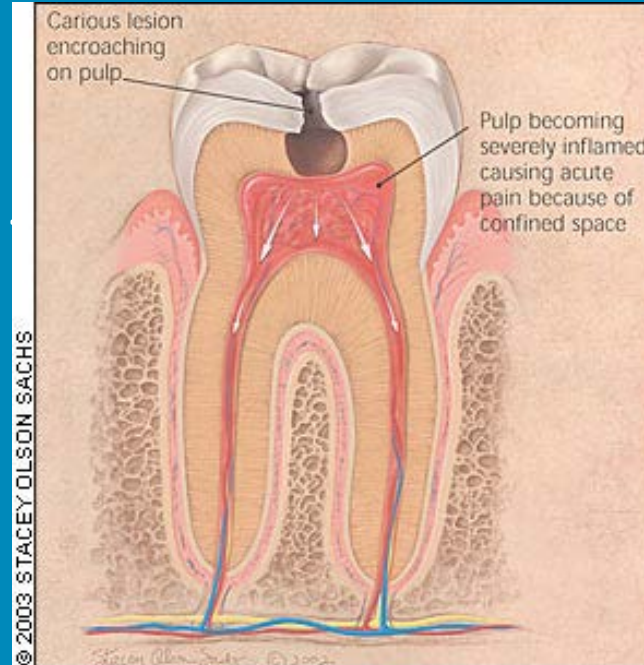
Research slide by Dr. Jeremy Horst

# Indications for use of SDF

- High caries risk
- Poor access to care
- Pre-cooperative patients
- Geriatric patients
- Patients with special needs
- Hypersensitivity

# Contraindications

- Allergy to silver
- Irreversible pulpitis
- Caries lesion extending into pulp
- Mouth sores



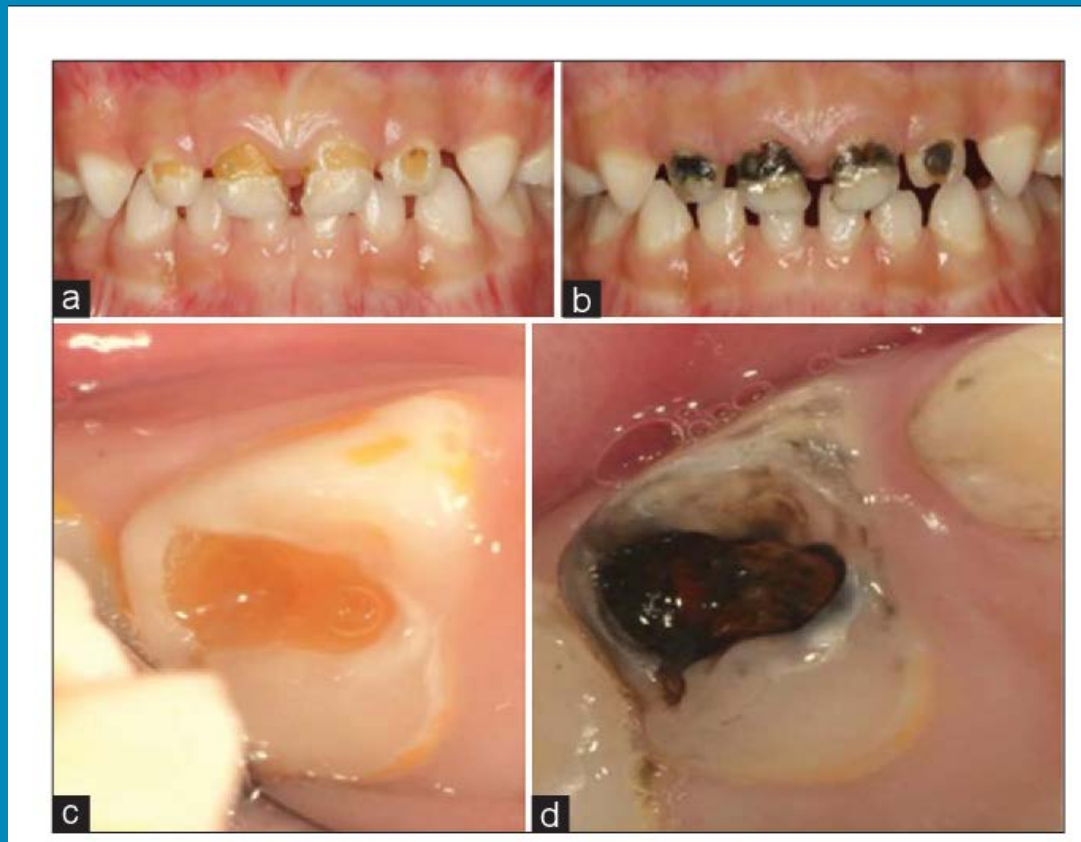
<https://www.aafp.org/afp/2003/0201/p511.html>

# Safety

- No adverse reactions have been reported
- Safety glasses



# Advantages



- Inexpensive
- Quick treatment
- Limited materials required
- Painless and non-invasive
  - No injections or drills
- No post-operative precautions
- Atraumatic experience

# Disadvantages



- Esthetics
- Reapplication appointments
- Taste
- Staining

<https://www.nationalelfservice.net/dentistry/caries/silver-diamine-fluoride-effective-arresting-caries/>

# Application

- Isolate the affected area
- Clean and dry affected tooth surface
- Dip microbrush and apply directly to tooth surface
- Air-dry







# Questions?

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907-729-5607



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