

# ***PREVENTING DENTAL DECAY IN CHILDREN***



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# ***CHILDHOOD DECAY***

- About 50% of CA children have a history of tooth decay by kindergarten
- 73% of CA third graders have a history of tooth decay.
- Only 1 state of 25 surveyed ranked lower than CA in prevalence of tooth decay (Arkansas)
- Nationally, 79%+ of AI/AN children 2-4 years of age have a history of decay

"Mommy, It Hurts to Chew" The California Smile Survey: An Oral Health Assessment of California's Kindergarten and 3<sup>rd</sup> Grade Children (The Dental Health Foundation, February 2006)



# ***EARLY CHILDHOOD CARIES (ECC)***



# ***MORE ABOUT ECC***

- Most prevalent chronic disease of childhood
- 5 times more prevalent than asthma
- 7 times more prevalent than hay fever



US Department of Health and Human Services. (2000) *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: US Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health.

# ***PRIMARY TEETH ARE IMPORTANT!***

- Eating and nutrition
- Holding Space
- Proper speech development



# ***WHO GETS ECC***

- ECC can happen in any family!



# ***GENETIC LINK***

- Some children may be genetically predisposed to ECC



# ***THE EFFECTS OF ECC***

- Pain
- Infection
- Self-esteem



# ***PAIN***

- Children learn to live with the pain
- Missed preschool and school days
- Inability to concentrate; impairs school readiness
- Can affect sleep and overall health and well-being



# ***INFECTION***

- Failure to thrive and delayed growth patterns
- Can impact developing permanent teeth
- Can be life threatening

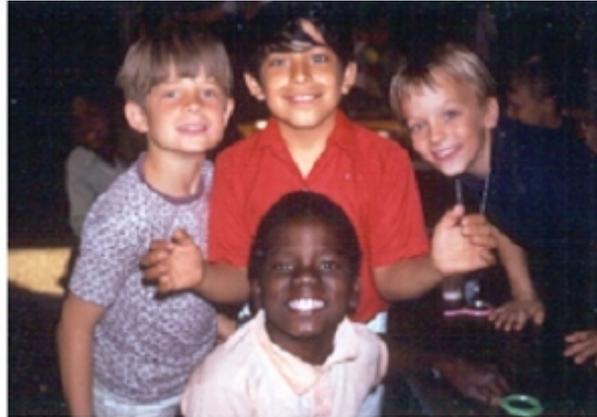


# ***SELF-ESTEEM***

- Stainless steel crowns
- Unattractive smiles



***AND SMILING!***

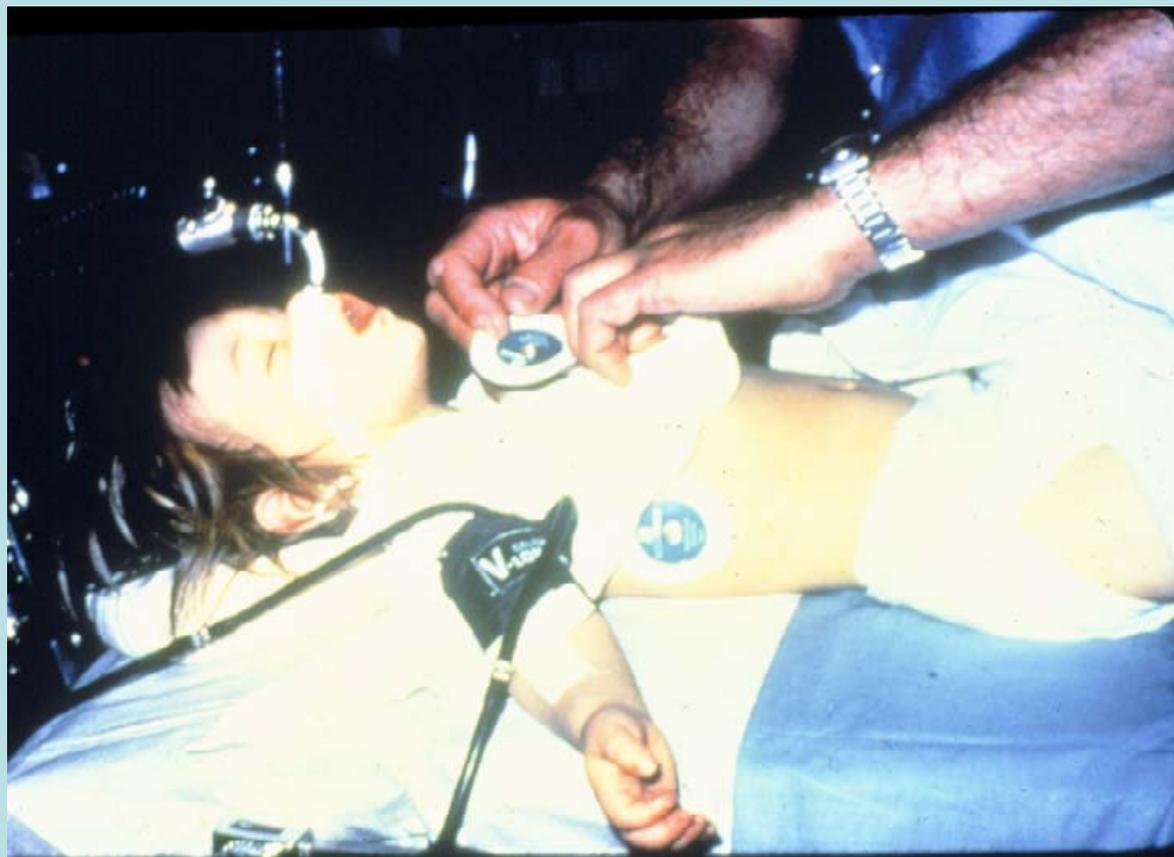


# ***COST OF ECC***

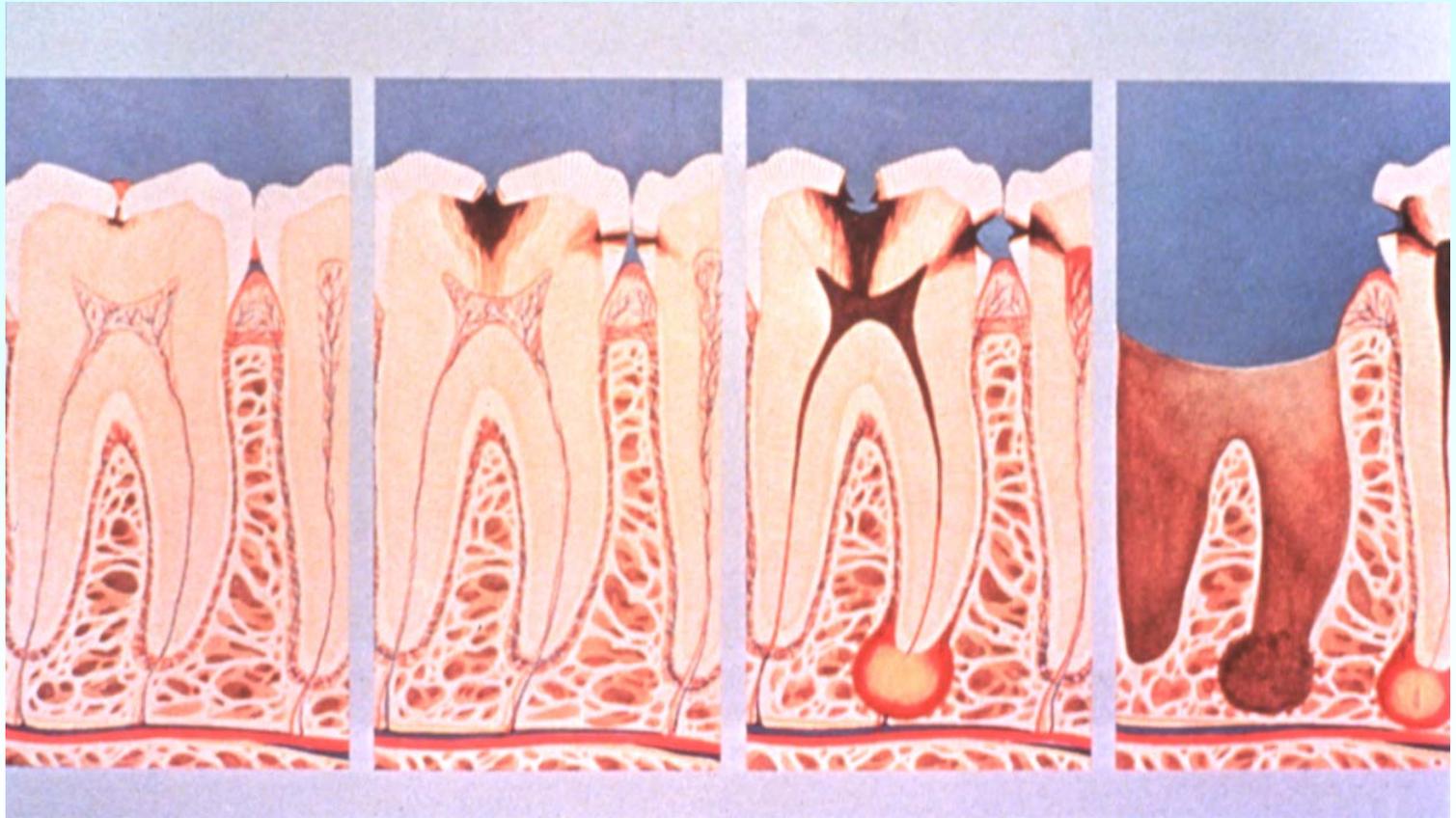
- \$2,000-\$5,000 for treatment
- More if hospitalized



Berkowitz RJ, Moss M, et al. Clinical outcomes for nursing caries treated using general anesthesia. *ASDC J Dent Child* 1997;64(3):210-1, 228  
Almeida AG, Roseman MM, et al. Future caries susceptibility in children with early childhood caries following treatment under general anesthesia. *Pediatr Dent* 2000;22(4):302-6.



# ***TOOTH DECAY***



# ***PRIMARY TEETH ARE MORE SUSCEPTABLE TO DECAY***



# ***PRIMARY TEETH*** **VS** ***ADULT TEETH***

- Enamel is thinner
- Pulpal tissue is larger
- Decay process is quicker
- Teeth abscess quickly
- Often multiple abscessed teeth
- Primary teeth hurt just as much as permanent teeth

# ***TOOTH DECAY***



# ***SEVERE ECC***

- Distinctive pattern of tooth decay that begins on upper primary teeth
- Rapidly progressing to other teeth as they erupt



# ***DENTAL ABCESSSES***



# ***SEVERE INFECTIONS***

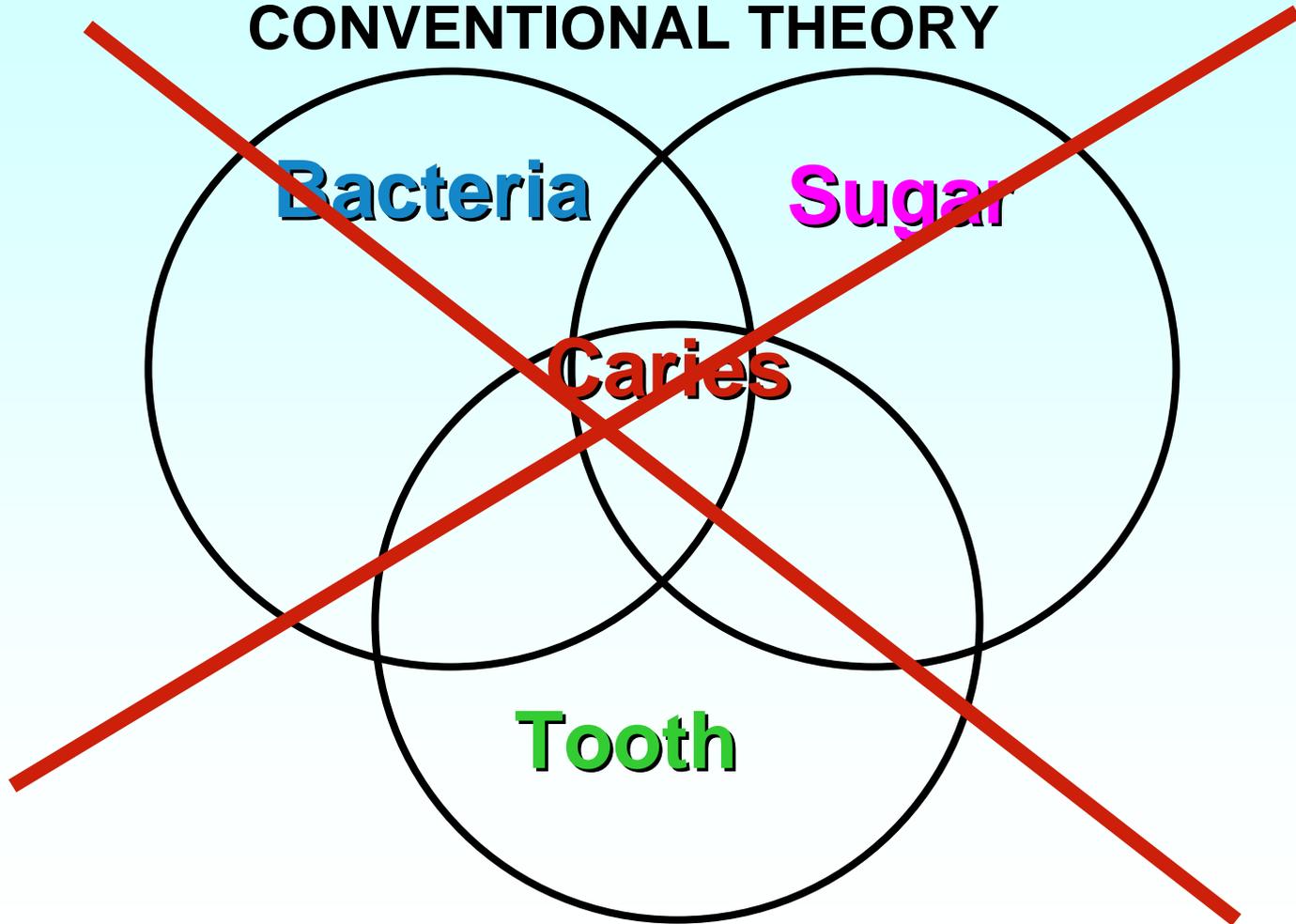
- ANTIBIOTICS
- EXTRACTIONS
- HOSPITALIZATIONS

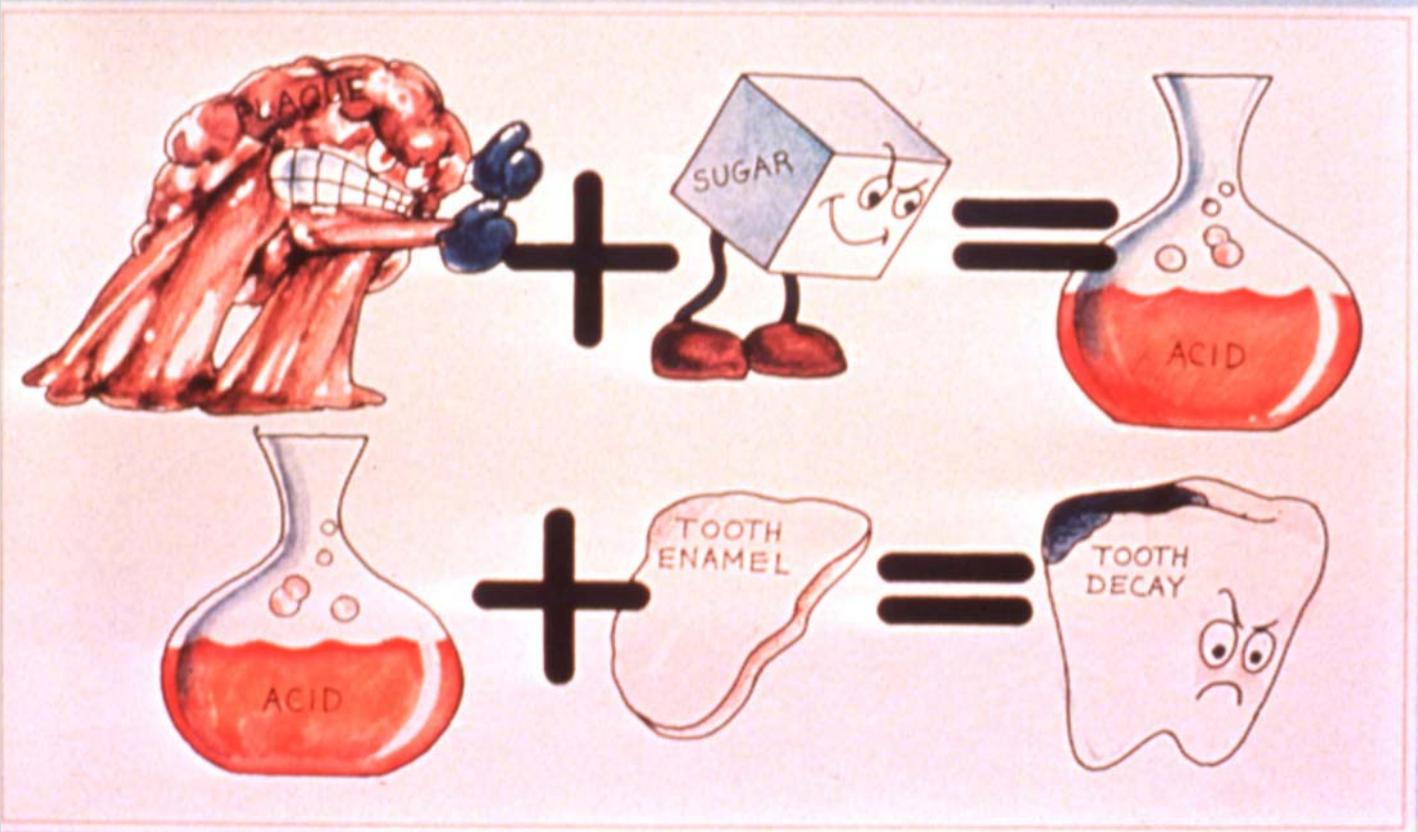


***WHAT IS THE CAUSE OF  
TOOTH DECAY?***

# ***CAUSE OF TOOTH DECAY***

**CONVENTIONAL THEORY**





# THE CARIES BALANCE

## Pathological Factors

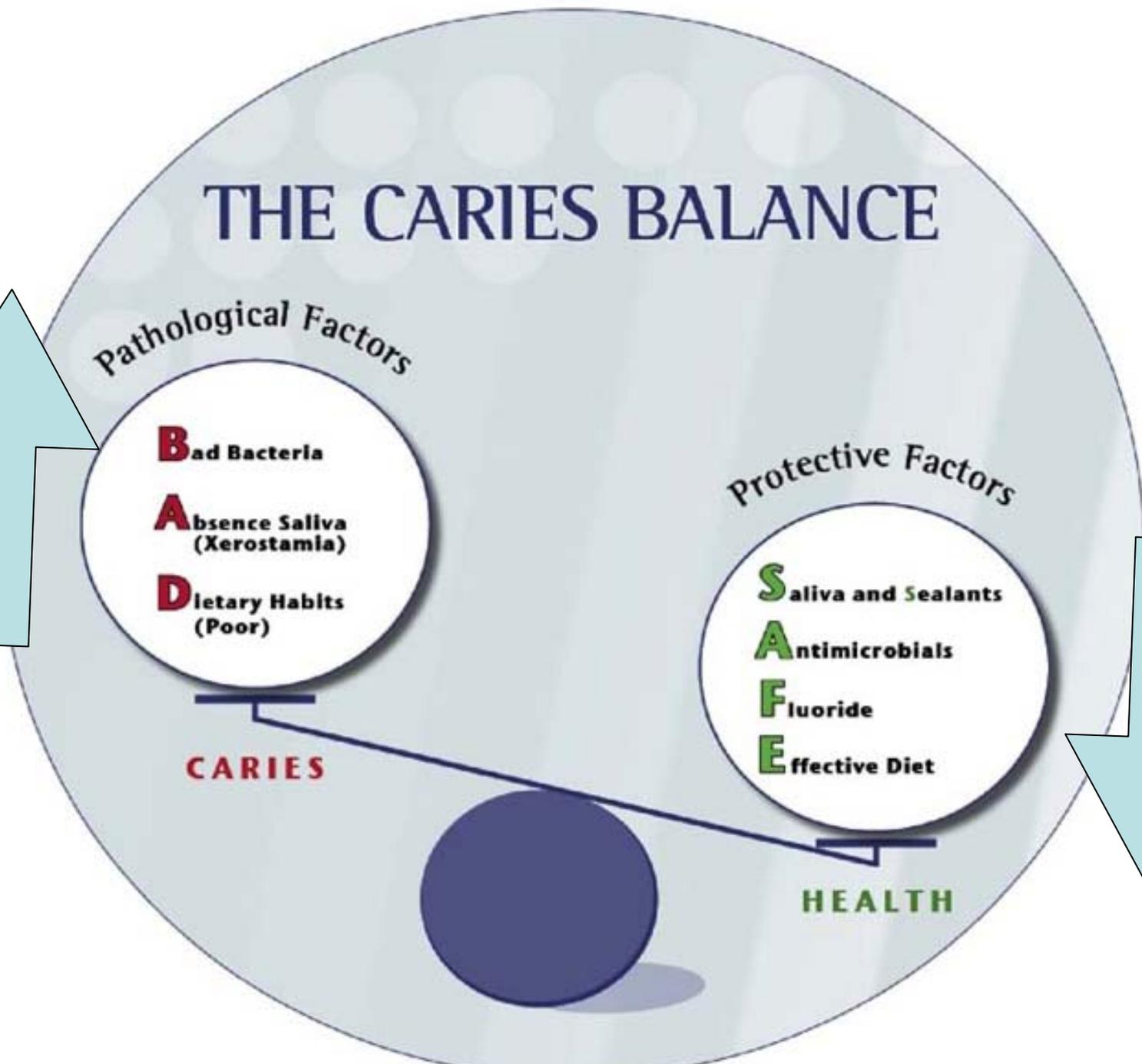
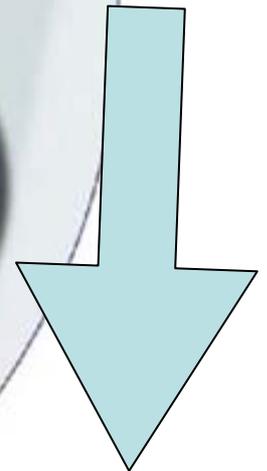
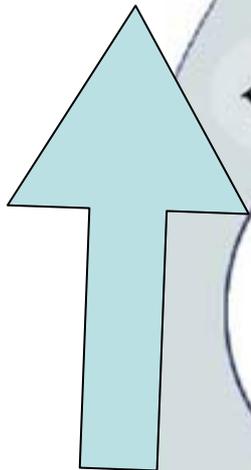
- B**ad Bacteria
- A**bsence Saliva (Xerostamia)
- D**ietary Habits (Poor)

**CARIES**

## Protective Factors

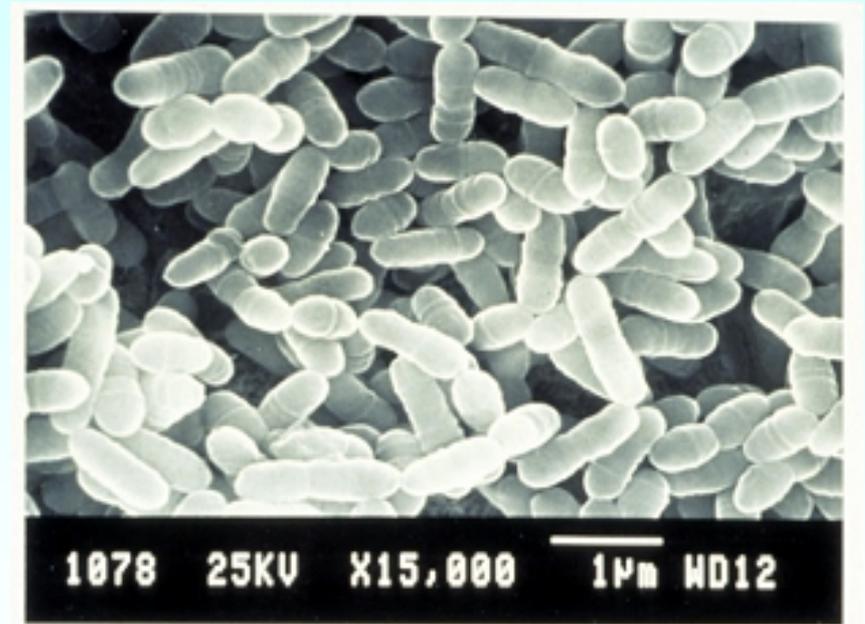
- S**aliva and Sealants
- A**ntimicrobials
- F**luoride
- E**ffective Diet

**HEALTH**



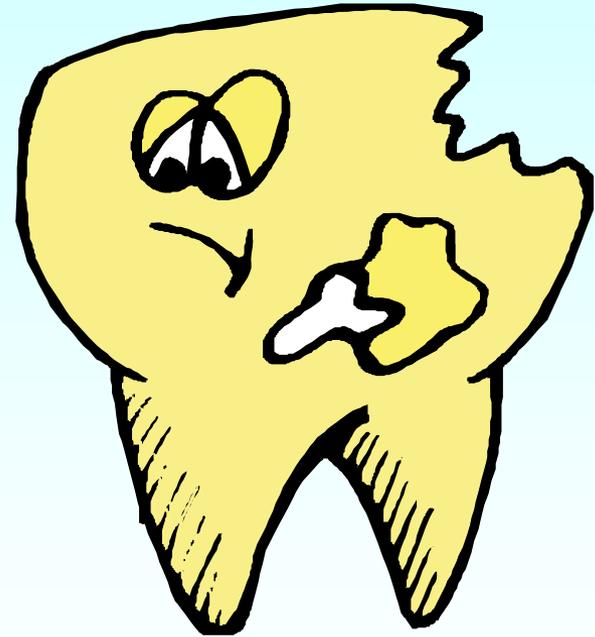
# ***BACTERIA***

- *STREP MUTANS*
- *LACTOBACILLUS*



# ***ACIDOGENIC BACTERIA***

- Acidogenic bacteria produce acids from carbohydrates
- Demineralization
- Bacteria become part of oral flora and fauna
- Bacteria remain forever
- Bacteria is not present at birth



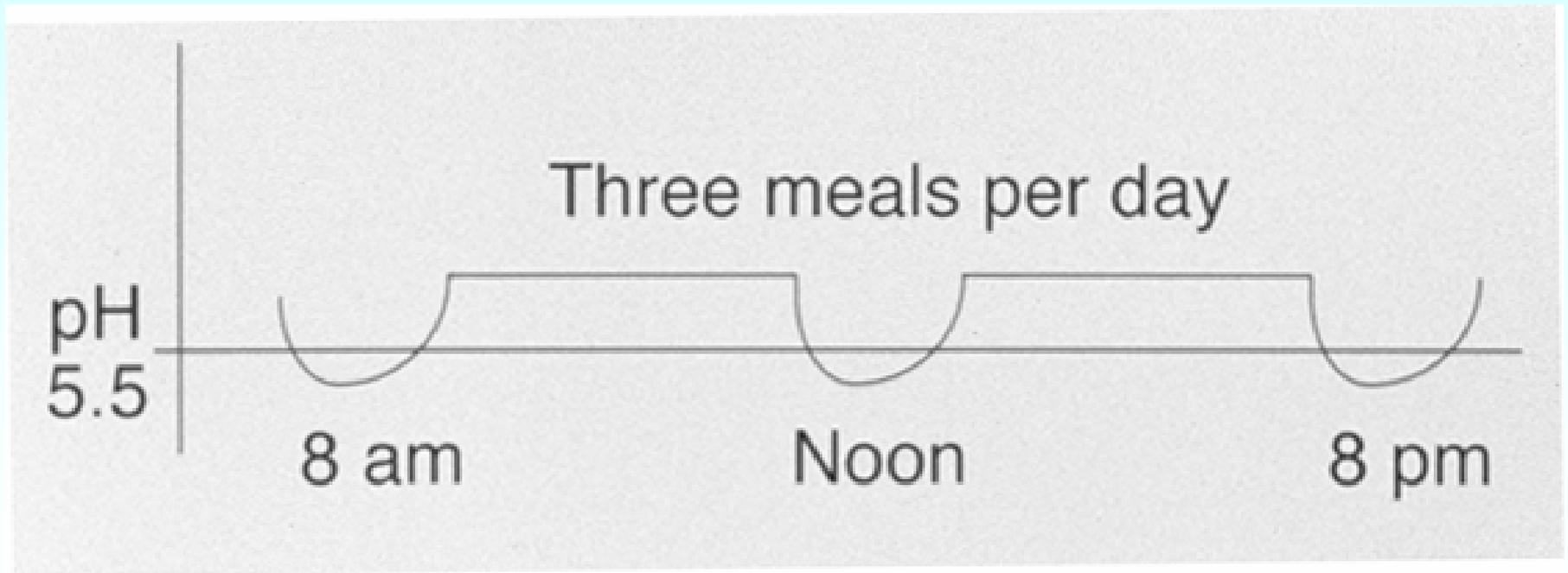
***DIET***

# ***LIMITING FERMENTABLE CARBOHYDRATES***

- Sugary foods and drinks
- Simple carbohydrates like white crackers
- Need to limit both frequency and total sugar intake



# ***AVOID FREQUENT EATING***



# ***FIRST SIGN OF DECAY***





# ***HOW DO CHILDREN GET INFECTED WITH THE BACTERIA?***

## **OLD THEORY**

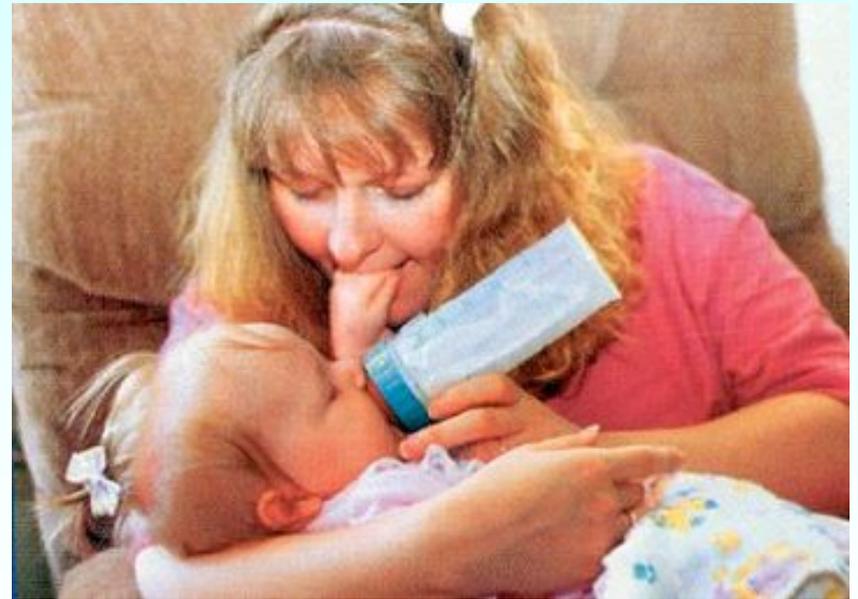
- Bacteria only present after tooth eruption
- Bacterial transmitted by playmates and siblings

# ***NEW THEORY***

- Studies found bacteria prior to tooth eruption
- Bacteria can be traced to host
- Source of initial bacterial infection is mother or primary caregiver

# ***ECC AN INFECTIOUS TRANSMISSABLE DISEASE***

- *Mutans streptococci, lactobacilli, and other acid-producing bacteria*
- Transmission both vertical and horizontal



# ***NEW FINDINGS***

- The higher the bacterial count of the mother/primary caregiver the greater the likelihood of transmission
- The earlier the infant is infected the greater the severity of dental decay



# ***PREVENT ECC?***



**Tooth Decay**



**No Tooth Decay**

# ***VISIT DENTIST DURING PREGNANCY***

- Assess the mother's caries risk
- Recommend mother's use of chlorhexidine or xylitol as appropriate, after the baby is born
- Educate mother on the infectious nature of the decay process



# ***PREGNANT WOMEN AND MOTHERS***

- Reduce mother's bacteria during first two years
- Use anti-bacterials like chlorhexidine and xylitol





# ***XYLITOL RESEARCH***

- 6-year study in Finland
- Led to lower levels of caries in child
- Mothers chewed xylitol gum during first 2 years of child's life



Lynch H, Milgrom P. Xylitol and Dental Caries: An Overview for Clinicians. J Calif Dent Assoc 2003;31(3):205-09.

Milgrom P, Ly KA, Roberts MC, Rothen M, Mueller G, Yamaguchi DK. Mutans streptococci dose response to xylitol chewing gum. J Dent Res 2006;85(2):177-81.

# ***XYLITOL GUM***



- 4 boxes (60 pieces/box) is a month supply
- 8 pieces each day

# ***WEANING***

- Recommend using a cup at 6 months of age
- Consider weaning at 12-14 months of age
- Don't let baby sleep with the bottle
- Don't let baby walk around with a bottle or sippy cup all day



# ***BABY BOTTLE AT NIGHT***

- Only water
- Other liquids cause decay:
- Milk
- Formula
- Fruit juice
- Sugary drinks



# ***LIFT THE LIP***

“lift the lip” monthly to check for chalky white spots or brown spots



# ***FIRST SIGNS BBTD***





# ***BBTD PROGRESSES***



# ***TREATMENT OF ECC***

- 40-50% of children treated with severe ECC have new decay within 4-12 months
- We must treat the infection!



Berkowitz RJ, Moss M, et al. Clinical outcomes for nursing caries treated using general anesthesia. *ASDC J Dent Child* 1997;64(3):210-1, 228

Almeida AG, Roseman MM, et al. Future caries susceptibility in children with early childhood caries following treatment under general anesthesia. *Pediatr Dent* 2000;22(4):302-6.

# ***YES!***

- Interventions with pregnant women and mothers of infants
- Interventions with babies and young children



# ***ORAL HEALTH ASSESSMENT FOR BABIES AND YOUNG CHILDREN***



# ***INFANT EXAM***

**BEFORE FIRST BIRTHDAY**



# ***BUILDING RAPPORT***

- Play and talk with child
- Use toys or a baby toothbrush for distraction
- Use staff to occupy child during the interview



***EXPECT CRYING!***



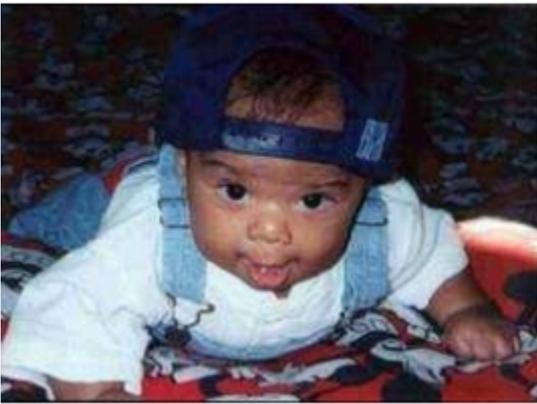
# ***FIRST CLEANING***

- Remove plaque
- Discuss home care
- Reinforce the use of a small dab of fluoride toothpaste



# ***REINFORCE HOME CARE***

- It's what families do at home that really counts!



# ***BRUSH AT SCHOOL***



# ***CLEANING THE TEETH AT HOME***

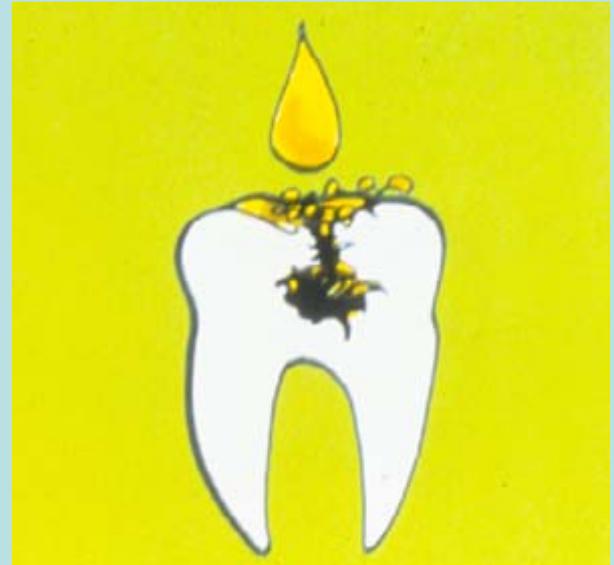
- Begins when first tooth erupts
- Let older children and caregivers practice while you watch



# ***LIMIT THE TOTAL SUGAR INTAKE***

- Decrease obesity
- Decrease diabetes
- Decrease tooth decay





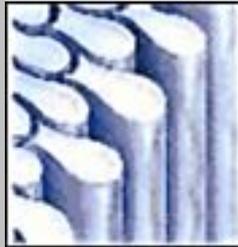
# ***FLUORIDE INHIBITS DEMINERALIZATION***

- Fluoride “adsorbed” to the surface of the crystal acts as a physical barrier to acid
- Like metal shavings on a magnet

# ***BENEFITS OF WATER FLUORIDATION***

Fluoridation is the most cost effective method of improving the dental health of a community\*

## **Close Up of Enamel**



With Fluoridation



Without Fluoridation

\* Source: National Institutes of Health

# ***WATER FLUORIDATION***

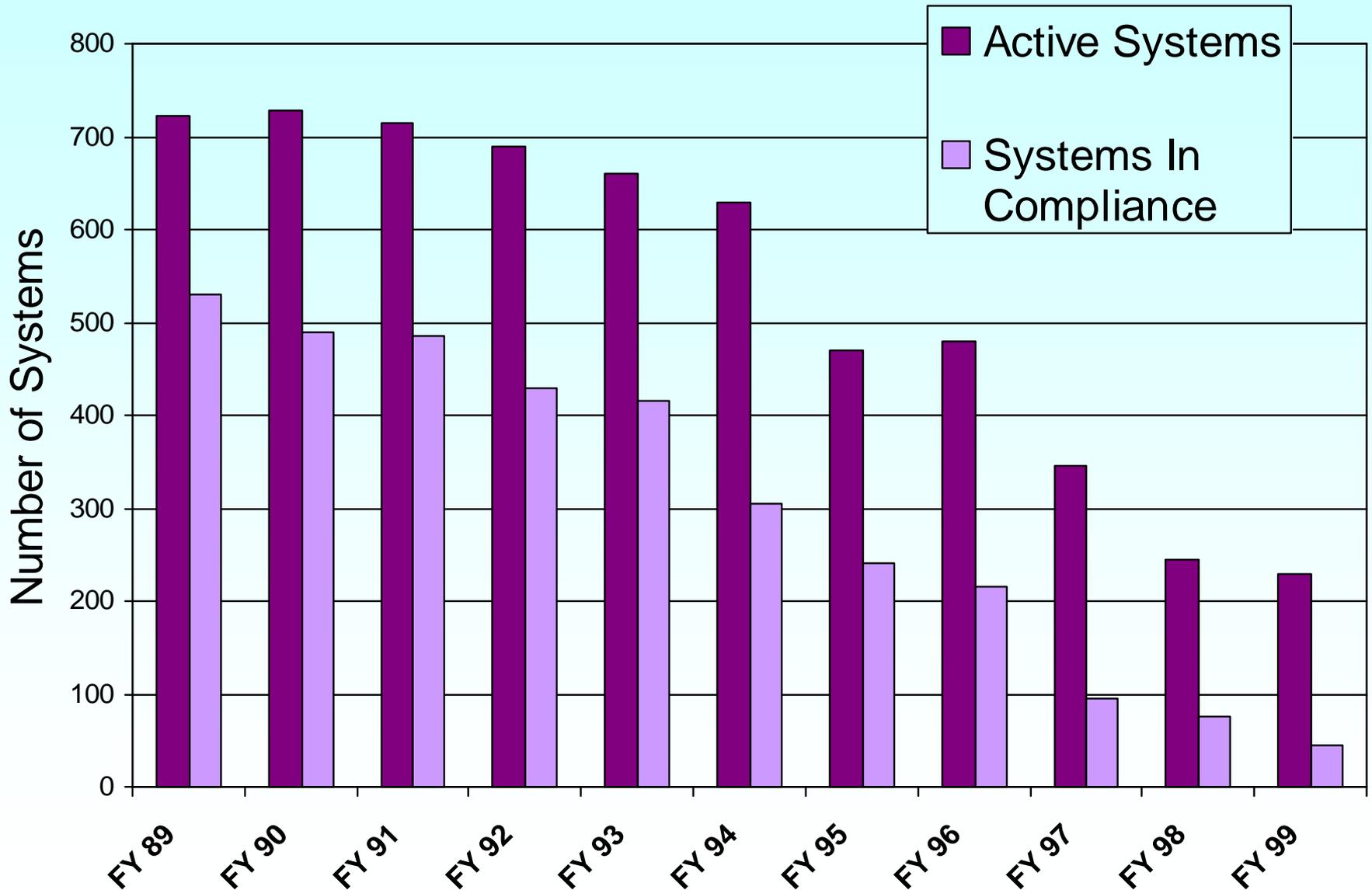
- Bottled water has essentially no fluoride





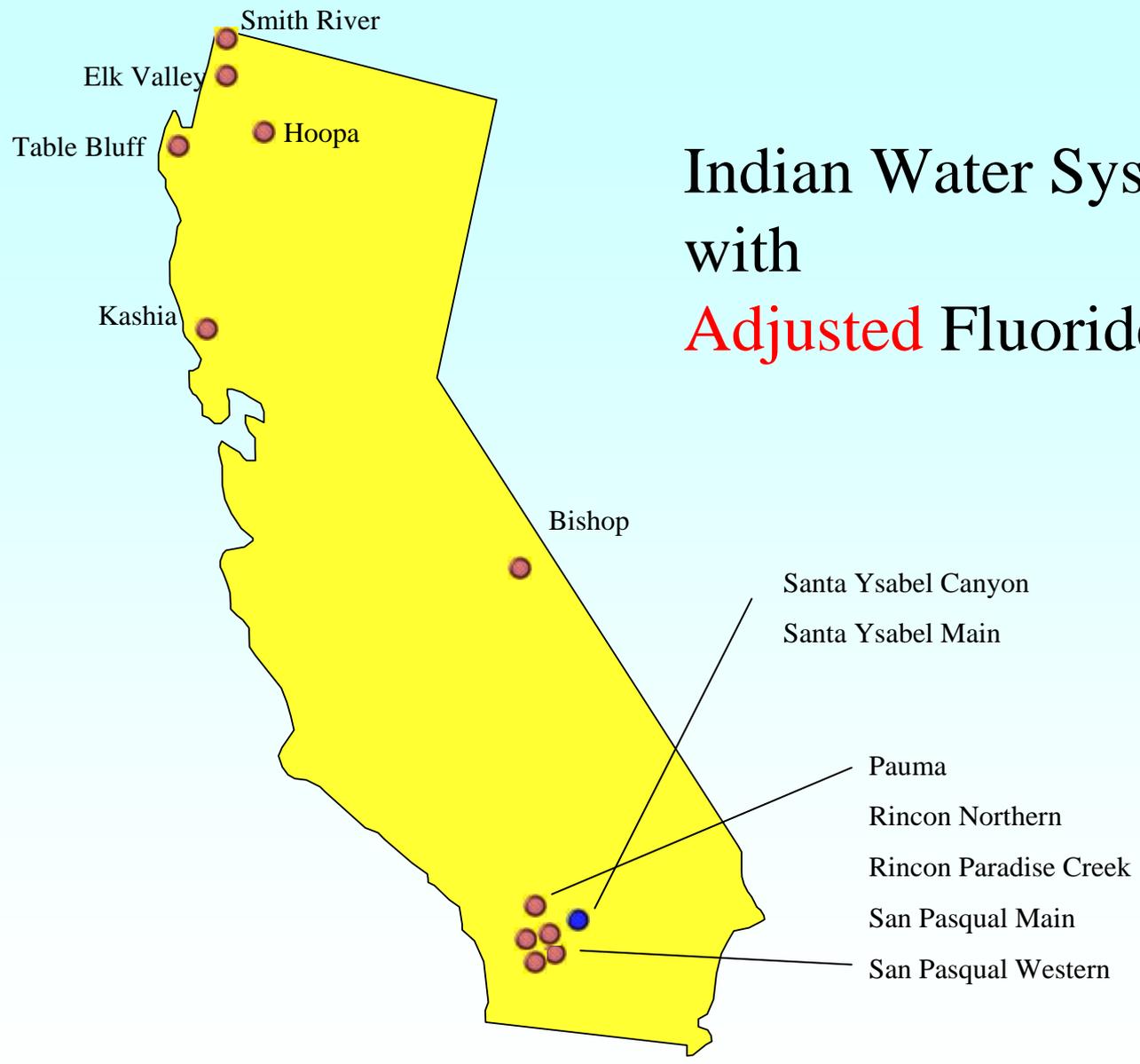
***WATER IS THE  
PRIMARY SOURCE***

# IHS-wide Historical Perspective

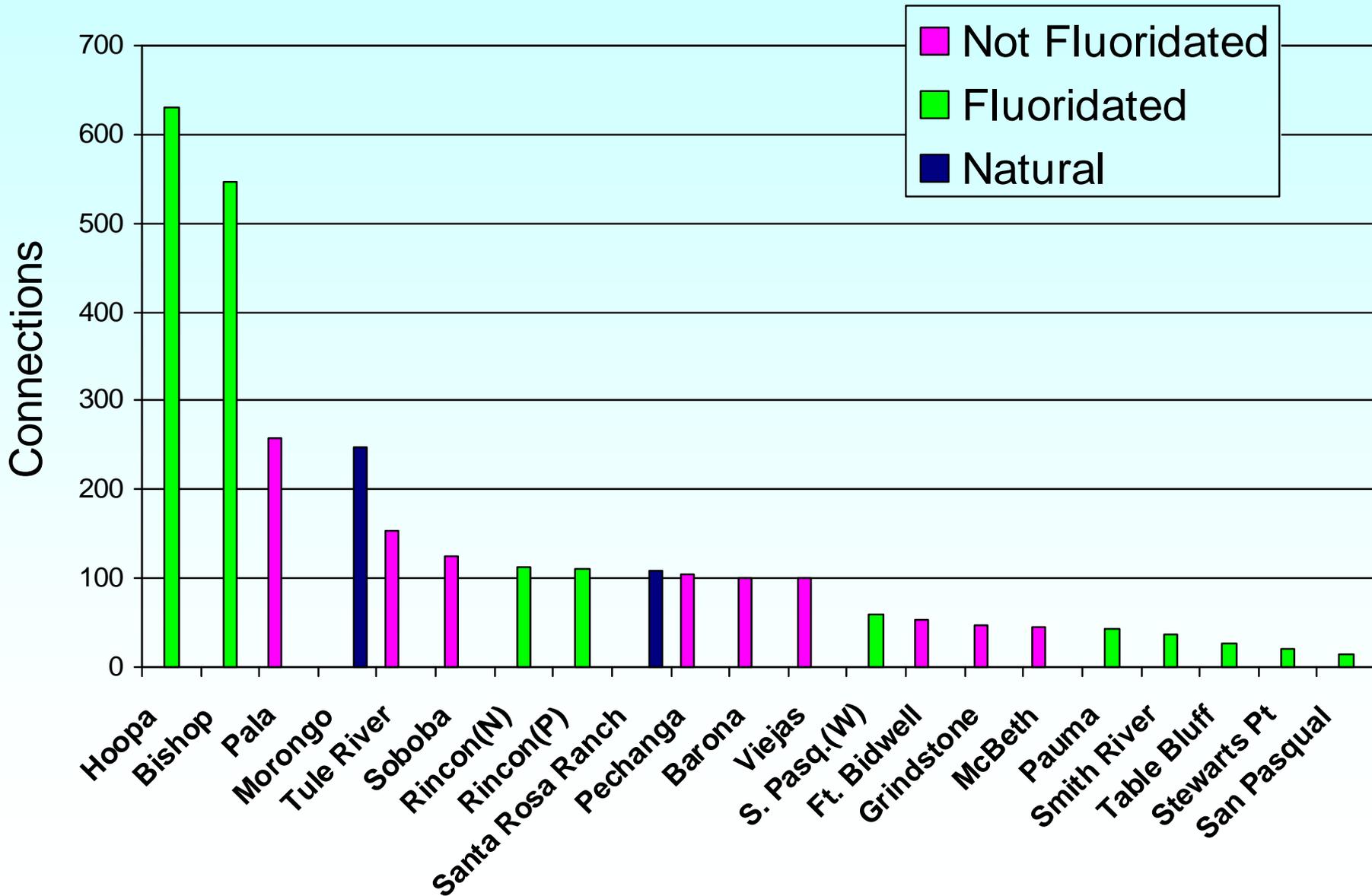


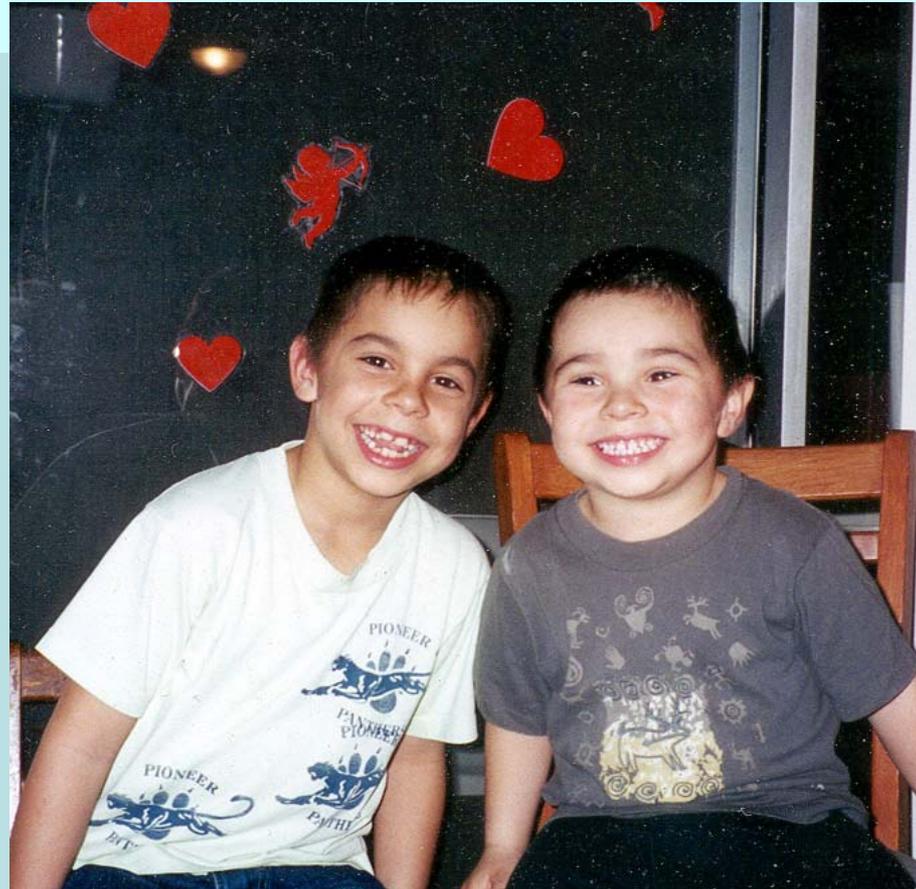
Source: IHS 1990-2000 Dental Services for American Indians and Alaska Natives

# Indian Water Systems with **Adjusted** Fluoride Levels



# Largest Indian Water Systems in CA





*The famous Fluette poster children benefited greatly from fluoride tablets*

# ***CLAIMS***

“Fluoridation causes AIDS!”

“It’s a Communist plot!”

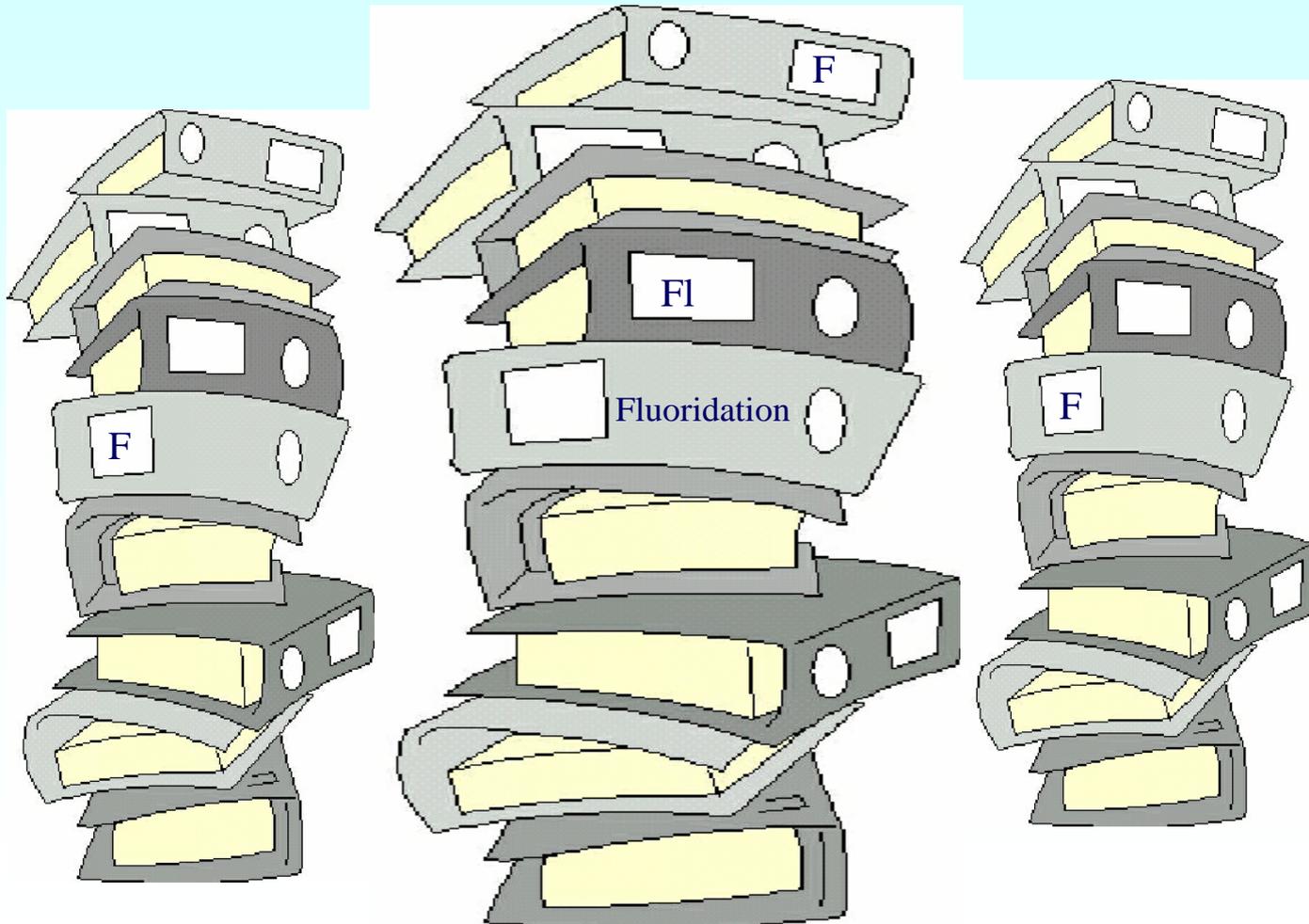
“You’ll get cancer!”

“It’s a drug!”

“Your skin will wrinkle!”

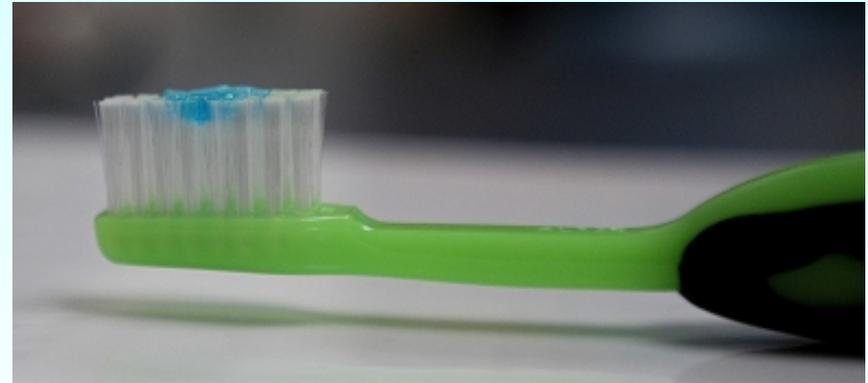
It eats your plumbing!

# Single Most Effective Public Health Method to Improve Dental Health



# ***FLUORIDE TOOTHPASTE***

- Encourage daily use in the morning and before bed
- A small pea-sized dab is the appropriate amount
- Apply toothpaste across width, not length of toothbrush



# ***FLUORIDE MOUTHRINSES***

- Not for babies and young children
- Child must be able to effectively spit



# ***FLUORIDE VARNISH***

- Professionally applied topical fluoride treatment
- Safe for babies and young children



# ***APPLY FLUORIDE VARNISH***



# ***SEALANTS***



# ***FOLLOW-UP VISITS***

- Children who have received infant oral health often make excellent future dental patients



# ***SUMMARY***

## For all babies and young children

- Water fluoridation
- Daily use of fluoride toothpaste in the morning and at bedtime
- Limit sugar and other simple carbohydrates

## For high-risk patients

- Fluoride Varnish
- Consider anti-bacterials for mothers and older children
- Fluoride Mouthrinse when child can spit
- Dental Sealants

# ***CHANGING HEALTH BEHAVIORS***

- Changes in health behavior do not happen overnight
- It often takes many triggers, delivered over a period of time, in combination with a person's own experiences and values to change health behavior



# ***DENTAL SUPPORT CENTER***



- I.H.S. prevention grant (CA First)
- Cooperative project with CRIHB
- Dental Advisory Committee is the steering committee
- California is focusing on the prevention of decay in children
- Available to all Tribal and Urban Programs

# ***SUPPORT CENTER ACTIVITIES***

- Sealant certificate course for Registered Dental Assistants
- Training Head Start and Preschool Staff
- Train medical and dental staff on ECC

# ***Proposed activities***

- Demonstration project proposal with the California Endowment
- Use diabetes model and treat ECC as a chronic disease
- Intensive family oriented education covering oral hygiene, healthy diet/snacks and bring in adjunct services when indicated

***QUESTIONS***

# ***CONTACT INFORMATION***

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