Water Fluoridation – Alaska Experiences

Policy Summit
National Network for Oral Health Access
Orlando, Florida
October 24, 2010

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Areas of Discussion

- Background on Dental Issues
- Opponents messages on water fluoridation
- Juneau Experience
- Craig, Fairbanks & Seward
- What else is coming that could be problematic?
- Possible community health center roles
Changes in Prevalence

- **Children**: 80% of the disease in 20% of the population (largely low-income children)
- **Adults**: More keeping teeth to adulthood more focus on periodontal health and cosmetics
- **Elderly**: More keeping their teeth; Medicare; drugs and cancer treatment reduce saliva flow; change in diet; gingival recession – root caries
- **Alaska Natives**: Traditional v. current diet; access to care; access to fluorides; and behavioral/social changes with teeth; 77% 2-4 year olds with caries experience – 60% with untreated; 95% 6-8 year olds with caries experience – 66% with untreated; 83% 15 year olds with caries experience – 67% untreated; 51% 35-44 aged adults with untreated decay.
Changing Perceptions – Generational Memory

DENTURES

DENTAL ABSCESS

WORKFORCE

TOOTHPASTE
For Want of a Dentist

Pr. George's Boy Dies After Bacteria From Tooth Spread to Brain
By Mary Otto
Washington Post Staff Writer
Wednesday, February 28, 2007; Page B01

Twelve-year-old Deamonte Driver died of a toothache Sunday. A routine, $80 tooth extraction might have saved him.
6-year-old boy dies from abscess
The Associated Press

GULFPORT — A 6-year-old boy who collapsed on a Harrison County school bus Thursday died from an abscess where two teeth had been removed from his lower jaw, county coroner Gary Hargrove said. Alexander “Alex” Callender, a kindergartner at Lizana Elementary, went into shock from the infection and his body shut down, Hargrove said after Friday’s autopsy.

Callender collapsed on the bus after leaving school Thursday.
Dental Decay Situation in Alaska
Head Start – Caries Experience (2005)

Percent of Head Start Children with Caries Experience by Race

- Total: 68.8%
- American Indian/Alaska Native: 84.2%
- White: 48.1%
- Other: 45.7%

Healthy People 2010 Goal: 11%
Third Graders -- Caries Experience
Percent with Caries Experience by Race/Ethnicity

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Percentage</th>
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<tr>
<td>National Baseline</td>
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<tr>
<td>Alaska Total</td>
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<tr>
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Healthy People 2010 Goal (6-8 year olds): 42%
Dental Access – Medicaid (FFY2004) HP2010 Target for Preventive Visit – 57%
Framing Community Water Fluoridation for the Public
Alaska Context

• Keep government out of my life – libertarian
• Polarized on economic development v. environmental protection (e.g., mining and clean water)
• Hooper Bay fluoridation death 1992
Key Messages

• Community water fluoridation is safe and effective in reducing tooth decay.

• 65 years of experience and studies on water fluoridation and fluoride.

• Reduction in tooth decay not at the same levels as when water fluoridation was first implemented - with the introduction of fluoridated toothpaste, rinses, gels and foams - but still see 20-40% reduction in tooth decay.
Words & Images – Toxin, Poison, Contaminant and/or Hazardous Waste
Pure Water – Safe Water – Pristine Water
Another view on water from the past
- W.C. Fields -

- I never drink water because of the disgusting things that fish do in it.

I never drink water, that is the stuff that rusts pipes.
Enamel Fluorosis
Optimum Level of Fluoride

Figure 1-2
Dental caries and dental fluorosis in relation to fluoride in public water supplies

Caries experience per child in DMF teeth

Percentage of population affected by dental fluorosis

PPM Fluoride

Very Mild
Mild
Moderate
Severe
Other Conditions

- Amoxicillin Use
- Celiac Disease
- Orthodontic Banding

Earlier Changes: Supplement schedule, “pea-size” drop of toothpaste, and lowering fluoride in formula.
Defending Fluoridation in Juneau

• Fluoridated since the early 1970s
• Fluoridation in the 1990s – early 2000s
• “The Experiment”
• Medical/Dental Community Response
• Mayor’s Task Force and Task Force Decision
• City Assembly Vote and the Process – SEARHC and local dentists/physicians
• Public Initiative and Media (ADA & newspaper)
“The Experiment”

- EPA/ADEC concerns with elevated copper levels in water discharged from the wastewater treatment plan.
- Discontinued fluoridation to see effect on copper levels – decreased in the summer and increased in the fall.
- Failed to inform community health care providers.
The Response(s)

- Pediatricians call the local paper – story is run
- City re-institutes fluoridation but says given concerns it will go to City Assembly
- Mayor convenes a Fluoridation Task Force
- Initial review of literature by the Task Force – panel discussion
- Newspaper article and subsequent implications
- Task Force on hold pending NRC report
National Research Council Report
“Because fluoride is well known for its use in prevention of dental caries, it is important to make a distinction here that EPA’s drinking-water guidelines are not recommendations about adding fluoride to drinking water to protect the public from dental caries. Guidelines for that purpose (0.7 to 1.2 mg/L) were established by the U.S. Public Health Service more than 40 years ago. Instead, EPA’s guidelines are maximum allowable concentrations in drinking water intended to prevent toxic or other adverse effects that could result from exposure to fluoride.”
NRC Report

- EPA regulates fluoride in water at 4.0 mg/L (maximum) – there is also a secondary level at 2.0 mg/L for cosmetic effects (dental fluorosis).

- 1.4 million people in the U.S. with fluoride concentrations of 2.0 – 3.9 mg/L in their drinking water; 200,000 people with levels equal to or exceeding 4.0 mg/L
NRC Findings

The NRC concluded EPA standard of 4 mg/L is not adequately protective of health – lowering the standard will reduce severe enamel fluorosis and reduce the lifetime accumulation of fluoride in bone that the majority of the committee concludes is likely to put individuals at risk of bone fractures and possibly skeletal fluorosis.

The NRC recommended changing the non-regulatory maximum contaminate level goal be lowered from 4 mg/L.
CDC Statement on the 2006 National Research Council (NRC) Report on Fluoride in Drinking Water

CDC recommends community water fluoridation as a safe, effective, and inexpensive way to prevent tooth decay (dental caries) among populations living in areas with adequate community water supply systems. Similar to many vitamins and minerals we consume for our health, fluoride should be taken in the proper amount. Past comprehensive reviews of the safety and effectiveness of fluoride in water have concluded that water fluoridation is safe and effective. Fluoride is present naturally in most water at a very low level, and more than 170 million people on public water systems in the United States enjoy the benefits of having their water adjusted to the optimal level (0.7–1.2 mg/L, or 0.7–1.2 parts per million [ppm]) for preventing tooth decay.
Task Reconvenes & Reports

- Reviews NRC report – divides up reporting on chapters
- Issues report – 3 opinions: In favor, opposed, agree evidence supports reduction in dental day but precautionary principle
- Back to the City Assembly
Dental Fluorosis

ADA Interim Guidance: Infant Formula
The ADA offers these recommendations so parents, caregivers and health care professionals who are concerned have some simple and effective ways to reduce fluoride intake from reconstituted infant formula.

Breast milk is widely acknowledged as the most complete form of nutrition for infants. The American Academy of Pediatrics recommends human milk for all infants (except for the few for whom breastfeeding is determined to be harmful).

For infants who get most of their nutrition from formula during the first 12 months, ready-to-feed formula is preferred to help ensure that infants do not exceed the optimal amount of fluoride intake.

If liquid concentrate or powdered infant formula is the primary source of nutrition, it can be mixed with water that is fluoride free or contains low levels of fluoride to reduce the risk of fluorosis. Examples are water that is labeled purified, demineralized, deionized, distilled or reverse osmosis filtered water. Many grocery stores sell these types of drinking water for less than $1 per gallon.

The occasional use of water containing optimal levels of fluoride should not appreciably increase a child’s risk for fluorosis.

Parents and caregivers should consult with their pediatrician, family physician or dentist on the most appropriate water to use in their area to reconstitute infant formula. Ask your pediatrician or physician whether or not water used in infant formula should first be sterilized.
So what does the ADA guidance mean?

Informed consent:

• Breastfeeding is preferred
• Guidance only relates to infants under age 1 whose primary food source is concentrated or powdered formula.
• Risk (chance of dental fluorosis) v. benefit (reduced tooth decay)
• What is the child’s risk? Past decay, decay experience in siblings, mother’s decay experience.
• Advise on use of de-mineralized water but it is up to the parent.
Juneau Assembly Vote

- Closed meeting to review report
- Prepared for city meeting on covering issues
- The process for testimony
- Turnout – private dentists, SEARHC dental, physicians and nurses
- Opponents
- Vote to discontinue: 5-4 with the Mayor casting the deciding vote
Fluoridation - Opposition Arguments

• People should just watch their diet and brush their teeth – agree but still have benefits for the population with fluoridation.

• People that want fluoride should get supplements don’t put it in my water – it is a public water system and the public as a whole benefits. Supplements require compliance (taking every day for 16 years) and have a cost (visit to get the prescription & ongoing costs).

• Fluorides effect is primarily topical so don’t need to ingest it – agree but have routine exposure to fluoride when it is in drinking water and fluoride present in saliva (and dental plaque).

• Don’t need it when we have fluoride in toothpaste – discussed already but still see 20-40% reduction in tooth decay with water fluoridation.

• Fluoride acknowledged as causing toxic effects seen in teeth – dental fluorosis, when seen in the U.S., is usually seen in very mild and mild forms – it is NOT a toxic effect, rather it is cosmetic and doesn’t impact tooth function.
Fluoridation - Opposition Arguments

• Might be good for children but bad for the elderly (skeletal fluorosis and fractures)
• Thyroid concerns
• Government conspiracy (Manhattan Project)
• Mass medication – Nuremburg code (voluntary consent)
• Osteosarcoma in young children
Fluoridation - Opposition Arguments
What about other countries?

- Fluoride isn’t what is reducing decay; or
- Other ways of reducing decay without fluoridation
Initiative to resume fluoridation

- Medical/dental community upset with Assembly vote
- Alaska Dental Society enlists ADA help
- Collect signatures for public initiative
- Develop media
- Informal polling
- Newspaper campaign: Letters to the editor, op-ed pieces and guest commentaries
- An expert comes to town
- Near election day – letters from a few local physicians
- Election Day
What can be learned from Juneau?

- Trust in authority is mixed and not enough
- Messages on safety and experience with fluoridation aren’t enough
- Fluoridation issues with efforts to reduce fluorosis are easily used to confuse the public
- Fluoridation and arguments used by fluoridation are not well understood by all in the dental community
- ADA support helpful (Jane McGinley)
- Debating the Issue – should you do it?
- Alternatives to water fluoridation – what happened?
- Building relationships and support
- Opponents aren’t a bunch of “crazies” – well organized and articulate and “emotional” on this issue
CRAIG

- Fallout from Juneau
- Cancer
- Partnering to work with the City Council
- Retirement of the water operator
FAIRBANKS

- A CWF opponent dentist w/ a patient on the Assembly
- City paper involvement
- Education and answering Assembly questions
- Assembly vote
- New mayor – Task Force
- Expert task force process
- Studies on caries with lower fluoridation levels – Canada
- Waiting for a decision
SEWARD

- Community wellness
- Assembly vote – deferred to advisory vote
- Advisory vote advocacy
- Partnerships for fluoridation
- The vote
- Assembly vote
- What next?
What else?

- EPA guidelines based on the NRC report
- Fluoride supplements – risk based
- Water consumption no longer related to average daily mean temperature
- Public Health Service CWF guidelines
- Harvard osteosarcoma study
- Fluoride varnish
Some roles for community health center

- Educate staff on water fluoridation and fluorides
- Policymaker awareness on unmet dental needs
- Network with policymakers – water operators (education and recognition)
- Fluoride varnish and oral evaluation
Questions
For More Information - Contact:

CDC Division of Oral Health:  www.cdc.gov/fluoridation

American Dental Association:
 www.ada.org/public/topics/index/fluoride/index.asp

National Institutes of Medicine, National Institute of Dental &
Craniofacial Research
http://www.nidcr.nih.gov/HealthInformation/DiseasesAndConditions/Fluoride/default.htm

NRC Report “Fluoride in Drinking Water” – Report in Brief:
http://www.nidcr.nih.gov/HealthInformation/DiseasesAndConditions/Fluoride/default.htm
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